

**Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania**



RESEARCH BULLETIN

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**2010 Journal articles, Conference Proceedings, Book Reports, Thesis and Dissertations**

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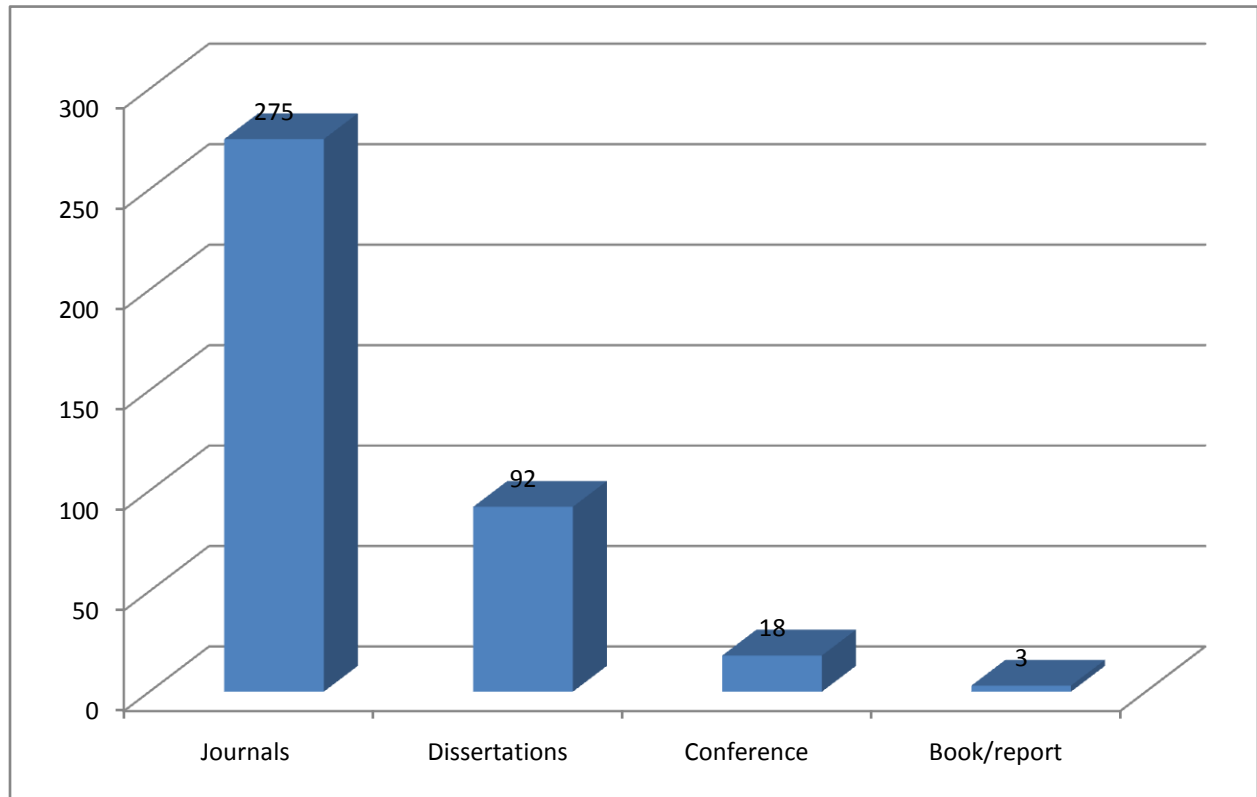
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**Information to readers**

This bulletin is intended to provide information on research by members of Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania. It provides summaries of publications during the proceeding calendar year, including dissertations, thesis, journal articles and conference proceedings. Members are requested to provide the Editor with summaries of their publications and ongoing research in electronic form for inclusion in the Bulletin. Abstract should be limited to 200 words.

## Editorial

The current volume (Volume 13 No.1) contains total of 388 abstracts (275 journal articles, 92 Dissertations, 18 Conference proceedings and 3 book/research report published in 2010.



**Dr. Edda Tandi Lwoga**

**Editor**

**P.O Box 65001**

**Dar es Salaam, Tanzania**

**Tel: Tel: +255-22 2151462**

**Fax: +255-22 2151462**

**E-mail: [tlwoga@muhas.ac.tz](mailto:tlwoga@muhas.ac.tz)**

**Website: <http://library.muhas.ac.tz>**

1. Aabye MG, Ruhwald M, PrayGod G, Jeremiah K, Faurholt-Jepsen M , Faurholt-Jepsen D, Range N , Friis H , Chagalucha J, Andersen AB, Ravn P. Potential of interferon- $\gamma$ -inducible protein 10 in improving tuberculosis diagnosis in HIV-infected patients. *European Respiratory Journal*. 2010; 36 (6): 1488-1490.
2. Abbasi MK, Khaliq A, Shafiq M, Kazmi M, Ali I. Comparative effectiveness of urea N, poultry manure and their combination in changing soil properties and maize productivity under rainfed conditions in Northeast Pakistan. *Experimental Agriculture*, 46(02), 211-230.

A field experiment was conducted to evaluate the comparative effectiveness of poultry manure, urea N and the integrated use of both in changing soil properties, nutrient uptake, yield and yield attributes of maize grown at Rawalakot, Azad Jammu and Kashmir, Pakistan. Treatments include control without any amendment ( $N_0$ ); urea N (UN) = 120 kg N ha<sup>-1</sup> ( $N_{120U}$ ); UN = 150 kg N ha<sup>-1</sup> ( $N_{150U}$ ); poultry manure (PM) = 120 kg N ha<sup>-1</sup> ( $N_{120PM}$ ); PM = 150 kg N ha<sup>-1</sup> ( $N_{150PM}$ ); UN = 90 kg N ha<sup>-1</sup> + PM = 30 kg N ha<sup>-1</sup> ( $N_{90U+30PM}$ ); UN = 60 kg N ha<sup>-1</sup> + PM = 60 kg N ha<sup>-1</sup> ( $N_{60U+60PM}$ ); UN = 30 kg N ha<sup>-1</sup> + PM = 90 kg N ha<sup>-1</sup> ( $N_{30U+90PM}$ ). N fertilization from different sources and combinations increased dry matter yield from 5206 kg ha<sup>-1</sup> in the control to 5605–5783 kg ha<sup>-1</sup> and grain yield increased from 1911 kg ha<sup>-1</sup> to 2065–3763 kg ha<sup>-1</sup>. Application of the highest rate of urea N recorded the highest grain yields of 3763 kg ha<sup>-1</sup>, double the control. The proportional increase for  $N_{90U+30PM}$  and  $N_{60U+60PM}$  was 85 and 83% while PM alone gave lower yields (41 and 44%) than the respective urea N treatments. Integrated use of urea + PM proved superior to other treatments in enhancing the uptake of N, P and K in plants. Averaged across two years, uptake of N, P and K in  $N_{90U+30PM}$  and  $N_{60U+60PM}$  was 88 and 85, 16.5 and 17.5, and 48.5 and 53.5 kg ha<sup>-1</sup>, respectively compared to 52.5, 11.5 and 33.5 kg ha<sup>-1</sup> in the control. Nitrogen use efficiency (NUE) varied from 29% in PM treatments to 30–39% in combined treatments while NUE of 40% was recorded for urea N treatments. Application of PM lowered soil bulk density from 1.19 t m<sup>-3</sup> in the control to 1.10 and 1.05 t m<sup>-3</sup> in  $N_{120PM}$  and  $N_{150U}$ , enhanced pH from 7.39 to 7.65 and

7.78 and increased soil organic matter (22 and 32%), total N (21 and 26%), available P (44 and 55%) and available K (10 and 15%) compared with the control. Economic analysis suggested the use of 50% recommended mineral N (60 kg N ha<sup>-1</sup>) with PM saves the mineral N fertilizer by almost 50% compared to a system with only mineral N application. In addition, increase in N efficiency, plant nutrition and soil fertility associated with combined treatment would help to minimize the use of high cost synthetic mineral fertilizers and represents an environmentally and ergonomically sound management strategy.

3. **Abdsu M, Kshada A, Shafiq M, Ogunyemi O, Chong TS, Hadjar K. Applied Production Completion Using Optimum Number of Inflow Control Devices. In Abu Dhabi International Petroleum Exhibition and Conference. Society of Petroleum Engineers. 2010.**

This paper describes a case history detailing design, planning, completions, testing and production of first Inflow Control Device (ICD) horizontal well in one of field in Middle East. In this field, most of existing wells are open hole horizontal producers. A non uniform production profile across the horizontal section can result in early water and gas breakthrough. This can substantially reduce oil production, create zones of bypassed oil and lower the ultimate recovery. In case of early water breakthrough, it will also accelerate the need for artificial lift for individual wells and require increased water and gas handling capacity requirements. The area of first row of producers located close to the water injectors are now experiencing increasing water cut in some wells causing the well to decline and die prematurely. Objective from the first ICD installation was to test the technical concept of ICD completion in managing the heel-toe effect and reduce the water cut (multiple water entries) in this well, as a first step to mitigate the down-dip and mid-dip problem. Additionally following objectives were set: reduce water cut, optimize production, extend the life of well, prove ICD technology benefits and use to field wide. A critical aspect of the process way the modeling, prediction and optimization of both reservoir performance and completion hardware design. After successful ICD design and installation, well was put on production and tested, following results are achieved: oil rate

increased by 100%, Water cut reduced by 18% and well head pressure increased by 30%. The appraisal and acceptance loop of the completion has been closed by having this well completed, put on production and tested. Approval of concept was achieved and the anticipated benefits were realized by actual performance of the well. Leverage knowledge from this pilot well has provided an insight into ICD capabilities and implementation and has set the stage for other fields.

- 4. Abedini F, Ismail M, Hosseinkhani H, Ibrahim, T, Azmi T, Omar A, Domb AJ. Toxicity evaluation of dextran-spermine polycation as a tool for gene therapy in vitro. *Journal of Cell and Animal Biology*. 2010; 4(12): 170-176.**

Cationic polymers are a leading class of nonviral self-assembled nucleic acid delivery systems. Cationic polymers have been shown to condense the DNA so that the entrapped DNA is protected from contact with DNase. The objective of the present study is to evaluate the effect of cationic dextran on the proliferation rate, morphological changes and biosynthetic activities in vitro. Cationic dextran was prepared by means of reductive-amination between oxidized dextran and the natural oligoamine, spermine. Four kinds of biological evaluations including cell proliferation assay, ultrastructural changes of cells using transmission electron microscopy (TEM), acridine orange/Propidium Iodide and cell cycle were studied. Our results clearly indicated that the toxicity of cationic dextran is dose depended and it is not toxic at low concentration and tolerable by the cells, and it can be used as a tool for gene delivery.

- 5. Aboud S, Nilsson C, Karlén K, Marovich M, Wahren B, Sandström E, Gaines H, Biberfeld G, Godoy-Ramirez K. Strong HIV-specific CD4+ and CD8+ T-lymphocyte proliferative responses in healthy individuals immunized with an HIV-1 DNA vaccine and boosted with recombinant modified vaccine virus Ankara expressing HIV-1 genes. *Clinical and Vaccine Immunology*. 2010; 17 (7): 1124-1131.**

We investigated HIV-1 vaccine-induced lymph proliferative responses in healthy volunteers immunized intradermally or intramuscularly (with or without adjuvant

granulocyte-macrophage colony-stimulating factor [GM-CSF] protein) with DNA expressing HIV-1 gag, env, rev, and rt at months 0, 1, and 3 using a Biojector and boosted at 9 months with modified vaccinia virus Ankara (MVA) expressing heterologous HIV-1 gag, env, and pol (HIV-MVA). Lymphoproliferative responses to aldrithiol-2 (AT-2)-inactivated-HIV-1 antigen were tested by a [3H]thymidine uptake assay and a flow-cytometric assay of specific cell-mediated immune response in activated whole blood (FASCIA-WB) 2 weeks after the HIV-MVA boost (n = 38). A FASCIA using peripheral blood mononuclear cells (FASCIA-PBMC) was also employed (n = 14). Thirty-five of 38 (92%) vaccinees were reactive by the [3H]thymidine uptake assay. Thirty-two of 38 (84%) vaccinees were reactive by the CD4+ T-cell FASCIA-WB, and 7 of 38 (18%) also exhibited CD8+ T-cell responses. There was strong correlation between the proliferative responses measured by the [3H] thymidine uptake assay and CD4+ T-cell FASCIA-WB ( $r = 0.68$ ;  $P < 0.01$ ). Fourteen vaccinees were analyzed using all three assays. Ten of 14 (71%) and 11/14 (79%) demonstrated CD4+ T-cell responses in FASCIA-WB and FASCIA-PBMC, respectively. CD8+ T-cell reactivity was observed in 3/14 (21%) and 7/14 (50%) using the FASCIA-WB and FASCIA-PBMC, respectively. All 14 were reactive by the [3H]thymidine uptake assay. The overall HIV-specific T-cell proliferative response in the vaccinees employing any of the assays was 100% (38/38). A standardized FASCIA-PBMC, which allows simultaneous phenotyping, may be an option to the [3H] thymidine uptake assay for assessment of vaccine-induced T-cell proliferation, especially in isotope-restricted settings.

6. **Ahouidi AD, Bei AK, Neafsey DE, Sarr O, Volkman S, Milner D, Cox-Singh J, Ferreira MU, Ndir O, Premji Z, Mboup S, Duraisingh MT. Population genetic analysis of large sequence polymorphisms in Plasmodium falciparum blood-stage antigens. *Infection, Genetics and Evolution*. 2010; 10 (2): 200-206.**

*Plasmodium falciparum*, the causative agent of human malaria, invades host erythrocytes using several proteins on the surface of the invasive merozoite, which have been proposed as potential vaccine candidates. Members of the multi-gene PfRh family are surface antigens that have been shown to play a central role in directing merozoites to



alternative erythrocyte receptors for invasion. Recently, we identified a large structural polymorphism, a 0.58 Kb deletion, in the C-terminal region of the Pfrh2b gene, present at a high frequency in parasite populations from Senegal. We hypothesize that this region is a target of humoral immunity. Here, by analyzing 371 *P. falciparum* isolates we show that this major allele is present at varying frequencies in different populations within Senegal, Africa, and throughout the world. For allelic dimorphisms in the asexual stage antigens, Msp-2 and EBA-175, we find minimal geographic differentiation among parasite populations from Senegal and other African localities, suggesting extensive gene flow among these populations and/or immune-mediated frequency-dependent balancing selection. In contrast, we observe a higher level of inter-population divergence (as measured by *F<sub>st</sub>*) for the Pfrh2b deletion, similar to that observed for SNPs from the sexual stage Pfs45/48 loci, which is postulated to be under directional selection. We confirm that the region containing the Pfrh2b polymorphism is a target of humoral immune responses by demonstrating antibody reactivity of endemic sera. Our analysis of inter-population divergence suggests that in contrast to the large allelic dimorphisms in EBA-175 and Msp-2, the presence or absence of the large Pfrh2b deletion may not elicit frequency-dependent immune selection, but may be under positive immune selection, having important implications for the development of these proteins as vaccine candidates.

7. Alexander N , Schellenberg D, Ngasala B, Petzold M, Drakeley C, Sutherland C. **Assessing agreement between malaria slide density readings.** *Malaria Journal.* 2010; **9 (1): 4.**

**Background:** Several criteria have been used to assess agreement between replicate slide readings of malaria parasite density. Such criteria may be based on percent difference, or absolute difference, or a combination. Neither the rationale for choosing between these types of criteria, nor that for choosing the magnitude of difference which defines acceptable agreement, are clear. The current paper seeks a procedure which avoids the disadvantages of these current options and whose parameter values are more clearly justified. **Methods and Results:** Variation of parasite density within a slide is expected,

even when it has been prepared from a homogeneous sample. These places lower limits on sensitivity and observer agreement, quantified by the Poisson distribution. This means that, if a criterion of fixed percent difference criterion is used for satisfactory agreement, the number of discrepant readings is over-estimated at low parasite densities. With a criterion of fixed absolute difference, the same happens at high parasite densities. For an ideal slide, following the Poisson distribution, a criterion based on a constant difference in square root counts would apply for all densities. This can be back-transformed to a difference in absolute counts, which, as expected, gives a wider range of acceptable agreement at higher average densities. In an example dataset from Tanzania, observed differences in square root counts correspond to 95% limits of agreement of -2,800 and +2,500 parasites/vl at average density of 2,000 parasites/vl, and -6,200 and +5,700 parasites/vl at 10,000 parasites/vl. However, there were more outliers beyond those ranges at higher densities, meaning that actual coverage of these ranges was not a constant 95%, but decreased with density. In a second study, a trial of microscopist training, the corresponding ranges of agreement are wider and asymmetrical: -8,600 to +5,200/vl, and -19,200 to +11,700/vl, respectively. By comparison, the optimal limits of agreement, corresponding to Poisson variation, are  $\pm 780$  and  $\pm 1,800$  parasites v/l, respectively. The focus of this approach on the volume of blood read leads to other conclusions. For example, no matter how large a volume of blood is read, some densities are too low to be reliably detected, which in turn means that disagreements on slide positivity may simply result from within-slide variation, rather than reading errors.

**Conclusions.** The proposed method defines limits of acceptable agreement in a way which allows for the natural increase in variability with parasite density. This includes defining the levels of between-reader variability, which are consistent with random variation: disagreements within these limits should not trigger additional readings. This approach merits investigation in other settings, in order to determine both the extent of its applicability, and appropriate numerical values for limits of agreement.

8. Ali AT, Hassan ER. General Exp a-function method for nonlinear evolution equations. *Applied Mathematics and Computation*. 2010; 217(2): 451-459.

This work generalizes the exponential function method in considering an arbitrary base “a” as opposed to the conventional base “e” for the exponential function. The combined KdV–mKdV equation is considered to reveal the effectiveness and convenience of the proposed generalization. The study highlights the power of the proposed method on constructing solutions expressed in terms of exponential, hyperbolic, periodic, symmetrical Fibonacci, symmetrical Lucas, and k-Fibonacci functions. Some of the obtained solitary wave solutions are sketched graphically.

- 9. Ali AT, Turgut M. Position vector of a time-like slant helix in Minkowski 3-space. *Journal of Mathematical Analysis and Applications*. 2010; 365(2): 559-569.**

In this paper, position vector of a time-like slant helix with respect to standard frame of Minkowski space  $E_3^1$  is studied in terms of Frenet equations. First, a vector differential equation of third order is constructed to determine position vector of an arbitrary time-like slant helix. In terms of solution, we determine the parametric representation of the slant helices from the intrinsic equations. Thereafter, we apply this method to find the representation of a time-like Salkowski and time-like anti-Salkowski curves as examples of a slant helices, by means of intrinsic equations. Moreover, we present some new characterizations of slant helices and illustrate some examples of our main results.

- 10. Ali AT. Position vectors of space like general helices in Minkowski 3-space. *Nonlinear Analysis: Theory, Methods & Applications*. 2010; 73(4): 1118-1126.**

In this paper, the position vectors of a space like general helix with respect to the standard frame in Minkowski space  $E_3^1$  are studied in terms of the Frenet equations. First, a vector differential equation of third order is constructed to determine the position vectors of an arbitrary space like general helix. In terms of solution, we determine the parametric representation of the general helices from the intrinsic equations. Moreover, we give some examples to illustrate how to find the position vectors of space like general helices with a space like and time like principal normal vector.

- 11. Ali SSA, Al-Sunni FM, Shafiq M, Bakhashwain JM. U-model based learning feed forward control of MIMO nonlinear systems. *Electrical Engineering*. 2010; 91(8): 405-415.**

In this paper, a learning feed forward controller (LFFC) using the U-model is proposed for a better tracking control of multivariable nonlinear systems over a finite time interval. The multivariable system is modeled using the U-model and the LFFC is established using Newton–Raphson method. U-model significantly simplifies the online synthesis of the feed forward control law. The proposed technique is verified on 2-link robot manipulator in real-time. The performance of the proposed U-model based LFFC is compared with a number of schemes under varying load conditions.

- 12. Amira MB, Hanene JH, Madiha D, Imen B, Mohamed H, Abdelhamid C. Effects of frying on the fatty acid composition in farmed and wild gilthead sea bream (*Sparus aurata*). *International journal of food science & technology*. 2010; 45(1): 113-123.**

The effects of frying in soybean (FWSO) and olive oils (FWOO) on the fatty acid composition of farmed and wild gilthead sea bream *Sparus aurata* were evaluated. The fat content increased with both frying treatments. However, after FWOO the moisture content of the fish was reduced to a greater extent than that in fish FWSO. The concentration of saturated fatty acids (SFA) decreased significantly during both frying processes ( $P < 0.01$ ). However, the concentration of monounsaturated fatty acids (MUFA) increased significantly in fish fried in olive oil ( $P < 0.01$ ). The fried fish contained a higher level of n-6 polyunsaturated fatty acids (PUFA) and a lower level of n-3 PUFA compared to raw fish. The n-3/n-6 ratio decreased in wild fish FWSO and FWOO from  $0.94 \pm 0.08$  to  $0.15 \pm 0.01$  and  $0.15 \pm 0.02$ , respectively. In farmed bream, the ratios decreased from  $2.51 \pm 0.03$  to  $0.18 \pm 0.03$  and  $0.36 \pm 0.01$ , respectively. The concentration of *trans* fatty acids decreased significantly in both fish types after frying ( $P < 0.05$ ). The frying process widely affected the EPA and DHA content, limiting the positive effects of n-3 PUFA.

- 13. Annecke T, Chappell D, Chen C, Jacob M, Welsch U, Sommerhoff CP, Becker BF. Sevoflurane preserves the endothelial glycocalyx against ischaemia–reperfusion injury. *British journal of anaesthesia*. 2010; 104(4): 414-421.**

**Background:** Healthy vascular endothelium is coated by the glycocalyx, important in multiple endothelial functions, but destroyed by ischemia–reperfusion. The impact of volatile anaesthetics on this fragile structure has not been investigated. We evaluated the effect of cardiac pre- and post-conditioning with sevoflurane on integrity of the endothelial glycocalyx in conjunction with coronary vascular function. **Methods:** Isolated guinea pig hearts perfused with Krebs–Henseleit buffer underwent 20 min stopped-flow ischemia (37°C), either without or with 1 MAC sevoflurane. This was applied for 15 min before, for 20 min after, or both before and after ischemia. Transudate was collected for assessing coronary net fluid extravasation and histamine release by mast cells. Coronary release of syndecan-1 and heparan sulphate was measured. In additional experiments with and without continuous sevoflurane, cathepsin B and striptase  $\beta$ -like protease activity were measured in effluent. Hearts were perfusion-fixed to visualize the endothelial glycocalyx. **Results:** Ischemia led to a significant ( $P<0.05$ ) increase by 70% in transudate formation during reperfusion only in hearts without sevoflurane. This was accompanied by significant ( $P<0.05$ ) increases in heparan sulphate (four-fold) and syndecan release (6.5-fold), with electron microscopy revealing massive degradation of glycocalyx. After ischemia, histamine was released into transudate, and cathepsin B activity increased in effluent ( $P<0.05$ ). Sevoflurane application attenuated all these changes, except for histamine release. **Conclusions:** Sevoflurane protects the endothelial glycocalyx from ischemia–reperfusion-induced degradation, with both preconditioning and rapid post-conditioning being successful. The mechanism seems to involve attenuation of lysosomal cathepsin B release and to be independent from tissue mast cell degranulation.

- 14. Antony SN. Evaluation of direct coronal Tooth restorations for quality and patient satisfaction in public dental clinics, Dar es Salaam Tanzania. Master of Dentistry**

**(Restorative Dentistry) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Evaluation of quality of restorations provided to Tanzanians has never been done hence standards of the restorations remains unknown. Patient satisfaction with restorations which is an important aspect of quality of care assessment has also never been done. To ensure quality restorative care is provided it is mandatory to assess quality of restorations as well as patient satisfaction with restorations received. Objective To evaluate quality of direct coronal restorations and determine patient satisfaction with the restorations placed at dental clinics within Dar es Salaam city. **Material and Methods:** A cross sectional study was conducted between June and December 2009 at Muhimbili National Hospital (MNH), Mwananyamala, Temeke, and Mnazi mmoja dental clinics. Modified USPHS Ryge 1980 criteria and patient satisfaction questionnaire were used to assess technical quality of the restorations and patient satisfaction, respectively. Quality of restorations and patient satisfaction data was analyzed using SPSS version 14 program. **Results:** A total of 200 patients with majority being females (71.5%) were enrolled. The participants had 516 direct coronal restorations of which 48% were amalgam restorations. Sixty three percent of the examined restorations were of acceptable quality. The most frequent reason for unacceptable restorations was colour mismatch (45.7%) followed by restoration overhangs (26.0%) and faulty contact point (22.7%). Secondary caries and apical periodontitis were found on 10.5% and 7% of the restorations respectively. Sixty six percent of patients were satisfied with their restorations with older patients (above 50 years) more satisfied than younger patients.

**15. Arnold WH, Becher S, Dannan A, Widera D, Dittmar T, Jacob M, Grimm WD. Morphological characterization of periodontium-derived human stem cells. *Annals of Anatomy-Anatomischer Anzeiger*. 2010; 192(4): 215-219.**

The aim of this study has been to characterize adult human somatic periodontium-derived stem cells (PDSCS) isolated from human periodontium and to follow their differentiation after cell culture. PDSCS were isolated from human periodontal tissue and cultured as

spheres in serum-free medium. After 10 days the primary spheres were dissociated and the secondary spheres sub-cultured for another 1–2 weeks. Cells from different time points were analyzed, and immunohistochemical and electron microscopic investigations carried out. Histological analysis showed differentiation of spheres deriving from the PDSCS with central production of extracellular matrix beginning 3 days after sub-culturing. Isolated PDSCS developed pseudopodia which contained actin. Tubulin was found in the central portion of the cells. Pseudopodia between different cells anastomosed, indicating intercellular transport. Immunostaining for osteopontin demonstrated a positive reaction in primary spheres and within extracellular matrix vesicles after sub-culturing. In cell culture under serum-free conditions human PDSCS form spheres which are capable of producing extracellular matrix. Further investigations have to be carried out to investigate the capability of these cells to differentiate into estrogenic progenitor cells.

**16. Arsenault JE, Aboud S, Manji KP, Fawzi WW, Villamor E. Vitamin supplementation increases risk of subclinical mastitis in HIV-infected women. Journal of Nutrition.2010; 140 (10): 1788-1792.**

Subclinical mastitis is common in HIV-infected women and is a risk factor for mother-to-child transmission of HIV. The purpose of this study was to examine the effect of vitamin supplementation [vitamin A +  $\beta$ -carotene, multivitamins (B complex, C, and E), or multivitamins, including vitamin A +  $\beta$ -carotene] on the risk of subclinical mastitis during the first 2 y postpartum among HIV-infected women. The study was a randomized, placebo-controlled, clinical trial including 674 HIV-infected, antiretroviral naïve Tanzanian women who were recruited during pregnancy and followed-up after delivery. Breast milk samples were obtained approximately every 3 mo. Any subclinical mastitis was defined as a ratio of the sodium to potassium (Na:K) breast milk concentrations  $< 0.6$  and further classified as either moderate (Na:K  $\geq 0.6$  and  $\leq 1$ ) or severe (Na:K  $> 1.0$ ). Fifty-eight percent of women had at least 1 episode of any subclinical mastitis. Women assigned to multivitamins (B complex, C, and E) had a 33% greater risk of any subclinical mastitis ( $P = 0.005$ ) and a 75% greater risk of severe

subclinical mastitis ( $P = 0.0006$ ) than women who received the placebo. Vitamin A +  $\beta$ -carotene also increased the risk of severe subclinical mastitis by 45% ( $P = 0.03$ ). Among women with CD4+ T-cell counts  $\geq 350$  cells/ $\mu\text{L}$ , multivitamin intake resulted in a 49% increased risk of any subclinical mastitis ( $P = 0.006$ ); by contrast, there were no treatment effects among women with CD4+ T-cell counts  $< 350$  cells/ $\mu\text{L}$  ( $P$ - interaction for treatment x CD4+ T-cell count = 0.10). Supplementation of HIV-infected women with vitamins increased the risk of subclinical mastitis.

**17. Arsenault JE, Webb AL, Koulinska IN, Aboud S, Fawzi WW, Villamor E. Association between breast milk erythropoietin and reduced risk of mother-to-child transmission of HIV. *Journal of Infectious Diseases*. 2010; 202 (3): 370-373.**

We examined the prospective associations between breast milk concentrations of erythropoietin, a factor with trophic effects on infant gut epithelia, and the risk of mother-to-child transmission (MTCT) of human immunodeficiency virus (HIV) through breastfeeding in a study of 59 MTCT cases and 116 controls nested within a cohort of antiretroviral-naive HIV-infected Tanzanian women. Controls were matched to cases on the basis of the time from birth when the breast milk sample was collected. The risk of MTCT was inversely related to breast milk erythropoietin concentration (adjusted odds ratio for highest vs. lowest erythropoietin concentration tertile, 0.34 [95% confidence interval, 0.14-0.82];  $P = .02$ ). These results suggest a protective effect of breast milk erythropoietin against MTCT.

**18. Arshad MN, Mubashar-ur-Rehman H, Khan IU, Shafiq M, Lo KM. N-(p-Tolylsulfonyl)-l-asparagine. *Acta Crystallographica Section E: Structure Reports Online*. 2010; 66(3): 541-541.**

In the title compound,  $\text{C}_{11}\text{H}_{14}\text{N}_2\text{O}_5\text{S}$ , the amide O atom acts as a hydrogen-bond acceptor from a carboxylate O atom and a secondary amino N atom. In addition, one of the sulfonyl O atoms and the carbonyl O atom of the carboxyl group also form hydrogen



bonds with the primary amido N atom. These intermolecular hydrogen-bonding interactions give rise to a layer structure, with the layers parallel to the *ac* plane.

**19. Assefa A, Kassa M, Tadese G, Mohamed H, Animut A, Mengesha T. Therapeutic efficacy of artemether/lumefantrine (Coartem) against Plasmodium falciparum in Kersa, South West Ethiopia. *Parasit Vectors*. 2010; 3(1): 1.**

**Background:** Artemether/Lumefantrine (Coartem®) has been used as a first-line treatment for uncomplicated Plasmodium falciparum infection since 2004 in Ethiopia. In the present study the therapeutic efficacy of artemether/ lumefantrine for the treatment of uncomplicated P. falciparum infection at Kersa, Jima zone, South-west Ethiopia, has been assessed. **Methods:** A 28 day therapeutic efficacy study was conducted between November 2007 and January 2008, in accordance with the 2003 WHO guidelines. Outcomes were classified as early treatment failure (ETF), late clinical failure (LCF), late parasitological failure (LPF) and adequate clinical and parasitological response (ACPR). **Results:** 90 patients were enrolled and completed the 28 day follow-up period after treatment with artemether/ lumefantrine. Cure rate was very high, 96.3%, with 95% CI of 0.897-0.992 (PCR uncorrected). Age-stratified data showed adequate clinical and parasitological response (ACPR) to be 100% for children under 5 and 97.4% and 87.3% for children aged 5-14, and adults, respectively. There was no early treatment failure (ETF) in all age groups. Fever was significantly cleared on day 3 ( $P < 0.05$ ) and 98% of parasites were cleared on day 1 and almost all parasites were cleared on day 3. 72.5% of gametocytes were cleared on day 1, the remaining 27.5% of gametocytes were maintained up to day 3 and total clearance was observed on day 7. Hemoglobin concentration showed a slight increase with parasitic clearance ( $P > 0.05$ ). No major side effect was observed in the study except the occurrence of mouth ulcers in 7% of the patients. **Conclusions:** The current study proved the excellent therapeutic efficacy of artemether/lumefantrine in the study area and the value of using it. However, the proper dispensing and absorption of the drug need to be emphasized in order to utilize the drug for a longer period of time. This study recommends further study on the toxicity of the drug with particular emphasis on the development of oral ulcers in children.

**20. Attebery JE, Mayegga E, Louis RG, Chard R, Kinasha A, Ellegala DB. Initial audit of a basic and emergency neurosurgical training program in rural Tanzania. *World Neurosurgery*. 2010; 73 (4): 290-295.**

**Objective:** As of 2006, only three formally trained neurosurgeons are licensed in Tanzania. Recently, efforts have increased toward training local Tanzanian physicians and assistant medical officers (AMOs) to meet the basic neurosurgical needs of nonurban areas. Between January and July 2006, an initial attempt at such an apprenticeship was undertaken with a locally trained AMO already performing general surgery at Haydom Lutheran Hospital, Tanzania. **Methods:** Fifty-one neurosurgical patients were identified and their patient charts were requested from the medical records office. Records were not available for 4 of the 51 patients for undeterminable reasons. **Results:** The neurosurgical infrastructure at HLH is basic but adequate for a number of procedures. Cases performed included ventriculoperitoneal shunts, repair of myelomeningoceles, and burr holes and craniotomies for trauma and biopsies. Of 51 patients initially identified, 14 (27%) were confirmed deceased and 20 (39%) confirmed living. The remaining 17 (33%) were lost to follow-up. There were no significant differences in the mortality rates of patients receiving care from the American-trained neurosurgeon and those receiving care from the Tanzanian AMO trained and mentored by the American neurosurgeon. **Conclusions:** This initial audit provides support for the development of limited neurosurgery programs in underserved communities. Combined utilization of available neurosurgeons and continued training for available local clinicians may help to meet this need.

**21. Ayo HO, Mcharo CN. C-reactive protein response in open fractures of the tibia. *SA Orthopedic Journal*. 2010; 9(1): 24-29.**

**Background:** C-reactive protein (CRP) is an acute-phase protein secreted by hepatocytes during various types of tissue injury. We tried to determine whether the severity of an open fracture of the tibial diathesis as classified according to the Gustilo-Anderson system corresponds to the degree and pattern of CRP response after trauma and infection.

Methods: This was a prospective study done over a six-month period on 48 patients with open tibial-diaphyseal fracture. Serial blood samples for CRP testing were taken seven times over a two-week period. The fractures were graded According to the Gustilo-Anderson classification and after surgery wounds were examined regularly for signs of surgical-site infection (SSI). **Results:** Twenty-nine patients (60.4%) did not develop postoperative SSI and mean CRP levels peaked on different days for the different fracture grades with grade II, IIIa, and IIIb fractures all having mean peak levels of 52.2 mg/l. There was no association between the mean peak CRP levels and the fracture grades ( $p = 0.5$ ). Those patients who developed postoperative SSI (19; 39.6%) still showed no clear association between mean peak levels and fracture grades ( $p = 0.48$ ) and CRP levels also peaked on different days with grade IIIc fractures having the highest level at 67.7 mg/l. When fracture grading was excluded from data analysis, mean CRP levels for both groups of patients peaked on the third postoperative day with a higher value of 52.2 mg/l for patients with postoperative SSI compared with 47.7 mg/l for those without postoperative SSI, and the difference was significant ( $p = 0.015$ ). CRP remained elevated up to the fourteenth postoperative day in patients with postoperative SSI while it showed a decline until it approached the pre-operative level in patients without postoperative SSI. **Conclusions:** This study has shown that the severity of an open fracture of the tibial diathesis as classified according to the Gustilo-Anderson system does not correspond to the degree and pattern of CRP response after trauma and SSI. This is demonstrated by the erratic CRP response in both infected and uninfected open fractures of the tibia when fracture grade was compared with the kinetics of CRP response. The elevated CRP level on the third postoperative day and continued persistence thereafter in patients with SSI is, however, a potential early screening tool for infection before clinical signs of infection appear on the fifth postoperative day.

22. Bakari M, Ngadi M, Bergthorson T. Energy analysis of biochemical conversion processes of biomass to bioethanol. In XVIIth World Congress of the *International Commission of Agricultural and Biosystems Engineering (CIGR)*. 2010; 13e17.

Bioethanol is one of the most promising biofuels that can replace or compliment fossil fuels. It is a renewable resource that can be produced from different biomass including agricultural products, waste and byproducts. In this paper, energy analysis for conversion of different groups of biomass including lignocelluloses, starchy and sugar biomass to bioethanol were studied. Depending on the structure of a biomass, biochemical conversion typically involves the breakdown of the biomass to simple sugars using different pretreatment methods. Energy requirement for the various conversion steps were calculated and summed to obtain mass and energy efficiencies for the conversions. Mass conversion ratios of corn, molasses and rice straw were calculated as 0.3396, 0.2300 and 0.2296 kg of bioethanol per kg of biomass, respectively. The energy efficiency of biochemical conversion of corn, molasses and rice straw were calculated as 28.57, 28.21 and 31.33%, respectively. The results show that conversion of lignocelluloses with specific microorganisms such as *Mucor indicus*, *Rhizopus oryzae* and using the Simultaneous Saccharification and Fermentation (SSF) methods or similar technologies is very attractive for many reasons.

**23. Bakari M, Ngadi M, Kok R, Raghavan V, Diagne A. Energy analysis for small-and medium-scale rural rice parboiling in sub-Saharan Africa. In 2nd Africa Rice Congress, Barnako, Mali.2010.**

Rice is a staple food in sub-Saharan Africa and many other regions of the world. There is a year-on-year increase in demand for rice in the region. Although there are some large-scale producers, most rice production in the region is by rural farmers and processing is done in small rural communities. Analysis of energy use in rice processing has become critical due to the dire consequences of deforestation and the increasing cost of fuel. Therefore, we studied the energy use pattern in medium- and small-scale rice parboiling outfits. Five set of parboilers in the upper Benue River basin in Adamawa State, Nigeria were selected for the study: three small rural parboilers and two medium-scale suburban parboilers. A questionnaire was used to gather data, along with inspection of the firewood sizes and the stove used. Data gathering from the two medium-scale suburban parboilers involved on-site study. Two energy parameters involved in rice parboiling are human

energy and thermal energy. Thermal energy comes entirely from firewood. The human energy use per kilogram of parboiled paddy was higher for the rural small-scale parboiling process than for the medium-scale parboilers. Energy use of the medium-scale parboilers was higher if they did not make use of the charcoal left after the complete combustion of the firewood. One of the reasons for this was the energy losses to the atmosphere, which were apparently very high for the medium-scale parboilers. The convection current through the stove was much higher for the small rural parboilers, leading to higher convection losses. The study reveals the need for optimized energy use for rice parboiling and it shows that in order for rural rice processing to be sustainable, energy sources must be carefully considered and the concept of recycling of fuel biomass should be integrated into the process.

**24. Bakari M, Ngadi M, Kok R, Raghavan V. Sustainability of Rice Processing in Rural Sub-Saharan Africa.2010.**

Energy and environmental sustainability are important considerations for increased rice production. This study examined the energy utilization and sustainability of rice processing in sub-Saharan Africa. The community of Gadan Loko village in the song local government of Adamawa State, Nigeria was selected as the focus of study. Rice parboiling, the most energy intensive process in rice processing is carried out usually by women in small quantities of about 13.2 kg using traditional pots on tripod support stoves. The parboiled rice is sun dried on mats before it is taken to the milling stalls where it is milled using milling machines driven by single cylinder diesel engines. There were large variations in the quality of milled rice due to lack of consistency in processing parameters. Accumulation of rice husk in the community created important environmental issues. In this study, methods of improving sustainability of rice processing were investigated. The areas included: the utilization of waste heat from the diesel engines for improved drying and efficient pre-soaking; the utilization of solar energy for pre-soaking; the utilization of rice husks as alternative fuel to firewood; and the optimization and redesign of the stoves and parboiling vessels to minimize heat loss to the environment. The results showed that the utilization of rice husk as alternative fuel

and the redesign of the stoves and parboiling vessels will increase the sustainability of rice processing and can be easily adopted by the community. While solar energy pre-soaking was not economical and the utilization of waste heat from the diesel engines for drying and pre-soaking would be difficult to implement at the rural scale, because most of the parboiling is done far away from the milling stalls. The study showed that research, development of appropriate technology, and education (RATE) of the rural community is an important way of increasing sustainability.

**25. Balandya E, Sheth S, Sanders K, Wieland-Alter W, Lahey T. Semen protects CD4+ target cells from HIV infection but promotes the preferential transmission of R5 tropic HIV. *The Journal of Immunology*. 2010; 185(12): 7596-7604.**

Sexual intercourse is the major means of HIV transmission, yet the impact of semen on HIV infection of CD4+ T cells remains unclear. To resolve this conundrum, we measured CD4+ target cell infection with X4 tropic HIV IIIB and HC4 and R5 tropic HIV BaL and SF162 after incubation with centrifuged seminal plasma (SP) from HIV-negative donors and assessed the impact of SP on critical determinants of target cell susceptibility to HIV infection. We found that SP potently protects CD4+ T cells from infection with X4 and R5 tropic HIV in a dose- and time-dependent manner. SP caused a diminution in CD4+ T cell surface expression of the HIVR CD4 and enhanced surface expression of the HIV coreceptor CCR5. Consequently, SP protected CD4+ T cells from infection with R5 tropic HIV less potently than it protected CD4+ T cells from infection with X4 tropic HIV. SP also reduced CD4+ T cell activation and proliferation, and the magnitude of SP-mediated suppression of target cell CD4 expression, activation, and proliferation correlated closely with the magnitude of the protection of CD4+ T cells from infection with HIV. Taken together, these data show that semen protects CD4+ T cells from HIV infection by restricting critical determinants of CD4+ target cell susceptibility to HIV infection. Further, semen contributes to the selective transmission of R5 tropic HIV to CD4+ target cells.

26. **Barnabas D. Tooth wear among adults attending dental clinics in Dar es salaam, Tanzania Master of dentistry (Restorative Dentistry) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Tooth wear is the non-carious gradual loss of tooth surface, classified as attrition, abrasion, erosion. Risk habits related to tooth wear include clenching, tooth grinding, unilateral chewing, chewing bones, and frequent use of citrus fruits/juice, frequent vomiting and repeated heartburn. **Objective:** To assess tooth wear in adults dental patients in Dar es Salaam, Tanzania by analyzing their habits as related to tooth wear and determining their awareness on tooth wear, its prevalence, types of tooth wear, teeth affected, and extent of tooth wear. **Materials and Methods:** This descriptive cross-sectional study involved 316 participants selected from patients attending five dental clinics between August to November 2009, in Dar es Salaam. A questionnaire was administered to assess awareness and habits related to tooth wear, and tooth wear measured clinically. The data were analyzed using SPSS version 13 and statistical level of significance was  $p < 0.05$ . **Results:** Overall 39.1 % of subjects were aware on tooth wear. Awareness on causes and outcome was 39.5% and 26.4% respectively. Risk habits to tooth wear most frequently reported include unilateral chewing, chewing bones, and use of citrus fruits respectively. More females reported risk habits than males. Thirty percent of respondents using horizontal movement to brush their teeth and few (7.6%) reported using excessive force during brushing. The prevalence of tooth wear was 41.8%. Patients in age group 18-40 years had lower prevalence of tooth wear in both males and females compared to those who were aged 41 + years. Attrition was most prevalent type of tooth wear of which molars were most affected followed by incisors, canine and premolars respectively. Incisal/occlusal was most involved site in all 2. VI types of teeth. Enamel had higher scores in all levels of tooth wear than dentine while 6.2% of teeth had dentine exposure. **Conclusion:** Prevalence of tooth wear was 41.8% of which attrition was observed to rank high. Tooth surface most affected was incisal/occlusal with molars having more wear than other tooth types. Enamel was frequently involved than dentine. Awareness on tooth wear among participants was low. Risk habits frequently reported were chewing bones, unilateral chewing, and use of citrus fruits/juice respectively.

**Recommendations** 3. There is a need to raise public awareness on causes and risk habits related to tooth wear. 4. There is a need to develop a universally acceptable tooth wear index that will be able to determine prevention and treatment need 5. There is a need of more studies on tooth wear using much bigger sample sizes to be conducted to in Tanzania 4. An item of tooth wears to be included in Oral Health Survey in Tanzania.

**27. Bauer G, Jacob M. Fertilitätsentscheidungen im Partnerschaftskontext. KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie. 2010; 62(1): 31-60.**

A review of existing sociological literature on fertility decisions reveals that most empirical studies focus on characteristics of the female spouse as explanatory factors, while the role of the partner is neglected for the most part. However, most children are fathered and born into an existing relationship and the influence of the partner has to be regarded as an important determining factor for childbirth. We propose starting from a bargaining perspective and model family-formation as a collective decision mutually agreed upon by both spouses, especially scrutinizing on the interrelation of both partners' educational level. In this paper, we examine in how far certain educational constellations have an impact on family formation. Classical theories of family economics suggest that educational asymmetries between partners may encourage parenthood. Our analysis is based on German Mikrozensus data collected between 1996 and 2004. The large sample allows us to analyze in detail the effects of educational levels as well as uncommon educational constellations. In a first step, we investigate separate effects of general and vocational education of each partner, followed by a quasi-cohort design, with women born in the mid 1960th and mid 1970th, to study the timing of the first birth. We conclude that traditional hyper gamy may foster parenthood. But also educational homogamy leads to a higher amount of parents as compared to hypogenous couples, in which the wife's educational qualification exceeds the husband's educational degree.

**28. Baumgartner JN , Lugina H , Johnson L , Nyamhanga T. Being faithful in a sexual relationship: Perceptions of Tanzanian adolescents in the context of HIV and**



**pregnancy prevention. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. 201; 22 (9): 1153-1158.**

Little is known about what adolescents think about faithfulness and partner reduction for HIV prevention (the B in the ABC HIV prevention behavior change strategy), including how they understand its implementation within relationships. In addition, because adolescents face the twin threats of HIV and unintended pregnancy, it is important to understand how adolescents may integrate their thinking on pregnancy prevention if they are using faithfulness or partner reduction as their HIV prevention strategy. This study gathered evidence by conducting 20 focus group discussions (FGDs) with 158 adolescents, aged 14-20. The FGDs were stratified by sex, age, current school attendance, rural or urban residence, and marital status. Results showed that the vast majority of groups felt that B messages are important and relevant for unmarried (as well as married) youth to hear for HIV prevention, but the messages need to be explicit (e.g., being faithful means having only one tested sexual partner at a time). Faithful relationships are perceived as ideal in terms of romantic expectations and HIV prevention, but were considered unrealistic if the relationship had a power imbalance. Adolescents acknowledged the risks of multiple partners and a few recognized that concurrent partnerships are riskier than serial partnerships. Condoms were given as the primary method for pregnancy prevention among youth, yet faithfulness was usually seen as precluding condom use and many youth considered condom use as evidence of a lack of faithfulness. Overall, adolescents recognized that practicing fidelity is complex. Young people need life skills education for how to establish and maintain faithful relationships with one tested partner and how to integrate condom use for pregnancy prevention within that relationship. Programs also need to more explicitly address the issues of trust and repeat HIV testing within faithful relationships which is an uncomfortable but necessary reality for many adolescents.

**29. Bazira J, Asimwe BB, Joloba ML, Bwanga F, Matee MI. Use of the GenoType® MTBDRplus assay to assess drug resistance of Mycobacterium tuberculosis isolates from patients in rural Uganda. *BMC clinical pathology*. 2010; 10(1): 5.**

**Background:** Drug resistance levels and patterns among *Mycobacterium tuberculosis* isolates from newly diagnosed and previously treated tuberculosis patients in Mbarara Uganda were investigated. **Methods:** We enrolled, consecutively; all newly diagnosed and previously treated smear-positive TB patients aged  $\geq 18$  years. Isolates were tested for drug resistance against rifampicin (RIF) and isoniazid (INH) using the GenoType® MDRTBplus assay and results were compared with those obtained by the indirect proportion method on Lowenstein-Jensen media. HIV testing was performed using two rapid HIV tests. **Results:** A total of 125 isolate from 167 TB suspects with a mean age 33.7 years and HIV prevalence of 67.9% (55/81) were analyzed. A majority (92.8%) of the participants were newly presenting while only 7.2% were retreatment cases. Resistance mutations to either RIF or INH were detected in 6.4% of the total isolates. Multidrug resistance, INH and RIF resistance was 1.6%, 3.2% and 4.8%, respectively. The *rpoB* gene mutations seen in the sample were D516V, S531L, H526Y H526 D and D516V, while one strain had a  $\Delta 1$  mutation in the wild type probes. There were three strains with *katG* (codon 315) gene mutations while only one strain showed the *inhA* promoter region gene mutation. **Conclusion:** The TB resistance rate in Mbarara is relatively low. The GenoType® MTBDRplus assay can be used for rapid screening of MDR-TB in this setting.

30. Bazira J, Matte MI, Asiimwe BB, Joloba LM. Genetic diversity of *Mycobacterium tuberculosis* in Mbarara, South Western Uganda. *African Health Sciences*. 2010; 10 (4): 306-311.

**Background:** We determined the genetic diversity of mycobacteria isolated from tuberculosis patients in Mbarara Uganda, using region of difference (RD) analysis and spacer oligonucleotide typing (spoligotyping). **Methods:** Sputum samples were cultured on Lowenstein Jensen media. The isolates were characterized using RD analysis and spoligotyping. **Results:** The majorities (92.8%) of the patients were new cases, 60% were males and 44% were HIV positive with a mean age of 33.7 years. All the 125 isolates were identified as *M.tuberculosis sensu stricto*. Most (92.8%) of the isolates were modern

strains. Spoligotyping revealed 79 spoligotype patterns, with an overall diversity of 63.2%. Sixty (48%) isolates formed 16 clusters each consisting of 2-15 isolates. Mst (59.2%) of the isolates were Uganda genotype strains. The major shared spoligotypes in our sample were SIT 135 (T2-Uganda) with 12 isolates and SIT 128 (T2) with 5 isolates. Sixty nine (87%) patterns had not yet been defined in the SpolDB4.0.database.

**Conclusion:** The TB epidemic in Mbarara is caused mainly by modern M.tuberculosis strains of the Uganda genotype. The wide diversity of strains may indicate that the majority of the TB cases are reactivation rather than re-infection. However this needs to be ascertained with more discriminative finger printing techniques.

**31. Becker BF, Chappell D, Bruegger D, Annecke T, Jacob M. Therapeutic strategies targeting the endothelial glycocalyx: acute deficits, but great potential. *Cardiovascular research.* 2010; 137.**

Damage of the endothelial glycocalyx, which ranges from 200 to 2000 nm in thickness, decreases vascular barrier function and leads to protein extravasation and tissue oedema, loss of nutritional blood flow, and an increase in platelet and leukocyte adhesion. Thus, its protection or the restoration of an already damaged glycocalyx seems to be a promising therapeutic target both in an acute critical care setting as well as in the treatment of chronic vascular disease. Drugs that can specifically increase the synthesis of glycocalyx components, refurbish it, or selectively prevent its enzymatic degradation do not seem to be available. Pharmacological blockers of radical production may be useful to diminish the oxygen radical stress on the glycocalyx. Tenable options are application of hydrocortisone (inhibiting mast cell degranulation), use of antithrombin III (lowering susceptibility to enzymatic attack), direct inhibition of the cytokine TNF- $\alpha$ , and avoidance of the liberation of natriuretic peptides (as in volume loading and heart surgery), while infusion of human plasma albumin (to maintain mechanical and chemical stability of the endothelial surface layer) seems the easiest to implement.

**32. Becker BF, Chappell D, Jacob M. Endothelial glycocalyx and coronary vascular permeability: the fringe benefit. *Basic research in cardiology.* 2010; 105(6): 687-701.**

Current concepts of vascular permeability are largely still based on the Starling principle of 1896. Starling's contribution to understanding vascular fluid homeostasis comes from realizing that the transport of fluid to and from the interstitial space of peripheral tissues follows the balance between opposing oncotic and hydrostatic pressures. It is presumed that in peripheral tissues fluid is readily filtered from blood to tissues at the arterial/arteriolar side of the circulation and largely reabsorbed at the venular/venous aspect, excess fluid being removed from the tissue by the lymphatic system. This balance is determined particularly by the properties of the vascular barrier. Recent studies have shown that the endothelial glycocalyx, located with a thickness of at least 200 nm on the luminal side of healthy vasculature, plays a vital role in vascular permeability by constituting the vascular barrier together with the endothelial cells themselves. While water and electrolytes can freely pass through the glycocalyx, plasma proteins, especially albumin, interact strongly. Binding and intercalating plasma constituents with the structural elements of the glycocalyx creates the so-called endothelial surface layer. This is the actual interface between flowing blood and the endothelial cell membrane in vivo. The oncotic pressure difference pertinent to fluid homeostasis is not built up between the intravascular and the interstitial tissue spaces, but within a small protein-free zone beneath the glycocalyx surface layer. This explains why perturbation of the glycocalyx leads to a breakdown of both fluid and protein handling in the coronary vascular bed. Preventing damage to the glycocalyx seems to be a promising goal in cardio protection in many clinical scenarios, including acute ischemia, hypoxia and inflammation, and chronic vascular disease as in atherosclerosis, diabetes and hypertension.

- 33. Becker S, Mlay R, Schwandt HM, Lyamuya E. Comparing couples' and individual voluntary counseling and testing for HIV at antenatal clinics in Tanzania: A randomized trial. *AIDS and Behavior*. 2010; 14 (3): 558-566.**

Voluntary counseling and testing (VCT) for a couple (CVCT) is an important HIV-prevention effort in sub-Saharan Africa where a substantial proportion of HIV transmission occurs within stable partnerships. This study aimed to determine the

acceptance and effectiveness of CVCT as compared to individual VCT (IVCT). 1,521 women attending three antenatal clinics in Dar es Salaam were randomized to receive IVCT during that visit or CVCT with their husbands at a subsequent visit. The proportion of women receiving test results in the CVCT arm was significantly lower than in the IVCT arm (39 vs. 71%). HIV prevalence overall was 10%. In a subgroup analysis of HIV-positive women, those who received CVCT were more likely to use preventive measures against transmission (90 vs. 60%) and to receive nevirapine for themselves (55 vs. 24%) and their infants (55 vs. 22%) as compared to women randomized to IVCT. Uptake of CVCT is low in the antenatal clinic setting. Community mobilization and couple-friendly clinics are needed to promote CVCT.

- 34. Berg mark R ,Berg mark B , Blander J , Fataki M , Janabi M. Burden of disease and barriers to the diagnosis and treatment of group a beta-hemolytic streptococcal pharyngitis for the prevention of rheumatic heart disease in Dar Es Salaam, Tanzania. *Pediatric Infectious Disease Journal*. 2010; 29 (12): 1135-1137.**

To understand patient and clinician attitudes toward Streptococcus pharyngitis and rheumatic heart disease prevention in Tanzania, data from 3 sources were obtained: a survey of 119 clinicians, outpatient rapid test screening, and interviews with 17 rheumatic heart disease patients. Patients do not seek care for sore throat. Clinicians stated that identifying and treating Streptococcus pharyngitis is not prioritized.

- 35. Bevan KE, Mohamed F, Moran BJ. Pseudomyxoma peritonei. *World journal of gastrointestinal oncology*. 2010; 2(1): 44.**

Pseudomyxoma peritonei (PMP) is an uncommon “borderline malignancy” generally arising from a perforated appendiceal epithelial tumour. Optimal treatment involves a combination of cytoreductive surgery (CRS) with heated intraperitoneal chemotherapy (HIPEC). Controversy persists regarding the pathological classification and its prognostic value. Computed tomography scanning is the optimal preoperative staging technique. Tumour marker elevations correlate with worse prognosis and increased recurrence rates.

Following CRS with HIPEC, 5-year survival ranges from 62.5% to 100% for low grade, and 0%-65% for high grade disease. Treatment related morbidity and mortality ranges from 12 to 67.6%, and 0 to 9%, respectively. Surgery and HIPEC are the optimal treatment for PMP which is at best a “borderline” peritoneal malignancy.

**36. Blystad A, van Esterik P, de Paoli MM, Sellen DW, Leshabari SC, Moland KMI. Reflections on global policy documents and the WHO's infant feeding guidelines: Lessons learnt. *International Breastfeeding Journal*.2010; 5: 18.**

As the papers in this thematic series have illustrated, the postnatal prevention of mother to child transmission of HIV (PMTCT) strategy has struggled with lack of local relevance. In an attempt to increase our understanding of the great dissonance between the policy intention and the experiences of the participants in concrete PMTCT programmes, we will in these concluding remarks draw upon writings in institutional ethnography. Through the concept of 'global texts' we reflect upon the scientific and ideological underpinnings of the WHO policy guidelines on HIV and infant feeding, and the influence that this policy has had across multiple local settings. The particular impact of the global postnatal PMTCT policy guidelines on the position of breastfeeding lies at the core of the discussion.

**37. Borghi J , Sabina N, Ronsmans C , Killewo J. Comparison of costs of home and facility-based basic obstetric care in rural Bangladesh. *Journal of Health, Population and Nutrition*. 2010; 28 (3): 286-293.**

This study compared the costs of providing antenatal, delivery and postnatal care in the home and in a basic obstetric facility in rural Bangladesh. The average costs were estimated by interviewing midwives and from institutional records. The main determinants of cost in each setting were also assessed. The cost of basic obstetric care in the home and in a facility was very similar, although care in the home was cheaper. Deliveries in the home took more time but this was offset by the capital costs associated with facility-based care. As use-rates increase, deliveries in a facility will become

cheaper. Antenatal and postnatal care was much cheaper to provide in the facility than in the home. Facility-based delivery care is likely to be a cheaper and more feasible method for the care provider as demand rises. In settings where skilled attendance rates are very low, home-based care will be cheaper.

**38. Bråve A, Gudmundsdotter L, Sandström E, Haller BK, Hallengård D, Maltais AK, Wahren B. Biodistribution, persistence and lack of integration of a multigene HIV vaccine delivered by needle-free intradermal injection and electroporation. *Vaccine*. 2010; 28(51): 8203-8209.**

It is likely that gene-based vaccines will enter the human vaccine area soon. A few veterinary vaccines employing this concept have already been licensed, and a multitude of clinical trials against infectious diseases or different forms of cancer are ongoing. Highly important when developing novel vaccines are the safety aspects and also new adjuvant and delivery techniques needs to be carefully investigated so that they meet all short- and long-term safety requirements. One novel *in vivo* delivery method for plasmid vaccines is electroporation, which is the application of short pulses of electric current immediately after, and at the site of, an injection of a genetic vaccine. This method has been shown to significantly augment the transfection efficacy and the subsequent vaccine-specific immune responses. However, the dramatic increase in delivery efficacy offered by electroporation has raised concerns of potential increase in the risk of integration of plasmid DNA into the host genome. Here, we demonstrate the safety and lack of integration after immunization with a high dose of a multigene HIV-1 vaccine delivered intradermally using the needle free device Biojector 2000 together with electroporation using Derma Vax™ DNA Vaccine Skin Delivery System. We demonstrate that plasmids persist in the skin at the site of injection for at least four months after immunization. However, no association between plasmid DNA and genomic DNA could be detected as analyzed by qPCR following field inversion gel electrophoresis separating heavy and light DNA fractions. We will shortly initiate a phase I clinical trial in which healthy volunteers will be immunized with this multiplasmid

HIV-1 vaccine using a combination of the delivery methods jet-injection and intradermal electroporation.

**39. Burson AM, Soliman AS, Ngoma TA, Mwaiselage J, Ogweyo P, Eissa MS, Dey S, Merajver SD. Clinical and epidemiologic profile of breast cancer in Tanzania. *Breast Disease*. 2010; 31 (1): 33-41.**

**40. Purpose:** Breast cancer is a highly heterogeneous disease globally. Public health prevention measures require an understanding of the burden of breast cancer and its risk factors. The purpose of this study was to describe the clinical, pathologic, and epidemiologic characteristics of breast cancer patients in Tanzania. **Methods:** Data was abstracted from the medical records of all breast cancer patients attending Ocean Road Cancer Institute (ORCI) over a 2-year period from July 2007 to June 2009. Tumor tissue paraffin blocks were collected for all patients with available tissues for the determination of estrogen receptor (ER) and progesterone receptor (PR). Data for all patients was analyzed descriptively and by using unconditional logistic regression, by comparing early stage (ES), defined as stages I and II and late stage (LS), defined as stages III and IV patients to obtain odds ratios (ORs), 95% confidence intervals (CIs), and P-values. **Results:** Among the 488 patients, stage was determined for 356 patients, 90.7% of whom presented in LS. Of the 57 tumor tissues, 49.1% were ER-/PR-. Patients with ulceration (OR = 4.97; 95% CI = 1.07, 23.04; p = 0.04) and peau d'orange (OR = 6.78; 95% CI = 1.48, 31.17; p = 0.01) were more likely to present in LS rather than ES. Male breast cancer accounted for 2.9% of all breast cancers and inflammatory breast cancer (IBC) comprised 4.3-5.5% of cases based on registered t4d diagnosis or the criteria of IBC signs, if t4d was not reported in the medical records. **Conclusion:** Most breast cancer patients in Tanzania are diagnosed at advanced disease stages with about half of the tumors being ER-/PR-. These data strongly support that reducing barriers to care, down-staging of disease at diagnosis, implementation of clinical guidelines for management of advanced cases, and palliative care are the four most essential factors that need to be addressed to reduce morbidity and mortality from breast cancer in Tanzania. Further research is needed to quantify the magnitude and molecular features of two relatively rare



forms of breast cancer that may account for a greater proportion of the burden of breast cancer in Tanzania compared to the USA and Western Europe: male breast cancer and IBC.

- 41. Butt FMA, Moshi JR, Owibingire S, Chindia ML. Xeroderma pigmentosum: A review and case series. *Journal of Cranio-Maxillofacial Surgery*. 2010; 38 (7): 534-537.**

Xeroderma pigmentosa (XP) is a condition inherited as an autosomal recessive trait and is characterized by photosensitivity, pigmentary changes, premature skin ageing and malignant tumour development resulting from the defect in DNA repair. The management of complications of XP, especially orofacial tumours entails an enormous surgical challenge to the clinicians. We present five cases of XP.

- 42. Chande HM, Kassim T. Assessment of women's knowledge and attitude towards carcinoma of the cervix in Ilala Municipality. *East African journal of public health*. 2010; 7 (1): 74-77.**

To assess knowledge and attitudes of women towards carcinoma of the cervix in Ilala Municipality. A community based cross-sectional study targeting all women in Ilala municipality. Therefore the sample size was 196 women but for the purpose of this study it was increased up to 201 women. A multistage random sampling procedure was used to select a representative sample. Permission was sought at all the appropriate levels in the form of oral as well as written consent. Only women who were willing to participate in the study were interviewed. A questionnaire was developed and data analyzed using Epic info software was used to analyse data. Differences between proportions found in different groups were tested for statistical significant using chi-squared test. A total of 210 women were interviewed. A number of respondents were in the age groups 21-30 and 31-40 years and 76.1% of the respondents were aware of carcinoma of the cervix. The most common mentioned risk factors were early marriage (37.1%) and multiparity (36%). Irregular vaginal bleeding was the most common symptom mentioned (51.7%).

Irrespective of the level of education 98%-100% of all respondents knew the importance of screening for carcinoma of the cervix. It was therefore concluded that women were aware of carcinoma of the cervix but the knowledge on this disease is still very low.

**43. Chappell D, Dörfler N, Jacob M, Rehm M, Welsch U, Conzen P, Becker BF. Glycocalyx protection reduces leukocyte adhesion after ischemia/reperfusion. Shock. 2010; 34(2): 133-139.**

Adhesion of polymorph nuclear neutrophils (PMN) to coronary endothelium is a key event for cardiac ischemia/reperfusion injury. Adhesion molecules are normally harbored within the glycocalyx, clothing every healthy vascular endothelium, but shed by ischemia/reperfusion. Our aim was to show whether protection of the glycocalyx with either hydrocortisone or antithrombin can reduce post ischemic leukocyte adhesion. Isolated guinea pig hearts, perfused with Krebs-Henseleit buffer, were subjected to 20 min of warm (37°C) no-flow ischemia and consecutive 10 min of reperfusion, either in the absence or presence of hydrocortisone (10 µg/mL) or antithrombin (1 U/mL). An intracoronary bolus of  $3 \times 10^6$  PMN was applied at the end of reperfusion but without prior contact to the drugs. The sequestration of PMN was calculated from the difference between coronary input and output of cells. Expression of the integrin CD11b on PMN was measured before and after coronary passage. Ischemia/reperfusion induced severe degradation of the glycocalyx (coronary venous syndecan-1 release,  $171 \pm 15$  ng/g heart vs. basal,  $19 \pm 2$  ng/g; heparan sulfate,  $5.27 \pm 0.28$  µg/g vs. basal,  $0.26 \pm 0.06$  µg/g) and increased PMN adhesion ( $38.1\% \pm 3.5\%$  vs. basal,  $11.7\% \pm 3.1\%$ ). Hydrocortisone and antithrombin both not only reduced glycocalyx shedding (syndecan-1 release,  $34 \pm 6$  ng/g and  $26 \pm 5$  ng/g; heparan sulfate,  $1.96 \pm 0.24$  µg/g and  $1.28 \pm 0.2$  µg/g, respectively), but also PMN adhesion ( $17.3\% \pm 2.2\%$  and  $25.4\% \pm 3.3\%$ , respectively) after ischemia/reperfusion. Electron microscopy revealed a mostly intact coronary glycocalyx after pretreatment with either drug. Activation of PMN upon coronary passage was not influenced. Preservation of the glycocalyx mitigates post ischemic PMN adhesion. Preconditioning with either hydrocortisone or antithrombin should, thus, alleviate vascular leakage, tissue edema, and inflammation.

**44. Chappell D, Jacob M. Influence of non-ventilatory options on postoperative outcome. *Best Practice & Research Clinical Anesthesiology*. 2010; 24(2): 267-281.**

Preoperative patient handling should urgently be updated according to current evidence and, if none is available, at least according to physiological knowledge. To prevent pulmonary aspiration, preoperative fasting for 2 h (clear fluids) and 6 h (solid food) and abstinence of 20 min for smoking is sufficient. Beta-blockage requires an indication. Bowel preparation should be abandoned and minimal invasive surgery as well as local and regional anesthesia should be used where possible. Fluid therapy should be rational and requirement-adapted, and hypothermia, postoperative nausea and vomiting, unnecessary drains, tubes and catheters avoided. A multi-modal opioid-sparing pain therapy, sufficient oxygenation as well as early nutrition and mobilization all play an important role for patient outcome. Recent studies have postulated that combining single-modality evidence-based care principles into a multi-modal effort to enhance postoperative recovery has improved patient outcome. Henrik Kehlet termed such a principle the ‘fast-track concept’, comprehending the entire preoperative phase starting with preoperative preparation, over traumatic surgical and anaesthesiological techniques reducing the neuroendocrine stress response and also comprising the postoperative treatment. This strategy has been shown to positively influence organ function, homeostasis, morbidity, need for hospitalization and convalescence and, therefore, to reduce costs. Despite these promising results, general implementation of evidence-based measures leaves a lot to be desired. Further development of surgical minimally invasive techniques and ongoing evaluation of procedure-specific strategies is urgently warranted.

**45. Chatilla LC. Factors associated with Malaria rapid diagnostic test use and adherence to test results by health care workers in Iringa rural district. Master of Public Health. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** we guidelines on malaria case management include confirmation of malaria episode using mRDT (WHO malaria report 2009). Thus mRDTs are being deployed in most endemic countries in sub-Saharan Africa including Tanzania. Use of mRDTs by HCWs and adherence to test results is thus important in order to reduce the over use of highly effective but expensive ACTs. This may lead to improved targeting of anti malarial, improved health outcome and increased patient satisfaction. Use of mRDTs and adherence to test negative results by HCWs has shown a mixture of results in recent studies leading to inconsistent use and non adherence thus increasing over prescription of anti malarial among other things. Most studies suggests that the main factor of non use and adherence to test results for HCWs is the ambiguity nature of the guidelines, training messages which have been insisting that any fever means malaria and some senses of mistrust on the accuracy of m R DTs. **Methods:** Thirty dispensaries were randomly selected to evaluate the pilot program conducted by NMCP. All HCWs found in these dispensaries were interviewed and assessment of whether they use and adhere to test results was done through review of registers. The first outcome variable was the proportion of HCWs who used mRDTs and the second outcome variable was the proportion of HCWs who adhere to test results. The chi-square statistic was used to determine association between independent variables and outcome variables. **Results:** A total of 70 HCWs were interviewed to determine their knowledge on mRDT. Of these 18 were not assessed for use of mRDT as they had never prescribed. 52 prescribers were assessed for use and adherence to test results. Only 39 (75%) were using mRDT and 13 (25%) never used mRDT. one of the factors was significantly associated with use of mRDT by HCWs. **Conclusion:** The lesson learnt from the pilot who was done in Iringa rural was not sufficient to warrant national roll out of mRDTs. Improved supportive supervision, well defined logistics for ordering mRDTs, feed back to HCWs on what they are doing and training packages that in cooperate theories for behavior change could increase the proportion of HCWs who use and adhere to test results.

**46. Chatterjee A, Bosch RJ, Hunter DJ, Manji K, Msamanga GI, Fawzi WW. Vitamin A and vitamin B-12 concentrations in relation to mortality and morbidity among**

**children born to HIV-infected women. *Journal of tropical pediatrics*. 2010; 56(1): 27-35.**

Vitamin A supplementation starting at 6 months of age is an important child survival intervention; however, not much is known about the association between vitamin A status before 6 months and mortality among children born to HIV-infected women. Plasma concentrations of vitamins A and B-12 were available at 6 weeks of age (n = 576 and 529, respectively) for children born to HIV-infected women and they were followed up for morbidity and survival status until 24 months after birth. Children in the highest quartile of vitamin A had a 49% lower risk of death by 24 months of age compared to the lowest quartile (HR: 0.51, 95% CI: 0.29–0.90; P-value for trend = 0.01). Higher vitamin A levels were protective in the sub-groups of HIV-infected and un-infected children but this was statistically significant only in the HIV-uninfected subgroup. Higher vitamin A concentrations in plasma are protective against mortality in children born to HIV-infected women.

**47. Chatterjee A, Bosch RJ, Kupka Rc , Hunter DJ, Msamanga GI, Fawzi WW. Predictors and consequences of anaemia among antiretroviral-naive HIV-infected and HIV-uninfected children in Tanzania. *Public Health Nutrition*. 2010; 13 (2): 289-296.**

**Objective** Predictors and consequences of childhood anaemia in settings with high HIV prevalence are not well known. The aims of the present study were to identify maternal and child predictors of anaemia among children born to HIV-infected women and to study the association between childhood anaemia and mortality. Design Prospective cohort study. Maternal characteristics during pregnancy and Hb measurements at 3-month intervals from birth were available for children. Information was also collected on malaria and HIV infection in the children, who were followed up for survival status until 24 months after birth. **Setting:** Dar es Salaam, Tanzania. **Subjects:** The study sample consisted of 829 children born to HIV-positive women. **Results:** Advanced maternal clinical HIV disease (relative risk (RR) for stage  $\geq 2$  v. stage 1: 1.31, 95 % CI 1.14, 1.51)

and low CD4 cell counts during pregnancy (RR for  $< 350$  cells/mm<sup>3</sup> v.  $\geq 350$  cells/mm<sup>3</sup>: 1.58, 95% CI 1.05, 2.37) were associated with increased risk of anaemia among children. Birth weight  $< 2500$  g, preterm birth ( $< 34$  weeks), malaria parasitaemia and HIV infection in the children also increased the risk of anaemia. Fe-deficiency anaemia in children was an independent predictor of mortality in the first two years of life (hazard ratio 1.99, 95% CI 1.06, 3.72). **Conclusions** Comprehensive care including highly active antiretroviral therapy to eligible HIV-infected women during pregnancy could reduce the burden of anaemia in children. Programmes for the prevention of mother-to-child transmission of HIV and ant malarial treatment to children could improve child survival in settings with high HIV prevalence.

**48. Chaudhuri S, Mackintosh M, Mujinja PG. Indian generics producers, access to essential medicines and local production in Africa: an argument with reference to Tanzania. *European Journal of Development Research*. 2010; 22(4): 451-468.**

Much analysis of the supply chain for essential medicines to Africa assumes broad sustainability of low-cost generics supply from Indian manufacturers. We use Indian data and interviews to question this assumption. In a case study of Tanzania, we then argue for the necessity and feasibility of enhanced local production of essential medicines. We identify key industrial policy interventions, including industrial protection and active government purchasing; public goods including legislative and regulatory frameworks and training; and encouragement and facilitation of joint ventures. We show that a basis has been laid for these activities, and identify the urgency and difficulty of the policy challenge. There are lessons for the Tanzanian case from Indian industrial history, and policy space is provided by Tanzania's Least Developed Country status. Industrial and health policy can be further integrated to the benefit of Tanzania's citizens. The Tanzanian case has broader implications for African policymakers.

**49. Chonde TM, Basra D, Mfinanga SGM , Range N, Lwilla F, Shirima RP, Van Deun A, Zignol M, Cobelens FG, Egwaga SM, Van Leth F. National anti-tuberculosis**

**drug resistance study in Tanzania. *International Journal of Tuberculosis and Lung Disease*. 2010; 14 (8): 967-972.**

**OBJECTIVE:** To assess the prevalence of anti-tuberculosis drug resistance in a national representative sample of tuberculosis (TB) patients in Tanzania according to recommended methodology. **DESIGN:** Cluster survey, with 40 clusters sampled proportional to size, of notified TB patients from all diagnostic centres in the country. **RESULTS:** The survey enrolled 1019 new and 148 retreatment patients. The adjusted prevalence of *Mycobacterium tuberculosis* strains resistant to any of the four first-line drugs in new patients was 8.3%, while the prevalence of multidrug-resistant TB (MDR-TB) was 1.1%. In retreatment patients, the crude prevalence for any resistance and for MDR-TB was respectively 20.6% and 3.9%. The prevalence of drug resistance did not differ in relapse patients compared to failure patients. These estimates are among the lowest in those African countries with an estimated level of drug resistance in the last 5 years. **CONCLUSION:** The low levels of drug resistance in Tanzania are likely due to a well performing TB control programme and the absence of noticeable involvement of the private sector in TB treatment.

50. Daud H, Yahya N, Asirvadam V, Talib KI. Air wave's effect on sea bed logging for shallow water application. *In Industrial Electronics & Applications (ISIEA), 2010 IEEE Symposium on*. 2010: 306-310.

Sea bed logging (SBL) is a technique for finding resistive layers, which can be hydrocarbon reservoirs in the subsurface using marine controlled source electromagnetic (CSEM) survey. In CSEM, a mobile horizontal electric dipole (HED) source transmits low frequency EM signal which is towed over an array of seafloor receivers measuring the electric and/or magnetic field. This EM signal induces an airwave along the air/sea surface that interferes with the signal that comes from the subsurface and this airwave will start dominating at larger offsets. Airwave is actually the energy that propagates from the source through the atmosphere to the receiver on the seabed. Airwave component is problematic in shallow water because it is less attenuated during its up and

down propagation compared to deeper water. This paper will present the air wave amplitude verses water depth relationship. Using the simulator that has been developed using MATLAB software we will set up a forward model that contains air, sea water, sediments and hydrocarbon reservoir with their resistivity values respectively. Sea water depth will be varied starting from 250m and is incremented every 250m until the airwaves signal captured by the receiver becomes insignificant or approaching to zero. From this simulation we shall find the water depth on which airwave has less effect on the desired forward model.

**51. Daud H, Yahya N, Sagayan V, Talib AM. Magnitude vs. low frequency EM waves for sea bed logging applications. In Applied Electromagnetics (APACE), 2010 IEEE Asia-Pacific Conference on. 2010: 1-6.**

The new emerging technique for finding resistive layers in the subsurface which can be hydrocarbon-saturated reservoirs using Marine controlled source electromagnetic (CSEM) is called seabed logging (SBL). It uses a mobile horizontal electric dipole (HED) source which generates ultra-low frequency (0.1 - 10 Hz) but powerful electromagnetic signal while being towed at about 30 - 40m above an array of seafloor electric field receivers. These arrays of receivers will receive signal in the form of direct waves, air waves, reflected waves and refracted waves and is measured in the form of amplitude and phase. The amplitude and phase of this signal depend on the resistivity of the mediums that they travel. Hydrocarbon is known to have high resistivity value of 30 - 500 $\Omega$ m, in contrast to conductive sea water of 0.5 - 2  $\Omega$ m and sediments of 1 - 2 $\Omega$ m. This paper will investigate and discuss the effect of these receivers readings in term of direct waves, air waves, reflected waves and guided waves as we increased the frequency value from 0.01Hz to 10Hz. Using simulator that has been developed using MATLAB software we will set up a forward model that contains air, sea water, sediments and hydrocarbon reservoir with their predefined resistivity values. From here we shall discuss the trend on wave amplitude obtained at different frequency values.



**52. Daud H, Yahya N. Wireless Control Mechanism for EM Source and Receiver Positioning for Offshore Applications.2010.**

This paper proposes a prototype on wireless control mechanism for better positioning of electromagnetic (EM) source with receiver for offshore sea bed logging application. In sea bed logging array of receivers are placed on the sea bed to record signal that comes from the transmitter that is towed 20 – 40 m above the sea bed. When a receiver is dropped on the sea bed, it will end up in arbitrary direction, which means that the recorded electric and magnetic x- and y-components will also point in arbitrary directions. This will affect the quality of the received signals. The amplitudes of electric and magnetic marine controlled source electromagnetic (CSEM) data are highly offset dependent. In the present technique the measurement of the receiver orientation can be performed using gyroscope and compass. The retrieved data have to be corrected using rotation equations to obtain the inline rotation angle ( $0^\circ$ ) before the amplitude of the horizontal electric and magnetic fields can be obtained. Our work premise focuses on using wireless control mechanism to correct or reposition the EM receiver so that it is in line with the transmitter position. A computer that acts as a controller station will be used to monitor the position of the EM detector using Zig-Bee wireless communication on real time basis. A robot is constructed to hold the EM receiver and this robot shall be turn clockwise or anti clockwise to ensure the correct positioning of the EM source to the receiver. By using this mechanism we shall demonstrate the improved in receiving signals in term of amplitude as we reposition the receiver to be in line with the transmitter ( $0^\circ$ ).

**53. Dawson AH, Eddleston M, Senarathna L, Mohamed F, Gawarammana I, Bowe SJ, Buckley NA. Acute human lethal toxicity of agricultural pesticides: a prospective cohort study. *PLoS medicine*. 2010; 7(10): e1000357.**

**Background:** Agricultural pesticide poisoning is a major public health problem in the developing world, killing at least 250,000–370,000 people each year. Targeted pesticide restrictions in Sri Lanka over the last 20 years have reduced pesticide deaths by 50%

without decreasing agricultural output. However, regulatory decisions have thus far not been based on the human toxicity of formulated agricultural pesticides but on the surrogate of rat toxicity using pure unformulated pesticides. We aimed to determine the relative human toxicity of formulated agricultural pesticides to improve the effectiveness of regulatory policy. **Methods and Findings:** We examined the case fatality of different agricultural pesticides in a prospective cohort of patients presenting with pesticide self-poisoning to two clinical trial centers from April 2002 to November 2008. Identification of the pesticide ingested was based on history or positive identification of the container. A single pesticide was ingested by 9,302 patients. A specific pesticide was identified in 7,461 patients; 1,841 ingested an unknown pesticide. In a subset of 808 patients, the history of ingestion was confirmed by laboratory analysis in 95% of patients. There was a large variation in case fatality between pesticides—from 0% to 42%. This marked variation in lethality was observed for compounds within the same chemical and/or WHO toxicity classification of pesticides and for those used for similar agricultural indications. **Conclusion:** The human data provided toxicity rankings for some pesticides that contrasted strongly with the WHO toxicity classification based on rat toxicity. Basing regulation on human toxicity will make pesticide poisoning less hazardous, preventing hundreds of thousands of deaths globally without compromising agricultural needs. Ongoing monitoring of patterns of use and clinical toxicity for new pesticides is needed to identify highly toxic pesticides in a timely manner.

**54. Donnelly MP, Paschou P, Grigorenko E, Gurwitz D, Mehdi SQ, Kajuna SLB, Barta C, Kungulilo S, Karoma NJ, Lu RB, Zhukova OV, Kim JJ, Comas D, Siniscalco M, New M, Li P, Li H, Manolopoulos VG, Speed WC, Rajeevan H, Pakstis AJ, Kidd JR, Kidd KK. The Distribution and Most Recent Common Ancestor of the 17q21 Inversion in Humans. *American Journal of Human Genetics*. 2010; 86 (2): 161-171.**

The polymorphic inversion on 17q21, sometimes called the micro tubular associated protein tau (MAPT) inversion, is a ~900 kb inversion found primarily in Europeans and Southwest Asians. We have identified 21 SNPs that act as markers of the inverted, i.e., H2, heliotype. The inversion is found at the highest frequencies in Southwest Asia and

Southern Europe (frequencies of ~30%); elsewhere in Europe, frequencies vary from < 5%, in Finns, to 28%, in Arcadians. The H2 inversion heliotype also occurs at low frequencies in Africa, Central Asia, East Asia, and the Americas, though the East Asian and Amerindian alleles may be due to recent gene flow from Europe. Molecular evolution analyses indicate that the H2 heliotype originally arose in Africa or Southwest Asia. Though the H2 inversion has many fixed differences across the ~900 kb, short tandem repeat polymorphism data indicate a very recent date for the most recent common ancestor, with dates ranging from 13,600 to 108,400 years, depending on assumptions and estimation methods. This estimate range is much more recent than the 3 million year age estimated by Stefansson et al. in 2005.1.

55. **Eliakimu ES. Assessment of maternal postnatal care utilization and associated factors among women infants aged 2-6 months in Shinyanga rural district, Shinyanga region. Master of Public Health. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Maternal postnatal care (PNC) is an essential intervention towards reduction of maternal mortality. About 61 percent of maternal deaths occur in the postpartum period. Despite its importance, utilisation of maternal PNC has remained low. A descriptive cross-sectional study was conducted to assess utilisation of maternal PNC among women with infants aged 2-6 months in Shinyanga Rural District, Shinyanga Region. The study was carried out in June 2010 and involved a sample of 386 women from 36 hamlets of 12 randomly selected villages (three hamlets per village). Face-to-face structured interviews were conducted to collect data on socio-demographic characteristics, elements of PNC provided, method of delivery, mother's awareness of PNC, postpartum morbidity symptoms, perceived health system factors and cultural belief. The results revealed that the overall utilisation of maternal PNC services was 34.7%. Utilisation of PNC at day 7, 28 and 42 post-delivery was 31.6%, 11.7% and 3.6% respectively. Number of previous pregnancies; education level of mother and husband, were significantly associated with utilisation of maternal PNC at day 7 and 28 combined with 42. Only husband's education was significantly associated with overall PNC utilisation within 42 days post-delivery. In

the multi variable logistic regression (LR) model, women with husbands with primary education and above were 2.4 times more likely to utilise maternal PNC within 42 days post-delivery compared to women with husbands without education (OR =2.4, 95% CI= 1.1-5.6). About 14.8% and 15.6% of mothers received all the recommended PNC elements at day 7 and combined day 28 and 42 respectively. Awareness that maternal PNC is important was associated with utilisation within 42 days post-delivery. About 17.4% of mothers reported postpartum morbidity symptoms. Mothers who reported seclusion period of 15-30 days, were 0.4 times less likely to utilise maternal PNC compared to seven or less days (OR = 0.4, 95% CI = 0.1 - 0.9). The study concludes that utilisation of maternal PNC is low; and it is associated with husband's education and mother awareness on its importance. This study recommends creating awareness on importance of maternal PNC to both mothers and husbands through use of IEC materials; and sensitization of health care workers on the need for consistent provision of recommended maternal PNC service elements to all mothers.

**56. Emil F. Factors influencing implementation of council health plants, a case study of sumbawanga urban and Iringa urban districts. Master of Art (Health Policy and Management) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Introduction:** Effective implementation of policy is a challenging process especially in resource constrained countries. The district is the main implementation unit of the Tanzania national health policies and programmes. Implementers at district level face various constraints when implementing health plans therefore understanding their views on factors influencing implementation of plans is important in ensuring effective execution of health plans to achieve the desired goals. The objectives of this study were to explore the views of Council Health Planning Team (CHPT) on factors influencing implementation of council health plans, and to identify ways of addressing constraints to implementation. **Methods:** A cross sectional descriptive study was conducted in Sumbawanga and Iringa municipals among CHPT and in-charges of health facilities that had roles in planning and implementation of Comprehensive Council Health Plans

(CCHP) through in depth interviews using an interview guide. The participants were purposively selected and a total of 16 people were enrolled in the study. **Results:** Factors influencing implementation of CCHP were identified. Majority of respondents perceived delay in disbursement of funds, lack of capacity of workers and top down approach to planning as constraints to implementation of health plans. The existence of CCHP guideline, manpower and good leadership at the councils were among the identified enablers. The poor road infrastructure of Sumbawanga and existence of a number of incapable people at decision making positions were further found to undermine performance of implementation of health plans in Sumbawanga municipal compared to Iringa municipal. Proposed solutions include the need to change the procurement act to reduce present bureaucracy, the participatory planning should be strengthened and more motivation of staff especially those allocated in rural areas is required. In addition further training of workers at health centres and dispensaries on planning issues is essential. **Conclusion:** The delayed in disbursement of funds, lack of human capacity and long bureaucratic procedures are among the constraints to implementation of plans whereas enabling factors include availability of CCHP guideline, good leadership skills and transparency. It is recommended that the constraints should be addressed by the relevant authorities and the enabling factors should be sustained

**57. Eratne S, Nair P, John E. Leakage control in full adders with selectively stacked inverters. In *Circuits and Systems (MWSCAS), 2010 53rd IEEE International Midwest Symposium on .2010. 833-836.***

Technology scaling beyond the 65nm regime has resulted in leakage power consumption emerging as a major design constraint. Several methods aiming at mitigating leakage power have been studied and tested. These include power-rail gating, input vector control, transistor body biasing, transistor stacking, etc. This paper extends the idea of transistor stacking but limiting it to the inverters in the given logic circuit or cell in order to obtain leakage savings. Stacking of inverters is effective in leakage current reduction during both the active and standby modes of the circuit. Stacking also has the advantage of not requiring any additional control circuitry. We examine the leakage power and

delay variations for this approach and compare it with the method of power-rail gating. The results indicate that selective stacking of inverters can yield considerable leakage savings without causing significant delay penalties. Therefore it is suitable for cells such as full adders which are in the critical path of complex logic modules such as the microprocessor.

- 58. Eriksen J , Mujinja P , Warsame M , Nsimba S, Kouyaté B , Gustafsson LL , Jahn A , Müller O , Sauerborn R , Tomson G. Effectiveness of a community intervention on malaria in rural Tanzania - a randomised controlled trial. *African Health Sciences*.2010; 10 (4): 332-340.**

**Background:** Malaria infections are a major public health problem in Africa and prompt treatment is one way of controlling the disease and saving lives. **Methods:** This cluster-randomised controlled community intervention conducted in 2003-2005 aimed at improving early malaria case management in under five children. Health workers were trained to train community-based women groups in recognizing malaria symptoms, providing first-line treatment for uncomplicated malaria and referring severe cases. Evaluation was through a pre- (2004) and a post-intervention survey (2005). Anemia prevalence was the primary outcome. Results: 1715 children aged 6-59 months were included in the pre-intervention survey and 2169 in the post-intervention survey. The prevalence of anemia decreased significantly from 37% [95% CI 34.7-39.3] to 0.5% [95% CI 0.2-0.7] after the intervention ( $p < 0.001$ ); slightly more in the intervention (from 43.9% to 0.8%) than in the control (30.8% to 0.17%) group ( $p = 0.038$ ). Fever and reported fever decreased significantly and the mean body weight of the children increased significantly over the study period in both control and intervention groups. **Conclusion:** The decrease in anemia was significantly associated with the intervention, whereas the fever and body weight trends might be explained by other malaria control activities or seasonal/climate effects in the area. The community intervention was shown to be feasible in the study context.

- 59. Eslami R, Jacob M. Robust reconstruction of MRSI data using a sparse spectral model and high resolution MRI priors. *Medical Imaging, IEEE Transactions on.* 2010; 29(6): 1297-1309.**

We introduce a novel algorithm to address the challenges in magnetic resonance (MR) spectroscopic imaging. In contrast to classical sequential data processing schemes, the proposed method combines the reconstruction and post processing steps into a unified algorithm. This integrated approach enables us to inject a range of prior information into the data processing scheme, thus constraining the reconstructions. We use high resolution, 3-D estimate of the magnetic field in homogeneity map to generate an accurate forward model, while a high resolution estimate of the fat/water boundary is used to minimize spectral leakage artifacts. We parameterize the spectrum at each voxel as a sparse linear combination of spikes and polynomials to capture the metabolite and baseline components, respectively. The constrained model makes the problem better conditioned in regions with significant field in homogeneity, thus enabling the recovery even in regions with high field map variations. To exploit the high resolution MR information, we formulate the problem as an anatomically constrained total variation optimization scheme on a grid with the same spacing as the magnetic resonance imaging data. We analyze the performance of the proposed scheme using phantom and human subjects. Quantitative and qualitative comparisons indicate a significant improvement in spectral quality and lower leakage artifacts.

- 60. Ezekiel MJ, Talle A, Mnyika KS, Klepp KI. Social geography of risk: The role of time, place and antiretroviral therapy in conceptions about the sexual risk of HIV in Kahe, Kilimanjaro, Tanzania. *Norsk Geografisk Tidsskrift.* 2010; 64 (1):48-57.**

The epidemiological pattern of HIV/AIDS in Africa and Tanzania is characterized by geographical variations in HIV prevalence. Despite the geographical variations, heterosexual contact remains the predominant mode of HIV transmission. The article examines the interrelationships of social, spatial and temporal issues in explaining the sexual risk of HIV/AIDS amongst youths in rural Tanzania. Drawing on discussions with

young people, the authors employ a comparative approach to establish categories of social practices that explain HIV risk. HIV risk is largely influenced by social interaction as youths engage in routine day-to-day activities in different geographical locales. The availability of antiretroviral treatment ushered in new dynamics in locally available strategies to manage the risk of HIV infection. Gender relations appear to have an underlining influence in determining the timing and place of risk as well as ways of controlling risk. The study participants emphasized both social and biomedical interventions to manage and control sexual activity and risk. Youth-focused and community-wide interventions addressing HIV prevention, care and treatment need to recognize the fact that the HIV epidemic in Tanzania is increasingly becoming a rural phenomenon structured by a wide range of local, national and global processes

**61. Fazal I, Karsiti MN, Zulkifli SA, Ibrahim T, Rao KR. Modeling and simulation of a moving-coil linear generator. In Intelligent and Advanced Systems (ICIAS), 2010 International Conference on. 2010: 1-5.**

This paper presents the flux analysis of moving coil linear generator using finite element method (FEM). Two generators, 6 poles and 8 poles are used to analyse and compare the flux distribution for air gap. The EMF for both generators are also analyzed. These generators will be used for free piston linear engine. A moving permanent-magnet linear generator has drawbacks of thermal and impact force demagnetization, in addition to requiring complex control strategies. To overcome these limitations, one of the solutions is to have a moving-coil linear generator. This paper presents the flux analysis using finite element method (FEM) for a moving-coil linear generator. The flux varies with a peak-to-peak value of 0.006 Wb with the movement of a single-turn coil. Flux density in the air gap changes sinusoidally with the addition of a DC component. EMF generated in the single-turn coil has a range of  $\pm 2$  Volts for a 1-mm air gap and  $\pm 1.5$  volts for a 2-mm air gap. The analysis is performed to consider replacing the moving permanent-magnet by a moving-coil for a linear generator whose prime-mover is a free-piston linear combustion engine.



62. **Fedrick F. Factors contributing to non-adherence to diabetics treatment among patients attending clinics in Mwanza city, Tanzania. Master of Science (Public Health) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Non-adherence in chronic diseases has been described earlier as taking less than 80% of the prescribed treatment. Non-adherence to the diabetes treatment regimen is possibly the most common reason for poor health outcomes among people with diabetes. The rates of non-adherence to diabetes regimen tasks are highly variable, but have significant consequences on diabetes outcomes and the effectiveness of treatments. Non-adherence is a problem that has many contributing factors and the responsibility for adherence must be shared by health professionals, the health care system, the community and the patients. **Objective:** The aim of this study was to determine the proportion (magnitude) of non-adherence and its contributing factors among diabetic patients attending clinics in Mwanza city. Specifically the study determined the relationship between non-adherence and various variables which are; alcohol use, knowledge on diabetes, its treatment and complication, travel distance to reach the clinic by patients and medication side effects. **Results:** A total of 272 diabetic patients attending two diabetes clinics in Mwanza city were interviewed. Of the respondents, 118(43.4%) were males. Their mean age was 51.22 (14.97 standard deviation). Among all respondents, 255 (93.8%) scored High level of knowledge on Diabetes and its treatment as compared with those with low knowledge making it not a significant contributor to non-adherence. Of the 272 patients, 77(28.3%) reported non-adherent. v Alcohol use, medication side effects and distance travelled to reach the clinic were the significant contributors to non-adherence (p=0.001). **Conclusion:** Factors which were found contributing to non-adherence to diabetes treatment include: alcohol use, medication side effects and few clinics located far from most of patient. Quality improvement efforts should focus on these modifiable factors. It is therefore **Recommended** that, patients should be educated on the possible side effects that can occur during treatment and that they should not stop taking the drugs against medical advice. Alcohol use should be discouraged among diabetic patients as it is the cause of non-adherence probably due to forgetfulness. This

should be done at all levels from the doctors, nurses and drug dispensers in all clinics. Also more diabetes clinics should be established at least in each district hospital in order to improve accessibility to clinics and reduce long waiting time. For improving adherence, availability of information with patients' perspectives about patients' expectations, needs and experiences in taking medication and about what might help them to become and remain adherent should be maintained. Key terms: - Diabetes; type 1 diabetes; type 2 diabetes; Medication; Non-adherence.

**63. Franke MF, Spiegelman D, Ezeamama A, Aboud S, Msamanga GI, Mehta S, Fawzi WW. Malaria parasitemia and CD4 T cell count, viral load, and adverse HIV outcomes among HIV-infected pregnant women in Tanzania. *American Journal of Tropical Medicine and Hygiene*. 2010; 82 (4): 556-562.**

We examined the cross-sectional relationships between malaria parasitemia and CD4 T cell count and viral load among human immunodeficiency virus (HIV)-infected pregnant women. We then followed women to investigate whether or not baseline parasitemia predicted CD4 T cell counts or viral loads > 90 days post-baseline or predicted time to HIV disease stage 3 or 4 or acquired immune deficiency syndrome (AIDS)-related death (ARD). Parasitemia level was nonlinearly associated with viral load at baseline and among measurements taken > 90 days post-baseline; women with low baseline parasitemia, versus none, had higher viral loads at both time points. Any baseline parasitemia predicted an increased rate of ARD among women with baseline CD4 T cell counts > 500 cells/ $\mu$ L (ratio rate [RR] = 2.6; 95% confidence interval [CI] = 1.1-6.0; P test for heterogeneity = 0.05). Further study is warranted to determine whether or not parasitemia is especially detrimental to individuals with lower levels of immunosuppression or chronic low parasitemia.

**64. Fredrick F. Urinary tract infection in febrile under-five children admitted in paediatric wards at Muhimbili national hospital Dar es Salaam, Tanzania. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Urinary tract infection (UTI) is a common and significant cause of morbidity and long-term complications in paediatric population. These infections are caused mainly by gram negative bacteria, which constitute the normal flora of gastrointestinal tract colonizing the perineum and ascending into the genital urinary system through the urethra. Children present with non specific symptoms and signs making the diagnosis of UTI in children challenging, furthermore obtaining urine specimen for confirming the diagnosis of UTI is difficult resulting in presumptive treatment of these patients. Effective and appropriate treatment depends on clinician's high index of suspicion which is influenced by knowledge of the prevalent bacteriological uropathogens and antimicrobial susceptibility pattern in the specific area of practice. There is limited information on clinical epidemiology of UTI in children in Dar es Salaam, and the few studies that are available were conducted several years ago. Therefore findings of those studies may not be applicable in the current circumstances bearing in mind the dynamic nature of antimicrobial susceptibility pattern of uropathogens. **Objective:** To determine the prevalence of UTI, etiological uropathogens and antimicrobial susceptibility pattern in febrile children under-five years of age admitted in general paediatric wards of Muhimbili National Hospital, Dar es Salaam, Tanzania. **Methodology:** This was a cross-sectional hospital based study which was conducted among febrile children less than five years of age. The children were consecutively recruited at admission in the general paediatric wards and the study was carried out for six months, from September, 2009 to February, 2010. Standardized questionnaires were used to collect socio- demographic characteristics and clinical presentation of study participants. The diagnosis of UTI was confirmed by urinalysis and bacteriological culture of urine specimens, which were obtained by supra-pubic aspiration or catheterization. The laboratory investigations were performed in accordance with the standard operating laboratory procedures. After isolation of bacterial uropathogens on a urine specimen antimicrobial susceptibility testing was performed using discs for the following antimicrobials ampicillin, co-trimoxazole, clavulanate-potentiated amoxicillin, ceftriaxone, gentamycin and amikacin. **Results:** A total of 382 children fulfilled the eligibility criteria and were enrolled into the study; out of which 212

(55.5%) were males and 170 (44.5%) were females. Among the 382 children sixty four children were confirmed to have UTI by urine culture, giving an overall prevalence of UTI of 16.8%. Females were noted to have higher prevalence of UTI than males, however, the difference was not statistically significant ( $p=0.332$ ). *Escherichia coli* was the most commonly isolated organism accounting for 35.7%, followed by *Klebsiella* spp. Gram positive organisms were also isolated and these included *Staphylococcus epidermidis*, *Staphylococcus aureus* and *Streptococcus faecalis*. Resistance rates of the isolated uropathogens to ampicillin, co-trimoxazole and clavulanate-potentiated amoxicillin were 79.7%, 89.1% and 70.3% respectively, while gentamycin and ceftriaxone had slightly lower resistance rates of 54.7% and 50% respectively. Amikacin had least resistance rate of 12.5%. Nitrite test had sensitivity and specificity of 68.8% and 92.4%, while leukocyte esterase test had sensitivity and specificity of 76.65 and 85.9%. When used in combination the nitrite and leukocyte esterase tests had a sensitivity and specificity of 85.9% and 79.6% respectively. Patients with fever for seven days or more were noted to have higher prevalence of UTI as compared to those with fever for less than seven days (OR 3.42; 95%CI 1.91-6.12,  $p<0.01$ ) while patients with history of convulsion had lower prevalence of UTI than those without (OR 2.37; 95%CI 1.16-4.85,  $p=0.016$ ). **Conclusion:** Urinary tract infection was prevalent in children less than five years of age admitted with fever, particularly those with fever of longer than seven days duration. The isolated bacterial uropathogens have shown a relatively high resistance to ampicillin, co-trimoxazole and clavulanate-potentiated amoxicillin. **Recommendations:** Children admitted with fever should be evaluated for UTI and urine culture and sensitivity should guide the choice of antimicrobials in their treatment.

**65. Frumence G, Killewo J, Kwesigabo G, Nyström L, Eriksson M, Emmelin M. Social capital and the decline in HIV transmission - A case study in three villages in the Kagera region of Tanzania. *Sahara J.* 2010; 7 (3): 9-20.**

We present data from an exploratory case study characterising the social capital in three case villages situated in areas of varying HIV prevalence in the Kagera region of Tanzania. Focus group discussions and key informant interviews revealed a range of

experiences by community members, leaders of organisations and social groups. We found that the formation of social groups during the early 1990s was partly a result of poverty and the many deaths caused by AIDS. They built on a tradition to support those in need and provided social and economic support to members by providing loans. Their strict rules of conduct helped to create new norms, values and trust, important for HIV prevention. Members of different networks ultimately became role models for healthy protective behaviour. Formal organisations also worked together with social groups to facilitate networking and to provide avenues for exchange of information. We conclude that social capital contributed in changing HIV related risk behaviour that supported a decline of HIV infection in the high prevalence zone and maintained a low prevalence in the other zones.

- 66. Galukande M, von Schreeb J, Wladis A, Mbembati N, de Miranda H, Kruk ME, Luboga S, Matovu A, McCord C, Ndao-Brumblay SK, Ozgediz D, Rockers PC, Quiñones AR, Vaz F, Debas HT, Macfarlane SB. Essential surgery at the district hospital: A retrospective descriptive analysis in three African countries. PLoS Medicine. 2010; 7 (3): 1-10.**

**Background:** Surgical conditions contribute significantly to the disease burden in sub-Saharan Africa. Yet there is an apparent neglect of surgical care as a public health intervention to counter this burden. There is increasing enthusiasm to reverse this trend, by promoting essential surgical services at the district hospital, the first point of contact for critical conditions for rural populations. This study investigated the scope of surgery conducted at district hospitals in three sub-Saharan African countries. **Methods and Findings:** In a retrospective descriptive study, field data were collected from eight district hospitals in Uganda, Tanzania, and Mozambique using a standardized form and interviews with key informants. Overall, the scope of surgical procedures performed was narrow and included mainly essential and life-saving emergency procedures. Surgical output varied across hospitals from five to 45 major procedures/10,000 people. Obstetric operations were most common and included cesarean sections and uterine evacuations. Hernia repair and wound care accounted for 65% of general surgical procedures. The

number of beds in the studied hospitals ranged from 0.2 to 1.0 per 1,000 populations. **Conclusion:** The findings of this study clearly indicate low levels of surgical care provision at the district level for the hospitals studied. The extent to which this translates into unmet need remains unknown although the very low proportions of live births in the catchment areas of these eight hospitals that are born by cesarean section suggest that there is a substantial unmet need for surgical services. The district hospital in the current health system in sub-Saharan Africa lends itself to feasible integration of essential surgery into the spectrum of comprehensive primary care services. It is therefore critical that the surgical capacity of the district hospital is significantly expanded; this will result in sustainable preventable morbidity and mortality.

**67. Genet S, Sabarly L, Guigon E, Berry H, Delord B. Dendritic signals command firing dynamics in a mathematical model of cerebella Purkinje cells. *Biophysical journal*. 2010; 99(2): 427-436.**

Dendrites of cerebella Purkinje cells (PCs) respond to brief excitations from parallel fibers with lasting plateau depolarization. It is unknown whether these plateaus are local events that boost the synaptic signals or they propagate to the soma and directly take part in setting the cell firing dynamics. To address this issue, we analyzed a likely mechanism underlying plateaus in three representations of a reconstructed PC with increasing complexity. Analysis in an infinite cable suggests that Ca plateaus triggered by direct excitatory inputs from parallel fibers and their mirror signals, valleys (putatively triggered by the local feed forward inhibitory network), cannot propagate. However, simulations of the model in electro tonic equivalent cables prove that Ca plateaus (resp. valleys) are conducted over the entire cell with velocities typical of passive events once they are triggered by threshold synaptic inputs that turn the membrane current inward (resp. outward) over the whole cell surface. Bifurcation analysis of the model in equivalent cables and simulations in a fully reconstructed PC both indicate that dendritic Ca plateaus and valleys, respectively, command epochs of firing and silencing of PCs.

- 68. Gomes MF, Warsame M, Nasemba N, Singlovic J, Kapinga A, Mwankuyse S, Mduma S, Msabaha MH, Mulokosi F, Shishira J, Kitua A, Mrango Z. Gaining time: Early treatment of severe pediatric malaria in Tanzania. *Drug Development Research*. 2010; 71 (1): 92-98.**

Early effective treatment prevents death or disability from malaria. In malaria-endemic rural areas, pediatric patients who cannot take drugs orally and require injectable treatment have to be transported to the nearest facility that can give injectable malaria drugs. If time to reach the hospital is long, pre-referral treatment and effective referral can play a major positive role. We compare the clinical course of illness and time taken to reach hospital in patients from Study 13, a randomized controlled study of pre-referral rectal articulate in which rapid referral was emphasized, with a comparator group of pediatric patients admitted at the same hospital in Tanzania whose parents' actions prior to admission at the hospital reflected routine behavior. The key difference was that parents of sick children from the intervention study rapidly transferred their children to the hospital following the advice they were given. Time gained by the referral study was 48 h and this difference was reflected in less severe symptoms at admission. Efforts to improve referral advice in the community can be a powerful complement to other malaria case management strategies.

- 69. Goud S, Hu Y, Jacob M. Real-time cardiac MRI using low-rank and sparsity penalties. In *Biomedical Imaging: From Nano to Macro, 2010 IEEE International Symposium on*. 2010; 988-991.**

We introduce a novel algorithm to reconstruct real-time cardiac MRI data from under sampled radial acquisitions. We exploit the fact that the spatio-temporal data can be represented as the linear combination of a few temporal basis functions. The current approaches that capitalize this property estimate the basic functions from central phase encodes, acquired with a fine temporal sampling rate. In contrast, we estimate the basic functions from the entire under-sampled data. By eliminating the need for training data, the proposed method can achieve potentially high acceleration factors. More importantly,

the estimation of the temporal functions from the entire data significantly improves the quality of the basis functions, which in turn improves the quality of the reconstructions. Experiments on numerical phantoms show a significant reduction in artifacts at high acceleration factors, in comparison to current schemes.

**70. Greeff M, Uys LR, Wantland D, Makoae L, Chirwa M, Dlamini P, Holzemer WL. Perceived HIV stigma and life satisfaction among persons living with HIV infection in five African countries: a longitudinal study. *International journal of nursing studies*. 2010; 47(4): 475-486.**

**Background:** Descriptive literature exists on the effects of HIV-related stigma on the lives of people living with HIV infection but few empirical studies have measured perceived HIV stigma nor explored its potential relationship to quality of life (QoL) over time in people living with HIV infection. **Aim:** A cohort study of a purposive convenient sample of 1457 HIV-positive persons was followed for one year in a longitudinal design that examined the effects of stigma and the life satisfaction dimension of the HIV/AIDS Targeted Quality of Life Instrument (HAT-QOL) over time, as well as the influence of other demographic and assessed social variables. Data were collected three times about six months apart from December 2005 to March 2007. **Results:** The average age in this sample was 36.8 years (SD = 8.78,  $n = 1454$ ) and 72.7% ( $n = 1056$ ) were female. The initial sample of participants was balanced among the five countries: Lesotho, Malawi, South Africa, Swaziland, and Tanzania. An attrition analysis demonstrated few demographic differences between those who remained in the study 12 months later compared with those at baseline. However, those who completed the study and who answered the QoL questions had significantly higher life satisfaction scores at baseline than those who left the study. There was a general increase in the report of life satisfaction QoL in all countries over the one-year period. However, as stigma scores increased over time there was a significant decrease in life satisfaction with differing rates of change by country. Certain factors had a positive influence on life satisfaction QoL: positive HIV media reports, taking antiretroviral, reduced symptom intensity, and disclosure to a friend. **Conclusion:** This cohort study is the first to document empirically



in a longitudinal sample that perceived HIV stigma has a significantly negative and constant impact upon life satisfaction QoL for people with HIV infection. In the absence of any intervention to address and reduce stigmatization, individuals will continue to report poorer life satisfaction evidenced by reduced living enjoyment, loss of control in life, decreased social interactivity, and decreased perceived health status.

**71. Hamada A, Mori M, Mori H, Muhihi A, Njelekela M, Masesa Z, Mtabaji J, Yamori Y. Deterioration of traditional dietary custom increases the risk of lifestyle-related diseases in young male Africans. *Journal of Biomedical Science*. 2010; 17 (1): S34.**

**Background.** Prevalence of metabolic syndrome (MS) is rapidly increasing worldwide. To investigate the spread of MS risks and its relationship with eating habits including fish intake, we carried out a health examination for young and middle-aged men. **Methods.** The subjects were 97 healthy men (20 to 50 years) living in Mwanza, located on the shore of Lake Victoria in Tanzania. The health examination was conducted according to the basic protocol of WHO-CARDIAC (Cardiovascular Diseases and Alimentary Comparison) Study. This survey included anthropometric measurements, a dietary questionnaire, blood pressure measurement, and blood and 24-hour urine (24U) collection. Excretions of sodium, potassium and taurine (Tau) in 24U were estimated as the biomarkers of salt, vegetable and fish product intakes respectively. **Results.** In this survey, 62.5 % of the young and 63.3% of the middle-aged adults had MS risks. The most prevalent MS risk factor was increased blood pressure (50.0% of young adults and 53.1% of the middle-aged). Tau excretions in 24U and n-3 fatty acid levels in plasma were significantly lower in young adults than those in the middle-aged (both  $P < 0.05$ ). The eating frequencies of non-traditional foods such as donuts and ice cream showed negative correlations with age ( $r = -0.282$ ,  $P < 0.01$  and  $r = -0.246$ ,  $P < 0.05$ ), while salt intake positively correlated with age ( $r = 0.236$ ,  $P < 0.05$ ). Tau excretion in 24U was inversely correlated with atherosclerosis index ( $r = -0.306$ ,  $P < 0.01$ ) and fasting blood glucose ( $r = -0.284$ ,  $P < 0.05$ ). **Conclusions.** Young adults in Mwanza had a decreased frequency of eating habit of fish products compared with the middle-aged as indicated by Tau excretion in 24U and n-3 fatty acid level in the plasma, and over half of young adults

had one or more MS risks just as the middle-aged. The change in food habit of lowered fish intake and raised exotic food intake might be concluded to increase MS risks in young men.

- 72. Harries AD, Murray MB, Jeon CY, Ottmani SE, Lonnroth K, Barreto ML, Billo N, Brostrom R, Bygbjerg IC, Fisher-Hoch S, Mori T, Ramaiya K, Roglic G, Strandgaard H, Unwin N, Viswanathan V, Whiting D, Kapur A. Defining the research agenda to reduce the joint burden of disease from diabetes mellitus and tuberculosis: Viewpoint. *Tropical Medicine and International Health*. 2010; 15 (6): 659-663.**

The steadily growing epidemic of diabetes mellitus poses a threat for global tuberculosis (TB) control. Previous studies have identified an important association between diabetes mellitus and TB. However, these studies have limitations: very few were carried out in low-income countries, with none in Africa, raising uncertainty about the strength of the diabetes mellitus-TB association in these settings, and many critical questions remain unanswered. An expert meeting was held in November 2009 to discuss where there was sufficient evidence to make firm recommendations about joint management of both diseases, to address research gaps and to develop a research agenda. Ten key research questions were identified, of which 4 were selected as high priority: (i) whether, when and how to screen for TB in patients with diabetes mellitus and vice versa; (ii) the impact of diabetes mellitus and non-diabetes mellitus hyperglycaemia on TB treatment outcomes and deaths, and the development of strategies to improve outcomes; (iii) implementation and evaluation of the tuberculosis 'DOTS' model for diabetes mellitus management; and (iv) the development and evaluation of better point-of-care diagnostic and monitoring tests, including measurements of blood glucose and glycated haemoglobin A 1c (HbA1c) for patients with diabetes mellitus. Implementation of this research agenda will benefit the control of both diseases.

- 73. Harris AP, Gordon JJ, Jacob M. U.S. Patent No. 7,676,579. Washington, DC: U.S. Patent and Trademark Office. 2010.**

Methods and apparatus for peer to peer network communication. In one implementation, a method of communicating between a first client system and a second client system includes: discovering first address information for a first client system connected to a first network address translation device; sharing the first address information with a second client system; receiving second address information for the second client system; and establishing communication between the first client system and the second client system using the second address information.

74. **Hartsell LR. Assessing maternal mortality data, a look into the quality of maternal mortality data registration in Kilimanjaro region, Tanzania. Master of Public Health Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Maternal mortality in Tanzania is high. The maternal mortality ratio stands at 578 maternal deaths per 100,000 live births. Initiatives to tackle high maternal mortality are underway in Tanzania and the Health Management Information System (HMIS) provides a routine mechanism to monitor progress made in reducing maternal deaths and other health indicators. The quality of this HMIS data, however, is questionable. The HMIS is weak at all levels and comprehensive registration of maternal deaths is a challenge. International health statistics experts have stated that a focus on HMIS in developing countries is the answer for sound and up-to-date health statistics. The objective of this study, therefore, is to assess the quality of maternal death data registration in Tanzania. The results of this study provide insight into ways that the maternal death data collection and reporting process can be strengthened to improve the accuracy and reliability of maternal mortality statistics in Tanzania. A qualitative, case study in the Kilimanjaro region was conducted during June 2010 to examine data registration for maternal deaths. Four levels within the national health system were investigated-health facility, district, region, and national. In-depth interviews with data management workers and health management staff took place at every level. Data analysis was performed qualitatively to answer the research questions and fulfill the study objectives. It was found that maternal

deaths primarily take place within the hospital setting and are registered through the maternal death reviews and additionally in the HMIS. The reviews in the Kilimanjaro region closely follow the nationally-recommended guidelines for maternal death review. Several factors were identified to promote (supervision and feedback, training, worker's perception of data collection, and mechanisms to capture community maternal death data) and other factors were found to limit (time taken to complete the report, data inconsistencies and errors, and shortage of staff) data registration. In all, implementation of the maternal death review has brought new hope that maternal deaths will be investigated thoroughly, recorded accurately, and prevented more effectively.

**75. Hasselrot K, Bratt G, Duvefelt K, Hirbod T, Sandström E, Broliden K. HIV-1 exposed uninfected men who have sex with men have increased levels of salivary CC-chemokines associated with sexual behavior. *AIDS*. 2010; 24(10): 1569-1575.**

**Objectives:** To determine whether soluble molecules with known anti-HIV-1 activity are increased in saliva of HIV-1 exposed uninfected individuals of discordant couples of men who have sex with men (MSM), and whether the levels of these molecules are associated with genetic polymorphisms, sexual behavior and/or HIV-1 neutralizing capacity.

**Methods:** Saliva and PBMC were collected from exposed uninfected individuals ( $n = 25$ ), and low-risk controls ( $n = 22$ ). Levels of CCL2, CCL3, CCL4, CCL5 and CCL11 were detected by Luminex, and SLPI, LL-37, alpha-defensins and IgA2 were detected by ELISA. Single nucleotide polymorphisms (SNPs) were investigated using mass spectrometry or PCR-sequencing. HIV-1 neutralizing activity was assessed using PBMC-based neutralization assays. Self-reported questionnaires described sexual behavior.

**Results:** Exposed uninfected individuals had significantly higher levels of salivary CCL2, CCL4, CCL5 and CCL11 as compared with controls although genetic polymorphisms within the corresponding regions were equally distributed. IgA2 was also increased in exposed uninfected individuals, whereas neither CCL3, SLPI, LL-37 nor alpha-defensins differed between exposed uninfected individuals and controls. The HIV-1 neutralizing capacity of saliva was associated with higher levels of CC-chemokines (but not SLPI, LL-37, alpha-defensins or IgA2) in both exposed uninfected individuals and

controls. The increased levels of CC-chemokines were associated with a higher frequency of unprotected oral sex and/or additional casual sex partners. **Conclusion:** HIV-1 exposed uninfected MSM had higher levels of salivary CC-chemokines compared with controls, this finding associated with sexual behavior rather than with genetic polymorphisms. The increased levels of CC-chemokines associated with HIV-1 neutralizing capacity in saliva.

**76. Hasselrot K, Bratt G, Hirbod T, Säberg P, Ehnlund M, Lopalco L, Broliden K. Orally exposed uninfected individuals have systemic anti-HIV responses associating with partners' viral load. *Aids*. 2010; 24(1): 35-43.**

**Objectives:** To determine whether oral HIV-1 exposure incites a persistent systemic anti-HIV-1 response in exposed uninfected individuals of discordant couples of men who have sex with men, and whether this response associates with HIV-1 exposure measured by viral load in the HIV-positive partners. **Methods:** Plasma were collected from exposed uninfected individuals ( $n = 25$ ), HIV-positive partners ( $n = 25$ ) and low-risk controls ( $n = 22$ ). A peripheral blood mononuclear cells-based neutralization assay was used to test these samples against three primary HIV-1 isolates. Self-reported questionnaires described routes of HIV-1-exposure, and clinical records documented viral loads in HIV-positive partners. **Results:** At enrolment, plasma samples from seven of 25 exposed uninfected individuals neutralized at least two of the three HIV-1 isolates. No samples from the 22 controls neutralized any HIV-1 isolate ( $P = 0.01$ ). Of these seven exposed uninfected individuals, six retained neutralization capacity during follow-up. Neutralization capacity among exposed uninfected individuals associated with the highest measured viral load of their respective partners ( $P = 0.01$ ) and also time since highest viral load ( $P = 0.02$ ). Purified plasma immunoglobulin (Ig) A1-mediated neutralization was observed in six of the seven samples, whereas none of the IgA1-depleted plasma samples neutralized HIV-1. The neutralizing IgA1 was not HIV envelope specific as detected by ELISA and western blot. **Conclusion:** Orally exposed uninfected men who have sex with men can mount neutralizing anti HIV-1 activity in plasma, mediated primarily by non-HIV envelope-specific IgA1. Neutralization was associated with

previous measured highest viral load in the HIV-positive partner, as well as time elapsed since the peak viral load. Neutralization also persisted over time in spite of a continuous low viral exposure.

77. **Haw CY, Mohamed F, Chia CH, Radiman S, Zakaria S, Huang NM, Lim HN. Hydrothermal synthesis of magnetite nanoparticles as MRI contrasts agents. *Ceramics International*. 2010; 36(4): 1417-1422.**

Magnetite (Fe<sub>3</sub>O<sub>4</sub>) nanoparticles prepared using hydrothermal approach were employed to study their potential application as magnetic resonance imaging (MRI) contrast agent. The hydrothermal process involves precursors FeCl<sub>2</sub>•4H<sub>2</sub>O and FeCl<sub>3</sub> with NaOH as reducing agent to initiate the precipitation of Fe<sub>3</sub>O<sub>4</sub>, followed by hydrothermal treatment to produce nano-sized Fe<sub>3</sub>O<sub>4</sub>. Chitosan (CTS) was coated onto the surface of the as-prepared Fe<sub>3</sub>O<sub>4</sub> nanoparticles to enhance its stability and biocompatible properties. The size distribution of the obtained Fe<sub>3</sub>O<sub>4</sub> nanoparticles was examined using transmission electron microscopy (TEM). The cubic inverse spinel structure of Fe<sub>3</sub>O<sub>4</sub> nanoparticles was confirmed by X-ray diffraction technique (XRD). Fourier transform infrared (FTIR) spectrum indicated the presence of the chitosan on the surface of the Fe<sub>3</sub>O<sub>4</sub> nanoparticles. The super paramagnetic behavior of the produced Fe<sub>3</sub>O<sub>4</sub> nanoparticles at room temperature was elucidated using a vibrating sample magnetometer (VSM). From the result of custom made phantom study of magnetic resonance (MR) imaging, coated Fe<sub>3</sub>O<sub>4</sub> nanoparticles have been proved to be a promising contrast enhanced agent in MR imaging.

78. **Hietala SF , Mårtensson A , Ngasala B, Dahlström S , Lindegårdh N, Annerberg A , Premji Z , Färnert A , Gil P, Björkman A, Ashton M. Population pharmacokinetics and pharmacodynamics of artemether and lumefantrine during combination treatment in children with uncomplicated falciparum malaria in Tanzania. *Antimicrobial Agents and Chemotherapy*. 2010; 54 (11): 4780-4788.**

The combination of artemether (ARM) and lumefantrine is currently the first-line treatment of uncomplicated falciparum malaria in mainland Tanzania. While the exposure to lumefantrine has been associated with the probability of adequate clinical and parasitological cure, increasing exposure to artemether and the active metabolite dihydroartemisinin (DHA) has been shown to decrease the parasite clearance time. The aim of this analysis was to describe the pharmacokinetics and pharmacodynamics of artemether, dihydroartemisinin, and lumefantrine in African children with uncomplicated malaria. In addition to drug concentrations and parasitemias from 50 Tanzanian children with falciparum malaria, peripheral parasite densities from 11 asymptomatic children were included in the model of the parasite dynamics. The population pharmacokinetics and pharmacodynamics of artemether, dihydroartemisinin, and lumefantrine were modeled in NONMEM. The distribution of artemether was described by a two-compartment model with a rapid absorption and elimination through metabolism to dihydroartemisinin. Dihydroartemisinin concentrations were adequately illustrated by a one-compartment model. The pharmacokinetics of artemether was time dependent, with typical oral clearance increasing from 2.6 liters/h/kg on day 1 to 10 liters/h/kg on day 3. The pharmacokinetics of lumefantrine was sufficiently described by a one-compartment model with an absorption lag time. The typical value of oral clearance was estimated to 77 ml/h/kg. The proposed semi mechanistic model of parasite dynamics, while a rough approximation of the complex interplay between malaria parasite and the human host, adequately described the early effect of ARM and DHA concentrations on the parasite density in malaria patients. However, the poor precision in some parameters illustrates the need for further data to support and refine this model.

**79. Hillmert S, Jacob M. Selections and social selectivity on the academic track: A life-course analysis of educational attainment in Germany. *Research in Social Stratification and Mobility*. 2010; 28(1), 59-76.**

Graduating from university is just the final step of an extended educational career. Sociological transition research has revealed that final educational attainment must be understood as the result of a sequence of successive decisions. With regard to graduation

from university, one has to take into account that upper secondary school qualifications are required for enrolling in the first place, and in Germany, the decision for this kind of schooling is at a much earlier age. So where on the long way to the university degree does Germany 'lose' its potential academics and in particular its lower class children? This paper presents a detailed picture of the life-course development of educational careers by analyzing the various steps of the collective educational history of a particular birth cohort. The paper takes account of both the country-specific institutional structures of the educational system and inter-individual variation in educational trajectories and combines both aspects in an analysis of the most relevant types of educational transitions associated with the 'academic track'. Altogether, the transitions aggregate to the final number of graduates as well as to the observed level of inequality in educational attainment. In our empirical analyses, we are interested in both the overall selection at particular transitions and social differences in these transition patterns. We use survey data on participation and social selectivity in education. The paper confirms the usefulness of transition research for understanding the process of educational attainment; an analysis based on transitions is clearly superior to an analysis which focuses purely on stock figures of educational attainment. However, the paper also shows that conventional forms of transition research are often too simple as they assume an ideal-typical sequence of transitions during education. Educational careers in reality often deviate from this model. The number of young people (and in particular lower class children) who try to join the 'academic track' at least once during their educational career is much higher than the number of those who graduate successfully in the end. Accounting for the most relevant events helps to understand the quantitative and qualitative selectivity of the German educational system and may serve as a model for research on other aspects of educational inequality as well as on other educational systems.

**80. Hirji KF. An era of global turbulence.Cheche: *Reminiscences of a Radical Magazine*.2010: 1-9.**

**81. Hirji KF. Socialism tomorrow.Cheche: *Reminiscences of a Radical Magazine*.2010: 173-195.**



**82. Hirji KF. The spark is kindled. Cheche: *Reminiscences of a Radical Magazine*. 2010: 17-34.**

**83. Hirji KF. Cheche: *Reminiscences of a Radical Magazine*. 2010:109-122.**

**84. Hirji KF. Cheche: *Reminiscences of a Radical Magazine*. Cheche: *Reminiscences of a Radical Magazine*. 2010: 1-231.**

Cheche, a radical, socialist student magazine at the University of Dares Salaam, first came out in 1969. Featuring incisive analyses of key societal issues by prominent progressives, it gained national and international recognition in a short while. Because it was independent of authority, and spoke without fear or favor, it was banned after just a year of existence. The former editors and associates of Cheche revive that salutary episode of student activism in this book with fast-flowing, humor spiced stories, and astute socio-economic analyses. Issues covered include social and technical aspects of low-budget magazine production, travails of student life and activism, contents and philosophy of higher education, socialism in Tanzania, African liberation, gender politics and global affairs. They also reflect on the relevance of past student activism to the modern era. If your interests cover higher education in Africa, political and development studies, journalism, African affairs, socialism and capitalism, or if you just seek elucidation of student activism in a nation then at the center of the African struggle for liberation, this book presents the topic in a lively but unorthodox and ethically engaging manner.

**85. Hirji KF. Contemporary capitalism. Cheche: *Reminiscences of a Radical Magazine*. 2010: 155-172.**

**86. Hirji KF. Not so silent a spark. Cheche: *Reminiscences of a Radical Magazine*. 2010: 53-63.**

- 87. Hirji KF. Socialism yesterday. Cheche: *Reminiscences of a Radical Magazine*. 2010: 133-154.**
- 88. Hogan M, Mrumbi K, Ayazi T, Hall J. Clinical psychology training in Tanzania: Getting started. *Clinical Psychology Forum*. 2010; (215): 36-39.**
- 89. Holmes MD, Dalal S, Volmink J, Adebamowo CA, Njelekela M, Fawzi WW, Willett WC, Adami HO. Non-communicable diseases in sub-Saharan Africa: The case for cohort studies. *PLoS Medicine*. 2010; 7 (5).**
- 90. Hussein S, Shafiq M, Badar MA, Zakaullah M. Effect of insulator sleeve material on the x-ray emission from a plasma focus device. *Physics of Plasmas*. 2010; 17(9): 092705.**

The effect of insulator sleeve material on x-ray emission from a 2.3 kJ Mather type plasma focus device operated in argon-hydrogen mixture is investigated. The time and space resolved x-ray emission characteristics are studied by using a three channel-p-n diode x-ray spectrometer and a multipinhole camera. The x-ray emission depends on the volumetric ratio of argon-hydrogen mixture as well as the filling pressure and the highest x-ray emission is observed for a volumetric ratio 40% Ar to 60% H<sub>2</sub> at 2.5 mbar filling pressure. The fused silica insulator sleeve produces the highest x-ray emission whereas no ceramic insulator sleeves such as nylon, Perspex, or Teflon does not produce focus or x-rays. The pinhole images of the x-ray emitting zones reveal that the contribution of the CuK $\alpha$  line is weak and plasmax-rays are intense. The highest plasma electron temperature is estimated to be 3.3 and 3.6 keV for Pyrex glass and fused silica insulator sleeves, respectively. It is speculated that the higher surface resistivity of fused silica is responsible for enhanced x-ray emission and plasma electron temperature.

- 91. Hussein S, Shafiq M, Zakaullah M. Tailoring a plasma focus as hard x-ray source for imaging. *Applied Physics Letters*. 2010; 96(3): 031501.**

An investigation on temporal and spatial properties of hard x-rays (15–88 keV) emitted in a 5.3 kJ plasma focus using Si pin diodes and a pinhole camera is reported. The maximum yield of hard x-rays of 15–88 keV range is estimated about 4.7 J and corresponding efficiency for x-ray generation is 0.09%. The x-rays with energy >15keV have 15–20 ns pulse duration and 1mm source size. This radiation is used for contact x-ray imaging of biological and compound objects and spatial resolution of 50

- 92. Ibrahim T, Bloch B, Esler CN, Abrams KR, Harper WM. Temporal trends in primary total hip and knee arthroplasty surgery: results from a UK regional joint register, 1991–2004. *Annals of the Royal College of Surgeons of England*. 2010; 92(3): 231.**

**Introduction:** The aim of this study was to evaluate temporal trends in the prevalence of primary total hip and knee replacements (THRs and TKRs) throughout the Trent region from 1991 to 2004. **Patients and Methods:** The Trent Regional Arthroplasty Study records details of primary THR and TKR prospectively and data from the register were examined. Age and gender population data were provided by the Office for National Statistics. **Results:** A total of 26,281 THRs and 23,606 TKRs were recorded during this period. Analysis showed that females had an increased incidence rate ratio (IRR) for both primary THR (IRR = 1.29; 95% CI 1.26–1.33;  $P < 0.001$ ) and TKR (IRR = 1.17; 95% CI 1.14–1.20;  $P < 0.001$ ). Patients aged 74–85 years had the largest IRR for both primaries THR (IRR = 6.7; 95% CI 6.4–7.0;  $P < 0.001$ ) and TKR (IRR = 15.3; 95% CI 14.4–16.3;  $P < 0.001$ ). **Conclusions:** The prevalence of primary TKR increased significantly over time whereas THR remained steady in the Trent region between 1991 and 2004.

- 93. Ibrahim T, Flamini E, Mercatali L, Sacanna E, Serra P, Amador D. Pathogenesis of osteoplastic bone metastases from prostate cancer. *Cancer*. 2010; 116(6): 1406-1418.**

Prostate cancer is the second leading cause of cancer-related death in men. A typical feature of this disease is its ability to metastasize to bone. It is mainly osteosclerotic, and

is caused by a relative excess of osteoblast activity, leading to an abnormal bone formation. Bone metastases are the result of a complex series of steps that are not yet fully understood and depend on dynamic crosstalk between metastatic cancer cells, cellular components of the bone marrow microenvironment, and bone matrix (osteoblasts and osteoclasts). Prostate cancer cells from primary tissue undergo an epithelial-mesenchyme transition to disseminate and acquire a bone-like phenotype to metastasize in bone tissue. This review discusses the biological processes and the molecules involved in the progression of bone metastases. Here we focus on the routes of osteoblast differentiation and activation, the crosstalk between bone cells and tumor cells, and the molecules involved in these processes that are expressed by both osteoblasts and tumor cells. Furthermore, this review deals with the recently elucidated role of osteoclasts in prostate cancer bone metastases. Certainly, to better understand the underlying mechanisms of bone metastasis and so improve targeted bone therapies, further studies are warranted to shed light on the probable role of the premetastatic niche and the involvement of cancer stem cells.

**94. Ibrahim T, Furnell SM, Papadaki M, Clarke NL. Assessing the usability of end-user security software. In Trust, Privacy and Security in Digital Business. 2010: 177-189.**

From a previous study we have determined that commercial security products can suffer from a usability perspective, lacking the necessary attention to design in relation to their alert interfaces. The aim of the paper is to assess the usability of alerts in some of the leading Internet security packages, based upon a related set of usability criteria. The findings reveal that the interface design combined with the user's relative lack of security knowledge are two major challenges that influence their decision making process. The analysis of the alert designs showed that four of the criteria are not addressed in any of the selected security measures and it would be desirable to consider the user's previous decisions on similar alerts, and modify alerts according to the user's previous behavior.

**95. Ibrahim T, Nath P. Large tau and tau neutrino electric dipole moments in models with vectorlike multiplets. *Physical Review D*. 2010; 81(3): 033007.**

It is shown that the electric dipole moment of the  $\tau$  lepton several orders of magnitude larger than predicted by the standard model can be generated from mixings in models with vectorlike multiplets. The electric dipole moment (EDM) of the  $\tau$  lepton arises from loops involving the exchange of the W, the charginos, the neutralinos, the sleptons, the mirror leptons, and the mirror sleptons. The EDM of the Dirac  $\tau$  neutrino is also computed from loops involving the exchange of the W, the charginos, the mirror leptons, and the mirror sleptons. A numerical analysis is presented, and it is shown that the EDMs of the  $\tau$  lepton and the  $\tau$  neutrino which lie just a couple of orders of magnitude below the sensitivity of the current experiment can be achieved. Thus the predictions of the model are testable in an improved experiment on the EDM of the  $\tau$  and the  $\tau$  neutrino.

**96. Ibrahim T, Nath P. On the Possible Observation of Mirror Matter. Nuclear Physics B-Proceedings Supplements. 2010: 200: 161-168.**

The possibility that mirror matter with masses in the several hundred GeV- TeV range exists is explored. Mirror matter appears quite naturally in many unified models of particle interactions both in GUTs and in strings often in vector-like combinations. Some of these vector-like multiplets could escape acquiring super heavy masses and remain light down to the low energies where they acquire vector-like masses of electroweak size. It is found that a very small mixing of the vector-like multiplets with MSSM matter (specifically with the third generation matter) can produce very large contributions to the magnetic moment of the  $\tau$  neutrino by as much as several orders of magnitude putting this moment in the range of accessibility of improved experiment. Further, it is shown that if mirror matter exists it would lead to distinctive signatures at colliders and thus such matter can be explored at the LHC energies with available luminosities.

**97. Ibrahim T, Nath P. The top quark electric dipole moment in models with vector like multiplets. 2010: 1007.0432.T**

The electric dipole moment (EDM) of the top quark is calculated in a model with a vector like multiplet which mixes with the third generation in an extension of the MSSM. Such mixings allow for new CP violating phases. Including these new CP phases, the EDM of the top in this class of models is computed. The top EDM arises from loops involving the exchange of the W, the Z as well as from the exchange involving the charginos, the neutralinos, the gluino, and the vector like multiplet and their superpartners. The analysis of the EDM of the top is more complicated than for the light quarks because the mass of the external fermion, in this case the top quark mass cannot be ignored relative to the masses inside the loops. A numerical analysis is presented and it is shown that the top EDM could be close to  $10^{-19} \text{ e cm}$  consistent with the current limits on the EDM of the electron, the neutron and on atomic EDMs. A top EDM of size  $10^{-19} \text{ e cm}$  could be accessible in collider experiments such as the ILC.

**98. Ibrahim T, Nath P. Top quark electric dipole moment in a minimal super symmetric standard model extension with vectorlike multiplets. *Physical Review D*. 2010; 82(5): 055001.**

**99. Ibrahim T, Sacanna E, Gaudio M, Mercatali L, Ricci R, Scarpi E, Amador D. Abstract P1-13-04: Immunohistochemical Evaluation of RANK/RANKL/OPG Axis and CXCR4 in Primary Breast Cancer and Their Role in Bone Metastasis. *Cancer Research*. 2010; 70(24): 1-13.**

**Background:** The RANK/RANKL/OPG axis plays an important role in the bone metastasis process. CXCL12 is overexpressed in bone and, like its receptor, CXCR4, is a determinant of organ tropism. The objective of the present study was to evaluate whether the expression of these markers in primary breast cancer can predict the onset of bone metastases. **Methods:** Marker expression was evaluated by immunohistochemical staining in paraffin-embedded sections of primary breast cancers from 40 individuals: 10 patients (median age 64 years, range 48-78) showed no evidence of disease (NED — control group) at a median of 9.8 (range 6.9-11.5) years, while 30 (median age 67 years, range 42-87) had relapsed. In the latter group, 10 (median age 66

years, range 42-87) had visceral metastases (VM — control group) and 20 (median age 69 years, range 42-87) had bone metastases (BM — case group), both confirmed radiologically. The 3 patient subgroups (NED, visceral lesions, bone lesions) were matched for age classes ( $\geq 60$  years,  $> 60$  years). The study design was reviewed and approved by the local ethics committee. **Results:** In the overall series, 17.5% of tumors were positive for RANK, 22.5% for OPG and 25% for CXCR4. None of the patients expressed RANKL. RANK and OPG resulted equally expressed in 20% of NED patients, while CXCR4 was expressed in only 10% of this group. OPG was expressed in 20% of VM patients, whereas RANK or CXCR4 were not detected. RANK and OPG positivity was present in 25% of BM patients, while CXCR4 was expressed in 45% of cases. CXCR4 was the only marker with a significantly higher frequency of expression in bone metastases than in visceral lesions ( $p=0.013$ ). Taking into consideration all the patients without bone involvement (NED plus VM patients), it was observed that CXCR4 expression, alone and in combination with RANK, significantly discriminated between BM patients and the control group ( $p=0.008$  and  $P<0.001$ , respectively). ER-positivity and HER2-negative status were observed in 80% and 95% of BM patients, respectively, but neither discriminated between cases and controls. **Conclusions:** In our study, ER-positivity and HER2- negativity identified a high percentage of bone relapse patients, but also highlighted patients who did not have bone involvement. RANK and CXCR4 expression, on the other hand, would appear to be a more accurate predictor of bone relapse. Such evidence could help to identify patients with a high probability of developing bone metastases, which can be treated with bisphosphonates or other bone-targeted therapies, such as denosumab, in an attempt to prevent distant metastases. Our results are currently being validated in a larger series of breast cancer patients.

**100. Ibrahim T, Sacanna E, Gaudio M, Mercatali L, Ricci R, Scarpi E, Amador, D. Accuracy of RANK/OPG and CXCR4 compared to hormone receptors in predicting bone metastases in patients with breast cancer. In ASCO Annual Meeting Proceedings.2010; 28, (15): 11507.**

**101. Ibrahim T, Wang J, Howe D, Nor NM. Design and optimization of a moving-iron linear permanent magnet motor for reciprocating compressors using finite**

element analysis. *International Journal of Electrical & Computer Sciences IJECS/IJENS*. 2010; 10(2): 84-90.

The paper describes design and optimisation of a tubular moving-iron linear permanent magnet motor for reciprocating compressor using finite element. The four leading design parameters are optimized individually. To validate the process reaches an optimal design; two leading parameters are varied simultaneously. This is due to one parameter may influence other parameters. The linear motor is aimed to produce 88.5 W output power which is enough to operate household refrigerator compressor system. . To reduce material and manufacture cost, Strontium Ferrite and soft magnetic composite are used in this design.

**102. Innocent E, Joseph CC, Gikonyo NK, Nkunya MH, Hassanali A. Constituents of the essential oil of *Suregada zanzibariensis* leaves are repellent to the mosquito, *Anopheles gambiae* ss. *Journal of Insect Science*. 2010; 10(1): 57.**

In traditional African communities, repellent volatiles from certain plants generated by direct burning or by thermal expulsion have played an important role in protecting households against vectors of malaria and other diseases. Previous research on volatile constituents of plants has shown that some are good sources of potent mosquito repellents. In this bioprospecting initiative, the essential oil of leaves of the tree, *Suregada zanzibariensis* Verdc. (Angiospermae: Euphobiaceae) was tested against the mosquito, *Anopheles gambiae*s.s. Giles (Diptera: Culicidae) and found to be repellent. Gas chromatography (GC), GC-linked mass spectrometry (GC-MS) and, where possible, GC-co-injections with authentic compounds, led to the identification of about 34 compounds in the essential oil. About 56% of the constituents were terpenoid ketones, mostly methyl ketones. Phenylacetaldehyde (14.4%), artemisia ketone (10.1%), (1 S)-(-)-verbenone (12.1%) and geranyl acetone (9.4%) were the main constituents. Apart from phenylacetaldehyde, repellent activities of the other main constituents were higher than that of the essential oil. The blends of the main constituents in proportions found in the essential oil were more repellent to *An. gambiae*s.s. that was the parent oil ( $p < 0.05$ ), and



the presence of artemisia ketone in the blend caused a significant increase in the repellency of the resulting blend. These results suggested that blends of some terpenoid ketones can serve as effective *An. gambiaes.s.* mosquito repellents.

**103. Innocent E, Magadula JJ, Kihampa C, Heydenreich M. Bioactive is flavones from *Dalbergia vacciniifolia* (Fabaceae). *Natural Product Communications*. 2010; 5 (6): 903-906.**

Three new 5-dehydroxy isoflavone compounds, 6,2'-dimethoxy-7, 4'-dihydroxyisoflavone (1), 6,2',4'-trimethoxy-7- hydroxyisoflavone (2), and 6,2',4',5'-tetramethoxy-7-O- [ $\beta$ -D-apiofuranosyl-(1 $\rightarrow$ 6)- $\beta$ -D-glucopyranoside] isoflavone (3), along with a known isoflavone, 6,2',4',5'-tetramethoxy-7- hydroxyisoflavone (4), were isolated from the ethanolic extract of *Dalbergia vacciniifolia* Vatke. Their structures were established by spectroscopic techniques including one- and two-dimension NMR. Compound 1 showed mild cytotoxic activity against brine shrimp larvae with a LC50 value of 266  $\mu$ g/mL.

**104. Innocent E, Magadula JJ. Variations of anti-mosquito larvicidal constituents in the *Harrisonia abyssinica* species of Tanzania. *International Journal of Biological and Chemical Sciences*. 2010; 4(1).**

*Harrisonia abyssinica* (Simaroubaceae) is widely distributed and used in traditional medicine in Tanzania. Phytochemical studies of the plant report the presence of steroid and limonoid compounds while much of its biological studies were concentrated on its pharmacological activity on human pathogens. In the present study, eight extracts from plant materials collected from the moist forest mosaic (Zone I) and the Coastal forest and thicket zone (Zone II) were tested against *Culex quinquefascintus* Say larvae. Detailed analysis of mosquito larvicidal activity of the eight extracts showed a dose dependent ( $p > 0.05$ ) trend with the dichloromethane and ethanol extracts of the root bark plant materials collected from Zone I having higher effectiveness. In 24 h, the dichloromethane and ethanol extracts of the root bark from Zone I achieved mortality of 90% and 100%,

respectively, at 50 ppm. Likewise, at 5 ppm the two extracts were having 60% and 58% mortality, both been not significant different ( $p>0.05$ ) but significantly different ( $p<0.05$ ) to the rest of the extracts and the control. Follow-up isolation of the ethanol extract of the root bark from Zone I yielded two known limonoids, harrissonin (1) and pedonin (2) which were also present in the dichloromethane extract from the same Zone. Similarly, the toxicity of the ethanol extract of the root bark from Zone I ( $LC_{50} = 6.75$  mg/ml) had high activity compared to other extracts. The variations of activity and chemical compounds in *Harrisonia abyssinica* suggest the importance of keeping pharmacopoeias of importance medicinal plants in our regions.

- 105. Irshad A, Gilani SM, Khurram S, Shafiq M, Khan AW, Usman M. Hash-chain based peer-peer key management and establishment of security associations in MANETS. In *Information and Emerging Technologies (ICIET), 2010 International Conference on. 2010: 1-6.***

Key management has always been an issue in ad hoc networks. These networks are infrastructure-less which gives the attackers an open chance to intrude and operate it on their will. A lot of work has been done in the area but the techniques were either less secured or require too many computations and were based on asymmetric or symmetric key management cryptographic schemes. The employment of such schemes requires a trusted third party to provide the secret keys to all nodes in the ad hoc network before network formation, which can be taken as a serious flaw. The ideal form of the ad hoc networks functions in a self-organized manner. We have a proposed a hash chain based peer to peer key management and establishing the security association, which eliminates the need for third party key initializing in all the nodes and emphasize on self-organization.

- 106. Irshad A, Noshairwan W, Shafiq M, Khurram S, Irshad E, Usman M. Security Enhancement for Authentication of nodes in MANET by checking the CRL status of Servers. In *Security-Enriched Urban Computing and Smart Grid. 2010: 86-95.***

MANET security is becoming a challenge for researchers with the time. The lack of infrastructure gives rise to authentication problems in these networks. Most of the TTP and non-TTP based schemes seem to be impractical for being adopted in MANETs. A hybrid key-management scheme addressed these issues effectively by pre-assigned logins on offline basis and issuing certificates on its basis using 4G services. However, the scheme did not taken into account the CRL status of servers; if it is embedded the nodes need to check frequently the server's CRL status for authenticating any node and place external messages outside MANET which leads to overheads. We have tried to reduce them by introducing an online MANET Authority responsible for issuing certificates by considering the CRL status of servers, renewing them and key verification within MANET that has greatly reduced the external messages.

- 107. Jackson SJ , Varley J. , Sellers C , Josephs K , Codrington L , Duke G , Njelekela MA , Drummond G , Sutherland AI , Thompson AAR , Baillie JK. Incidence and predictors of acute mountain sickness among trekkers on Mount Kilimanjaro. *High Altitude Medicine and Biology*. 2010; 11 (3): 217-222.**

We investigated the incidence of AMS amongst a general population of trekkers on Mount Kilimanjaro, using the Lake Louise consensus scoring system (LLS). Additionally we examined the effect of prophylactic acetazolamide and different ascent profiles. Climbers on 3 different ascent itineraries were recruited. At 2743m we recruited 177 participants (mean age 31, range [18-71]) who completed LLS together with an epidemiological questionnaire. At 4730m participants (n=189, male=108, female=68, mean age 33, range [18-71]) completed LLS, 136 of whom had been followed up from 2730m. At 2743m, 3% (5/177) of climbers were AMS positive, and 47% (89/189) of climbers from all itineraries were AMS positive at 4730m. Of climbers attempting the Marangu itineraries, 33% (45/136) were taking acetazolamide. This group had a similar rate of AMS and no statistical difference in severity of LLS when compared with those not taking prophylactic drugs. We also did not demonstrate a difference between the incidence of AMS in climbers who did or did not take a rest day at 3700m. However,

there was a significant reduction in the incidence of AMS amongst pre-acclimatized subjects. Consistent with previous work, we found that the rate of AMS on Mount Kilimanjaro is high. Furthermore, at these fast ascent rates, there was no evidence of a protective effect of acetazolamide or a single rest day. There is a need to increase public awareness of the risks of altitude sickness and we advocate a pragmatic "golden rules" approach

108. **Jacob F. Factors associated with use of herbal drugs during pregnancy in Rungwe district Mbeya region, Master of Public Health. *Dissertation 2010.* Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Tanzania Although there is no report directly linking between the use of herbal drugs during pregnancy and maternal or foetal mortality, several studies reveal the adverse effect of herbal medicine to the foetal and pregnant mothers. The use of herbal drugs during pregnancy in Tanzania is a common practice. However, little is known regarding prevalence and factors associated with use of local herbs during pregnancy. This study collected data from 253 women in four villages of Rungwe District Mbeya Tanzania. Data were collected using questionnaire in June 2010. Questionnaire was based on factors, prevalence, and perception of local herbal use among pregnant women. Data were analyzed as frequencies, percentage as well as analysis of variance. One third of the respondents had used herbal drugs during pregnancy. Distance from health facilities, and age of the respondents were found to have association with use of local herbs among pregnant women. Negative perceptions on local herbs use during pregnancy have protective effect on the use of local herbal during pregnancy. Health education on the danger of using local herbs during pregnancy should be provided to mothers and general population especial women approaching reproductive ages who are expected mothers, because their information may influence their decision. Also, District and national level authorities should insist the construction of health facilities near to the community to improve conventional health services accessibility.

109. **Jacob M, Florido C, Aguiló E. Environmental innovation as a competitiveness factor in the Balearic Islands. *Tourism Economics*. 2010; 16(3): 755-764.**

This paper analyses the importance of environmental innovations as a key competitiveness factor for tourism firms in the Balearic Islands. Empirical evidence from a sample of tourism firms confirms the importance of environmental innovation, especially in the lodging and accommodation sector and as firm size and/or scale of operations increases. Firms belonging to a corporation are more environmentally innovative than independent firms. Environmental innovations are mainly process and technological ones. When investing in new destinations, Balearic hotel chains transfer and incorporate environmental technologies in new establishments. Finally, the main objectives when introducing environmental innovations are to satisfy customer needs and to improve service quality and the image and competitiveness of the firm.

110. **Jacob M, Jaros D, Rohm H. The effect of coagulant type on yield and sensory properties of semihard cheese from laboratory-, pilot-and commercial-scale productions. *International journal of dairy technology*. 2010; 63(3): 370-380.**

Using calf rennet or a commercial microbial rennet substitute derived from *Rhizomucor miehei* cheese making experiments were performed at laboratory and pilot scale and at commercial scale in two industrial dairy plants during regular production. At all levels of scale, the solids transfer from milk to curd was significantly higher (0.50–1.19%) when using calf rennet. There were significant differences in levels of proteolysis during maturation and in levels of bitterness at 12 weeks of ripening between Gouda cheeses produced with calf rennet or with commercial rennet substitute at pilot and at commercial scale.

111. **Jacob M, Mawar N, Menezes L, Kaipilyawar S, Gandhi S, Khan I, Nayyar A. Assessing the environment for introduction of human papillomavirus vaccine in India. *Open Vaccine J*. 2010; 3: 96-107.**

This paper presents findings from a study conducted in 2007 and 2008 in two states in India: Andhra Pradesh and Gujarat. The objectives of the study were to: (i) design effective and appropriate HPV vaccine delivery systems for 10- to 14-year-old girls; (ii) design a communication strategy for HPV vaccine delivery; and (iii) devise an HPV vaccine advocacy strategy. The study populations included girls, parents, and local-, district-, and national-level stakeholders. A mixture of group discussions, visual representation techniques, face-to-face interviews, desk and health facility record reviews, field observations, and consultative workshops were used to collect the data. Study findings showed that the policymakers, health care providers, parents, and adolescents were aware and concerned about cervical cancer; would welcome vaccination if safe, effective, affordable, and accessible. Health systems did not require large infrastructure investments to introduce HPV vaccine; basic cold chain and logistic equipment were available. New outreach systems for adolescent girls need to be tested through demonstration projects. No policies would compromise the introduction of HPV vaccination. An HPV vaccine program, requiring public education and provider training, could be delivered. Policymakers' safety and vaccine efficacy concerns can be addressed through targeted advocacy efforts. Three broad approaches were suggested: (i) merge HPV vaccination with already established immunization services; (ii) package HPV immunization with adolescent health services or as a part of a cancer control service; and (iii) deliver HPV vaccinations through either routine immunization services or a campaign using schools as sites for school-going girls and anganwadi or village health centers for non-school-going girls.

- 112. Jacob M, Mbianke C, Kurner T. A dynamic 60 GHz radio channel model for system level simulations with MAC protocols for IEEE 802.11 ad. In Consumer Electronics (ISCE), 2010 IEEE 14th International Symposium on. 2010; 1-5.**

This paper presents a dynamic 60 GHz radio channel model for system level simulations with MAC Protocols. It is based on radio propagation measurements investigating the

influence of moving humans on the 60 GHz channel, which has been performed in the framework of IEEE 802.11ad 60 GHz WLAN standardization

**113. Jacob M, Suchan C, Ferstl OK. Modeling of Business Systems using Hybrid Simulation: A New Approach. In ECIS. 2010.**

Simulation models are important instruments for analyzing business systems. They are classified into time-discrete and time-continuous simulation models, for example Discrete Event Systems (DEVS) or System Dynamics (SD) models. These special models are particularly suitable to analyze subsystems of a business system with either time-discrete or time-continuous behaviour. However, in general they are not appropriate to analyze a business system which shows time-discrete and time-continuous behaviour simultaneously. Analyzing business systems with time-discrete and time-continuous Behaviour with isolated sub models and consolidating the findings of these analyses afterwards may lead to redundancy and consistency problems. In this paper an approach for developing hybrid simulation models, which exhibit time-discrete and time-continuous behaviour, is presented. The hybrid simulation models contain DEVS and SD simulation sub models that are coupled. The approach introduces a structural model of business systems that consists of several control layers with time discrete or time-continuous behaviour, as well as a modeling approach for integrating DEVS and SD sub models by coupling mechanisms. Finally, an investigation of a market case illustrates the use of the presented approach.

**114. Jacob M, Weiss F. From higher education to work patterns of labor market entry in Germany and the US. *Higher Education*. 2010; 60(5): 529-542.**

Comparative studies describing the transition from higher education to work have often simplified the complex transition processes involved. In this paper we extend previous research by taking into account several steps that comprise labor market entry, e.g., recurrent education leading to more than one instance of labor market entry. By comparing Germany and the United States we also examine how the tertiary education

systems influence these transitions via the mode of stratification (parallel tracks in Germany vs. consecutive tracks in the US), the coordination mechanism (state-controlled vs. market-based) and the degree of standardization in educational programs. In our empirical analyses using large-scale longitudinal survey data we find that transitions in the US are less standardized and regulated than in Germany. Furthermore, differences between students from lower- and higher-tier institutions are less marked than expected, both within and between the two countries.

**115. Jacob M. International investment agreements and human rights. INEF. 2010.**

This paper deals with the intersection of international investment law and human rights. What previously appeared to two specialist communities as a distant fringe phenomenon is rapidly gaining critical traction as a legitimate topic in its own right. Following a review of the history and rationale of investment protection and the main substantive and procedural features of investment treaties, the study examines how the modern investment regime can affect a host state's capacity to regulate. It finds that to date investment law and arbitration display fragmentary tendencies and have the potential to exert a negative impact on the human rights situation of host states. The paper then analyses different proposals how investment protection could better respect human rights. Its main thesis is that these two fields of international law are not hermetically separate disciplines that cannot interact in a meaningful way. For all their contextual and ideological dissimilarities, investment law and human rights are two fields of international law pursuing the same powerful project of a global rule of law.

**116. Jaros D, Jacob M, Otto C, Rohm H. Excessive cross-linking of caseins by microbial transglutaminase and its impact on physical properties of acidified milk gels. *International dairy journal*. 2010; 20(5): 321-327.**

By varying cross-linking intensity, the effect of microbial transglutaminase on acid gels made from casein solution and raw milk was studied. To avoid any impact of heating, N-



ethylmaleimide was used for enzyme inactivation after appropriately checking its efficiency. Up to a specific degree of oligomerisation gel stiffness and firmness increased and  $\tan \delta$ , time at gelation onset and syneresis decreased. Above approximately 70% and 25% of cross-linked protein in casein solution and raw milk, respectively, these parameters showed an opposite behaviour, and weak gels with high syneresis were obtained. Substrate differences, such as preferred cross-linking of adjoining  $\kappa$ -caseins on the surface of the micelle enhanced the effect of steric hindrance in raw milk and impaired proper rearrangements upon acidification at a much lower level of oligomerised protein. It is mainly dimeric and trimeric casein that successfully contributed to the enhanced properties of milk protein gels.

- 117. Jastrow C, Priebe S, Spitschan B, Hartmann J, Jacob M, Kürner T, Kleine-Ostmann T. *Wireless digital data transmission at 300 GHz. Electronics letters.* 2010; 46(9): 661-663.**

Recently, analogue video signal transmission at 300 GHz has been demonstrated using a versatile Schottky mixer based measurement system designed for terahertz communication channel modeling and propagation studies. In this reported work, digital signal transmission at 300 GHz using this system is demonstrated and analyzed. The performance of the digital transmission setup is characterized with respect to phase noise and modulation errors. For demonstration, high data rate digital video signals have been transmitted over a distance of up to 52 m.

- 118. Jensen L, Jensen AV, Praygod G, Kidola J, Faurholt-Jepsen D, Changalucha J, Range N, Friis H, Helweg-Larsen J, Jensen JS, Andersen AB. Infrequent detection of *Pneumocystis jirovecii* by PCR in oral wash specimens from TB patients with or without HIV and healthy contacts in Tanzania. *BMC Infectious Diseases.*2010; 10: 140.**

**Background:** In tuberculosis (TB) endemic parts of the world, patients with pulmonary symptoms are managed as "smear-negative TB patients" if they do not improve on a two-

week presumptive, broad-spectrum course of antibiotic treatment even if they are TB microscopy smear negative. These patients are frequently HIV positive and have a higher mortality than smear-positive TB patients. Lack of access to diagnose *Pneumocystis jirovecii* pneumonia might be a contributing reason. We therefore assessed the prevalence of *P. jirovecii* by PCR in oral wash specimens among TB patients and healthy individuals in an HIV- and TB-endemic area of sub-Saharan Africa. **Methods:** A prospective study of 384 patients initiating treatment for sputum smear-positive and smear-negative TB and 100 healthy household contacts and neighbourhood controls. DNA from oral wash specimens was examined by PCR for *P. jirovecii*. All patients delivered sputum for TB microscopy and culture. Healthy contacts and community controls were clinically assessed and all study subjects were HIV tested and had CD4 cell counts determined. Clinical status and mortality was assessed after a follow-up period of 5 months. **Results:** 384 patients and 100 controls were included, 53% and 8% HIV positive respectively. A total number of 65 patients and controls (13.6%) were at definitive risk for PCP based on CD4 counts  $\leq 200$  cells per mm<sup>3</sup> and no specific PCP prophylaxis. Only a single patient (0.3% of the patients) was PCR positive for *P. jirovecii*. None of the healthy household contacts or neighborhood controls had PCR-detectable *P. jirovecii* DNA in their oral wash specimens regardless of HIV-status. **Conclusions:** The prevalence of *P. jirovecii* as detected by PCR on oral wash specimens was very low among TB patients with or without HIV and healthy individuals in Tanzania. Colonisation by *P. jirovecii* was not detected among healthy controls. The present findings may encourage diagnostic use of this non-invasive method.

119. **Jeremiah K, PrayGod G, Faurholt-Jepsen D, Range N, Andersen AB, Grewal HMS, Friis H. BCG vaccination status may predict sputum conversion in patients with pulmonary tuberculosis: A new consideration for an old vaccine?. Thorax.2010; 65 (12): 1072-1076.**

**Background:** Failure to convert (persistent sputum and/or culture positivity) while on anti tuberculosis (anti-TB) treatment at the end of the second month of anti-TB therapy has been reported to be a predictor of treatment failure. Factors that could be associated with

persistent bacillary positivity at the end of the second month after initiation of anti-TB treatment were assessed. **Methods:** A prospective cohort study was conducted in 754 patients with sputum culture positive pulmonary TB in Mwanza, Tanzania. Information on social demographic characteristics, anthropometric measurements, BCG scar status, HIV status, CD4+ count, white blood cell count, and hemoglobin and sputum culture status was obtained. **Results:** Factors associated with sputum culture non-conversion at the end of the second month of anti-TB treatment were initial acid-fast bacilli (AFB) culture grading of 3+ (OR 5.70, 95% CI 1.34 to 24.31, p=0.02) and absence of a BCG scar (OR 3.35, 95% CI 1.48 to 7.58, p=0.004). **Conclusion:** Patients with pulmonary TB with no BCG scar and high initial AFB sputum intensity are at risk of remaining sputum culture positive at the end of the second month of anti-TB treatment. These findings reflect a beneficial role for BCG vaccination on sputum conversion which should also be examined in large studies in other areas. The finding of a beneficial role for BCG vaccination on the treatment of pulmonary TB is important for TB control and vaccination programmes.

- 120. Johannessen A , Holberg-Petersen M , Lövgarden G , Naman E, Ormaasen V , Matee MI , Gundersen SG, Bruun JN. HIV type-1 drug resistance testing on dried blood spots is feasible and reliable in patients who fail antiretroviral therapy in rural Tanzania. *Antiviral Therapy*. 2010; 15 (7): 1003-1009.**

**Background:** HIV type-1 (HIV-1) drug resistance testing is rarely available in resource-limited settings because of high costs and stringent requirements for storage and transport of plasma. Dried blood spots (DBS) can be a convenient alternative to plasma, but the use of DBS needs validation under field conditions. We assessed the performance of DBS in genotypic resistance testing of patients who failed first-line antiretroviral therapy (ART) in rural Tanzania. **Methods:** A total of 36 ART-experienced patients with viral loads >1,000 copies/ml (median 15,180 copies/ml [range 1,350-3,683,000]) and with various HIV-1 subtypes were selected for resistance testing. DBS were stored with desiccant at ambient temperature for a median of 29 days (range 8-89). Samples were amplified using an in-house reverse transcriptase-nested PCR method and sequenced using the

ViroSeq assay (Abbott Molecular, Des Plaines, IL, USA). DBS-derived genotypes were compared with genotypes from plasma. **Results:** Overall, 34 of 36 (94%) DBS specimens were successfully genotyped. In the protease region, of 142 polymorphisms found in plasma, 132 (93%) were also detected in DBS. In the reverse transcriptase region, of 57 clinically relevant mutations present in plasma, 51 (89%) were also detected in DBS. A total of 30 of 34 (88%) patients had identical resistance profiles to antiretroviral drugs in plasma and DBS. **Conclusions:** Genotyping was successful in the vast majority of DBS specimens stored at ambient temperature for up to 3 months, and there was high concordance between mutations found in DBS and plasma. Our study suggests that DBS can be a feasible and reliable tool to monitor HIV-1 drug resistance in patients on ART in resource-limited settings.

**121. Johansen BJ. Sonographic renal cortical signs predicting renal function among chronic kidney disease patients at Muhimbili national hospital. Master of Medicine (Radiology) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Objective:** To determine whether renal sonography pathological changes can be used to predict renal function among patients with chronic kidney disease (CKD). **Methods:** This was a cross-sectional study which evaluated 145 patients with CKD who underwent both kidney sonography and renal function test based on estimated glomerular filtration rate (eGFR) by MORO equation. These patients were recruited from Diabetic, Hypertensive and Nephrology clinics at Muhimbili National Hospital from June to December 2009. A systematic random sampling was used based on the fore mentioned clusters (Diabetic, Hypertensive and Nephrology clinics). Hricak standardized measure of renal cortical echogenicity scoring was used as Grade 0; Grade I; Grade II and Grade III. Cortical volume was also calculated and obtained as a renal volume minus central echogenic complex (sinus) volume. These three variables were analyzed looking for correlation, sensitivity, specificity, positive and negative predictive values and Likelihood Ratio. Renal function test using eGFR by MDRD equation was used as the gold standard. **Results:** The regression correlation between renal cortical echogenicity and renal

function (eGFR) revealed a correlation coefficient of  $r^2 = 0.622$ ,  $p < 0.001$ . The sensitivity of echogenicity as predictor of renal function was 74.7% (95% CI: 0.68 - 0.78), specificity was 93.5% (95% CI: 0.85 - 0.99). Positive Likelihood Ratio (LR) +11.6;  $p < 0.001$ , hence echogenicity proved to be a strong prediction sign. To be more precise, it was shown that cortical echogenicity grade I or below shows renal function of more than 60 mL/min/1.73 m<sup>2</sup> and echogenicity grade II or more presents with a compromised renal function below 59 mL/min/1.73 m<sup>2</sup>. Right and left renal cortical volume as relates to estimated GFR showed correlation coefficient of  $r = +0.49$  and  $r = +0.43$  respectively. It revealed within +0.7 and +0.3 range which defines a weak linear association. It showed the regression slope  $b$  with (95% CI: 0.50-1.04) and correlation coefficient of  $r^2 = 0.184$ ;  $p < 0.001$ . **Conclusions:** The observed correlations between renal cortical echogenicity, renal cortical parenchyma volume change and renal function estimated by GFR suggest that: 1. renal cortical echogenicity sign may potentially be useful as surrogate marker of the renal function. 2. Renal cortical volume as a predictor of renal function did not qualify our alternative hypothesis. 3. At present however, precise prediction of renal function based on a renal cortical volume change requires a big sample size for the specific conclusion since its significance testing shows a confidence interval with high prediction variability.

122. **John E, Laskow TC, Buchser WJ, Pitt BR, Basse PH, Butterfield LH, Lotze MT. Zinc in innate and adaptive tumor immunity. *J Transl Med.* 2010; 8: 118.**

Zinc is important. It is the second most abundant trace metal with 2-4 grams in humans. It is an essential trace element, critical for cell growth, development and differentiation, DNA synthesis, RNA transcription, cell division, and cell activation. Zinc deficiency has adverse consequences during embryogenesis and early childhood development, particularly on immune functioning. It is essential in members of all enzyme classes, including over 300 signaling molecules and transcription factors. Free zinc in immune and tumor cells is regulated by 14 distinct zinc Importers (ZIP) and transporters (ZNT1-8). Zinc depletion induces cell death via apoptosis (or necrosis if apoptotic pathways are blocked) while sufficient zinc levels allows maintenance of autophagy. Cancer cells have

upregulated zinc importers, and frequently increased zinc levels, which allow them to survive. Based on this novel synthesis, approaches which locally regulate zinc levels to promote survival of immune cells and/or induce tumor apoptosis are in order.

- 123. John K, Fitzpatrick J, French N, Kazwala R, Kambarage D, Mfinanga GS, MacMillan A, Cleaveland S. Quantifying risk factors for human brucellosis in Rural Northern Tanzania. *PLoS ONE*. 2010; 5 (4): e9968.**

**Background:** Brucellosis is a zoonosis of veterinary, public health and economic significance in most developing countries. Human brucellosis is a severely debilitating disease that requires prolonged treatment with a combination of antibiotics. The disease can result in permanent and disabling sequel, and results in considerable medical expenses in addition to loss of income due to loss of working hours. A study was conducted in Northern Tanzania to determine the risk factors for transmission of brucellosis to humans in Tanzania. **Methods:** This was a matched case-control study. Any patient with a positive result by a competitive ELISA (c-ELISA) test for brucellosis, and presenting to selected hospitals with at least two clinical features suggestive of brucellosis such as headache, recurrent or continuous fever, sweating, joint pain, joint swelling, general body malaise or backache, was defined as a case. For every case in a district, a corresponding control was traced and matched by sex using multistage cluster sampling. Other criteria for inclusion as a control included a negative c-ELISA test result and that the matched individual would present to hospital if falls sick. **Results:** Multivariable analysis showed that brucellosis was associated with assisted parturition during abortion in cattle, sheep or goat. It was shown that individuals living in close proximity to other households had a higher risk of brucellosis. People who were of Christian religion were found to have a higher risk of brucellosis compared to other religions. The study concludes that assisting an aborting animal, proximity to neighborhoods, and Christianity was associated with brucellosis infection. There was no association between human brucellosis and Human Immunodeficiency Virus (HIV) serostatus. Protecting humans against contact with fluids and tissues during assisted parturition of livestock may be an important means of reducing the risk of transferring

brucellosis from livestock to humans. These can be achieved through health education to the communities where brucellosis is common.

124. **Johnson N. Referral practices among traditional birth attendants and factors influencing them in Geita District. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Maternal Mortality ratio is higher in developing countries especially in Sub Saharan Africa compared to developed countries. This higher ratio is due to pregnant women missing emergency obstetric care when needed. Majority of deliveries are being conducted outside health facilities by unskilled personnel such as traditional birth attendants (TBAs). Some of the TBAs don't refer complicated cases to the health facilities and others do refer inappropriately. The referral practices among TBAs are being studied because there is limited and inconclusive information. The aim of this study was to establish the factors which influence referral practices of TBAs. The study also attempted to establish the level of knowledge of TB As on danger signs during pregnancy, delivery and post delivery. A cross sectional analytical study was done in Geita District in order to achieve the above objectives. The study population was all TBAs in Geita whereby a sample of 233 was involved in the study. Data were collected from the field and analyzed using SPSS computer software. It has been established in this study that Most TBAs 185 (79.4%) are referring complicated cases to the health facilities however only 60% of those who are referring to the health facilities are referring appropriately. Also it has been found that factors such as training on delivery care, high level of knowledge, being supervised, high level of education, ability to read and write, not using local herbs, living close to the health facilities, improved infrastructure were associated with referring cases to the health facilities. Improvement in social conditions will be associated with improved appropriate referral from TBAs to the health facilities and thus access to emergency obstetric care (EOC) by pregnant mothers will be increased and maternal mortality ratio will be cut down. Training of TBAs should be strengthened and focused to recognition of danger signs during pregnancy, delivery and post delivery; and prompt referral of those identified cases to the health facilities.

- 125. Justin-Temu M, Mwambete DK, Nyaki D. Public knowledge, attitude and perception of over the counter medicines: case study in Dar es Salaam region, Tanzania. *East African journal of public health*.2010; 7 (4): 282-285.**

The purpose of this study was to investigate on misuse, abuse and the general public opinion as well as perception of OTC medicines. Data were collected, by face-to-face interview guided with a semi-structured questionnaire. The key questions focused on community attitude towards retail pharmacy, use of OTC medicines, views on OTC in terms of safety and effectiveness and knowledge and opinion on misuse and abuse of OTC medicines. The collected data were coded and statistically analyzed using EPI-Info version 6 database. Out of 270 interviewees, 50% admitted to have had visited retail pharmacies at least once per month. More than half of the participants (64.1%) reported to having been buying OTC medicines at least once in a month and 55.7% used the medicines as per containers label or leaflets' instructions. The public demonstrated high awareness on the potential misuse of OTC medicines. The study revealed a high level of awareness on the potential abuse of OTC medicines and positive perception with regard to safety and effectiveness of OTC medicines. From these findings, it shows those pharmacists need to be more proactive in the management of inappropriate OTC drug use.

- 126. Kaale E, Risha P, Reich E, Layloff TP. An interlaboratory investigation on the use of high-performance thin layer chromatography to perform assays of lamivudine-zidovudine, metronidazole, nevirapine, and quinine composite samples. *Journal of AOAC International*. 2010; 93 (6): 1836-1843.**

Two laboratories extensively investigated the use of HPTLC to perform assays on lamivudine-zidovudine, metronidazole, nevirapine, and quinine composite samples. To minimize the effects of differences in analysts' technique, the laboratories conducted the study with automatic sample application devices in conjunction with variable-wavelength scanning densitometers to evaluate the plates. The HPTLC procedures used relatively



innocuous, inexpensive, and readily available chromatography solvents used in the Kenyon or the Global Pharma Health Fund Minilabs® TLC methods. The use of automatic sample applications in conjunction with variable- wavelength scanning densitometry demonstrated an average repeatability or within-laboratory RSD of 1.90%, with 73% less than 2% and 97% at 2.60% or less, and an average reproducibility or among-laboratory RSD of 2.74%.

- 127. Kaaya SF, Mbwambo JK, Fawzi MC, Van Den Borne H, Schaalma H, Leshabari MT. Understanding women's experiences of distress during pregnancy in Dar es Salaam, Tanzania. *Tanzania journal of health research*. 2010; 12 (1): 36-46.**

Several studies show depression is common during pregnancy. However, there is limited information in Tanzania on the magnitude of perceived distress during pregnancy and meanings ascribed to such distress. A descriptive survey collected data using unstructured interviews from 12 traditional practitioners and 10 peri-urban women with previous pregnancy related mental health concerns identified using a depression vignette. The objectives were to describe the sources and characteristics of distress during pregnancy, and idioms of distress that could inform cultural adaptation of depression screening tools. Narrative analysis showed an emergent category of "problematic pregnancies" framed women's recollections of prolonged periods of sadness. This experience was qualified using various idioms of distress that were differentially emphasized depending on informant's perceived causes of health concern. The idiom kusononeka was consistently used to describe extreme sadness across causal categories and clustered with at least two typical features of major depression. This suggested existence of a construct with similarities to biomedical criteria for depression. "Thinking too much" emerged as a distinctive expression associated with prolonged sadness. Distinctive expressions of social functioning impairments were identified that can inform depression severity assessments. In conclusion, contextual inquiry into experiences of psychological distress showed distinct local idioms that clustered in patterns similar to symptoms of biomedical depressive episodes. Further studies to assess the utility of local idioms of distress and distress related functional impairment in depression assessment tools are warranted.

128. **Kaaya SF, Mbwambo JK, Kilonzo GP, Van Den Borne H, Leshabari MT, Fawzi MC, Schaalma H. Socio-economic and partner relationship factors associated with antenatal depressive morbidity among pregnant women in Dar es Salaam, Tanzania. *Tanzania journal of health research*. 2010; 12 (1): 23-35.**

Depression during pregnancy may negatively influence social functioning, birth outcomes and postnatal mental health. A cross-sectional analysis of the baseline survey of a prospective study was undertaken with an objective of determining the prevalence and socio-demographic factors associated with depressive morbidity during pregnancy in a Tanzanian peri-urban setting. Seven hundred and eighty seven second to third trimester pregnant women were recruited at booking for antenatal care at two primary health care clinics. Prenatal structured interviews assessed socio-economic, quality of partner relationships and selected physical health measures. Depressive symptoms were measured at recruitment and three and eight months postpartum using the Kiswahili version of the Hopkins Symptom Checklist. Completed antenatal measures available for 76.2% participants, showed a 39.5% prevalence of depression. Having a previous depressive episode (OR 4.35,  $P < 0.01$ ), low (OR 2.18,  $P < 0.01$ ) or moderate (OR 1.86,  $P = 0.04$ ) satisfaction with ability to access basic needs, conflicts with the current partner (OR 1.89,  $P < 0.01$ ), or booking earlier for antenatal care (OR 1.87,  $P = 0.02$ ) were independent predictors of antenatal depression in the logistic regression model; together explaining 21% of variance in depression scores. Attenuation of strength of multivariate associations suggests confounding between the independent risk factors and socio-demographic and economic measures. In conclusion, clinically significant depressive symptoms are common in mid and late trimester antenatal clinic attendees. Interventions for early recognition of depression should target women with a history of previous depressive episodes or low satisfaction with ability to access basic needs, conflict in partner relationships and relatively earlier booking for antenatal care. Findings support a recommendation that antenatal services consider integrating screening for depression in routine antenatal care.

- 129. Kaaya SF, Mbwambo JK, Smith Fawzi MC, Van Den Borne H, Schaalma H, Leshabari MT. Understanding women's experiences of distress during pregnancy in Dar es Salaam, Tanzania. *Tanzania Journal of Health Research*. 2010; 12 (1): 4.**

Several studies show depression is common during pregnancy. However, there is limited information in Tanzania on the magnitude of perceived distress during pregnancy and meanings ascribed to such distress. A descriptive survey collected data using unstructured interviews from 12 traditional practitioners and 10 peri-urban women with previous pregnancy related mental health concerns identified using a depression vignette. The objectives were to describe the sources and characteristics of distress during pregnancy, and idioms of distress that could inform cultural adaptation of depression screening tools. Narrative analysis showed an emergent category of "problematic pregnancies" framed women's recollections of prolonged periods of sadness. This experience was qualified using various idioms of distress that were differentially emphasized depending on informant's perceived causes of health concern. The idiom kusononeka was consistently used to describe extreme sadness across causal categories and clustered with at least two typical features of major depression. This suggested existence of a construct with similarities to biomedical criteria for depression. "Thinking too much" emerged as a distinctive expression associated with prolonged sadness. Distinctive expressions of social functioning impairments were identified that can inform depression severity assessments. In conclusion, contextual inquiry into experiences of psychological distress showed distinct local idioms that clustered in patterns similar to symptoms of biomedical depressive episodes. Further studies to assess the utility of local idioms of distress and distress related functional impairment in depression assessment tools are warranted.

- 130. Kabir M, Iqbal MZ, Shafiq M, Farooqi ZR. Effects of lead on seedling growth of *Thespesia populnea* L. *Plant, Soil and Environment*. 2010; 56(4): 194-199.**

The effects of lead on root, shoot and seedling length, leaf area, number of leaves, plant circumference, seedling dry weight, root/shoot and leaf area ratios of *Thespesia populnea* L. were determined in greenhouse under natural environmental conditions with and

without phytotoxic metal ions at 5, 10, 15, 20, and 25  $\mu\text{mol/l}$ . Lead treatments have a strong influence on the growth and development of *T. populnea* by reducing significantly ( $P<0.05$ ) all the above parameters. Lead treatment at 5-25  $\mu\text{mol/l}$  produced significant ( $P<0.05$ ) effects on seedling and root length, plant circumference and seedling dry weight of *T. populnea*, while lead treatment at 10-25  $\mu\text{mol/l}$  produced significant ( $P<0.05$ ) effects on shoot length, number of leaves and leaf area as compared to control. Tolerance in *T. populnea* seedling at 25  $\mu\text{mol/l}$  of lead treatment was lowest as compared to all other treatments.

- 131. Kadigi DM. Etiological agents and antimicrobial susceptibility patterns of bacterial agents causing urinary tract infection in children aged less than five years, Dar es salaam, Tanzania, 2010. Master of Medicine (Epidemiology and Laboratory management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** The empirical therapy of urinary tract infections (UTI) relies on the predictability of the agents causing UTI and knowledge of their antimicrobial susceptibility testing patterns. This information need to be updated regularly. This study was conducted to assess the spectrum and patterns of antimicrobial resistance of UTI agents isolated from under-five children presenting with clinical symptoms suggestive of UTI at district hospitals in Dar es Salaam. **Methods:** This was a cross-sectional study with epidemiological and laboratory components carried out at Amana and Mwananyamala Municipal hospitals. Epidemiological data was gathered from children's parents /guardian using a structured questionnaire for socio-demographic information and antimicrobial drug usage. Laboratory data included results of urine for culture in Cystine-Lactose-Electrolyte Deficient (CLED) agar media and susceptibility test done in Mueller Hinton agar using Kirby Bauer technique. Results: Of the 270 children, 166 (61.5%) were male, mostly aged less than twelve months, 72.6% of mothers were housewives. Among cultured mid-stream urine samples, 78 (28.9%) revealed a significant single isolate growth of  $\sim 10^5$  colon-forming units per milliliter of urine, 32 (11.9%) had mixed growth, 26 (9.6%) non-significant growth, and the remainder 134 (49.6%) revealed no

bacterial growth. Among the isolated bacteria, *Escherichia coli* was the most common isolate 33 (42.3%), followed by *Klebsiella* spp 31 (39.7%), *Streptococcus* spp 4 (5.1 %) while 3 (3.8%) were isolated each for *Staphylococcus aureus*, *Proteus mirabilis* and unidentified coli forms. *Pseudomonas* spp was isolated only once. The isolated bacteria had high resistance to amoxicillin 79 (98.7%), trimethoprim-sulfamethoxazole 77 (96.2) and ampicillin 76 (94.9%). They had low resistance against amikacin 6 (7.7%) and nitrofurantoin 16 (20.5%). Self medication showed no significant association with the development of multiple drug resistance. **Conclusions and Recommendations:** In view of the high drug resistance amongst bacteria (95 - 98%), therapy should only be advocated, as far as possible, after culture and susceptibility test has been performed. Based on the results of this study, the empirical treatment of UTI should be done mostly with nitrofurantoin which revealed lower resistance; also ciprofloxacin can be secondly considered as amikacin has limited usage to pediatrics due to side effects. Meanwhile more studies are required to get the baseline susceptibilities pattern of antibiotics to be incorporated in the National guideline for management of UTI for under-fives.

132. **Kahale SB. Barriers in involvement and participation of males in family planning in Iringa municipal, Tanzania. Master of Art (Health Policy and Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** In Tanzania the use of FP is still low. The use of contraceptives in married men of 15 - 65 years for any method is 68.3% while out of that 49.4% use condoms. **Objectives:** The study intended to analyze barriers in the involvement and participation of male in FP. **Methodology:** The study was a cross-sectional analytical study using quantitative and qualitative research methods: The study was conducted in Iringa region and the quantitative part of study involved 284 randomly selected male respondents aged 15 - 65 years and above. The qualitative part of the study involved 11 key informants who were Health care providers from both government and private health facilities in the study area. Quantitative Data were entered and analyzed using Epi Info version 3.5.1 while Qualitative data was analyzed using Atlas it. **Results:** A total of 284 men

responded to the questionnaires, most of them (44.4%) were between 25-34 years old. Findings showed that about 57% of respondents were involved in FP and 53% were participating in FP. Overall male involvement and participation was only 43%. Age, marital status and occupation were significantly associated with male involvement and participation. The study also revealed that men had positive attitudes towards FP. Among the reasons mentioned to hinder male participation in FP were religious beliefs being against use of FP, and Health facilities were found to be non male friendly **Conclusion:** Male involvement and participation in FP is still very low. The barriers for the enrolment of men in FP were said to be: few contraceptive options for men and little knowledge about options by the community, an unfavorable social or religious climate and also FP clinic setups are unwelcoming to men. **Recommendation:** The study recommends more information to men on FP methods and available FP option to them and use of different channels of communication in dissemination of FP information in a wide coverage. Increase in FP service accessibility and availability to men e.g. training of male FP providers to reach men. The study also recommends strategies which might promote male involvement and participation in family planning like; Multi sectoral collaboration and revisiting FP policies, also considering FP as a cross cutting issue.

133. **Kamuhabwa AR, Lugina R. Pattern of drug use among elderly patients in public and private hospitals in Dar-as Salaam. *East African journal of public health.* 2010; 7(1): 44-48.**

**Objective:** The aim of this study was to assess the use of potentially inappropriate medications in the elderly patients (> or = 65 years of age) according to the 2002 Beers criteria. **Method:** This was a retrospective and prospective study that was carried between December 2006 and June 2007. During this period, a total of 514 prescriptions of elderly patients were collected and examined for the pattern of drug use. The study involved reviewing prescriptions of patients who are 65 years old and above. Patients were those who were attending the clinics in the selected hospitals during the period of the study. In addition, files of patients who had attended the hospitals for not longer than the past 12 months were reviewed. The hospitals included two public hospitals

(Mwananyamala municipal hospital and Muhimbili National Hospital) and two privately-owned hospitals (Aga Khan and Hindu Mandal hospitals) in Dar es Salaam. **Results:** The study revealed that 11.4% of medicines prescribed were drugs of concern i.e. medications that should be avoided in elderly patients or which are inappropriate for use in elderly patients according to Beers list. Among these drugs those with high frequency of use were Nifedipine (3.5%), Iron sulphate (2.2%), Chlorpropamide (2%) and Digoxin (1.8%). These drugs were more prescribed in the public hospitals than in private ones. It was also observed that more women (62.3%) are suffering from a number of diseases than males (37.7%). In addition, women received more inappropriate medications (60.7%) than their male counterparts (39.3%). The common most prevalent diseases were hypertension (22.5%), diabetes mellitus (17.9%), malaria (13.5%), urinary tract infection (4.2%) and anemia (3.7%). **Conclusion:** Based on the findings, there is a need for both the public and health care professionals to be aware of the harmful drugs in the old age so as to minimize occurrence of side effects.

134. **Kasebele YV. Prevalence and associated factors of rotavirus gastroenteritis in Children age 0-5 years in Moshi 2009. Master of Science (Epidemiology and Laboratory) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background/Introduction:** Diarrhea is a leading killer of children around the world. Responsible for 4 to 6 million deaths per year according to the World Health Organization. The disease is characterized by vomiting, fever and watery diarrhea, associated with dehydration and sometimes death in children. It is associated with high cases of morbidity and mortality and it is estimated that up to 600,000 deaths in young children occur annually in the less developed countries and approximately 150,000-200,000 deaths occur in Africa alone. Rotavirus is the leading viral agent causing gastroenteritis in children. **Rationale:** The study aimed at accurately determining the prevalence and associated factors of group A rotavirus disease in a resource-poor setting necessary to make informed decisions on provision appropriate interventions for prevention and control. **Objectives:** To determine the prevalence and associated factors

of rotavirus gastroenteritis in children aged 0-5 years in Moshi Municipal Health facilities. **Methodology:** This was cross-sectional descriptive study conducted in a hospital setting, involving children of five years of age and below with diarrhea, and whose faecal samples were collected and tested for rotavirus by ELISA test at MUHAS Microbiology laboratory. All patients who met case definition were included in the study. Completed questionnaires were coded by numbers and double entered in a computer using Epi info software version 3.5.1. Chi-square test was used to explore bivariate associations for categorical variables. **Results:** Of the 249 children with diarrhoea 31(12.4%) showed stool rotavirus positive results among these, 17 (54.8%) were females and 14 (45.2%) were males. Prevalence varied by sex being 5.6% in males and 6.8% among females. The overall mean age was 23.3 months; mean age for females was 23.5 months where as for males was 23.0 months. Rotavirus positive specific age group distribution, 30 (96.8%) children are in the age group 7- 24 months and 1(3.2%) child in the age group 25-60 months. **Conclusion and Recommendations:** This study shows insignificant prevalence of rotavirus gastroenteritis that could decrease the importance of vaccination by health education to parents on oral rehydration therapy, general sanitation, improvement of water supplies and proper excreta disposal this could reduce the burden of diarrhea diseases including rotavirus.

135. **Kassim KS. Prevalence of hepatitis b, c and HIV infections in children with sickle cell anaemia at Muhimbili national hospital, Dar es Salaam, Tanzania. Master of medicine (Pediatrics and child health) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Hepatitis B virus (HBV) accounts for a large portion of the disease burden worldwide with 350 million chronic carriers of the disease. Africa, with 12% of the world's population, carries approximately 18% of the global burden of HBV infection, with hepatocellular carcinoma and cirrhosis accounting for 2% of the continent's annual deaths. World Health Organization (WHO) estimates that about 170 million people, 3% of the world's population, are infected with hepatitis C virus (HCV) and are at risk of developing liver cirrhosis and/or liver cancer. Besides HBV, HCV infections, Sub-



Saharan Africa is also affected by human immunodeficiency virus (HIV) infection. In 2007 the number of people living with HIV was estimated to be 1.4 million in Tanzania. The majority of children get infected with HIV prenatally. Acute severe anemia necessitating blood transfusion is very frequent in Tanzania because of malaria and infections. Children with sickle cell anemia (SCA) are at even a greater risk of frequent blood transfusions and consists mainly the use of packed RBCs. The viruses mentioned above can be transmitted from mother to child (intra- uterine, breast feeding), through horizontal transmission by contaminated blood. Part of the national blood transfusion services is to reduce transmission of infections. Donor blood is screened for Hepatitis B, HIV and syphilis. Data on the magnitude of HBV, HCV and HIV infections in children with SCA are limited. **Objectives:** To determine the prevalence and factors associated with HBV, HCV and HIV among children with SCA aged between 6 months and 10 years in a tertiary referral hospital. **Materials and methods:** This was a hospital based cross-sectional study that was carried out between November 2008 and March 2009 at Sickle Cell Disease (SCD) clinic at Muhimbili National Hospital in Dar es Salaam, Tanzania. All children with SCA aged between six months and ten years inclusive attending the SCD clinic who met the inclusion criteria during the study period were eligible to be enrolled in the study after getting informed consent. Data was collected using structured questionnaire which included patient history, physical examination and test results for HBV, HCV and HIV infection. The data were analyzed using EPI Info version 6.4 and the SPSS version 15. **Results:** During the study period, 540 children with SCA were enrolled into the study. Of 540 children, 308 (57%) were males. Three hundred and seventy eight (70%) children were not vaccinated with hepatitis B vaccine. Seventy three point five percent of those vaccinated had protective anti-HBs levels  $\geq 10$  mIU/mL. Of 540 children, three (0.6%) had HBV infection, two were female, one being below five years of age and two being above. Both had no hepatomegally, splenomegally was present in one and jaundice was also present in one child. Five (0.9%) had HIV infection, 3 were male, 2 female and all were above 5 years of age. Three children had received blood transfusions. Hepatomegally was present in one child. Splenomegally was also present in one child while jaundice was present in 2 children. There were no statistically significant differences between HIV infected and uninfected

children in relation to socio-demographic, anthropometric measurements and clinical characteristics. Twenty four (4.4%) children had HIV infections. Of these, 11 were males and 13 were female. Nineteen of 24 children were above five years of age. Fourteen children had received blood transfusions. Hepatomegaly was present in 4 children, splenomegaly in 3 and jaundice in 18. There were no statistically significant differences between HIV infected and uninfected children in relation to socio-demographic, anthropometric measurements. **Conclusions:** The seroprevalence of HBV, HIV and HIV were found to be 0.6%, 0.9% and 4.4%, respectively, in children with seA. Seventy percent of children with SeA were not immunized with Hepatitis B vaccine. In spite of having multiple blood transfusions, blood transfusion was not associated with HBV, HIV or HIV infections. **Recommendations:** It is recommended that screening of donated blood for HBV and HIV should be continued to prevent risk of transmitting these infections via blood transfusions. Screening of HI V should be started. There is a need for vaccinating those who were not vaccinated especially those who show no evidence of prior infection. A booster dose should be given to those who did not mount a response to vaccination.

**136. Kaswija JP. Proteinuria in ambulatory HIV-infected patients managed at Muhimbili national hospital .master of medicine (Internal Medicine) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Kidney disease has emerged as an important complication of HIV infection, highly active antiretroviral therapy (HAART) and co morbidities. Thus, there is an overwhelming implication for HIV -related kidney disease in sub-Saharan Africa (SSA) since 67.7% of the world's HIV-infected individuals do reside in SSA region. However, relatively little is known regarding the burden of HIV -associated chronic kidney disease in this region. The HIV infection in the kidney has diverse manifestations, but most of the HIV- associated nephropathies are predominantly characterized by proteinuria. However, urine screening for proteinuria is not routinely done among HIV -infected individuals in Tanzania, and the magnitude of proteinuria and associated risk factors has not been investigated among HIV-infected population attending HIV/AIDS

Care and Treatment Clinics in Tanzania. Study Objective: To determine the magnitude of proteinuria in ambulatory HIV- infected adult patients managed at the HIV / AIDS Care and Treatment Clinic, Muhimbili National Hospital, Tanzania. **Materials and methodology:** Data collection included interviews using a standard structured questionnaire, physical examination and laboratory investigations (serum biochemistry, hematology, absolute CD4+ T lymphocyte count and serology for hepatitis Band C viruses). Proteinuria was defined as a dipstick result of 1+ proteinuria or greater on the spot mid-stream urine samples. Results: A total of 294 HIV -infected patients participated in the study; their mean age ( $\pm$  SD) was of 39.1 ( $\pm$  6.3), range 18-69 years, and females were 68.7%. Proteinuria was detected in 11.9% (95%CI 8.5-16.3) of the study participants; with the proteinuria category being +, 2+, and: 3+ in 71.4%, 22.9%, and 5.7% of the cases, respectively. Fifteen percent of participants had an estimated glomerular filtration rate (eGFR) less than 60 mL/min/1.73m<sup>2</sup>). The presence of proteinuria was significantly associated with lower CD4+ count < 200 cells/ul, (p = 0.023), advanced WHO HIV clinical stage (p = 0.020), HAART-na'ive (p < 0.0001), lower mean hemoglobin (p < 0.019), lower eGFR (p < 0.0001), and hypoalbuminaemia (p < 0.0001). ix In multivariate analysis, low eGFR  $\ll$  60 mL/min/1.73m<sup>2</sup>; OR 4.07, p = 0.019), high serum creatinine (> 200  $\mu$ mol/L; OR 4.94, p = 0.007), low hemoglobin  $\ll$  9g/dL; OR 2.05, p = 0.030), and hypoalbuminuria  $\ll$  30g/L; OR 3.05, p = 0.021) were independently associated with proteinuria. The eGFR < 60 mL/min/1.73m<sup>2</sup> had an independent association with low CD4+ count  $\ll$  200 cell/ul.; OR 2.83, P = 0.033), high serum creatinine (OR 4.08, P = 0.001), low hemoglobin  $\ll$  9 g/dL; OR 1.96, p = 0.010) and WHO HIV clinical stage 3 and 4 (OR 2.65, p = 0.046). **Conclusion and recommendations:** The prevalence of both proteinuria (11.9%) and impaired renal function (15%), eGFR < 60 mL/min/1.73m<sup>2</sup>, is high in ambulatory HIV -infected patients without specific clinical symptoms and signs. These findings underscore regular proactive screening and monitoring for proteinuria and/or kidney function among HIV -infected population as an important part of the national comprehensive strategy for HIV/AIDS care and treatment in Tanzania. Simple, versatile and cost-effective interventions such as dipstick urinalysis can easily be done at the lowest-level health facilities that provide HIV/AIDS Treatment and Care service in Tanzania. This would

result in early detection and prompt treatment or referral for patients with dipstick proteinuria to higher-level health facilities for further management; and thus facilitating early diagnosis and management of HIV -associated renal disease.

- 137. Kaveh K, Ibrahim R, Ibrahim T, Azmi T, Bakar A, Zakaria MZ. Normal and pathologic compact bone repair with bone tissue engineering in rabbits. *Online Journal of Veterinary Research*. 2010; 14(2): 121-142.**

Restoration of skeletal integrity especially in cases with osteogenic inhibitory underlying diseases is still a challenging issue. The aim the current study was to investigate the effects of bone tissue engineering comprising of a combination of autologous osteoblasts and corticocancellous bone graft in repairing compact bone critical sized defect in normal and osteoporotic models. Implant of corticocancellous bone graft alone served as group one. Bone marrow-derived mesenchymal stem cell of 6 rabbits were cultured, differentiated into osteoblasts and seeded into scaffold of corticocancellous bone graft and implanted in the normal and osteoporotic rabbits as second and third groups respectively. Up to eight weeks radiographs were taken to evaluate the level of osteogenicity. Rabbits were euthanized on week eight postoperative and the implants were harvested for gross, histological and scanning electron microscope observation. In the implant of bone graft alone, the major bone formation pattern was creeping substitution. New bone formation at margin and osteogenesis at the centre of the defect were observed in the implant of tissue engineering bone in normal model, and bone formation pattern included osteogenesis, osteoconduction, and osteoinduction. New bone formation with very thin bone trabeculae penetrating through the entire defect in third group was the result in the last group; however, the new bone formation pattern was completely osteoporotic. As a conclusion, tissue engineering bone, constructed by corticocancellous bone graft and autogenous marrow-derived osteoblasts was more efficient than graft alone in bone formation capability. New bone regeneration and complete bone healing in normal and pathologic bone was possible only in eight weeks which implies it might be an ideal graft for bone defect repair.

138. **Kawai K, Kupka R, Mugusi F, Aboud S, Okuma J, Villamor E, Fawzi WW.** A randomized trial to determine the optimal dosage of multivitamin supplements to reduce adverse pregnancy outcomes among HIV-infected women in Tanzania. *The American journal of clinical nutrition.* 2010; 91(2): 391-397.

**Background:** We previously reported that supplementation with multivitamins (vitamin B complex, vitamin C, and vitamin E) at multiples of the Recommended Dietary Allowance (RDA) significantly decreased the risk of adverse pregnancy outcomes among HIV-infected women. The minimum dosage of multivitamins necessary for optimal benefits is unknown. **Objective:** We investigated the efficacy of multivitamin supplements at single compared with multiple RDAs on decreasing the risk of adverse pregnancy outcomes among HIV-infected women. **Design:** We conducted a double-blind, randomized controlled trial among 1129 HIV-infected pregnant women in Tanzania. Eligible women between 12 and 27 gestational weeks were randomly assigned to receive daily oral supplements of either single or multiple RDA multivitamins from enrollment until 6 wk after delivery. **Results:** Multivitamins at multiple and single doses of the RDA had similar effects on the risk of low birth weight (11.6% and 10.2%, respectively;  $P = 0.75$ ). We found no difference between the 2 groups in the risk of preterm birth (19.3% and 18.4%, respectively;  $P = 0.73$ ) or small-for-gestational-age (14.8% and 12.0%, respectively;  $P = 0.18$ ). The mean birth weights were similar in the multiple RDA ( $3045 \pm 549$  g) and single RDA multivitamins group ( $3052 \pm 534$  g;  $P = 0.83$ ). There were no significant differences between the 2 groups in the risk of fetal death ( $P = 0.99$ ) or early infant death ( $P = 0.19$ ). **Conclusion:** Multivitamin supplements at a single dose of the RDA may be as efficacious as multiple doses of the RDA in decreasing the risk of adverse pregnancy outcomes among HIV-infected women. This trial was registered at [clinicaltrials.gov](http://clinicaltrials.gov) as NCT00197678.

139. **Kawai K, Msamanga G, Manji K, Villamor E, Bosch RJ, Hertzmark E, Fawzi WW.** Sex differences in the effects of maternal vitamin supplements on mortality and morbidity among children born to HIV-infected women in Tanzania. *British Journal of Nutrition.* 2010; 103 (12): 1784-1791.

We examined whether there are sex differences in the effect of vitamin supplements on birth outcomes, mortality and morbidity by 2 years of age among children born to HIV-infected women in Tanzania. A randomised placebo-controlled trial was conducted among 959 mother-infant pairs. HIV-infected pregnant women were randomly assigned to receive a daily oral dose of one of four regimens: multivitamins (vitamins B-complex, C and E), vitamin A plus -carotene, multivitamins including vitamin A plus -carotene or placebo. Supplements were administered during pregnancy and continued after delivery. The beneficial effect of multivitamins on decreasing the risk of low birth weight was stronger among girls (relative risks (RR)=0.39, 95% CI 0.22, 0.67) than among boys (RR=0.81, 95% CI 0.44, 1.49; P for interaction=0.08). Maternal multivitamin supplements resulted in 32% reduction in mortality among girls (RR=0.68, 95% CI 0.47, 0.97), whereas no effect was found among boys (RR=1.20, 95% CI 0.80, 1.78; P for interaction=0.04). Multivitamins had beneficial effects on the overall risks of diarrhoea that did not differ by sex. Vitamin A plus -carotene alone increased the risk of HIV transmission, but had no effects on mortality, and we found no sex differences in these effects. Sex differential effects of multivitamins on mortality may be due to sex-related differences in the immunological or genetic factors. More research is warranted to examine the effect of vitamins by sex and better understand biological mechanisms mediating such effects.

**140. Kessy AT, McCourt W. Is decentralization still recentralization? The local government reform programme in Tanzania. *International Journal of Public Administration*. 2010; 33(12-13): 689-697.**

Many governments have promoted decentralization, but opinion is divided on whether real devolution of authority from the centre to the local level has occurred. This article uses a study of the Local Government Reform Program (LGRP) in Tanzania to explore whether decentralization is realizing its objectives. Our findings are that LGRP has led to a significant devolution of authority and resources. However, persisting capacity deficits, increased financial dependence on the central government, and political and institutional constraints mean that the achievements have fallen short of the reformers' intentions. The

study suggests that even where political will to decentralize exists, it has to translate into identifying and dealing with stubborn and subtle constraints such as, in this case, the contradiction between a new devolved structure and a persisting deconcentrated structure in order for decentralization to reach the logical conclusion that the reformers intended.

**141. Kida IA, Manyori C, Masalu JR. Prevalence and correlates of perceived oral malodor among adolescents in Temeke district, Dar es Salaam. *East African journal of public health*. 2010; 7 (1): 49-53.**

The objective of this study was to determine the prevalence of perceived oral malodor and its correlates in terms of self assessed oral health status and reported health behaviors (oral hygiene practice, dental attendance, tobacco use and alcohol consumption) among adolescents in secondary schools in Temeke district, Dar es Salaam. Cross-sectional survey data were used. The sample consisted of adolescents (n= 400) 13 years old and above attending secondary schools in Temeke district. Eight schools were selected randomly from the sampling frame of all schools in the district (N=63). Self-administered questionnaires used to collect information from the adolescents included questions on socio-demographic details; perceived oral malodor; self rated oral health status and oral health related behavior (dental attendance, brushing, smoking and alcohol consumption). Data entry and analysis were done using Statistical Package for Social Sciences (SPSS) software version 13.0 .Chi-square and multiple logistic regressions were performed. Seventy two percents of the adolescents perceived oral malodor. More boys (62%) than girls (51%) rated their oral health to be poor. Almost all adolescents (97.5%) reported to brush their teeth; tongue brushing was 62% and 76% for boys and girls respectively. The percentage of adolescents who never attended to a dentist was 57% and 54% for boys and girls, respectively. Bleeding gums on brushing was reported by 64% of boys while in girls the percentage was 63%. Tobacco use was 23% and 16% for boys and girls, respectively and alcohol was consumed by 48% of boys and 31% of girls. Unadjusted logistic regressions revealed that subjects who perceived oral malodor were more likely to report having poor oral health status (OR = 1.5; CL= 1.1-2.3) and bleeding gums during brushing (OR = 1.8; CL = 1.1-2.3). Regarding oral health related behaviors,

tongue brushing (OR=0.5; CI = 0.3-0.7), and alcohol consumption (OR = 0.6; CI = 0.4-0.9) did not vary in the expected direction as perceived oral malodor. Smoking habit (OR=0.7; CI=0.4-1.2) did not show a significant correlation with perceived oral malodor among adolescents in the selected schools of Temeke district. Oral malodor is prevalent among adolescents in Temeke district in Dar es Salaam. Information about perceived oral malodor and the factors associated with it might help in planning effective strategies to promote oral health and general health among this group of population.

**142. Kidula MI. Psychosocial impacts of caring for patients with mental illness on families at Temeke municipality, Dar es salaam Tanzania Master of Science in Nursing (Nursing Mental health) *Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.***

**Introduction:** Mental illness is the condition affecting more than 450 million people worldwide. People with mental disorders often cause distress among their family members and mostly are overwhelmed by the patients' symptoms. Many studies in developed countries have focused on burden encountered by family members with small attention to psychosocial impacts and coping skills when caring the patient, and few of these studies have been done in developing countries. It is expected that this burden is more severe in low-income countries as it aggravated by poverty consequently families suffer psychologically and socially due to living with or caring for their relative or family member afflicted by mental illness. This study explored the psychosocial impacts of family caring a mentally ill patient and the way they coped with caring situation.

**Objectives:** The aim of the study was to determine the psychosocial impacts and coping strategies of mental illness on the family members caring a person with psychiatric disorders in Temeke Municipality, Dar es Salaam. **Method:** The study was a descriptive qualitative study where purposive sampling procedure was used to emol 14 participants and data was collected by focused group discussion and in- depth interviews. Ethical clearance was granted from MUHAS Ethical Committee. Data analysis was done by content analysis whereby seven different themes emerged **Results:** Seven main themes emerged from this study: Financial constraints, disruption of family functioning,



problems in managing patient's symptom, lack of social support, conflicts with neighbours, stigma and discrimination and coping and adaptation. These findings revealed social and psychological problems incurred by families caring patients with mental illness in Temeke municipal council and thereby has suggested several interventions. **Conclusion:** Family caring for person with mental illness has its advantages, yet it has multiple social and psychological problems and challenges for both family carers and the mental health professionals. This study has attempted to explore psychosocial problems in family caring patient with mental illness. The findings offer a direction for family intervention that acknowledges the need of both the carers and their mentally ill relatives.

- 143. Kikwilu EN, Frencken JE, Masalu JR, Mulder J. Barriers to restorative care as perceived by dental practitioners in Tanzania. *Community Dental Health*. 2010; 27 (1): 23-28.**

**Objective:** To identify barriers to restorative care, as perceived by dental practitioners. **Methods** Of the total of 147 dental practitioners employed in regional and district government hospitals and municipal health centres, 138 completed a pre-tested questionnaire: a response rate of 94%. Factor analysis was performed to extract barrier factors. Chi-square test was used to test the influences of independent variables on discrete dependent variables, and ANOVA was used to test the influences of independent variables on continuous dependent variables. **Results** Knowledge of patients and beliefs of patients were perceived as the most important barriers. Others were financial, motivation of practitioners, dentistry looked down upon by administration and patients' fear of noise from drill. Practitioners who worked in high and medium economic zones perceived patients' fear of noise from drill as a barrier to restorative care more than their counterparts in low economic zones. Practitioners who worked in low economic zones perceived dentistry looked down upon by administration as a barrier to restorative care more than colleagues in high and medium economic zones. **Conclusions** Knowledge and beliefs of patients about restorative care were the two main factors that hindered restorative care, as perceived by dental practitioners in Tanzania. Organized information

provision to the population and regular continuing education meetings for practitioners on restorative and preventive care, plus adoption of Atraumatic Restorative Treatment in daily clinical work are considered appropriate in addressing these barriers.

**144. Kileo JJ. Gestational diabetes mellitus. Prevalence, associated factors and pregnancy outcome in women attending antenatal clinic at Muhimbili national hospital. Master of Medicine (Obstetrics and Gynecology) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Gestational diabetes mellitus (GDM) is a substantial and growing health concern in many parts of the world. It also has serious, long-term consequences for both baby and mother, including a predisposition to obesity, metabolic syndrome, and diabetes later in life. Early detection and intervention identifies women with high risk and offers primary prevention for women with this condition and their babies. The prevalence may range from 3- 19% of all pregnancies depending on the population studied and the diagnostic tests employed. There is no recent study which has been done to find the prevalence of GDM and associated factors in our country. **Objective:** To determine the prevalence of GDM associated factors and pregnancy outcome in women attending Antenatal Clinic at Muhimbili National Hospital. **Methodology:** A structured questionnaire was used to obtain participants' particulars including demographic characteristics including age of patients, marital status, gravidity and gestation age. Information on associated factors was also collected which included previous obstetric history and history of diabetes in the family. Blood samples for Random Blood Glucose (RBG) measurement was taken from all participants and 2hrs oral glucose tolerance test was done to those participants who were found to have impaired RBG. The diagnosis of GDM was obtained using WHO criteria. The pregnancy outcome of among women with GDM was also looked upon. **Results:** A total of 549 participants were interviewed and examined 61 (11 %) had impaired RBG. Out of them, 2hrs OGTT was done in 59 participants and 27(45.8%) were found to have GDM. The overall prevalence of GDM was found to be 4.9% (27/549). It was noted that among investigated factors participants with history of diabetes in the first degree relatives were three times likely to have GDM

than those with no family history of diabetes in the first degree relatives (OR=2.5; 95%CI: 1.14-5.51). All other variables were not significant in bivariate analysis. "Out of 549- participants 505(92%) delivered" within the "study-period. Clients with GDM 26/27(96.3%) delivered during the study period. Delivery of big baby was found to have significantly positive association with GDM (p-value <-0.001). Delivery of still birth as well as premature baby did not show association with GDM. Delivery by caesarean section 12/186(6.5%) was high for GDM though this was not statistically significant. **Conclusion and recommendation:** There is relatively high prevalence of GDM in women attending antenatal clinic at Muhimbili National Hospital. This is a preventable disease, so efforts should be initiated to stop further increase in its prevalence.

**145. Kiloloma WO. Management of spontaneous aneurysmal intracranial hemorrhage at Charlotte Maxeke Johannesburg academic hospital. Master of Science (Neurosurgery) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

The patients were treated at the department of neurological surgery Charlotte Maxeke Johannesburg academic hospital (incorporating department of Neurosurgery of the University of the Witwatersrand, South Africa). The medical records of all patients admitted from June 2007 to May 2009 with spontaneous aneurysmal intracranial haemorrhage were included in the study. The surgical outcome were evaluated by using the Modified Ranking scale, the relationship of Hunt and Hess score, Fisher grading on outcome were also examined. Results: Amongst 102 enrolled cases, the age of the patient ranged between 25 and 78 years with a mean of 45 years, the peak aneurysmal frequency was in the age of 41- 50 years (4th decade of life), with the Male: Female ratio of 1: 1.2, majority of aneurysms were located on anterior circulation (94.6%) over (5.4%) on posterior circulation. The anterior communicating artery was highly affected with aneurysmal frequency of 43.8%, 36.2% were on middle cerebral artery and 11.4% on posterior communicating artery. The rate of multiple aneurysms amongst recruited patients was 2.9%. The commonest presenting symptom was headache (97%) followed by nausea and vomiting (63%). Most patients were admitted with Hunt and Hess grade

(iii) 71.6%, while 21.6% had grade (ii). On Neuron imaging modality on CT scan indicated that 60.8% were admitted with Fisher grade 3, 35.3% had Fisher grade 4 and none of the patient had Fisher grade 1.

**146. Kimambo DC. Prevalence of anemia in congestive heart failure patients at Muhimbili National Hospital Dar es Salaam – master of medicine (Internal Medicine) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Anemia increases morbidity and mortality in patients with congestive Heart failure. Few studies have examined the prevalence of anemia and its impact among congestive heart failure patients in Africa. This study determined the prevalence of anemia in patients with congestive heart failure attending Muhimbili National Hospital, the national referral hospital in Dar es Salaam Tanzania. **Methods:** This was a descriptive cross sectional study of patients admitted in medical wards and patients referred to medical out patient's clinics with a diagnosis of Congestive heart Failure at Muhimbili National Hospital. From October 2009 to January 2010 a total of 140 patients met the inclusion criteria and were recruited into the study. Anemia was defined as ... per WHO as hemoglobin level <13g/dl for men and <12g/dl for female. Patients were classified according to the NYHA. • All. Patients had a full haemogram, serum Ferritin, biochemical profile, CXR, ECG and echocardiography. **Results:** Anemia was found in 108/140 (77.1%) of patients. The mean age was 42±20. Males were older than females with median age of 47 (range 14-94) years as compared to median age of 35 (range 10-85) years in females. The prevalence of anemia was significantly higher in males (84.9%) than in females (70.3%), p=0.0040. The risk of having anemia increased with severity of NYHA (p=0.0018). Most of the patients with anemia were found to be in NYHA functional class III and IV. Normocytic norm chromic was the common type of anemia (78% of anemic patients), while microcytic hypo chromic anemia was found in only 17% of the patients. Anemic patients were also found to have significantly low haematocrit (p=0.0001) and higher creatinine level (p= 0.0076). Renal function impairment as a co-morbidity (estimated Glomerular filtration Rate <60mls/min) was found in 62% and

was associated with the presence of anemia **Conclusion:** The prevalence of anemia in patients with congestive heart failure attending Muhimbili national hospital was high (77%). The prevalence was higher in patients with NHY A class III and IV , and was significantly associated with low haematocrit level, increased serum creatinine level, impaired renal functions (estimated Glomerular filtration Rate <60mils/min) **Recommendation:** Improve awareness that anemia IS common In CHF and should be addressed as important eo morbidity.

- 147. Kisanga F, Mbwambo J, Hogan N, Nystrom L, Emmelin M, Lindmark G. Perceptions of child sexual abusea qualitative interview study with representatives of the socio-legal system in Urban Tanzania. *Journal of Child Sexual Abuse.*2010; 19 (3): 290-309.**

Through in-depth interviews, this study explored perceptions and experiences of key players handling child sexual offense cases in Dar es Salaam, Tanzania. The informants included public police investigators, magistrates, legal workers, and social workers working with nongovernmental organizations. The interviews were recorded, transcribed verbatim, and analyzed using qualitative content analysis. Five themes emerged summarizing factors associated with sexual offenses, including community passivity, legal system weaknesses, legal framework inadequacy, and key players' vulnerabilities. Addressing the identified weaknesses may promote justice, while changes in attitudes and norms are needed for the prevention of sexual offenses to children.

- 148. Kohi TW, Portillo CJ, Durrheim K, Dlamini PS, Makoe LN, Greeff M, Holzemer WL. Does perceived HIV stigmas contribute to nurses' intent to migrate in five African countries? *Journal of the Association of Nurses in AIDS Care.* 2010; 21(2): 134-143.**

Nurse migration out of low-resource countries has occurred for many years, resulting in workforce shortages, particularly in countries with a high prevalence of HIV. A cross-sectional survey of 1,374 nurses from five African countries (Lesotho, Malawi, South

Africa, Swaziland, and Tanzania) was conducted. A logistic regression analysis resulted in a profile of odds ratios predicting increased odds of intent to migrate for nurses who were more experienced and working in urban hospitals. These data provide the first support that HIV stigma experienced by nurses through their association as providers for people living with HIV may also be contributing to their intent to migrate. The study contributes to a greater understanding of the complexity of nurse migration in Africa.

- 149. Kohi TW, Portillo CJ, Safe J, Okonsky J, Nilsson AC, Holzemer WL. The Tanzania HIV/AIDS Nursing Education (THANE) Preservice Curriculum. *Journal of the Association of Nurses in AIDS Care*. 2010; 21(2): 92-98.**

The Schools of Nursing at Muhimbili University of Health and Allied Sciences and the University of California, San Francisco (UCSF) have been collaborating on a twinning partnership to develop an HIV nursing education preservice curriculum. The Tanzania HIV/AIDS Nursing Education (THANE) project was designed to increase the HIV education capacity of Tanzanian nursing schools by strengthening the knowledge and skills of the nurse educators. The THANE project includes three components: (a) development of 12 curriculum modules, (b) training of trainers, and (c) roll-out to all nurse educators in the eight zones of Tanzania and Zanzibar. The evaluation plan focuses on three main areas: (a) HIV knowledge, confidence in teaching, and thoughts about HIV, (b) participant satisfaction with the workshops, and (c) monitoring educators to assess implementation and dissemination of the THANE curriculum into existing curricula. To date, 300 nurse educators have been trained.

- 150. Komba EV, Mgonda YM. The spectrum of dermatological disorders among primary school children in Dar es Salaam. *BMC Public Health*. 2010; 10: 765.**

**Background:** Dermatologic disorders are common in many countries but the spectrum varies greatly. Many studies have reported a significant burden of skin diseases in school children. The objective of this study was to determine the current spectrum of dermatological disorders in primary school children in Dar es Salaam city. **Methods:**

Primary school children were recruited by multistage sampling. Detailed interview, dermatological examination and appropriate laboratory investigations were performed. Data was analyzed using the 'Statistical Package for Social Sciences' (SPSS) program version 10.0 and EPI6. A p-value of  $< 0.5$  was significant. **Results:** A total of 420 children were recruited (51% males; mean age 11.4  $\pm$  2.8 years; range 6-19 years). The overall point prevalence of any skin disorder was 57.3% and it was 61.9% and 52.6% in males and females respectively ( $p = 0.05$ ). Infectious dermatoses accounted for 30.4% with superficial fungal infections (dermatophytoses and pityriasis versicolor) being the commonest (20%). Dermatophytoses were diagnosed in 11.4% (48/420); the prevalence in males and females being 12.6% and 10.1% respectively ( $p = 0.41$ ) and higher (21.8%) in the age-group 6-10 years ( $p = 0.045$ ). Fungal cultures were positive in 42/48 children (88%). All three dermatophyte genera were isolated. Tinea capitis was the commonest disease among culture-positive dermatophytoses (30/42; 71.4%) with an overall prevalence of 7.1% (30/420) followed by tinea pedis (11/42; 26.1%) whose overall prevalence was 2.6%. *Microsporum canis* was common in tinea capitis (14/30; 46.7%) followed by *Trichophyton violaceum* (6/30; 20%). *Trichophyton rubrum* was common in tinea pedis (5/11; 45.5%). Thirty six children (8.6%) had pityriasis versicolor which was more prevalent (6/27; 22.12%) in the age group 16-19 years ( $p = 0.0004$ ). The other common infectious dermatoses were pyodermas (4%) and pediculosis capitis (3.6%). Common non-infectious dermatoses were: acne vulgaris (36.4%), non-specific dermatoses (10.7%), non-specific ulcers (5%) and atopic eczema (2.6%). Rare conditions (prevalence  $< 1\%$ ) included: vitiligo, alopecia areata and intertrigo. The majority of the affected children (67.2%) did not seek any medical assistance. **Conclusions:** Skin disorders are common in primary school children; infectious dermatoses are still rampant and many children do not seek medical assistance.

151. König R , Nassri A , Meindl M, Matuja W, Kidunda AR , Siegmund V , Bretzel G , Löscher T , Jilek-Aall L , Schmutzhard E , Winkler AS. The role of *Onchocerca volvulus* in the development of epilepsy in a rural area of Tanzania. *Parasitology*. 2010; 137 (10): 1559-1568.

**Introduction:** Several reports indicate high prevalence's of both onchocerciasis and epilepsy in some regions of Africa. This raises the question of whether these diseases are associated. We therefore investigated people with epilepsy and/or onchocerciasis living in an area in Tanzania endemic for *Onchocerca volvulus* (*O. volvulus*). **Methods:** We collected clinical information, skin snips, and blood from 300 individuals, and cerebrospinal fluid (CSF) from 197. Participants were allocated to 4 groups consisting of people with epilepsy and onchocerciasis (n=135), those with either epilepsy (n=61) or onchocerciasis only (n=35), and healthy individuals (n=69). Samples were evaluated for microfilaria, IgG4 antibodies against *O. volvulus*, *O. volvulus* antibody index (CSF/serum), and CSF routine parameters. Polymerase chain reaction (PCR) was performed on skin snips and CSF. **Results:** No difference was found in micro filarial density between participants with and without epilepsy (P=0.498). The antibody index was raised in 2 participants. CSF PCR was negative in all samples tested. **Discussion:** Our results do not give evidence of a relationship between *O. volvulus* and epilepsy. Despite the fact that 2 participants had raised antibody index, the existence of cerebral onchocerciasis caused by migration of microfilaria into the CSF appears unlikely. However, to date unexplored reactions to the infestation with *O. volvulus* causing epilepsy cannot be excluded.

152. **Kruk ME, Wladis A, Mbembati N, Ndao-Brumblay SK, Hsia RY, Galukande M, Luboga S, Matovu A, de Miranda H, Ozgediz D, Quiñones AR, Rockers PC, von Schreeb JI, Vaz F, Debas HT, Macfarlane SB. Human resource and funding constraints for essential surgery in district hospitals in africa: A retrospective cross-sectional survey. *PLoS Medicine*. 2010; 7 (3): 1-11.**

**Background** There is a growing recognition that the provision of surgical services in low-income countries is inadequate to the need. While constrained health budgets and health worker shortages have been blamed for the low rates of surgery, there has been little empirical data on the providers of surgery and cost of surgical services in Africa. This study described the range of providers of surgical care and anesthesia and estimated the resources dedicated to surgery at district hospitals in three African countries.



**Methods and Findings** We conducted a retrospective cross-sectional survey of data from eight district hospitals in Mozambique, Tanzania, and Uganda. There were no specialist surgeons or anesthetists in any of the hospitals. Most of the health workers were nurses (77.5%), followed by mid-level providers (MLPs) not trained to provide surgical care (7.8%), and MLPs trained to perform surgical procedures (3.8%). There were one to six medical doctors per hospital (4.2% of clinical staff). Most major surgical procedures were performed by doctors (54.6%), however over one-third (35.9%) were done by MLPs. Anesthesia was mainly provided by nurses (39.4%). Most of the hospital expenditure was related to staffing. Of the total operating costs, only 7% to 14% was allocated to surgical care, the majority of which was for obstetric surgery. These costs represent a per capita expenditure on surgery ranging from US\$0.05 to US\$0.14 between the eight hospitals.

**Conclusion** African countries have adopted different policies to ensure the provision of surgical care in their respective district hospitals. Overall, the surgical output per capita was very low, reflecting low staffing ratios and limited expenditures for surgery. We found that most surgical and anesthesia services in the three countries in the study were provided by generalist doctors, MLPs, and nurses. Although more information is needed to estimate unmet need for surgery, increasing the funds allocated to surgery, and, in the absence of trained doctors and surgeons, formalizing the training of MLPs appears to be a pragmatic and cost-effective way to make basic surgical services available in underserved areas.

- 153. Kumarihamy M, Fronczek FR, Ferreira D, Jacob M, Khan SI, Nanayakkara ND. Bioactive 1, 4-Dihydroxy-5-phenyl-2-pyridinone Alkaloids from *Septoria pistaciarum*. *Journal of natural products*. 2010; 73(7): 1250-1253.**

Four new 1, 4-dihydroxy-5-phenyl-2-pyridinone alkaloids (1–4) were isolated from an EtOAc extract of a culture medium of *Septoria pistaciarum*. The structures of these compounds were determined by spectroscopic methods, and the absolute configuration of the major compound (1) was determined by X-ray crystallographic analysis. Compound 1 exhibited moderate in vitro antiplasmodial (ant malarial) activity against chloroquine-sensitive (D6) and -resistant (W2) strains of *Plasmodium falciparum* and cytotoxic

activity to Vero cells. Compound 2 was moderately active against both methicillin-sensitive and methicillin-resistant strains of *Staphylococcus aureus*.

- 154. Lahey T , Arbeit RD , Bakari M , Horsburgh CR , Matee MI , Waddell R , Mtei L , Vuola JM , Pallangyo K , von Reyn CF. Immunogenicity of a protective whole cell mycobacterial vaccine in HIV-infected adults: A phase III study in Tanzania. *Vaccine*. 2010; 28 (48): 7652-7658.**

Preventive immunization with whole inactivated *Mycobacterium vaccae* (MV) confers protection against HIV-associated tuberculosis (TB) in BCG-immunized adults with CD4 counts  $\geq 200$  cells/ $\mu$ l. We evaluated the immunogenicity of MV in the 2013 subjects of the phase III DarDarTrial using an interferon gamma (IFN- $\gamma$ ) enzyme linked immunosorbent assay (ELISA), tritiated thymidine lymphocyte proliferation assay (LPA) and an ELISA for antibodies to the TB glycolipid lipoarabinomannan (LAM). MV immunization boosts IFN- $\gamma$  and LPA responses to MV sonicate, and antibody responses to LAM. Post-immunization immune responses to MV correlated with baseline clinical factors, but the responses did not predict protection from HIV-associated TB.

- 155. Lahey T , Sheth S , Matee M , Arbeit R , Horsburgh CR , Mtei L , MacKenzie T , Bakari M , Vuola JM, Pallangyo K , Von Reyn CF. Interferon  $\gamma$  responses to mycobacterial antigens protect against subsequent HIV-associated tuberculosis. *Journal of Infectious Diseases*. 2010; 202 (8): 1265-1272.**

**Background:** The cellular immune responses that protect against tuberculosis have not been identified. **Methods:** We assessed baseline interferon  $\gamma$  (IFN- $\gamma$ ) and lymphocyte proliferation assay (LPA) responses to antigen 85 (Ag85), early secretory antigenic target 6 (ESAT-6), and *Mycobacterium tuberculosis* whole cell lysate (WCL) in human immunodeficiency virus (HIV)-infected and bacille Calmette-Guérin (BCG)-immunized adults with CD4 cell counts of  $\geq 200$  cells/ $\mu$ L who received placebo in the DarDar tuberculosis vaccine trial in Tanzania. Subjects were followed prospectively to diagnose definite or probable tuberculosis. **Results:** Tuberculosis was diagnosed in 92 of 979

subjects during a mean follow-up of 3.2 years. The relative risk of tuberculosis among subjects with positive IFN- $\gamma$  responses to Ag85 was 0.51 (95% confidence interval [CI], 0.26-0.99; P = .049), to ESAT-6 was 0.44 (95% CI, 0.23-0.85; P = .004), and to WCL was 0.67 (95% CI, 0.49-0.88; P = .002). The relative risk of tuberculosis was not significantly associated with baseline LPA responses. In a multivariate Cox regression model, subjects with IFN- $\gamma$  responses to ESAT-6 and WCL had a lower hazard of developing tuberculosis, with a hazard ratio for ESAT-6 of 0.35 (95% CI, 0.16-0.77; P = .009) and a hazard ratio for WCL of 0.30 (95% CI, 0.16-0.56; P < .001). **Conclusions:** Baseline IFN- $\gamma$  responses to ESAT-6 and WCL were associated with protection from subsequent tuberculosis among HIV-infected subjects with childhood BCG immunization in a region of high tuberculosis prevalence.

- 156. Lahey T, Arbeit RD, Bakari M, Horsburgh CR, Matee M, Waddell R, von Reyn CF. Immunogenicity of a protective whole cell mycobacterial vaccine in HIV-infected adults: a phase III study in Tanzania. *Vaccine*. 2010; 28(48): 7652-7658.**

Preventive immunization with whole inactivated *Mycobacterium vaccae* (MV) confers protection against HIV-associated tuberculosis (TB) in BCG-immunized adults with CD4 counts  $\geq 200$  cells/ $\mu$ l. We evaluated the immunogenicity of MV in the 2013 subjects of the phase III DarDarTrial using an interferon gamma (IFN- $\gamma$ ) enzyme linked immunosorbent assay (ELISA), tritiated thymidine lymphocyte proliferation assay (LPA) and an ELISA for antibodies to the TB glycolipid lipoarabinomannan (LAM). MV immunization boosts IFN- $\gamma$  and LPA responses to MV sonicate, and antibody responses to LAM. Post-immunization immune responses to MV correlated with baseline clinical factors, but the responses did not predict protection from HIV-associated TB.

- 157. Lahey T, Sheth S, Matee M, Arbeit R, Horsburgh CR, Mtei L, Bakari M, von Reyn CF. Interferon  $\gamma$  responses to mycobacterial antigens protect against subsequent HIV-associated tuberculosis. *Journal of Infectious Diseases*. 2010; 202(8): 1265-1272.**

**Background:** The cellular immune responses that protect against tuberculosis have not been identified. **Methods:** We assessed baseline interferon  $\gamma$  (IFN- $\gamma$ ) and lymphocyte proliferation assay (LPA) responses to antigen 85 (Ag85), early secretory antigenic target 6 (ESAT-6), and Mycobacterium tuberculosis whole cell lysate (WCL) in human immunodeficiency virus (HIV)-infected and bacille Calmette-Guérin (BCG)-immunized adults with CD4 cell counts of  $\geq 200$  cells/ $\mu$ L who received placebo in the DarDar tuberculosis vaccine trial in Tanzania. Subjects were followed prospectively to diagnose definite or probable tuberculosis. **Results:** Tuberculosis was diagnosed in 92 of 979 subjects during a mean follow-up of 3.2 years. The relative risk of tuberculosis among subjects with positive IFN- $\gamma$  responses to Ag85 was 0.51 (95% confidence interval [CI], 0.26–0.99; P= .049), to ESAT-6 was 0.44 (95% CI, 0.23–0.85; P= .004), and to WCL was 0.67 (95% CI, 0.49–0.88; P= .002). The relative risk of tuberculosis was not significantly associated with baseline LPA responses. In a multivariate Cox regression model, subjects with IFN- $\gamma$  responses to ESAT-6 and WCL had a lower hazard of developing tuberculosis, with a hazard ratio for ESAT-6 of 0.35 (95% CI, 0.16–0.77; ) and a hazard ratio P p .009 for WCL of 0.30 (95% CI, 0.16–0.56; P <.001). **Conclusions:** Baseline IFN- $\gamma$  responses to ESAT-6 and WCL were associated with protection from subsequent tuberculosis among HIV-infected subjects with childhood BCG immunization in a region of high tuberculosis prevalence.

158. Lahtinen SJ, Knoblock K, Drakoularakou A, Jacob M, Stowell J, Gibson GR, Ouwehand AC. Effect of molecule branching and glycosidic linkage on the degradation of polydextrose by gut microbiota. *Bioscience, biotechnology, and biochemistry*. 2010; 74(10): 2016-2021.

Polydextrose is a randomly linked complex glucose oligomer that is widely used as a sugar replacer, bulking agent, and dietary fiber and prebiotic. Polydextrose is poorly utilized by the host and, during gastrointestinal transit; it is slowly degraded by intestinal microbes, although it is not known which parts of the complex molecule are preferred by the microbes. The microbial degradation of polydextrose was assessed by using a simulated model of colonic fermentation. The degradation products and their glycosidic

linkages were measured by combined gas chromatography and mass spectrometry, and compared to those of intact polydextrose. Fermentation resulted in an increase in the relative abundance of non-branched molecules with a concomitant decrease in single-branched glucose molecules and a reduced total number of branching points. A detailed analysis showed a preponderance of 1,6 pyranose linkages. The results of this study demonstrate how intestinal microbes selectively degrade polydextrose, and provide an insight into the preferences of gut microbiota in the presence of different glycosidic linkages.

159. **Lema IA. Quality of intensified tuberculosis case finding in public and private HIV-AIDS care and treatment clinics in Ilala municipality Dar es Salaam, Tanzania. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Tuberculosis (TB) is the most common opportunistic infection and the number one cause of death in HIV/AIDS patients in developing countries. In Sub Saharan Africa fourfold rise in TB cases related to HIV epidemic has been reported while in Tanzania a six fold rise of TB cases has been observed . The World Health Organization formulated an interim policy in 2004 to guide member states in implementing collaborative TBIHIV activities that was also adopted by Tanzanian Government. Intensified TB case finding is among the three strategies to reduce burden of TB among People Living with HIV (PLHIV), however since its implementation 2007 in Tanzania there has been no information with regard to its quality and actual practice in HIV care and treatment clinics thus this study was carried out to fill this gap. **Methods:** To assess the quality of intensified TB case finding among PLHIV attending public and private HIV/AIDS care and treatment clinics across sectional descriptive study was undertaken in 432 randomly selected PLHIV in Ilala Municipality, Dar es Salaam, Tanzania. The study used three tools, checklist to assess resources and interview health workers, an exit interview and case review guide to PLHIV and their files respectively to assess structure, process and outcome components of quality of intensified TB case finding as per Tanzanian National guideline. **Result:** Overall it was found that intensified TB case

finding was implemented in 43.5% of both public and private clinics the majority (64.4%) of PLHIV screened were from public clinics compared to those registered in private clinics (22.7%) and the difference was statistically significant (p value < 0.05). The prevalence of TB disease was 11.6%. The number of trained physicians (47.4%) and structural resources required for TB screening were inadequate in both clinics with exception of adult TB screening tools. Most Physicians (83%) reported to have different forms to feel which hinder their performance. Few (27.1 %) PLHIV were aware of intensified TB case finding with varying experience and satisfaction of PLHIV between public and private clinics. **Conclusion:** The overall quality of Intensified TB case finding in HIV/AIDS care and treatment clinics was poor and more pronounced in private clinics. More collaborative effort is recommended between National TB and Leprosy Programme and National AIDS Control Program to ensure at least 90% of staff in Care and Treatment clinics (CTC) receive TBIHIV training. Also TB screening tool needs to be integrated into CTC2 forms in order to alleviate the challenge of poor documentation.

- 160. L'Esperance VS, Kirkham F, Hill C, Cox S, Makani J, Clough G. Relationship between skin micro vascular reactivity, cerebral blood flow and hypoxaemia in children with sickle cell disease. *Archives of Disease in Childhood*. 2010; 95(1): A5.**

Sickle cell disease (SCD) is the most common genetic disorder in the UK. Increasing evidence suggests that autonomic function is altered in SCD, and if sympathetic drive is increased, this might increase the vascular tone of the intracranial arteries, leading to narrowing and increased velocities. Deep inspiratory gasps generate a vasomotor reflex characterized by sympathetic mediated transient vasoconstriction of skin arterioles. The aim of this study was to assess the relationship between autonomic reactivity, oxygen saturation (SpO<sub>2</sub>) and cerebral blood flow velocity (CBFV) in children with SCD. **Methods:** Autonomic reactivity was assessed using the inspiratory gasp vascular responses (IGVR) in 71 children with SCD (median age 7.8, range 2.8–15.3) years and 26 controls (7.7, 3.2–12.8). Coetaneous blood flux was measured by laser Doppler fluximetry (VMS and VPIT probe, Moor Instruments UK) on the pulp of the index finger

of the non-dominant hand at rest and during three deep inspiratory gasps. CBFV was measured in the middle cerebral artery (MCA) and basilar artery (BA) using transcranial Doppler (Doppler Box, ScanMed, UK); daytime and minimum nocturnal SpO<sub>2</sub> using pulse oximetry (Massimo, Irvine CA). **Results:** Mean resting blood flux (MRBF), IGVR, CBFV in the right and left MCA and BA were all higher in SCD compared to controls (p=0.002, p=0.001, p<0.0001, p<0.0001, p<0.0001, respectively), while SPO<sub>2</sub> and minimum nocturnal SpO<sub>2</sub> were lower (p<0.0001, p=0.026). In an analysis including SCA patients and controls, MRBF and IGVR were inversely correlated with SPO<sub>2</sub> (r=-0.286, -0.269; p=0.011, 0.019). Left and right MCA and BA velocities were correlated with MRBF (r=0.241, 0.364, 0.283; p=0.47, 0.002, 0.022, respectively) and IGVR (r=0.420, 0.307, 0.451; p<0.0001, p=0.011, p<0.0001). SpO<sub>2</sub> was inversely correlated with maximum CBFV in MCA and BA (r= -0.223, -0.276; p=0.044, 0.015). In multiple linear regression, IGVR predicted maximum MCA CBFV (r<sup>2</sup>=0.097, p=0.011); SpO<sub>2</sub> predicts IGVR (r<sup>2</sup>=0.058 p=0.037) but not CBFV. IGVR predicts CBFV independently of SpO<sub>2</sub> in a stepwise model. **Conclusion:** The study provides evidence of increased MRBF, sympathetic tone and CBFV in children with SCD and low SpO<sub>2</sub> which may improve understanding of the pathogenesis and prevention of cerebrovascular disease and neurological complications.

- 161. L'Esperance VS, Kirkham F, Hill C, Cox S, Makani J. "Nocturnal hemoglobin oxygen saturation variability is associated with vitamin C deficiency in Tanzanian children with sickle cell anemia." *Acta paediatrics* 100, no. 4 (2011): 594-597.**

Knowledge-intensive organizations (KIOs) have recently emerged as a popular topic of study in the knowledge management literature. This study explores what KIOs are and the key elements for differentiating these organizations from other traditional organizations. The results suggest that organizations can generally be divided into two groups - KIOs and non-KIOs, and there appears to be some clear and outright factors that differentiate KIOs from non-KIOs.

162. Leyna GH, Mmbaga EJ, Mnyika KS, Hussain A, Klepp KI. Food insecurity is associated with food consumption patterns and anthropometric measures but not serum micronutrient levels in adults in rural Tanzania. *Public Health Nutrition*. 2010; 13 (9): 1438-1444.

**Objective:** The purpose of the present paper is to assess the relationship between food insecurity and food consumption patterns, anthropometric measures and serum micronutrient levels in rural Kilimanjaro, Tanzania. **Design:** A population-based cross-sectional study was carried out between March and May of 2005. Setting Rural Kilimanjaro, Tanzania. Subjects Analysis was restricted to 1014 adults aged 15-44 years with children and complete data. **Results:** A large majority of the participants (91 %) reported some kind of food insecurity. Food insecurity was significantly associated with age, marital status and occupation. Participants reporting food insecurity were significantly less likely to frequently consume animal products, fruits and vegetables compared with participants categorized as food secure. Women categorized as experiencing individual food insecurity had a larger waist circumference than food-secure women ( $P = 0026$ ) while the mean BMI of women appeared to decline if they had a child who was food insecure ( $P = 0038$ ). There were no observed differences in serum micronutrient levels by food insecurity status. **Conclusions:** Food insecurity is highly prevalent and associated with food consumption patterns, waist circumference and BMI of women in rural Tanzania. Further studies should apply self-report measures in assessing food insecurity to larger and more diversified populations.

163. Likindikoki S. Clinician's knowledge, attitude and self efficacy in managing depression among people leaving with HIV-AIDS in Dar es Salaam Tanzania. 2010.

**Background:** People living with HIV/AIDS (PLHA) are significantly more distressed than the normal population, yet psychiatric disorders are commonly under-detected in HIV care settings. Some evidence shows that a high prevalence of mental health comorbidities, particularly major depressive disorder, occurs in PLHA accessing care at primary health care levels. Depression is a prevalent and disabling, yet potentially



treatable illness. Challenges posed by mental health EO morbidities to many clinicians include their recognition and diagnosis. Indeed studies show that knowledge, attitudes towards addressing psychological health concerns and ineffective training is important barriers in managing depression among PLHA. Studies also show that simple screening tools, some that have been validated in the proposed study area, have the utility in assisting non-specialized health care providers in assessing for depression in the primary health care context. Identifying issues affecting Health care provider s abilities to diagnose and treat depression in persons living with HIV AIDS is crucial to informing current HIV and AIDS management paradigms. **Objective:** To ascertain clinicians knowledge, attitudes, perceived self efficacy and associated determinants in recognition and treatment of depression in PLHA attending HIV/AIDS care and treatment clinics (CTCs) in Dar es Salaam Study site and design: A descriptive cross-sectional study was conducted between November 2009 and April 2010 in Dar es Salaam. It involved 50 private and public CTCs supported by Muhimbili University, Dar es salaam City health department and Harvard School of Public Health collaboration program (MDH). Method: A self administered previously used researcher modified questionnaire was distributed to 109 eligible clinicians who work with MDH supported CTCs in Dar es Salaam. Clinician's knowledge in diagnosis and treatment of depression, attitudes attributed to patients as well as perceived barriers and self efficacy in the recognition and treatment of depression were assessed. Data analysis was done using univariate and multivariate statistical analysis vi with significant level set at when  $p < 0.005$ . **Results:** Of the 109 clinicians with known eligibility, 84 (78%) returned the questionnaire. Of those who returned the forms, 38 (55.8%) were males, 50 (59.5%) were based in public health facilities and most were non physician clinicians 52 (62.7%). Among them 95%, 91.7%, 72.6% and 42% reported exposure to training on ART, adherence counseling, management of mental disorders and psychosocial issues related to HIV respectively. Majority reported correct knowledge of recognition 84 (63.7%) while a third reported correct knowledge in treatment of depression 84 (32.32%). Female clinicians reported higher knowledge on core symptoms for diagnosis of depression 36 (66.96%) than male clinicians 46 (61.56%)  $p < 0.003$  and physician clinicians were observed to have higher knowledge on treatment of depression 31 (41 %) than non physician clinicians 52 (27%)

$p < 0.005$ . Clinicians own attitudes to manage depression was more negative (mean score 1.96, SD 0.90) than those they attributed to patient (mean score 2.14, SD 0.78). Generally clinicians perceived many barriers to recognition and treatment of depression scoring a mean (SD) in policy and guideline 1.89 (1.15) and clinical setting 1.34 (1.1). While clinicians reported perceived self efficacy to be high (mean score 2.87, SD 0.07) it did not vary significantly with attitudes, knowledge or site and individual factors. However self motivation to treat depression was significantly associated with higher perceived self efficacy ( $p < 0.001$ ). Conclusion and recommendations: The recognition and treatment of depression in PLHA remains a challenge for clinicians in CTCs settings. Clinician's negative attitudes, perceived barriers and lack of adequate knowledge in recognition and treatment of depression impede the efforts to address depression in PLHA attending CTCs. Interventions to increase recognition and treatment of depression will need to focus on strategies that enhance clinician's motivation to do so, in-service trainings and use of users' friendly tools. These findings are crucial to informing the current gap in addressing common mental problems faced by PLHA attending CTCs.

**164. Lim HC, Su SNP, Mohamed-Ali H, Kotaki Y, Leaw CP, Lim PT. Toxicity of diatom *Pseudo-nitzschia* (Bacillariophyceae) analyzed using high performance liquid chromatography (HPLC). *J. Sci. Technol. Tropics*. 2010; 6: S116-S119.**

Amnesic shellfish poisoning (ASP) is a type of shellfish poisoning due to the consumption of shellfish mollusks contaminated with domoic acid (DA). The toxin was first reported in the chain-forming pennate diatom, *Pseudo-nitzschia* and subsequently in other diatom species. In this study, clonal cultures of *Pseudo-nitzschia* were established from plankton samples collected from Sarawak and Sabah coastal waters. Clonal cultures were maintained in SWII medium with the addition of silicate at 25°C, 30 PSU and under 12:12 light-dark photoperiod. Fifteen milliliters of late exponential phase cultures were collected for toxin analysis and subsamples were taken for cell count. Cellular toxin was extracted by boiling in medium at 100°C for 5 minutes. The extracts were filtered to remove cell debris before being analyzed with HPLC using standard domoic acid, isodomoic A and B as reference toxins. All the 32 strains of *Pseudo-nitzschia* sp.

analyzed in this study showed the absence of peaks corresponding to the three ASP toxins. This implies that non-toxic strains of *Pseudo-nitzschia* sp. are common in Malaysian waters. Further study will be carried out to include more strains along the coastal waters of Borneo as well as selected sites with shellfish farming activities in Peninsula Malaysia.

- 165. Lin Y, Gu T, Chen Z, Kennedy S, Jacob M, Zhong J. High-resolution MRS in the presence of field in homogeneity via intermolecular double-quantum coherences on a 3-T whole-body scanner. *Magnetic Resonance in Medicine*. 2010; 63(2): 303-311.**

Signals from intermolecular double-quantum coherences (iDQCs) have been shown to be insensitive to macroscopic field in homogeneities and thus enable acquisition of high-resolution MR spectroscopy in the presence of large inhomogeneous fields. In this paper, localized iDQC <sup>1</sup>H spectroscopy on a whole-body 3-T MR scanner is reported. Experiments with a brain metabolite phantom were performed to quantify characteristics of the iDQC signal under different conditions. The feasibility of in vivo iDQC high-resolution MR spectroscopy in the presence of large intrinsic and external field in homogeneity (in the order of hundreds of hertz) was demonstrated in the whole cerebellum of normal volunteers in a scan time of about 6.5 min. Major metabolite peaks were well resolved in the reconstructed one-dimensional spectra projected from two-dimensional iDQC acquisitions. Investigations on metabolite ratios, signal-to-noise ratio, and line width were performed and compared with results obtained with conventional point-resolved spectroscopy/MR spectroscopy in homogeneous fields. Metabolite ratios from iDQC results showed excellent consistency under different in vitro and in vivo conditions, and they were similar to those from point-resolved spectroscopy with small voxel sizes in homogeneous fields. MR spectroscopy with iDQCs can be applied potentially for quantification of gross metabolite changes due to diseases in large brain volumes with high field in homogeneity.

- 166. Lindi JB. Behavioral factors associated with cholera outbreaks in Kilosa district. Master of Public Health. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

The purpose of this study was to determine behavioral factors associated with cholera. Outbreaks in Kilosa district, Morogoro region. Specifically to determine awareness of cholera among heads of households, to assess the availability of latrines in the households, to determine water sources for domestic purposes and exploring different methods used for waste disposal within a household . This was a cross-sectional 'study involving 400 heads of households. Structured interview guide was used for generating data. **Results:** of the study revealed that only 39.6% of respondents were aware of causes, mode of transmission and prevention of cholera. Females were better informed about the disease (44.2%)' than males (32.9%). Although 88.3% of respondents had latrines, only three out of five washed their hands after latrine use. Regarding clean and safe water provision, the study revealed that only two-third of respondents had access to tap water for drinking, 56.6% of respondents use tap water for washing domestic utensils and 56% of respondents use tap water for washing their clothes. For waste management, the study revealed that 52.3% of respondents were disposing domestic waste haphazardly around the houses. Regardless of having latrines and accessibility to clean and safe water by most of the households, cholera outbreaks were still rampant. Poor knowledge on the mode of transmission and preventive measures of cholera among community members posed a challenge to control measures of the disease in the District. Based on these findings, it is clear that there are poor community based programmers on methods of pit latrine reinforcement and poor supportive supervision to villagers on environmental sanitation. Therefore the researcher recommends that there should be Awareness and advocacy campaign on cholera disease as well as community participation on planning, implementation and evaluation of cholera control prevention strategies

- 167. Lu Z, McMahon J, Mohamed H, Barnard D, Shaikh TR, Mannella CA, Lu TM. Passive micro fluidic device for sub millisecond mixing. *Sensors and Actuators B: Chemical*. 2010; *144*(1): 301-309.**

We report the investigation of a novel micro fluidic mixing device to achieve sub millisecond mixing. The micro mixer combines two fluid streams of several micro liters per second into a mixing compartment integrated with two T-type premixers and four butterfly-shaped in-channel mixing elements. We have employed three-dimensional CFD simulations to evaluate the mixing efficiency, and have constructed physical devices utilizing conventional micro fabrication techniques. The simulation indicated thorough mixing at flow rate as low as 6  $\mu\text{L/s}$ . The corresponding mean residence time is 0.44 ms for 90% of the particles simulated, or 0.49 ms for 95% of the particles simulated, respectively. The mixing efficiency of the physical device was also evaluated using fluorescein dye solutions and FluoSphere-red nanoparticles suspensions. The constructed micro mixers achieved thorough mixing at the same flow rate of 6  $\mu\text{L/s}$ , with the mixing indices of  $96\% \pm 1\%$ , and  $98\% \pm 1\%$  for the dye and the nanoparticle, respectively. The experimental results are consistent with the simulation data. The device demonstrated promising capabilities for time-resolved studies for macromolecular dynamics of biological macromolecules.

**168. Luka L. Compliance to nutrition counseling among HIV positive school children attending MDH CTC in Dar es Salaam. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Promotion of nutritional counseling is an important intervention to vulnerable populations that include HIV positive school going children who have significantly higher nutritional needs. The main objective of this study was to determine extent and factors associated with compliance to nutrition counseling among HIV positive school going children attending MOH care and treatment clinics in Dar es Salaam. A descriptive cross-sectional study was conducted in Dar es Salaam region from June to July 2010 to assess compliance to nutrition counseling given to HIV positive primary school children attending MDH CTC. Complying to nutritional counseling was defined as an HIV positive school going child aged 6-10 years who takes 1810 kilocalories per day or a child 10- 15

years who takes 2500 kilocalories per day. A random sample of 418 HIV positive school going children were selected for the study. Data was generated using structured interviews and standard anthropometric measurements. Overall, the dietary energy intake of a child ranged from (970 to 3050) kilocalories, with mean of 2100 kilocalories and standard deviation of 610 kilocalories. Compliance with nutrition counseling was found to be 50.8%. Compliance to nutrition counseling was low (50.8%), children less likely to comply were young children p-value < 0.01, males p-value < 0.01, severe disease p-value < 0.01, those on ant-retroviral treatment p-value = 0.04 and with more than three siblings p-value < 0.01. Parents/caretakers factors contributed to child nutrition counseling compliance were education p-value < 0.01, occupation p-value = 0.02 and income p-value < 0.05. The study therefore underlines the need for development of more nutrition interventions in MOH program focusing on HIV positive school children. The interventions should focus on HIV positive school children of young age, male children, those on ant retroviral treatment as well as those with more than three siblings, as the number of HIV positive school going children is growing every month.

- 169. Lwoga ET, Ngulube P, Stilwell C. Information needs and information seeking behavior of small-scale farmers in Tanzania. *Innovation: journal of appropriate librarianship and information work in Southern Africa: Information behavior.* 2010; (40): 82-103.**

This article provides a review of the information needs and information seeking patterns of the rural farmers in selected districts of Tanzania. Focus group data was triangulated with interview data in order to validate, confirm and corroborate quantitative results with qualitative findings. The findings revealed that the information needs and information seeking patterns of farmers were location and gender specific to a certain extent. Farmers relied on interpersonal and face to face communication more than explicit sources of information. Constraints on information access included internal (personal) and external barriers (unavailability of the extension officers, distant locations for consultations with public extension officers, poor responses to information requests from the government and village leaders, lack of awareness of the available information sources, inability of

some experts to solve problems, and poor knowledge sharing culture). It is thus important for the government to improve access to extension services, and equip them with necessary skills and adequate information resources. Further, the public and extension services, researchers, educators, information services and other agricultural actors should conduct regular studies on information needs, map communities' knowledge and information sources, create awareness of information sources, and knowledge culture, and use multiple sources of information (such as print and ICTs) to deliver relevant information in the communities in order to meet the disparate farmers' needs.

- 170. Lwoga ET, Ngulube P, Stilwell C. Managing indigenous knowledge for sustainable agricultural development in developing countries: Knowledge management approaches in the social context. *The International Information & Library Review*. 2010; 42(3): 174-185.**

This paper is based on a PhD study (Lwoga, 2009) that sought to assess the application of knowledge management (KM) approaches in managing indigenous knowledge (IK) for sustainable agricultural practices in developing countries, with a specific focus on Tanzania. This study used a mixed-research method which was conducted in six districts of Tanzania. Non-participant observation, semi-structured interviews, and focus groups were used to collect primary data from small-scale farmers in the selected districts. A total of 181 farmers participated in the semi-structured interviews, where the respondents ranged between 27 and 37 per district. Twelve focus group discussions were conducted in the selected districts. The study revealed that IK was acquired and shared within a small, weak and spontaneous network, and thus knowledge loss was prevalent in the surveyed communities. There were distinct variations in the acquisition of agricultural IK both in different locations and between genders. Information and communication technologies (ICT), culture, trust, and status influenced the sharing and distribution of IK in the surveyed communities. The research findings showed that KM models can be used to manage and integrate IK with other knowledge systems, taking the differences into account (for example, gender, location, culture, infrastructure). The paper concludes with recommendations for the application of KM approaches for the management of IK and its

integration with other knowledge systems for agricultural development in developing countries, including Tanzania.

- 171. Lwoga ET, Ngulube P, Stilwell C. The relevance of indigenous knowledge for small-scale farming in Tanzania. *Indilinga African Journal of Indigenous Knowledge Systems*. 2010; 9(1): 12-28.**

This article is based on a study that sought to explore small-scale farmers' perceptions and understanding of indigenous farming with an ultimate goal of promoting the use of IK for agricultural development in Tanzania. This study was mainly qualitative, where semi structured interviews were used to collect data from 181 small-scale farmers in six rural districts of Tanzania. Based on the study findings, it was evident that the local communities had an extensive base of IK and understanding of their environment, and they were able to put appropriate managerial skills and adaptive strategies to crop and animal farming. The findings also showed that IK was location specific, and farmers possessed IK on various farm tasks such as evaluation of soil quality, preservation of planting materials and crops, plant diseases and pest control and animal disease control. It is thus important to understand and facilitate the identification, documentation and use of this knowledge as well as integrating it with conventional knowledge for improved agricultural activities. The knowledge intermediaries (research, education, information and knowledge services, and agricultural support services) should thus conduct regular user studies to identify, validate and document IK in order to determine areas that need intervention, and to enable the incorporation of IK into research to enrich the agricultural technology development process and make it relevant for farmers.

- 172. Lwoga ET, Ngulube P, Stilwell C. Understanding indigenous knowledge: Bridging the knowledge gap through a knowledge creation model for agricultural development. *Journal of Information Management*. 2010; 12(1): 1-8.**

This article addresses the management of agricultural indigenous knowledge (IK) in developing countries, with a specific focus on Tanzania. It provides background details



on IK and its importance for agricultural development. It introduces various knowledge management (KM) concepts and discusses their application in managing IK in the developing world by placing Nonaka knowledge creation theory (Nonaka 1991; Nonaka & Takeuchi 1995; Nonaka, Toyama & Konno 2000) in the context of the local communities. Data from focus groups were used to triangulate with data from interviews in order to validate, confirm and corroborate quantitative results with qualitative findings. The study findings showed that knowledge creation theory can be used to manage IK in the local communities, however, adequate and appropriate resources need to be allocated for capturing and preserving IK before it disappears altogether. For sustainable agricultural development, the communities have to be placed within a knowledge-creating setting that continuously creates, distributes and shares knowledge within and beyond the communities' boundaries and integrates it with new agricultural technologies, innovations and knowledge.

173. **Lwoga ET. Bridging the Agricultural Knowledge and Information Divide: The Case of Selected Telecenters and Rural Radio in Tanzania. *The Electronic Journal of Information Systems in Developing Countries*.2010; 43.**
174. **Lyamuya FS. Factors influencing community acceptability of Artemether-Lumefantrine drug for treatment of uncomplicated malaria for under five, Dodoma Municipality — Tanzania. Master of Science (Applied Epidemiology) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**
175. **Lyimo MA. The effect of human breast milk on cell-free and cell-associated HIV-1 infection. Master of Medicine *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Human breast milk is a highly complex secretion that serves as a source of nutrients and protective immune factors to the growing infant whose immune system is still developing. Epidemiological studies of infants born to Human Immunodeficiency Virus (HIV)-infected mothers have shown lower rates of HIV-1 transmission among infants

who are exclusively breastfed as compared to those infants who receive other foods and fluids in addition to breast milk. Several immune factors with known anti-HIV activity have been identified in breast milk, and these include the chemokine receptor ligands macrophage inflammatory protein (MIP)-1 $\alpha$ , MIP-1 $\beta$ , regulated upon activation, normal T-cell expressed, and secreted (RANTES), and stromal derived factor (SDF)-1 $\alpha$ . In addition, breast milk from HIV-infected women also contains HIV-specific antibodies. The central hypothesis tested in this thesis was that immune factors present in the breast milk of HIV-positive women inhibit HIV-1 infection of susceptible target cells. This may explain, in part, the low rates of HIV-1 breast milk transmission reported from epidemiological studies. Experiments were performed to determine the HIV-inhibitory activity of breast milk from both HIV-positive and HIV-negative women. The results of this study demonstrate potent inhibition of R5 and X4-tropic strains of cell-free HIV-1 by breast milk from both HIV-positive and HIV-negative donors, while at the same time showing no effect of breast milk from either group on cell-associated HIV-1 infection. Inhibition of cell-free HIV by breast milk was mediated at an early step in the HIV life cycle, prior to proviral DNA integration into the host cell genome. Breast milk from HIV-infected and uninfected women had comparable levels of immune factors, including MIP-1 $\alpha$ , MIP-1 $\beta$  and RANTES. The HIV-1 inhibitory activity of breast milk against cell-free HIV-1 was not associated with an individual cytokine and was not mediated through immunoglobulin G. These findings suggest that breast milk contains immune factors that may provide protection against infection by cell-free HIV-1, but these factors may be less effective at blocking infection by cell-associated virus. Interventions aimed at reducing mother-to-child transmission of HIV-1 through breast milk should be designed to impact both cell-free and cell-associated virus in the breast milk.

- 176. Lyimo SS. The role of malaria rapid diagnostic test on the management of malaria amongst children in Kisarawe district, Coast region master of science (Epidemiology and Laboratory Management) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Malaria is a disease caused by protozoa parasite of the genus Plasmodium and infection occurs, following bite of infected female Anopheline mosquito. Malaria diagnosis continues to be a major challenge in malaria control strategies in Sub-Saharan Countries including Tanzania. Giemsa staining technique is widely practiced but mis-diagnosis has caused troubles. The objective of this study was to determine the role of malaria rapid diagnostic test (mRDT) in routine clinical practice for the management of malaria episode amongst children. **Methodology:** This was a cross-sectional study involving children aged five years and below attending a health care facility due to fever. A convenient sampling method was used to enroll children and blood samples were collected for mRDT, and smear microscopy. Exit interview was done. The gathered data was analyzed using Epi info software, version 3.5.1. **Results:** revealed a Sensitivity of RDT of 86% and Specificity of 98% and Predictive Value Positive 97% when the gold standard is reader two. For parasite density the linear Coefficient Correlation of two readers was 0.86, hence the linear correlation coefficient = 0.92 which is within normal acceptable range. There was discordance in parasite prevalence of which reader two had 17.2%, and reader one had 13.8%, an indication of misdiagnosis of reader one. However, even though 66 (22.7%) of children were treated based on mRDT only 50 (17.2%) should have been treated so 16 (5.5%) of children were given ALU unnecessarily. **Discussion** Malaria rapid diagnostic test is simple to perform and we can rely on the test because of the sensitivity and specificity that it has in detecting the presence of malaria parasites in blood. The test detects the presence of parasite antigen (HRP-2) so the chances that diagnosis can fail are less. **Conclusion:** From this study, we recommend the roll out of the mRDT especially to areas with poor infrastructure. We recommend investigation of all children with fever using RDT before treatment and whenever facility allows, all the positive cases to be confirmed with microscopy. However, in situation where microscopy is not possible, all RDT positive cases should receive treatment.

177. Mackintosh M, Mujinja PG. Markets and policy challenges in access to essential medicines for endemic disease. *Journal of African Economies*. 2010; 19(3): iii166-iii200.

Access to essential medicines is a core element of the effective health systems that are required to deal with endemic disease. Cost-effective access relies in turn on efficient market functioning and on appropriate policies towards the role of markets at national and international levels. This article argues that current international policy frameworks for promoting access to essential medicines lack coherence and display weak empirical foundations for proposed market interventions. A study of medicines markets in Tanzania questions some assumptions about market functioning underlying international policy, and shows how exploratory field studies can reduce the knowledge gap. Medicines policy should aim for rational use of essential medicines and for universal access free at the point of use to medicines essential to treat endemic diseases and other major causes of death. Unregulated retail market competition in essential medicines should be progressively constrained by government and NGO action. Wholesale market competition, in contrast, should be promoted, while the rebuilding of African pharmaceutical manufacturing is important for promoting and sustaining access. At each market level, public and non-governmental non-profit traders and providers can play a regulatory role alongside greater citizen information and civic activism.

**178. Madjapa HS. Root canal morphology of permanent teeth among the native Tanzanians. Master of Dentistry (Oral Surgery) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** The knowledge of root canal morphology of different teeth is important in the success of root canal treatment. Investigations of root canal morphology are conducted in order to determine the number of root canals, presence of lateral canal, accessory canals, location of apical foramen, presence of apical delta and root canal configuration type. These are important variants of root canal morphology and they have direct impact on success of the root canal treatment (RCT). Variation in the number of root canals, their configurations types, of apical delta' and location of apical foramen has been reported to differ within ethnic groups. Clinicians in Tanzania carry out root canal treatment basing on the knowledge of root canal morphology which was stipulated from different ethnic groups. Data on normal and common variations in the root canal

morphology in Tanzanian population is lacking. Objective: To assess the root canal morphology of permanent teeth among the native Tanzanians. **Methodology:** In this in-vitro study, three hundred and seventy nine (379) extracted permanent teeth were used. The specimen were collected in labeled containers from public dental clinics in Dar es Salam city, and stored in 10% formalin until when the collection was completed. The access cavity of each tooth was prepared and the pulp tissues were dissolved using 5% sodium hypochlorite solution. Ethylene blue alkaline ink was injected in the root canals and the specimens were processed using demineralization and clearing technique for study of the root canal morphology. The specimens were then examined for tooth length, number of root canals in each root, root canal configuration type in each root, presence of apical delta and location of apical foramen. **Results:** The mesiobuccal root of upper molars, (47.5% of the first molars; 46.4% of the second molars) and the distal root of lower molars (40.4% of the first molars; 54.1 % of the second molars) had more variations in the number of root canals than other roots. • VIII The majority of the roots which had two canals had canal configuration type II and IV. Whereas, roots with single canal had configuration type I. The occurrence of apical delta were found to be low (2.1 %) and were mainly observed in the palatal root of the upper molars and the distal roots of the lower molars. The location of apical foramen in all the examined specimens in this study was central. **Conclusion:** Variations in the root canal morphology were found to occur more frequently in the lower and upper molars in the present study, the variations are common in the mesiobuccal and distal roots of upper and lower molars respectively. These variations should be taken into consideration while carrying out root canal treatment.

179. Maduram A, John E, Hidalgo G, Bottke R, Fornell L, Oberholzer J, Benedetti E. Metabolic syndrome in pediatric renal transplant recipients: Comparing early discontinuation of steroids vs. steroid group. *Pediatric transplantation*. 2010; 14(3): 351-357.
180. Magadula J, Innocent E. Variations of anti-mosquito larvicidal constituents in the *Harrisonia abyssinica* species of Tanzania. 2010.

*Harrisonia abyssinica* (Simaroubaceae) is widely distributed and used in traditional medicine in Tanzania. Phytochemical studies of the plant report the presence of steroid and limonoid compounds while much of its biological studies were concentrated on its pharmacological activity on human pathogens. In the present study, eight extracts from plant materials collected from the Moist forest mosaic (Zone I) and the Coastal forest and thicket zone (Zone II) were tested against *Culex quinquefasciatus* Say larvae. Detailed analysis of mosquito larvicidal activity of the eight extracts showed a dose dependent ( $p > 0.05$ ) trend with the dichloromethane and ethanol extracts of the root bark plant materials collected from Zone I having higher effectiveness. In 24 h, the dichloromethane and ethanol extracts of the root bark from Zone I achieved mortality of 90% and 100%, respectively, at 50 ppm. Likewise, at 5 ppm the two extracts were having 60% and 58% mortality, both been not significant different ( $p > 0.05$ ) but significantly different ( $p < 0.05$ ) to the rest of the extracts and the control. Follow-up isolation of the ethanol extract of the root bark from Zone I yielded two known limonoids, harrissonin (1) and pedonin (2) which were also present in the dichloromethane extract from the same Zone. Similarly, the toxicity of the ethanol extract of the root bark from Zone I ( $LC_{50} = 6.75$  mg/ml) had high activity compared to other extracts. The variations of activity and chemical compounds in *Harrisonia abyssinica* suggest the importance of keeping pharmacopoeias of importance medicinal plants in our regions.

- 181. Magadula JJ, Suleimani HO. Cytotoxic and anti-HIV activities of some Tanzanian *Garcinia* species. *Tanzania Journal of Health Research*. 2010; 12(2): 144-1490.**

Cancer and HIV/AIDS remains the greatest public health and humanitarian challenges in the current world's health sector. For many decades now, millions of lives have been compromised by the two diseases. This study has evaluated ethanol extracts from nine *Garcinia* plant species collected in Tanzania for their *in vitro* cytotoxicity against four human cancer cell lines and for anti-HIV activity against HIV-1 viral replication in MT4 cells. Among the tested extracts, the fruit extracts of *G. livingstoneii* and *G. semseii*

showed moderate to mild cytotoxic activities against A549, DU145, KB and K562 human cell lines with 50 % cytotoxic ( $CC_{50}$ ) values ranging from 5.7-20.0  $\mu\text{g/ml}$ . Furthermore, only fruit extracts of *G. livingstonei* and *G. semseii* showed significant anti-HIV-1 activity with  $EC_{50}$  values of  $2.25 \pm 0.51$  and  $0.93 \pm 0.67$   $\mu\text{g/ml}$  respectively. This study has shown the potential of the *Garcinia* extracts to be the source of possible lead compounds and anti-HIV drug candidates currently needed for the management of HIV/AIDS. Phytochemical screening indicated dominance of phenolic compounds in *Garcinia* species while isolation of active principles from active fractions will be further undertaken.

- 182. Magadula JJ, Tewtrakul S. Anti-HIV-1 protease activities of crude extracts of some *Garcinia* species growing in Tanzania. *African Journal of Biotechnology*. 2010; 9 (12): 1848-1852.**

Eighteen ethanol extracts from some *Garcinia* species in the Guttiferae (Clusiaceae) family collected in Tanzania were investigated for their HIV-1 protease (HIV-1 PR) inhibitory activities using high performance liquid chromatography (HPLC). Among the tested extracts, the fruit hulls of *Garcinia semseii* showed the most potent inhibitory activity against HIV-1 PR with an  $IC_{50}$  value of 5.7  $\mu\text{g/ml}$  followed by the stem bark extracts of *Garcinia edulis* and *Garcinia kingaensis* with  $IC_{50}$  values of 9.2 and 15.2  $\mu\text{g/ml}$ , respectively. Phytochemical screening of extracts indicated mostly the presence of phenolic and steroidal compounds.

- 183. Magadula JJ. (2010). A bioactive isoprenylated xanthone and other constituents of *Garcinia edulis*. *Fitoterapia*, 81(5), 420-423.**

Phytochemical investigation on the root bark of *Garcinia edulis* (Clusiaceae) gave a new isoprenylated xanthone, 1,4,6-trihydroxy-3-methoxy-2-(3-methyl-2-butenyl)-5-(1,1-dimethyl-prop-2-enyl)xanthone (**1**), a known xanthone, forbexanthone (**2**) together with three known pentacyclic triterpenoids, friedelin, lupeol and lupeol acetate. The structure of the new compound was fully characterised by NMR spectroscopic analysis.

Compound **1** showed significant anti-HIV-1 protease activity with IC<sub>50</sub> value of 11.3 µg/mL. Furthermore, compound **1** showed potent cytotoxic activity with LC<sub>50</sub> value of 2.36 µg/mL against brine shrimp larva *in vitro*.

**184. Magadula JJ. A bioactive isoprenylated xanthone and other constituents of *Garcinia edulis*. *Fitoterapia*. 2010; 81 (5): 420-423.**

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**185. Magesa AS. A profile of acquired caused of childhood anemia in general pediatrics wards at Muhimbili national hospital Dar es salaam, Tanzania. Master of Medicine (Hematology and Blood Transfusion) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Anemia is a growing public health problem and greatly determines the prognosis of children in the pediatric wards. There is paucity of data describing its magnitude, hematological values and acquired causes among patients admitted in pediatrics wards. Anemia is the major cause of morbidity and mortality in pediatrics age yet the magnitude of acquired causes of anemia have been inadequately studied in Tanzania. **Objectives:** The study was aimed at determining the profile of acquired causes of childhood anemia in general pediatrics wards at Muhimbili National Hospital (MNH) in Dar es Salaam. Study design: This was a descriptive cross-sectional study. Study setting: This was conducted at MNH in general pediatrics wards from 20<sup>th</sup> August, 2009 to 31<sup>st</sup> December, 2009; and Subjects: A total of 315 patients, aged 1- 84 months,



consecutively admitted were recruited in the study. **Methods:** After informed verbal consent from the guardian or parent was obtained, information on demographic and clinical characteristics was collected from the parent or guardian. Physical examination and laboratory tests on blood; stool samples for hookworm screening; blood slides for malaria parasites; Human Immunodeficiency Virus (HIV) screening; blood peripheral smears; active serum vitamin B12; serum folate; serum transferrin; and serum iron were done on all subjects. Additional information was taken from medical files. The prevalence of anemia was determined as a percentage of all pediatric patients recruited during the time of data collection. All information was recorded using questionnaires and analysis was done using SPSS version 13.0. A P value of  $< 0.05$  was considered statistically significant. **Results:** Fatigue, headache, pallor, jaundice, hepatomegaly and splenomegaly were shown to be the most common presenting clinical feature in patients with anemia ( $p < 0.05$ ). The status of anemia ( $Hb < 11 \text{ g/dl}$ ) was 80.3%. The proportion of malaria was 7.9%, HIV seropositive was 10.2% and hookworm was 1.0% of all admissions. There was an increased risk of anemia in patients with HIV seropositive and or malaria although this was not statistically significant ( $OR > 1.0, p > 0.05$ ). Iron deficiency was the most common micronutrient deficiency occurring in 42% of all admissions and 41 - 46% among the anemic children; around one third of non anemic patients had iron deficiency ( $p = 0.05$ ). The proportion of folate deficiency was 8.6% and vitamin B12 deficiency 3.4% of all recruited patients ( $p > 0.05$ ). **Conclusions:** Status of anemia was 80.3%. Iron deficiency was common but HIV seropositive, malaria, hookworm, folate and vitamin B12 deficiencies were not prominent. It was noted that one third of the non anemic pediatric patients have iron deficiency as initial stages of developing anemia. **Recommendations:** Iron studies should be performed in microcytic anemia and causes of iron deficiency investigated. Iron food fortification programs should be developed and implemented. Further studies should be done to determine serum B12 and serum and red cell folate levels in children on a large scale in order to resolve the controversy of these micronutrient deficiencies in children. Study limitation: Since this was a cross sectional hospital based study, bias could not be avoided in determining the profile of acquired causes of childhood anemia.

186. **Mahuna HH. Prevalence of hypertension and associated risk factors among primary school teachers in Kinondoni municipality, Dar es Salaam. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Hypertension is a chronic health problem and if left untreated is a major risk factor for heart attacks, heart failure, renal failure, strokes and even death. In both economically developed and developing countries, hypertension affects 25% to 35% of the adult population. The global prevalence rises with age, and was approximately 30 % according to the recent community studies. In Tanzania the overall prevalence of hypertension was found to be 41.1 % in 1998, for men and 38.7% for women in a survey carried out in Dar es Salaam (urban), in Temeke, over 80% of the hypertension subjects were not aware that they had high blood pressure. In Kinondoni Municipality hypertension was among the top ten diseases in the outpatient department. The objective of the study was to determine prevalence of hypertension and associated risk factors among primary school teachers in Kinondoni Municipality, with reference to age, weight, physical activity, diet pattern, salt intake, alcohol use, and smoking habits and their associations with hypertension. A cross-sectional study among 1119(females: 936, and males: 183) teachers aged 21 and 60years was done. Data were collected using structured questionnaire. The prevalence of hypertension among study participants was found in (30.8%). Age, body mass index, gardening, farming, animal keeping, weight lifting and running were statically significantly associated with hypertension. However age and body mass index remained statically significantly associated with hypertension in the final model. Interventions addressing reduction of overweight, obesity, physical inactivity, consumption of diets high in saturated fats, and high salt intake, should be implemented among teacher populations to reduce prevalence of hypertension among them. But this also applies to the society as a whole.

187. **Maier D, Doppler M, Gasser A, Zellner H, Dharsee J, Schmutzhard E, Winkler AS. Imaging-based disease pattern in a consecutive series of cranial CTs and MRIs in a rural and an urban Tanzanian hospital: a comparative,**

**retrospective, neuroradiological analysis. *Wiener klinische Wochenschrift*. 2010; 122(3): 40-46.**

The prevalence of neurological diseases and cranial pathologies in sub-Saharan Africa remains a very little investigated field. This study aims at providing an imaging-based overview of cranial pathologies in two Tanzanian hospitals and at identifying possible differences in the spectrum of diseases between rural and urban African populations. At rural Haydon Lutheran Hospital (Manyara region) the data of 726 patients were included in a retrospective survey. At urban Aga Khan Hospital (Dar es Salaam) the data of 1975 patients who had undergone Computed Tomography (CT) and of 537 Magnetic Resonance Imaging (MRI) patients were obtained. All three surveys showed a clear male preponderance within the populations. The median age of the patients was higher in the city (urban CT 48 years; range 0–95/MRI 39 years; 0.1–89; rural CT 32 years; 0–102). In the urban series stroke, extra cranial infections, cerebral atrophy and tumours formed the main groups of diagnoses. Amongst rural patients traumatic pathologies, followed by stroke and cerebral infections/infestations were the most common diagnoses. The most striking differences were noticed with cases compatible with cerebral infections/infestations and hydrocephalus being reported more frequently in the rural population. On the other hand stroke and cerebral atrophy were more frequent amongst urban patients. In the rural catchment area the data of 51 HIV-positive CT patients could be obtained, showing a clear female preponderance. Within the urban HIV-positive subgroup of CT patients ( $n = 57$ ), the gender distribution was almost equal. Furthermore, in both HIV-positive populations the proportion "compatible with cerebral infections/infestations" was higher than amongst the overall study populations. In conclusion, cranial pathologies seem to differ widely in rural and urban areas of Tanzania in particular with respect to cerebral infections and vascular disease.

- 188. Majaliwa ES, Mohn A, Chiavaroli V, Ramaiya K, Swai AB, Chiarelli F. Management of diabetic ketoacidosis in children and adolescents in sub-Saharan Africa: a review. *East African medical journal*. 2010; 87(4):167-173.**

Diabetic ketoacidosis (DKA) is a complex metabolic state of hyperglycemia, ketosis, and acidosis. Diabetes in sub-Saharan Africa is, in many patients a serious disease with a poor prognosis. Most deaths, however, are due to preventable causes. To improve knowledge on the management of DKA in sub-Saharan Africa. Literature review from different published sources. Health systems in sub-Saharan Africa are currently organized for the treatment of episodes of illness and not long-term conditions like diabetes. Therefore the high rates of DKA is essentially due to lack of training of health professionals, lack of facilities in most hospitals, lack of public awareness as well as lack of health education to individual patients/families. In addition erratic insulin supply coupling with infections, low parental education, poor insulin storage and lack of facilities for self monitoring of blood glucose. A complex unfavourable social and economic environment is the basis of the high prevalence of DKA in sub-Saharan Africa. Several episodes of DKA can be prevented by effective public awareness programmes and education to healthcare providers.

- 189. Makani J, Komba AN, Cox SE, Oruo J, Mwamtemi K, Kitundu J, Magesa P, Rwezaula S, Meda E, Mgya J, Pallangyo K, Okiro E, Muturi D, Newton CR, Fegan G, Marsh K, Williams TN. Malaria in patients with sickle cell anemia: Burden, risk factors, and outcome at the outpatient clinic and during hospitalization. *Blood*. 2010; 115 (2): 215-220.**

Approximately 280 000 children are born with sickle cell anemia (SCA) in Africa annually, yet few survive beyond childhood. Falciparum malaria is considered a significant cause of this mortality. We conducted a 5-year prospective surveillance study for malaria parasitemia, clinical malaria, and severe malarial anemia (SMA) in Dar-es-Salaam, Tanzania, between 2004 and 2009. We recorded 10 491 visits to the outpatient clinic among 1808 patients with SCA and 773 visits among 679 patients without SCA. Similarly, we recorded 691 hospital admissions among 497 patients with SCA and 2017 in patients without SCA. Overall, the prevalence of parasitemia was lower in patients with SCA than in patients without SCA both at clinic (0.7% vs. 1.6%; OR, 0.53; 95% CI, 0.32-0.86; P = .008) and during hospitalization (3.0% vs. 5.6%; OR, 0.46; 95% CI, 0.25-

0.94;  $P = .01$ ). Furthermore, patients with SCA had higher rates of malaria during hospitalization than at clinic, the ORs being 4.29 (95% CI, 2.63-7.01;  $P < .001$ ) for parasitemia, 17.66 (95% CI, 5.92-52.71;  $P < .001$ ) for clinical malaria, and 21.11 (95% CI, 8.46-52.67;  $P < .001$ ) for SMA. Although malaria was rare among patients with SCA, parasitemia during hospitalization was associated with both severe anemia and death. Effective treatment for malaria during severe illness episodes and further studies to determine the role chemoprophylaxis are required.

- 190. Makani J, Marche S. Towards a typology of knowledge-intensive organizations: determinant factors. *Knowledge Management Research & Practice*. 2010; 8(3): 265-277.**

Phrases such as ‘knowledge-intensive organizations’ (KIOs) and ‘knowledge-intensive firms’ (KIFs), have recently found common usage, describing the distinct activities and attributes of some organizations. But a review of the literature reveals a lack of consensus among scholars and practitioners on the definition of KIOs. What is also absent from the discussion is an agreement on the factors that differentiate KIOs from non-KIOs, and how those factors affect knowledge management (KM) theory and practice. The objective of this paper is to extend a typology of KIOs as a preliminary step to conducting research on these types of organizations. With the typology of KIOs presented in this paper, we hope to provide a basis of distinguishing these organizations from other organizations, and also to allow one to perform comparative organizational analysis. The typology will also help researchers identify which of the organizations are knowledge-intense, and the nature of their knowledge-intensity, so that they help these organizations in designing appropriate KM tools.

- 191. Makani J, Spiteri L. The dynamics of collaborative tagging: An analysis of tag vocabulary application in knowledge representation, discovery and retrieval. *Journal of Information & Knowledge Management*. 2010; 9(02): 93-103.**

This study investigates the contribution of collaborative tagging to the design of user-driven vocabularies in knowledge management systems (KMS). Three metrics, tag growth, tag reuse, and tag discrimination, were used to examine the evolution of the tagging vocabulary of the knowledge management community of interest in Cite Like over a three-year period. Results indicate a steady decrease in the number of unique tags over the four years, suggesting an increasing stability in the community vocabulary over time and the establishment of domain-specific vocabulary. Members reused each others' tags over time and exhibited increasingly collaborative tagging behavior. Tag discrimination was high, with 4.11 distinct articles per tag. The stable and discriminatory nature of the community's tags suggests that collaborative tagging may serve as a useful resource for vocabulary choice or maintenance by KMS managers.

192. **Makundi PE. Factors contributing to high rate of teen pregnancy in Mtwara region, Tanzania. Master of Art (Health Policy and Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Pregnancies, abortion at early stages, early sexuality, and high rate of HIV infection became a major area of concern in Africa particular in sub Saharan Africa. However, an effort to understand teenager's sexual behavior and prevent young girls from reproductive health problems is almost none existing. In Tanzania pregnancy is one of the major reasons for school dropout among teenage girls. In 2007, pregnancy accounted to 21.9 % of secondary schools drop out. Mtwara Region is one of the leading areas in Tanzania for teenage pregnancy. Statistics show that school dropout caused by pregnancy has increased from 5.2 percent in 2003 to 21.9 percent in 2007 (BEST). **Objective:** This study had the general objective of assessing the social cultural factors for teen ager pregnancies in Mtwara Municipality. **Methods:** The study involved a total of 186 respondents from Mtwara Municipal in Railway Ward. Data were collected using questionnaires and interviews. Household schedules were drawn up listing the basic demographic information about all the occupants of selected household and identify eligible respondents (those under age of 19). All eligible respondents in each selected household were interviewed. Due to time limit two attempts were made to interview

respondents, if they were still missing the respondents were substituted. Findings Majority of teenagers in Mtwara Municipality is exposed to high risk of early pregnancies, sexually Transmitted Diseases and HIV due to the fact that sexual activity among youth in the region is a common conduct. Findings reveal that 42(56%) of male respondents and 63(56.7%) of female respondents were sexual active. The median age at first sex was 15 years of age. The findings reveal the social cultural reasons for teen pregnancies among other things are poor parental monitoring, pressure from peer group, and sexual feelings among individuals. The introduction of ward secondary school that force teens to hire a room far from their parents has also revealed as one of the reasons for increasing sexual activity among teens. Finally, the study found out that there was a positive relationship between social cultural factors and high rate of teenage pregnancies.

**Conclusion and recommendations:** It is suggested from these research findings; therefore, that high rate of teen pregnancies is not only due to economic and low knowledge about sexuality but also due to other social factors that affect day to day life of the teenagers. Teen pregnancies are due to unprotected and early sexual intercourse which also exposes teenagers to other risks of contacting Sexual Transmitted Infections and other sexual diseases such as HIV AIDS. **Recommendation:** Prevention of teenage from having sexual intercourse at early stage stages are very important interventions in preventing pregnancies at early ages. This study recommends that education on sexuality, its impacts and uses of contraceptives' to be provided in primary school at early grades. Programs targeting attitudes and social norms that facilitate sexual activities among the youth should be encouraged. Stronger emphasis on secondary school students is vital. Nevertheless, educational programs that promote sexuality education to teenager who are sexually immature are highly encouraged. This is because it might be too late to introduce such a program for teens who are sexually active about prevention methods for unwanted pregnancies. Parents/guardian play a vital role in sexual life of their teens. Parents should be encouraged to educate, discuss issues related to sexuality with their children direct or indirect. Parents and guardians should be educated about the pros and cons of doing or not doing so.

- 193. Makundi RH, Swila NN, Misangu RN, Reuben SW, Mwatawala M, Sikira A, Ishengoma C. Dynamics of infestation and losses of stored maize due to the larger grain borer (*Prostephanus truncatus* Horn) and maize weevils (*Sitophilus zeamais* Motschulsky). *Archives of Physiopathology and Plant Protection*. 2010; 43(14): 1346-1355.**

The dynamics of infestation and losses of stored maize due to the larger grain borer (*Prostephanus truncatus* Horn) and maize weevils (*Sitophilus zeamais* Motschulsky) were investigated in Tanzania. In single species a population, significantly higher maize damage ( $P \leq 0.05$ ) was caused by *P. truncatus* (23.3%) compared to *S. zeamais* (6.4%). Weight losses caused by *P. truncatus* were higher (12.7%) than for *S. zeamais* (6.7%) under similar conditions. A higher proportion of *P. truncatus* in the initial infestation population led to significantly higher ( $\leq 0.05$ ) maize damage compared to equal or higher proportions of *S. zeamais*. Irrespective of the initial number of *S. zeamais*, population size increased to levels higher than for *P. truncatus*. Maize losses in unimproved storage structures were  $>80\%$  compared to  $<2.5\%$  in improved structures under natural infestation. Inter-specific competition appeared to influence the dynamics of infestation, damage levels and weight losses. The first two months of storage were critical for damaging

- 194. Makuwani AM, Massawe SN, Mpembeni R, Shekimweri A. Setting an emergency obstetric care unit local initiatives, availability of resources and good will are the main ingredients of success: A lesson from Mkuranga District Hospital, Tanzania. *East African journal of public health*.2010; 7(2).**

Mkuranga District Hospital is 50 km South of Dar-Es-Salaam city serving a population of about 196,0004. Before June 2004, all obstetric patients with complications from this district were referred to Dar-Es-Salaam as the hospital had no comprehensive emergency obstetric care (CEmOC) skilled personnel. In June 2004, a project was started using local manpower and resources to impart knowledge for CEmOC. The aim was to reduce referrals to Dar es Salaam and hence delays in receiving CEmOC. Methodology: Hospital



staffs were trained on CEmOC which included the use of partography and management of common obstetric emergencies. The list of lacking essential equipments for of CEmOC was made and submitted to the district management for purchases. Weekly visit by the project manager was arranged for monitoring of the project. Results: There was a three to four fold increase in the monthly-number of deliveries in the hospital and referrals decreased sharply. Almost all major obstetric intervention was performed in the hospital and only 20% of patients were referred. Conclusion: The findings from this project show that using local initiatives, resources and advocacy can give a good outcome of obstetric services.

- 195. Maman S, Yamanis T, Kouyoumdjian F, Watt M, Mbwambo J. Intimate partner violence and the association with HIV risk behaviors among young men in Dar es Salaam, Tanzania. Journal of Interpersonal Violence. 2010; 25 (10): 1855-1872.**

There is growing evidence of the association between gender-based violence and HIV from the perspective and experiences of women. The purpose of this study is to examine these associations from the perspective of young men living in Dar es Salaam, Tanzania. A community-based sample of 951 men were interviewed, of whom 360 had sex in the past 6 months and were included in these analyses. Almost a third of the men (29.2%) reported that they had been physically violent at least once with an intimate partner. Men who reported more lifetime sexual partners (OR = 8.75;95% CI = 2.65,28.92), experienced physical violence as a child at home (OR = 1.73;95% CI = 1.09,2.76), and were more educated (OR = 1.91;95% CI = 1.18,3.11) were significantly more likely to report perpetrating violence. These associations persisted after adjusting for other variables. These data from the perspective of young men reinforce earlier findings from women that HIV risk and violence are occurring together in relationships of young adults. Interventions are needed to identify men at high risk for HIV and engage them in interventions that are designed to change norms and behaviors related to power and control with their sexual partners.

- 196. Manyanga V, Dhulipalla RL, Hoogmartens J, Adams E. Improved liquid chromatographic method with pulsed electrochemical detection for the analysis of kanamycin. *Journal of Chromatography A*. 2010; 1217(24): 3748-3753.**

This work describes the separation of the main component kanamycin A from its related substances using an improved liquid chromatographic method with pulsed electrochemical detection (LC-PED). Two methods, one using volatile ion pairing agents and the other using non-volatile ones were developed. Using volatile additives, the total run time was rather long with no possibility of developing gradient elution. The non-volatile method was found to be more performant and hence was selected for further quantitative work. This method employed gradient elution in order to reduce the analysis time and to improve the sensitivity of the late eluting peaks. Mobile phase A consisted of sodium sulphate (5.0 g/l), sodium octanesulphonate (0.5 g/l) and 0.2 M phosphate buffer pH 3.0 (50.0 ml/l). Mobile phase B was the same as A except for the amount of sodium sulphate which was increased to 15 g/l. Using a Platinum EPS column (150 mm × 4.6 mm ID, 3 µm) kept at 45 °C, 22 components could be separated within 45 min indicating that this method is much more selective than other already published ones. Robustness of the method was examined by means of an experimental design. The limit of detection and limit of quantization were found to be 1.7 and 5 ng, respectively. The method was found to be linear in the range LOQ–600 ng injected with a coefficient of determination equal to 0.999.

- 197. Manyanga V, Hoogmartens J, Adams E. Development and validation of an improved reversed-phase liquid chromatographic method combined with pulsed electrochemical detection for the analysis of netilmicin. *Journal of separation science*. 2010; 33(13): 1897-1903.**

Netilmicin is one of the amino glycoside antibiotics that lacks a strong UV absorbing chromospheres. However, the application of pulsed electrochemical detection has been used successfully for the direct analysis of amino glycoside antibiotics. This study describes an improved LC method combined with pulsed electrochemical detection for

the analysis of netilmicin. Using a Zorbax SB C-18 column (250 mm×4.6 mm id, 5 µm), isocratic elution was carried out with a mobile phase containing sodium sulfate (20 g/L), sodium octanesulfonate (0.3 g/L), THF (20 mL/L), and 0.2 M phosphate buffer pH 3.0 (50.0 mL/L). The robustness of the method was examined by means of an experimental design. The method proved to be sensitive, repeatable, linear, and robust. The method has also been used to analyze some commercial netilmicin samples.

198. **Maregesi S, Van Miert S, Pannecouque C, Feiz Haddad MH, Hermans N, Wright CW, Vlietinck AJ, Apers S, Pieters L. Screening of Tanzanian medicinal plants against plasmodium falciparum and human immunodeficiency virus. *Planta Medica*. 2010; 76 (2): 195-201.**

Medicinal plants used to treat infectious diseases in Bunda district, Tanzania, were screened for activity against *Plasmodium falciparum* and Human Immunodeficiency Virus Type 1 (HIV-1, IIB strain) and Type 2 (HIV-2, ROD strain). Antiplasmodial activity was observed for the 80% MeOH extract of *Ormocarpum kirkii* (root; MIC=31.25µ g/mL), *Combretum adenogonium* (leaves), *Euphorbia tirucalli* (root), *Harrisonia abyssinica* (root), *Rhynchosia sublobata* (root), *Sesbania sesban* (root), *Tithonia diversifolia* (leaves), and *Vernonia cinerascens* (leaves; MIC value of 62.5µ g/mL). With regard to HIV, 80% MeOH extracts of *Barleria eranthemoides* (root), *Combretum adenogonium* (leaves and stem bark), *Elaeodendron schlechteranum* (stem bark and root bark), *Lannea schweinfurthii* (stem bark), *Terminalia mollis* (stem bark and root bark), *Acacia tortilis* (stem bark), *Ficus cycamorus* (stem bark) and *Indigofera colutea* (shoot), as well as H<sub>2</sub>O extracts from *Barleria eranthemoides* (root), *Combretum adenogonium* (leaves and stem bark), and *Terminalia mollis* (stem bark and root bark) exhibited IC<sub>50</sub> values below 10µ g/mL against HIV-1 (III B strain). The highest anti-HIV-1 activity value was obtained for the *B. eranthemoides* 80% MeOH root extract (IC<sub>50</sub> value 2.1µ g/mL). Only a few extracts were active against HIV-2, such as the 80% MeOH extract from *Lannea schweinfurthii* (stem bark) and *Elaeodendron schlechteranum* (root bark), showing IC<sub>50</sub> values <10µg/mL.

199. Maregesi SM, Hermans N , Dhooghe L, Cimanga K, Ferreira D, Pannecouque C, Berghe DAV, Cos P , Maes L, Vlietinck AJ, Apers S, Pieters L. **Phytochemical and biological investigations of *Elaeodendron schlechteranum*. *Journal of Ethno pharmacology*. 2010; 129 (3): 319-326.**

**Aim of the study:** *Elaeodendron schlechteranum* (Loes.) Loes. Is a shrub or tree belonging to the family Celastraceae. In Tanzania, in addition to ethno pharmacological claims in treating various non-infectious diseases, the root and stem bark powder is applied on septic wounds, and the leaf paste is used for treatment of boils and carbuncles. The aim of this study was to identify the putative active constituents of the plant. **Materials and methods:** Dried and powdered root bark was extracted and subjected to bioassay-guided fractionation, based on antibacterial, antiparasitic and anti-HIV activity. Isolated compounds were identified by spectroscopic methods, and evaluated for biological activity. **Results and conclusions:** Bioassay-guided isolation led to the identification of tingenin B (22 $\beta$ -hydroxytingenone) as the main antibacterial constituent. It was active against *Bacillus cereus*, *Staphylococcus aureus* and *Escherichia coli* (IC<sub>50</sub> < 0.25  $\mu$ g/mL). Furthermore, antiparasitic activity was observed against *Trypanosoma cruzi* (IC<sub>50</sub> < 0.25  $\mu$ g/mL), *Trypanosoma brucei* (< 0.25  $\mu$ g/mL), *Leishmania infantum* (0.51  $\mu$ g/mL), and *Plasmodium falciparum* (0.36  $\mu$ g/mL). Tingenin B was highly cytotoxic to MRC-5 cells (CC<sub>50</sub> 0.45  $\mu$ g/mL), indicating a poor selectivity. Two inactive triterpenes, 3 $\beta$ ,29-dihydroxyglutin-5-ene and cangoronine methyl ester were also obtained. Phytochemical investigation of the anti-HIV active fractions led to the isolation and identification of three phenolic compounds, namely 4'-O-methylepigallocatechin, 4'-O-methylgallocatechin, and a new procyanidin dimer, i.e. 4',4'''-di-O-methyl-prodelphinidin B4 or 4'-O-methylgallocatechin-(4 $\alpha$ →8)-4'-O-methylepigallocatechin. However, none of these showed anti-HIV activity.

200. Maro I, Lahey T, MacKenzie T, Mtei L, Bakari M, Matee M, Pallangyo K, von Reyn CF. **Low BMI and falling BMI predict HIV-associated tuberculosis: a prospective study in Tanzania. *The international journal of tuberculosis and lung***

**disease: the official journal of the International Union against Tuberculosis and Lung Disease.2010; 14(11): 1447.**

**Background:** Low body mass index (BMI) is a known risk factor for tuberculosis (TB) in people without human immunodeficiency virus (HIV), but there are no prospective studies linking BMI to the risk of HIV-associated TB. **Design:** In HIV-infected adults with CD4 counts  $\geq 200$  cells/ $\mu$ l receiving placebo in a TB booster vaccine trial in Dar es Salaam, Tanzania, we measured BMI at baseline and Year 1, and related baseline BMI and change in BMI to the risk of developing TB. **Results:** We documented 92 cases of TB among 979 subjects followed for a mean of 3.2 years. Compared to subjects who did not develop TB, subjects who developed TB had a lower baseline BMI (23.2 vs. 24.6 kg/m<sup>2</sup>,  $P = 0.006$ ), and a greater BMI decline from baseline to Year 1 ( $-0.4$  vs.  $0.6$  kg/m<sup>2</sup>,  $P < 0.001$ ). In multivariate analyses, baseline BMI was associated with the risk of developing TB (hazard ratio [HR] per kg/m<sup>2</sup> 0.94, 95%CI 0.90–0.99,  $P = 0.028$ ), as was the change in BMI from baseline to Year 1 (HR per kg/m<sup>2</sup> 0.79, 95%CI 0.71–0.87,  $P < 0.001$ ). Subjects with a baseline BMI  $< 17$  kg/m<sup>2</sup> were more likely to develop TB (HR 3.72, 95%CI 1.16–12.0,  $P = 0.028$ ). **Conclusion:** Low BMI and falling BMI predict HIV-associated TB.

**201. Marwick KFM, Kaaya SF. Prevalence of depression and anxiety disorders in HIV-positive outpatients in rural Tanzania. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. 2010; 22 (4): 415-419.**

HIV/AIDS is associated with significant mental health morbidity in high-income countries, and depression associated with HIV/AIDS has been linked with faster disease progression and reduced drug adherence. However, research on mental health is scarce in sub-Saharan Africa where infection levels are highest. This cross-sectional study of 220 HIV-positive outpatients at a dedicated Tanzanian HIV/AIDS care centre assessed sociodemographics, clinical variables and prevalence of ICD-10 common mental health diagnoses via a standardized psychiatric questionnaire (the Clinical Interview Schedule - Revised). Depression or mixed anxiety and depression was identified in 15.5% of

subjects, with 4.5% suffering from other anxiety disorders. This suggests routine HIV care in sub-Saharan Africa should include assessment and treatment of mental health issues.

- 202. Masatu DM, Mcharo CN. Predictive values of serum nutritional indices for early postoperative wound infections in surgically treated closed femoral fractures. *SA Orthopedic Journal*. 2010; 9(4): 63-67.**

**Background:** Laboratory assessments of nutritional status consisting of evaluation of serum albumin and total lymphocytes Count (TLC) is valid tests of a patient's nutritional status. This study evaluated these indices and the findings were correlated with the occurrence of early surgical site infection (SSI). **Methods:** This was a prospective study conducted on 100 patients with closed femoral fractures for a period of ten months. Blood samples were taken to determine levels of serum albumin, total lymphocytes count and for human immunodeficiency virus (HIV). Postoperatively, body mass index (BMI) was calculated and wounds were examined regularly for signs of SSI. **Results:** On the basis of the albumin index, 25% of the patients had malnutrition and the infection rate in this group was 28%. Malnutrition as per TLC was 3% with an infection rate of 33.3%. Only one patient was malnourished when both albumin and TLC indices were considered and this patient developed SSI. Risk of developing SSI was about 10 times in those with albumin depletion, four times in those with reduced TLC and 12 times when both indices were low. Significant association was seen in low albumin levels ( $P = 0.000$ ). **Conclusions:** Patients at risk of SSI can be identified pre-operatively using relatively inexpensive laboratory tests of nutritional parameters such as seru.

- 203. Mashoto KO, Åstrøm AN, Skeie MS, Masalu JR. Changes in the quality of life of Tanzanian school children after treatment interventions using the Child-OIDP. *European Journal of Oral Sciences*. 2010; 118 (6): 626-634.**

This study aimed to examine the evaluative properties of the Child Oral Impacts on Daily Performances (Child-OIDP) inventory and to estimate treatment-associated changes in

the OIDP and self-reported oral health following atraumatic restorative treatment (ART) and oral health education (OHE). A total of 1,306 school attendees in Kilwa, Tanzania, completed the Child-OIDP inventory before and 6-months after, treatment. The post-treatment questionnaire assessed change in perceived oral health. Complete baseline and follow-up data were obtained for 104, 117, and 1,085 participants who received, respectively, ART fillings (Group A), ART fillings and tooth extraction (Group B), and OHE only (Group C). The longitudinal validity, responsiveness, and treatment-associated changes were calculated using anova, effect sizes, and repeated general linear models (GLM). The follow-up prevalence was 73.8%. The mean changes in the OIDP total- and subscale scores were negative within those who reported 'worsened' oral health, and positive in subjects reporting 'improved' oral health. Effect sizes for the total OIDP score ranged from -0.2 within the category 'worsened' to 0.4 within the category 'improved'. Changes following treatment were more extensive in Group B compared with Groups A and C, and in Group C compared with Group A. The Child-OIDP showed promising evaluative properties and responsiveness to change following ART fillings, ART fillings and tooth extraction, and OHE.

- 204. Mashoto KO, Astrom AN, Skeie MS, Masalu JR. Socio-demographic disparity in oral health among the poor: A cross sectional study of early adolescents in Kilwa district, Tanzania. *BMC Oral Health*. 2010; 10 (1): 7.**

**Background:** There is a lack of studies considering social disparity in oral health emanating from adolescents in low-income countries. This study aimed to assess socio-demographic disparities in clinical- and self reported oral health status and a number of oral health behaviors. The extent to which oral health related behaviors might account for socio-demographic disparities in oral health status was also examined. **Methods:** A cross-sectional study was conducted in Kilwa district in 2008. One thousand seven hundred and forty five schoolchildren completed an interview and a full mouth clinical examination. Caries experience was recorded using WHO criteria, whilst type of treatment need was categorized using the ART approach. **Results:** The majorities of students were caries free (79.8%) and presented with a low need for dental treatment

(89.3%). Compared to their counterparts in opposite groups, rural residents and those from less poor households presented more frequently with caries experience (DMT>0), high need for dental treatment and poor oral hygiene behavior, but were less likely to report poor oral health status. Stepwise logistic regressions revealed that social and behavioral variables varied systematically with caries experience, high need for dental treatment and poor self reported oral health. Socio-demographic disparities in oral health outcomes persisted after adjusting for oral health behaviors. **Conclusions:** Socio-demographic disparities in oral health outcomes and oral health behaviors do exist. Socio-demographic disparities in oral health outcomes were marginally accounted for by oral health behaviors. Developing policies and programs targeting both social and individual determinants of oral health should be an urgent public health strategy in Tanzania.

- 205. Mbalilaki JA, Masesa Z, Strømme SB, Høstmark AT, Sundquist J, Wändell P, Rosengren A, Hellenius ML. Daily energy expenditure and cardiovascular risk in Masai, rural and urban Bantu Tanzanians. *British Journal of Sports Medicine*. 2010; 44 (2): 121-126.**

**Background:** Several studies have revealed that the Masai, pastoralists in Tanzania, have low rates of coronary heart disease despite a diet high in saturated fat. It has also been suggested that they may be genetically protected. Recent studies detailing other potential protective factors, however, are lacking. **Methods:** A cross-sectional investigation of 985 Tanzanian men and women (130 Masai, 371 rural Bantu and 484 urban Bantu) with mean age of 46 (9.3) years. Anthropometric measures, blood pressure, serum lipids, and the reported dietary pattern and physical activity level were assessed. **Results:** 82% of Masai subjects reported a high fat/low carbohydrate intake, whereas 77% of the rural Bantu subjects reported a low fat/high carbohydrate intake, while a high fat/high carbohydrate intake was the main dietary pattern of the urban Bantu group as, reported by 55%. The most conspicuous finding for the Masai was the extremely high energy expenditure, corresponding to 2565 kcal/day over basal requirements, compared with 1500 kcal/day in the rural and 891 kcal/day for the urban Bantu. Mean body mass index among the Masai



was lower than the rural and urban Bantu. Mean systolic blood pressure of the Masai was also lower compared with their rural and urban Bantu counterparts. The Masai revealed a favorable lipid profile. **Conclusion:** The potentially atherogenic diet among the Masai was not reflected in serum lipids and was offset probably by very high energy expenditure levels and low body weight.

206. Mbawalla HS, Masalu JR, Åström AN. Socio-demographic and behavioural correlates of oral hygiene status and oral health related quality of life, the Limpopo - Arusha school health project (LASH): A cross-sectional study. *BMC Pediatrics*.2010; 10: 87.

**Background:** Promoting oral health of adolescents is important for improvement of oral health globally. This study used baseline-data from LASH-project targeting secondary students to; 1) assess frequency of poor oral hygiene status and oral impacts on daily performances, OIDP, by socio-demographic and behavioral characteristics, 2) examine whether socio-economic and behavioral correlates of oral hygiene status and OIDP differed by gender and 3) examine whether socio-demographic disparity in oral health was explained by oral health-related behaviors. **Methods:** Cross-sectional study was conducted in 2009 using one-stage cluster sampling design. Total of 2412 students (mean age 15.2 yr) completed self-administered questionnaires, whereas 1077 (mean age 14.9 yr) underwent dental-examination. Bivariate analyses were conducted using cross-tabulations and chi-square statistics. Multiple variable analyses were conducted using stepwise standardized logistic regression (SLR) with odds ratios and 95% Confidence intervals (CI). **Results:** 44.8% presented with fair to poor OHIS and 48.2% reported any OIDP. Older students, those from low socio-economic status families, had parents who couldn't afford dental care and had low educational-level reported oral impacts, poor oral hygiene, irregular tooth brushing, less dental attendance and fewer intakes of sugar-sweetened drinks more frequently than their counterparts. Stepwise logistic regression revealed that reporting any OIDP was independently associated with; older age-groups, parents do not afford dental care, smoking experience, no dental visits and fewer intakes of sugar-sweetened soft drinks. Behavioral factors accounted partly for association

between low family SES and OIDP. Low family SES, no dental attendance and smoking experience were most important in males. Low family SES and fewer intakes of sugar-sweetened soft drinks were the most important correlates in females. Socio-behavioural factors associated with higher odds ratios for poor OHIS were; older age, belonging to the poorest household category and having parents who did not afford dental care across both genders. **Conclusion:** Disparities in oral hygiene status and OIDP existed in relation to age, affording dental care, smoking and intake of sugar sweetened soft drinks. Gender differences should be considered in intervention studies, and modifiable behaviours have some relevance in reducing social disparity in oral health.

207. **Mbeba RM. Factors that influence hand washing practice among primary school children in Arusha rural district council, Arusha region, Tanzania. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Hand washing is the single most important and cost-effective method for prevention of diseases such as diarrhea among children and adults. Many interventions have been done in Tanzania focusing on primary care takers. Nevertheless, hand washing proportion is still low. Hence more hand washing promotion interventions are needed and for the behavior to be effective, proper hand washing must be learnt from childhood so that it becomes a routine habit throughout life. Since, school children are good behavior change agents, this study focused on primary school children's hand washing practice. **Objective:** The aim of this study was to determine factors influencing hand washing practice among primary school children. **Materials and methods:** A cross-sectional analytical study based on quantitative research methods was conducted from June to July 2010 involving 527 grade five to seven primary school children of both sexes in Arusha rural district council using a pre-tested self administered questionnaire. Data analysis: Frequency distributions, Chi-square and multiple logistic regression analyses were performed by SPSS version 13.0. **Results:** Only 18.8% of participants fulfilled the criteria of washing hands with soap, before eating, after using the toilet by using the required time. More than half (55.7%) of the children were aware of issues related to

hand washing practice. Only one school had hand washing stations and none of the schools provided soap for hand washing. Bivariate analysis indicated that; significantly ( $p < 0.001$ ) higher proportion of children who perceived pressure from important referents (42.1 %) washed hands as compared to those who did not perceive pressure (11.5%). Whereas, self efficacy and attitude were not significantly associated with children's hand washing practice. Controlling for age, sex, grade and school location multiple logistic regression further indicated that; pressure from important referents continued to be highly associated with hand washing [Adjusted OR= 0.2, 95% CI;0.1,0.3;  $p < 0.001$ ]. Likewise, children of lower grades were more likely to wash hands than those of higher grades [AOR= 2.4, 95% CI; 1.3, 4.6;  $p = 0.007$ ]. **Conclusion:** The findings of this study demonstrated important referents and grade of school children were significantly associated with their hand washing practice.

208. **Mbezi PB. Factors affecting the levels of male involvement in prevention of mother to child transmission of HIV in Mbeya city. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

The dissertation aimed to assess factors affecting the levels of male involvement in PMTCT of RIV services in Mbeya City. The descriptive cross-sectional study explored also the association between the various barriers males encounter and the optimum responsibilities required for male involvement in PMTCT of RIV services. The study was conducted in July 2009 in Mbeya city using a quantitative method, namely face-to-face structured questionnaire. A systematic random sampling technique was used to select 384 males, married or cohabiting aged 18 to 60 years residing in the catchments areas in Mbeya city. **Results** showed that 317 (83.0%) of respondents had a high level of knowledge on MTCT of HIV. The respondents 219 (73.5%) with knowledge on transmission of RIV from MTCT during pregnancy, had tested for RIV together with their wives/partners. The respondents 138 (36.0%) were optimally involved in PMTCT services in Mbeya city. The findings revealed that a smaller number of the married 59 (33.9%) and cohabiting 79 (37.6%) respondents were optimally involved in PMTCT

services. The socio-cultural and economic factors, individual related and service provision factors were found to hinder males utilizing PMTCT of RIV services to the optimum level. It is recommended that MORSW and other stakeholders should continue disseminating health promotion materials, advocacy campaigns on male involvement in PMTCT program to reach household level, targeting males. All these measures will ultimately lead to changes in males' attitude towards their involvement in PMTCT. Mbeya regional authority should utilize influential leaders of the communities in collaboration with NGOs to formulate and disseminate context specific and cultural sensitive messages on socio-cultural issues about PMTCT. ANCIPMTCT clinics should be friendlier and supportive to males and service providers should ensure efforts are made to involve males wholly in PMTCT implementation.

209. **Mbilikila HS. Factors influencing exclusive breast feeding for six months among mothers with infants aged 6-12 months in Lushoto district, Tanga region, Tanzania. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

In Tanzania, infant feeding is faced with several sub-optimal breastfeeding practices with low rate of exclusive breastfeeding for six months. These contribute to various healthy related problems with increase in infant's morbidity and mortality. The main goal of this study was to assess factors influencing exclusive breastfeeding during the first six months of infant's life, among women with infants aged 6-12 months in Lushoto district. Descriptive cross-sectional study design was used. Data was collected at single point in a time. The participants were selected using multistage sampling technique. Data was collected through household visit using questionnaire with both closed and open ended questions. Data was analyzed using statistical package for social sciences (SPSS). The results show that all 284(100%) women have ever breastfed their infants with high rate 214(75%) of breastfeeding initiation. However, the rate of exclusive breastfeeding for six months remained low 57(20.1 %). Maternal age 20-29 years (OR=9.16; 95% CI: 1.6 - 51.5), age more than 30 years (OR= 9.80; 95% CI: 1.6 - 58.9), house wife's (OR= 9.80; 95% CI: 1.6 - 58.9), and health workers as source information (OR=10.4; 95% CI: 1.57 -

69.5) and un skilled delivery attendants (OR=0.49; 95% CI 0.25 - 0.98) were the main predictors of exclusive breastfeeding for six months. Place of delivery, mass media as source of information was significantly associated with exclusive breastfeeding, however they didn't predict likely hood of exclusive breastfeeding for first six months. Mother's education level, parity, knowledge level and attitude were not significantly associated with exclusive breastfeeding for six months. It is therefore recommended that, main focus should be placed on appropriate and adequate health education, support and encouragement to mothers aged 20-29 and above 30 years. Lactating mothers should be given the recommended two hours daily for breastfeeding during the first six months. Also they should be sensitized, encouraged, motivated, and supported to attend RCHs clinics for getting appropriate and adequate exclusive breastfeeding information together with skilled and practical help from skilled health care workers.

**210. Mbugi EV, Chilongola JO. Allergic disorders in Africa and Africans: Is it primarily a priority? *World Allergy Organization Journal*. 2010; 3 (5): 175-181.**

In Africa, the burden of some diseases has been a problem for centuries. The spectrum of African diseases includes allergies, infections, nutritional deficiencies, and natural disasters. Efforts made by scientists to search for possible means of disease control have been outstanding; however, in some infections, solutions are still out of reach. In disease control programs, it might be worthwhile to pay attention to the most striking diseases than merely follow a holistic approach. This short review tackles the problems of allergy and allergens in Africa as compared with other disease burdens that may suggest the need for a more balanced approach based on priority.

**211. Mbugi EV, Meijerink M, Veenemans J, Jeurink PV, McCall M, Olomi RM , Shao JF, Verhoef H, Savelkoul HF. Alterations in early cytokine-mediated immune responses to *Plasmodium falciparum* infection in Tanzanian children with mineral element deficiencies: A cross-sectional survey. *Malaria Journal*. 2010; 9 (1):130.**

**Background:** Deficiencies in vitamins and mineral elements are important causes of morbidity in developing countries, possibly because they lead to defective immune responses to infection. The aim of the study was to assess the effects of mineral element deficiencies on early innate cytokine responses to *Plasmodium falciparum* malaria. **Methods.** Peripheral blood mononuclear cells from 304 Tanzanian children aged 6-72 months were stimulated with *P. falciparum*-parasitized erythrocytes obtained from in vitro cultures. **Results:** The results showed a significant increase by 74% in geometric mean of TNF production in malaria-infected individuals with zinc deficiency (11% to 240%; 95% CI). Iron deficiency anemia was associated with increased TNF production in infected individuals and overall with increased IL-10 production, while magnesium deficiency induced increased production of IL-10 by 46% (13% to 144%) in uninfected donors. All donors showed a response towards IL-1 production, drawing special attention for its possible protective role in early innate immune responses to malaria. **Conclusions:** In view of these results, the findings show plasticity in cytokine profiles of mononuclear cells reacting to malaria infection under conditions of different micronutrient deficiencies. These findings lay the foundations for future inclusion of a combination of precisely selected set of micronutrients rather than single nutrients as part of malaria vaccine intervention programmes in endemic countries

212. Mbugi EV, Meijerink M, Veenemans J, Jeurink PV, McCall M, Olomi RM, Shao JF, Chilongola JO, Verhoef H, Savelkoul HFJ. Effect of nutrient deficiencies on in vitro Th1 and Th2 cytokine response of peripheral blood mononuclear cells to *Plasmodium falciparum* infection. *Malaria Journal*. 2010; 9 (1): 162.

**Background:** An appropriate balance between pro-inflammatory and anti-inflammatory cytokines that mediate innate and adaptive immune responses is required for effective protection against human malaria and to avoid immunopathology. In malaria endemic countries, this immunological balance may be influenced by micronutrient deficiencies. **Methods:** Peripheral blood mononuclear cells from Tanzanian preschool children were stimulated in vitro with *Plasmodium falciparum*-parasitized red blood cells to determine T-cell responses to malaria under different conditions of nutrient deficiencies and malaria

status. **Results:** The data obtained indicate that zinc deficiency is associated with an increase in TNF response by 37%; 95% CI: 14% to 118% and IFN- response by 74%; 95% CI: 24% to 297%. Magnesium deficiency, on the other hand, was associated with an increase in production of IL-13 by 80%; 95% CI: 31% to 371% and a reduction in IFN- production. These results reflect a shift in cytokine profile to a more type I cytokine profile and cell-cell mediated responses in zinc deficiency and a type II response in magnesium deficiency. The data also reveal a non-specific decrease in cytokine production in children due to iron deficiency anaemia that is largely associated with malaria infection status. **Conclusions:** The pathological sequels of malaria potentially depend more on the balance between type I and type II cytokine responses than on absolute suppression of these cytokines and this balance may be influenced by a combination of micronutrient deficiencies and malaria status.

**213. Mbwambo ZH, Moshi MJ, Kayombo E, Kapingu MC, Uiso FC, Mahunnah RLA, Temba V. Observation and evaluation for efficacy and safety of traditional herbal remedies used in the management of HIV/AIDS in Tanzania. 2010.**

The first cases of AIDS in Tanzania were reported in Kagera region in 1983 (1). Subsequently, other regions also started reporting cases and by 1985 all regions in Mainland Tanzania had documented HIV/AIDS as an emerging public health problem. By end of 2003, it was estimated that about 1.8 million Tanzanians were living with HIV/AIDS and about 700,000 cumulative AIDS cases had occurred (1). The epidemic in Tanzania is caused mainly by three HIV-1 subtypes, including subtypes A, C and D (2), and to a limited extent by recombinant strains (2). Generally, it is estimated that in Tanzania the major subtypes A, C and D occur at frequencies of 40%, 40% and 20%, respectively (1-2). Transmission in Tanzania is mainly heterosexual, hence the highest prevalence and incidence is among the sexually active age groups. All sectors of the society have been affected, and HIV/AIDS has had profound health and socio-economic impact in Tanzania like in other endemic areas of the world.

- 214. Mbwilo GS, Smide B, Aarts C. Family perceptions in caring for children and adolescents with mental disabilities: A qualitative study from Tanzania. *Tanzania Journal of Health Research*.2010; 12 (2).**

Observations have shown that the provision of services to children and adolescents with mental disability (CAMDs) is not responding to the needs of this population. This community based study was carried out in Temeke Municipality in Tanzania and aimed to explore factors that influence family perspectives in the provision of care to CAMDs. This is a qualitative study of 52 respondents from 29 families involved in the daily care of CAMDs, chosen through convenient sampling. A semi structured questionnaire was used in the interviews. The text was analysed using thematic content analysis. The results of the study revealed family characteristics; deficient knowledge about mental disability (MD); and lack of health care facilities and resources for caring for CAMDs. The community and families of CAMDs had poor knowledge on MD and appropriate care, and about availability of resources and quality care. Families were not supported in the care of their children. Some children in consequence did not receive adequate health care. Some suffered from physical problems due to inadequate care; others were being locked in their room during periods when no-one was able to look after them. These factors were related to socio-economic characteristics of the families as well as to lacking service facilities. "Patient"-oriented, community/family-based health services to support management of chronic or life-long conditions such as MD are needed. The support of caregivers to children with MDs has to be improved. A well worked-out strategy would improve health care of CAMDs through provision of guidance and supervision to the families. Community and family/home-based care in the study area would benefit families of CAMDs.

- 215. McCauley CF, Webb C, Makani J, Macharia A, Uyoga S, Opi DH, Williams TN. High mortality from Plasmodium falciparum malaria in children living with sickle cell anemia on the coast of Kenya. *Blood*. 2010; 116(10): 1663-1668.**



Although malaria is widely considered a major cause of death in young children born with sickle cell anemia (SCA) in sub-Saharan Africa, this is poorly quantified. We attempted to investigate this question through 4 large case-control analyses involving 7164 children living on the coast of Kenya. SCA was associated with an increased risk of admission to hospital both with no malaria diseases in general (odds ratio [OR] = 4.17; 95% confidence interval [CI], 1.95-8.92;  $P < .001$ ) and with invasive bacterial diseases in particular (OR = 8.73; 95% CI, 4.51-16.89;  $P < .001$ ). We found no evidence for a strongly increased risk of either uncomplicated malaria (OR = 0.43; 95% CI, 0.09-2.10;  $P = .30$ ) or malaria complicated by a range of well-described clinical features of severity (OR = 0.80; 95% CI, 0.25-2.51;  $P = .70$ ) overall; nevertheless, mortality was considerably higher among SCA than non-SCA children hospitalized with malaria. Our findings highlight both the central role that malaria plays in the high early mortality seen in African children with SCA and the urgent need for better quantitative data. Meanwhile, our study confirms the importance of providing all children living with SCA in malaria-endemic areas with effective prophylaxis.

- 216. McCurdy SA, Ross MW, Williams ML, Kilonzo GP, Leshabari MT. Flash blood: blood sharing among female injecting drug users in Tanzania. *Addiction*. 2010; 105(6): 1062-1070.**

**Aims** This study examined the association between the blood-sharing practice of ‘flash blood’ use and demographic factors, human immunodeficiency virus (HIV) status and variables associated with risky sex and drug behaviors among female injecting drug users. Flash blood is a syringe-full of blood passed from someone who has just injected heroin to someone else who injects it in lieu of heroin. **Measurements** The association between flash blood use, demographic and personal characteristics and risky sex and drug use variables was analyzed by  $t$ -test and  $\chi^2$  test. The association between flash blood use and residential neighborhood was mapped. **Findings** Flash blood users were more likely to: be married ( $P = 0.05$ ), have lived in the current housing situation for a shorter time ( $P < 0.000$ ), have been forced as a child to have sex by a family member ( $P = 0.007$ ), inject heroin more in the last 30 days ( $P = 0.005$ ), smoke marijuana at an earlier age

( $P = 0.04$ ), use contaminated rinse-water ( $P < 0.03$ ), pool money for drugs ( $P < 0.03$ ) and share drugs ( $P = 0.000$ ). Non-flash blood users were more likely to live with their parents ( $P = 0.003$ ). Neighborhood flash blood use was highest near downtown and in the next two adjoining suburbs and lowest in the most distant suburbs. **Conclusions** These data indicate that more vulnerable women who are heavy users and living in shorter-term housing are injecting flash blood. The practice of flash blood appears to be spreading from the inner city to the suburbs.

**217. Meda E. Screening red cell all antibodies in SCA patients seen at MNH SCD clinics Dar es salaam, Tanzania master of medicine(Hematology and Blood Transfusion) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Red blood cell transfusion in sickle cell patients is a major form of supportive care and long term transfusion is recommended for patients with a risk of stroke. Many patients with SCA attend at MNH but no data are available on the frequency and pattern of all antibodies among those frequently transfused. Objective: This study aimed at determining the frequency and pattern of red blood cell all antibodies in sickle cell patients attending at MNH. **Materials and Methods:** This was a descriptive cross-sectional study that was conducted at Muhimbili National Hospital between August and November 2009. Informed consent was obtained from the patients, their parents or guardians for those less than 18 years. Information on social demographic and clinical characteristics was collected from the medical files and interview from the parents or guardians. After physical examination, laboratory tests on blood were done for each study subject. ABO and Rhesus blood group and alloantibody screening were performed on every patient's sample and alloantibody identification on those found with positive screening test. The overall prevalence of RBC all antibodies was determined and expressed as a percentage of all recruited patients during the time of data collection. All information was recorded using questionnaires and analysis was done using SPSS version 15. **Results:** The study involved a total of 471 SCA patients aged 6 months and above attending paediatric and general hematology SCD clinic. Of these, 365 (77.5%) had of

received a blood transfusion with 1184 total life time episodes transfusion (median, 2; range, 1-40).No records of transfusion documented in 106 (25.4%).The all immunization rate was 3.2% (15/471) among the SCA patients and 4.1% (15/365) of those who had been transfused. Anti-Kell was the most prevalent 20.7% and Rhesus blood group constituted 13.8% of total all antibodies. The risk of all immunization was found to increase with episodes of RBC transfusion. Rather unusual that sickle and pregnancy did not elicit antibody development. Life threatening anemia and splenomegaly were encountered in all immunized individuals. **Conclusion:** The all immunization was evident among the transfused SCA patients. The presence of clinically significant alloantibody in transfused SCA patients shows the relevant role of RBC transfusion in the risk of all immunization **Recommendations:** It is recommended that blood transfusion guideline be observed so that transfusion is appropriately used in management of SCA patients. This should involve an adequate pre- transfusion antibody screen and IA T cross-match. Policy of perfection would incorporate limited/partial phenotype matching of donor RBC for Kell, D, E and C prior to commencing chronic transfusion in order to minimize the risk of all immunization. Finally, further prospective studies are required to track the formation, clearance and features associated with all immunization in SCA patients.

- 218. Mega JL, Simon T, Collet JP, Anderson JL, Antman EM, Bliden K. SabatineMS. Reduced-function CYP2C19 genotype and risk of adverse clinical outcomes among patients treated with clopidogrel predominantly for PCI: a meta-analysis. *Jama.* 2010; 304(16): 1821-1830.**

**Objective:** To define the risk of major adverse cardiovascular outcomes among carriers of 1 ( $\approx$  26% prevalence in whites) and carriers of 2 ( $\approx$  2% prevalence in whites) reduced-function *CYP2C19* genetic variants in patients treated with clopidogrel. **Data Sources and Study Selection** A literature search was conducted (January 2000-August 2010) in MEDLINE, Cochrane Database of Systematic Reviews, and EMBASE. Genetic studies were included in which clopidogrel was initiated in predominantly invasively managed patients in a manner consistent with the current guideline recommendations and in which

clinical outcomes were ascertained. **Data Extraction** Investigators from 9 studies evaluating *CYP2C19* genotype and clinical outcomes in patients treated with clopidogrel contributed the relevant hazard ratios (HRs) and 95% confidence intervals (CIs) for specific cardiovascular outcomes by genotype. **Results** Among 9685 patients (91.3% who underwent percutaneous coronary intervention and 54.5% who had an acute coronary syndrome), 863 experienced the composite end point of cardiovascular death, myocardial infarction, or stroke; and 84 patients had stent thrombosis among the 5894 evaluated for such. Overall, 71.5% were no carriers, 26.3% had 1 reduced-function *CYP2C19* allele, and 2.2% had 2 reduced-function *CYP2C19* alleles. A significantly increased risk of the composite end point was evident in both carriers of 1 (HR, 1.55; 95% CI, 1.11-2.17;  $P = .01$ ) and 2 (HR, 1.76; 95% CI, 1.24-2.50;  $P = .002$ ) reduced-function *CYP2C19* alleles, as compared with no carriers. Similarly, there was a significantly increased risk of stent thrombosis in both carriers of 1 (HR, 2.67; 95% CI, 1.69-4.22;  $P < .0001$ ) and 2 (HR, 3.97; 95% CI, 1.75-9.02;  $P = .001$ ) *CYP2C19* reduced-function alleles, as compared with no carriers. **Conclusion** Among patients treated with clopidogrel for percutaneous coronary intervention, carriage of even 1 reduced-function *CYP2C19* allele appears to be associated with a significantly increased risk of major adverse cardiovascular events, particularly stent thrombosis.

219. Mehta S , Spiegelman D , Aboud S , Giovannucci EL. , Msamanga GI , Hertzmark E, Mugusi FM, Hunter DJ, Fawzi WW. Lipid-soluble vitamins A, D, and e in HIV-infected pregnant women in Tanzania. *European Journal of Clinical Nutrition*. 2010; 64 (8): 808-817.

**Background/Objectives:** There is limited published research examining lipid-soluble vitamins in human immunodeficiency virus (HIV)-infected pregnant women, particularly in resource-limited settings. **Subjects/Methods:** This is an observational analysis of 1078 HIV-infected pregnant women enrolled in a trial of vitamin supplementation in Tanzania. Baseline data on sociodemographic and anthropometric characteristics, clinical signs and symptoms, and laboratory parameters were used to identify correlates of low plasma vitamin A (0.7 mol/l), vitamin D (80 nmol/l) and vitamin E (9.7 mol/l) status. Binomial

regression was used to estimate risk ratios and 95% confidence intervals. **Results:** Approximately 35, 39 and 51% of the women had low levels of vitamins A, D and E, respectively. Severe anemia (hemoglobin 85 g/l; P0.01), plasma vitamin E (P0.02), selenium (P0.01) and vitamin D (P0.02) concentrations were significant correlates of low vitamin A status in multivariate models. Erythrocyte Sedimentation Rate (ESR) was independently related to low vitamin A status in a nonlinear manner (P0.01). The correlates of low vitamin D status were CD8 cell count (P0.01), high ESR (ESR 81 mm/h; P0.01), gestational age at enrollment (nonlinear; P0.03) and plasma vitamins A (P0.02) and E (P0.01). For low vitamin E status, the correlates were money spent on food per household per day (P0.01), plasma vitamin A concentration (nonlinear; P0.01) and a gestational age 16 weeks at enrollment (P0.01). **Conclusions:** Low concentrations of lipid-soluble vitamins are widely prevalent among HIV-infected women in Tanzania and are correlated with other nutritional insufficiencies. Identifying HIV-infected persons at greater risk of poor nutritional status and infections may help inform design and implementation of appropriate interventions.

**220. Mehta S, Giovannucci E, Mugusi FM, Spiegelman D, Aboud S, Hertzmark E, Fawzi WW. Vitamin D status of HIV-infected women and its association with HIV disease progression, anemia, and mortality. *PLoS One*. 2010; 5(1): e8770.**

**Background:** Vitamin D has a potential role in slowing HIV disease progression and preventing mortality based on its extensive involvement in the immune system; however, this relationship has not been examined in large studies or in resource-limited settings. **Methodology/Principal Findings:** Vitamin D levels were assessed in 884 HIV-infected pregnant women at enrollment in a trial of multivitamin supplementation (not including vitamin D) in Tanzania. Women were followed up for a median of 69.5 months, and information on hemoglobin levels, HIV disease progression, and mortality was recorded. Proportional hazard models and generalized estimating equations were used to assess the relationship of these outcomes with vitamin D status. **Conclusions/Significance:** Low vitamin D status (serum 25-hydroxyvitamin D < 32 ng/mL) was significantly associated with progression to WHO HIV disease stage III or greater in multivariate models

(incidence rate ratio [RR]: 1.25; 95% confidence intervals [CI]: 1.05, 1.50). No significant relationship was observed between vitamin D status and T-cell counts during follow-up. Women with low vitamin D status had 46% higher risk of developing severe anemia during follow-up, compared to women with adequate vitamin D levels (RR: 1.46; 95% CI: 1.09, 1.96). Women in the highest vitamin D quintile had a 42% lower risk of all-cause mortality, compared to the lowest quintile (RR: 0.58; 95% CI: 0.40, 0.84). Vitamin D status had a protective association with HIV disease progression, all-cause mortality, and development of anemia during follow-up in HIV-infected women. If confirmed in randomized trials, vitamin D supplementation could represent a simple and inexpensive method to prolonging the time to initiation of antiretroviral therapy in HIV-infected patients, particularly in resource-limited settings.

- 221. Mercatali L, Ibrahim T, Sacanna E, Ricci R, Scarpi E, Fabbri F, Amador D. Serum markers to monitor response to zoledronic acid in patients with bone metastases from breast cancer. In *ASCO Annual Meeting Proceedings*. 2010; 28(15): 1105.**

**Background:** Breast cancer is the most frequent tumor in women and 80% of patients with advanced disease have bone metastases (BM), which are responsible for high morbidity and reduced quality of life. Zoledronic acid (Zol), routinely used to treat patients with BM, inhibits bone resorption and has antitumor and antiangiogenic properties. **Methods:** The present study evaluated serum levels of vascular endothelial growth factor (VEGF) and cross-linked N-telopeptide of type I collagen (NTX) in 31 consecutive patients at first diagnosis of bone metastases. All received the monthly standard Zol treatment and were monitored for about 9 months with 3-4 blood samples collected from each patient during that time. **Results:** The baseline VEGF median value of 298 pg/ml (25-1264) increased to 345 pg/ml (62-977) at 3 months and, after falling to 307 pg/ml (112-1307) at 6 months, rose again, reaching 411 pg/ml (172-1004) at 9 months. However, these differences were not statistically significant. In contrast, the baseline NTX median value of 16 nm BCE (range 3-45) significantly decreased at 3 (11 nm BCE, range 5-35) and 6 (10 nm BCE, range 5-21) months ( $p < 0.001$ ), and reduced

even further (12 nm BCE, range 5-45), albeit not significantly, at 9 months. **Conclusions:** The present work shows that standard monthly treatment with zoledronic acid did not influence serum VEGF levels but significantly reduced serum NTX values by about 35% 3 and 6 months after treatment. The study is ongoing to validate these data in a larger series of patients.

- 222. Metodi J, Aboud S, Mpembeni R, Munubhi E. Immunity to hepatitis B vaccine in Tanzanian under-5 children. *Annals of Tropical Pediatrics*. 2010; 30 (2): 129-136.**

**Background:** Hepatitis B vaccine was introduced in Tanzania in 2002 and is administered as DPT-hepatitis B at 4, 8 and 12 weeks of life. Aim: To determine immunity to hepatitis B virus in children under 5 years attending reproductive and child health (RCH) clinics. **Methods:** A cross-sectional, health facility-based study was conducted between July and December 2007 at Temeke, Amana and Mwananyamala municipal hospitals in Dar es Salaam, Tanzania. Children under 5 years who had received DPT-HB vaccine as evidenced by RCH card number 1 were included. Blood samples were collected to determine hepatitis B surface antigen (HB sAg) and antibodies to hepatitis B surface antigen (anti-HB s) and hepatitis B core antigen (Anti-HB c). An anti-HB s level of  $\geq 10$  mIU/ml is regarded as protective. Nutritional and HIV status were also determined. Results: A total of 296 children under 5 years vaccinated with DPT-HB were recruited, 153 (51.7%) of whom were male. Altogether, 205 (69.3%) children had anti-HB s levels  $\geq 10$  mIU/ml. The number of DPT-HB vaccine doses, time interval since last DPT-HB dose and HIV status were significant predictors of anti-HB s levels. Five children (1.7%) were positive for HB sAg, suggesting possible vertical transmission. No child had anti-HB c antibodies. **Conclusion:** More than two-thirds of children under 5 years had protective anti-HB s levels. A change in the hepatitis B immunisation schedule to include a dose immediately after birth should improve immunity.

- 223. Metodi J, Aboud S, Mpembeni R, Munubhi E. Immunity to hepatitis B vaccine in Tanzanian under-5 children. *Annals of Tropical Pediatrics: International***

*Child Health. 2010; 30(2): 129-136.*

**Background:** Hepatitis B vaccine was introduced in Tanzania in 2002 and is administered as DPT-hepatitis B at 4, 8 and 12 weeks of life. *Aim:* To determine immunity to hepatitis B virus in children under 5 years attending reproductive and child health (RCH) clinics. **Methods:** A cross-sectional, health facility-based study was conducted between July and December 2007 at Temeke, Amana and Mwananyamala municipal hospitals in Dar es Salaam, Tanzania. Children under 5 years who had received DPT-HB vaccine as evidenced by RCH card number 1 were included. Blood samples were collected to determine hepatitis B surface antigen (HB<sub>s</sub>Ag) and antibodies to hepatitis B surface antigen (anti-HB<sub>s</sub>) and hepatitis B core antigen (Anti-HB<sub>c</sub>). An anti-HB<sub>s</sub> level of  $\geq 10$  mIU/ml is regarded as protective. Nutritional and HIV status were also determined. **Results:** A total of 296 children under 5 years vaccinated with DPT-HB were recruited, 153 (51.7%) of whom were male. Altogether, 205 (69.3%) children had anti-HB<sub>s</sub> levels  $\geq 10$  mIU/ml. The number of DPT-HB vaccine doses, time interval since last DPT-HB dose and HIV status were significant predictors of anti-HB<sub>s</sub> levels. Five children (1.7%) were positive for HB<sub>s</sub>Ag, suggesting possible vertical transmission. No child had anti-HB<sub>c</sub> antibodies. **Conclusion:** More than two-thirds of children under 5 years had protective anti-HB<sub>s</sub> levels. A change in the hepatitis B immunisation schedule to include a dose immediately after birth should improve immunity.

**224. Mhada TEV. Bacterial infections and antimicrobial susceptibility and outcome in neonates at Muhimbili National Hospital. Master of Medicine (Pediatrics and Child Health) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Neonatal septicemia remains a major cause of morbidity and mortality. More than 5 million neonatal deaths occur worldwide each year, the majority in developing countries where neonatal mortality accounts for 50-70% of the infant mortality rate. In Muhimbili National Hospital neonatal bacterial septicemia ranked number three among causes of neonatal mortality and morbidity in 2007/2008. The spectrum of organisms causing neonatal septicemia changes over time, therefore it is



important to know the sensitivity pattern of the commonly used antimicrobials. This information is useful in the proper management of neonatal bacteria septicemia.

**Objectives:** To determine the etiology, antimicrobial susceptibility pattern and immediate outcome of neonatal bacterial infections among neonates admitted in neonatal unit at Muhimbili National Hospital (MNH)

**Methods:** A hospital based cross sectional study was conducted at the neonatal ward from neonates presenting with clinical feature of infections to Muhimbili National Hospital in Dar es Salaam city from October 2009 to January 2010. A structured questionnaire was used to capture demographic information, neonates presenting of any symptoms and signs of neonatal infections were recruited consecutive daily and included into the study after obtaining a written informed consent from parents/guardians. A thorough physical examination including weight, length and occipital frontal circumference were done. Culture and sensitivity of blood, swabs, and urine were done. Pure colonies were identified based on characteristic morphology, gram stain appearance and standard commercially prepared biochemical tests, and thereafter-antibiotic sensitivities were done. Data analysis was done using SPSS software version 15 (Statistical Package for Social Science) for windows evaluation. A p-value of less than or equal to 0.05 was considered biostatic ally significant.

**Results:** Three hundred and thirty neonates met inclusion criteria and were recruited into the study. Out of which 170 (51.5%) were male and 160 (48.5%) were females, 253 (76.7%) were 0 to 6 days while 77 (23.3%) were 7 to 28 days old, with the mean age of 6 days. Common clinical features were umbilical pus discharge with hyperemia (96.1 %), fever (91.5%) and inability to feed (62.4%). Skin rash with pus spots and hypothermia were found to be independent predictors of bacterial infections. The frequency of infections confirmed by cultures in blood was 74 (22.4%), umbilical swabs 285 (89.9%) and skin swabs 28 (90.3%). Overall bacterial isolated were 371 from 330 neonates, 74 (19.9%) isolates from blood and 297 (80.1 %) from pus. In blood, 48.6% of bacteria were gram positive and 51.4% gram negative, of which the common aetiological agents were *Staphylococcus aureus* (36.5%), *Klebsiella* spp (29.7%) and *Escherichia coli* (18.9%). The microorganisms isolated were resistant to ampicillin (88.2%), cloxacillin (85.3%) and moderately resistant to gentamicin (58.8%). Of the 68 bacteria organisms isolated antibacterial susceptibility pattern showed 98.5% were sensitive to amikacin. Overall mortality was 13.9%, of which

14.2% was among neonates aged 0 to 6 days while 13.0% were 7 to 28 days old. In addition, participants with neonatal septicemia have a higher proportion of mortality than those without septicemia. (24.3% versus 10.9%,  $P = 0.003$ ) **Conclusion:** In this study, the common aetiological agents were *S. aureus*, *Klebsiella* spp and *E. coli*. In early onset septicemia, *Klebsiella* spp were the predominant organisms, while *S. aureus* was predominant in late onset septicemia. The microorganisms isolated were highly resistant to ampicillin and cloxacillin and moderately resistant to gentamicin (58.8%). Sensitivity to amikacin was high; the organisms were also sensitive to ceftriaxone and cefuroxime. Among the neonates with neonatal septicemia, 11 (61.1 %) died within the first 72 hours of admission **Recommendation:** The use of ampicillin, cloxacillin and gentamicin as first line treatment of neonatal bacterial septicemia in the neonatal ward of MNH needs to be re-evaluated. Amikacin should be used as an initial therapy. Antibiotic susceptibility surveillance, evaluation of local pathogens causing neonatal septicemia and detection of any shift in their antimicrobial susceptibilities.

225. **Mhalu AP. Magnitude and determinants of risky sexual behaviors among youths attending HIV care and treatment clinics in Dar es Salaam region, Tanzania. Master of Public Health Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Introduction:** Risky sexual behaviors are mainly the focal point of programmes on HIV prevention. Little interest has been given to sexual behaviors among HIV positive youths. Sexual behaviors of HIV infected youth have not been described. The intention of this study was to determine the magnitude and determinants of risky sexual behaviors among HIV infected youths. **Methods:** A cross-sectional study was conducted in June 2010 in selected Care and Treatment Clinics (CTCs) in the three municipalities of Dar-es-Salaam. A total of 282 eligible HIV infected youths aged 15-24 years were interviewed using a structured questionnaire to obtain data from study participants. Data was analyzed using the SPSS version 15.0. **Results:** Prevalence of unprotected sex was found to be 40.0% among males and 37.5% among females ( $p < 0.001$ ) with 38.7% of males and 29.1% of females reporting to not use condom consistently. More than 50% of the participants

didn't know HIV status of their sexual partners. A large proportion (46.7% males versus 60.4% females) of youth had low knowledge on STI prevention and STI transmission (65.3% for males and 73.4% for females). Multiple sexual partnership was reported by 10.6% of males and 15.9% of females ( $p < 0.005$ ). Independent predictors of condom use in this population was poor attitude towards condom (Adjusted Odds Ratio 0.23, 95% Confidence Interval (CI): (0.06-0.81) and not being on ARV (AOR, 0.38, 95% CI: 0.17-0.85). While those in young age group (15-19 years) were almost 3 times more likely to report multiple sexual partnerships and those not using alcohol was associated with 62% less likely to report to do so. **Conclusions:** Practice of unprotected sex and multiple sexual partnerships was prevalent among youth living with HIV / AIDS in Dar-es-Salaam. Low STI knowledge and low HIV disclosure status increased the vulnerability and risk for transmission of HIV infection among youth. Specific intervention measures including integrating reproductive health counseling in routine CTC should be a priority. Intervention measures should take into account age, location, ARV use status and other individual related behaviors such as alcohol consumption and condom use.

**226. Mhina AL. Respiratory health problems among pump attendants of selected petroleum filling stations in Dar es Salaam. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Occurrence of occupational respiratory diseases is important indicator of the quality of working conditions and working environment. However, while petroleum business is rapidly emerging as the more source of employment in urban and suburban areas in Dar es Salaam little is known to the health hazards encountered by petroleum filling station pump attendants and how to prevent them. This study aimed to explore occurrence of respiratory health problems and contributing factors among petroleum filling station pump attendants, importance and use of preventive measures. A cross - sectional comparative study was conducted in Dar es Salaam Municipality. Questionnaire was used to obtain information on demographic characteristics, work history, previous dust exposure and respiratory symptoms experienced and use of protective gears. Lung function was assessed using Easy One Portable Spiro meter and peak expiratory flow rate

meter. Statistical analysis was done using SPSS software version 15. Proportions were computed from categorical variables while mean and correlations and multiple regression analysis was computed from continuous variable. The criterion of significance association was assumed for p-values less than 0.05. The major finding of this study was the decreasing peak expiratory flow rate of 1.35 showed by petroleum filling attendants as compared to office workers. However the petroleum filling pump attendants reported no respiratory health symptoms when elicited. Protective gears (PPE) were not available however, some few petroleum filling pump attendants were aware of the risks concerning petroleum station working conditions. The study recommended dual approach to merge knowledge of respiratory health problems and practice health and safety measures (preventive practices) among petroleum filling pump attendants in order to improve their health and working conditions. Petrol stations owners should prepare information guidelines concerning prevention and ensure that the information is accessible to all petroleum filling station pump attendants.

**227. Midenge BY. Awareness on recommended veterinary drugs withdrawal periods among small scale dairy cattle farmers in Kinondoni municipality. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**228. Minja PC. Regulations of private health insurance: operation and its outcomes on enrollment and health services utilization of beneficiaries in Dar es Salaam. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Regulation is often seen as a potential solution to addressing the many problems which take place in the private production, financing and delivery of health services. For Private Health Insurance (PHI) markets to be able to meet public health objectives of equity, affordability and universal access to healthcare, and avoid insurance adverse effects of moral hazard, adverse selection and risk selection, their regulation needs to be effective (Al-Khatib, 2007). In this context, this study was conducted to explore the effectiveness of the existing regulatory framework of the PHI market and its outcomes in terms of

succeeding to avert risk selection, adverse selection and moral hazard. Consumers' involvement in regulation of the PHI market in Dar es Salaam was also explored. A cross-sectional analytical study using both qualitative and quantitative methods was conducted with 200 beneficiaries and seven representatives from both the regulatory authority and five private health insurance companies being interviewed. Information on how the PHI market operates with the existing regulatory framework and factors affecting effectiveness was obtained. The results indicated that regulation of the PHI market was done by the Tanzania Insurance Regulatory Authority in the same way as for other insurance markets with no regulations specific to health insurance. Apart from licensing and finances, there were no regulations on coverage, enrollment, premiums, benefit packages or provider payment mechanisms. The capacity of the authority to regulate the PHI market was found to be low in terms of lack of sufficient resources including personnel and expertise. Risk selection, adverse selection and moral hazard were found to be practiced in the market and consumer involvement in regulation was found to be low. The findings provide information that may be used to guide regulators and policymakers on issues that require regulation in the existing PHI market in order to attain equity, affordability and increase access to healthcare. Further studies on how to involve consumers' more in regulations are also required to ensure they are adequately protected.

**229. Minzi OM, Ngaimisi E. Journal of Chemical and Pharmaceutical Research. *J. Chem.* 2010; 2(2): 431-439.**

Simple high-Performance Liquid Chromatographic method for determination of Nevirapine in Human plasma is hereby reported. Carbamazepine was used as internal standard (IS). The Internal standard and the drug were extracted into basified di-isopropyl ether, dried with a Current of air using hair drier. The dried sample was reconstituted with 120 µl of mobile phase Followed by injection of 90 µl of the reconstituted sample into the chromatograph. A reversed Phase column C18 was used and the mobile phase consisted of 250ml acetonitrile and 800 ml Phosphate Buffer (pH 7.5). Detection was achieved at 282nm and both NVP and IS were well Separated from endogenous

substances. The method involves single step extraction procedure and applies a commonly available internal standard. It is suitable for use in laboratories of Developing countries as it applies readily available carbamazepine as internal standard, C-18 Column and does not require nitrogen evaporation system and high speed centrifuges whose Availability may be an issue in resource constrained laboratories.

- 230. Miranda R, Bobu E, Grossmann H, Stawicki B, Blanco SÁ. Factors influencing a higher use of recovered paper in the European paper industry. *Cellulose Chemistry and Technology*. 2010; 44(10): 419-430.**

Europe is one of the global leaders in paper recycling. Recovered paper is an indispensable raw material (around 50% of the fibrous raw material is recovered paper), which contributes to the sustainability of the sector. However, certain factors do have a limiting influence on the possibility of an extended use of recovered paper, such as the quality of the recovered paper, the poor sorting activities, the price for recovered paper, the acceptance/demand of recovered paper-containing products by the consumers, the recyclability of the paper products, etc. Against this background, the COST Action E48 – “The limits of paper recycling” – has analyzed the issues that predominantly influence the competitiveness of the paper and board recycling industry, and detected potentials for an extended use of recovered paper in the European paper industry. The analysis has been carried out on the basis of a detailed and comprehensive questionnaire aiming at collecting experiences and opinions on the situation of the different European countries, related to paper recycling.

- 231. Mirza SM, Mustafa G, Khan IU, Zia-ur-Rehman M, Shafiq M. 3-[4-(Acetamido) benzenesulfonamido] benzoic acid. *Acta Crystallographica Section E: Structure Reports Online*. 2010; 67(1): o25-o26.**

In the title compound, C<sub>15</sub>H<sub>14</sub>N<sub>2</sub>O<sub>5</sub>S, the dihedral angle between the aromatic rings is 63.20 (11) Å. The crystal structure displays classical intermolecular O-H...O hydrogen bonding typical for carboxylic acids, forming centrosymmetric dimers. These dimers

are further connected by N-H...O and C-H...O hydrogen bonds to form an extended network.

- 232. Mlay M, Bakari M. The prevalence of HIV among patients admitted with stroke at the Muhimbili National Hospital, Dar es Salaam, Tanzania. *Tanzania Journal of Health Research*. 2010; 12(2): 105-113.**

Stroke and HIV infection are both common medical problems in the day to day clinical practice. Although data from developed countries confirm HIV infection as a risk for stroke the exact underlying mechanism is still unclear. Little data exist on the magnitude of HIV among patients with stroke in Tanzania. This cross-sectional study was carried out to determine the prevalence of HIV and assess its impact on the clinical presentation and outcome of patients admitted with stroke at the Muhimbili National Hospital, Dar es Salaam, Tanzania between May and November 2008. Patients were clinically evaluated through history and physical examination. Presence of HIV was determined by demonstration of HIV antibodies through an ELISA test. CD4+ T-lymphocyte count was determined by flowcytometry. Complete blood counts, as well as lipid profile and blood glucose levels were also determined. A total of 215 patients with stroke, constituting 6.8% of the admissions, were analyzed. The prevalence of HIV among patients with stroke was 20.9% (45/215). The overall mean ( $\pm$ SD) age of patients with stroke who were HIV infected was 47.2 ( $\pm$  14.5) years, while that among patients with stroke but HIV uninfected was 56.1 ( $\pm$ 15.1) years ( $P < 0.001$ ). The proportion of patients with stroke and HIV who had hypertension was 53.3% (24/45), whereas among those HIV uninfected was 80.6% (137/170) ( $P = < 0.001$ ). Furthermore, fever, anemia, diarrhoea, tuberculosis and Kaposi's sarcoma were significantly more prevalent among those with HIV than those with no HIV infection. The respective proportions were 44% vs 24.7%; 26.7% vs 7.6%; 20.0% vs 2.9%; 13.3% vs 1.2%; and 6.7% vs 0% ( $P < 0.01$ ). Majority (58.3%) of the HIV infected stroke patients had CD4 counts of less than 200 cells/ $\mu$ l. The mean duration of hospital stay of 10.3 days was significantly longer among those with HIV compared to that of 7.3 days among the HIV uninfected patients with stroke ( $P = 0.001$ ). While on univariate analysis both fever and anemia were associated with mortality, on

multivariate analysis the presence of fever was found to be significantly associated with mortality among patients with stroke and HIV. In conclusion, the prevalence of HIV infection among patients with stroke was high. Patients with stroke and HIV were younger, had significant immunodeficiency and presented with other HIV-related illnesses. Early detection of HIV through enhanced counseling and testing is recommended.

**233. Mmari VB. Perceived causes of patients aggression and violence towards nurses in psychiatry department of Muhimbili National Hospital Dar es salaam, Tanzania. Master of Science (Metal Heath Nursing) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Aggression and violence pose a major problem for public health and health care systems. Aggression causes harm and injuries to self, others or the environment. The incidence of aggression in health care facilities is reportedly on the increase and concerns about management of this problem are growing. Nurses are exposed to aggression and violent behavior in their day to day work Health Service Advisory Committee (HSAC) 1987. **Objectives:** The first objective was to assess the perceived causes of patient's aggression towards nurses in psychiatry department of Muhimbili National Hospital; the second was to explore how nurses access and manage aggressive patients; and the last was to explore the perceptions/feelings of the patients on the management of aggression and violence. **Methods:** Qualitative study design was adopted. Convenient and purposeful sampling approaches were utilized to obtain the sample. Two focus group discussions were conducted, one involving patients (n=5). Nurses (n=4) participated in interview and the key informant (n= 1). All interviews were audio taped with the permission of participants and were later transcribed. Data were analyzed manually using descriptive content analysis method. **Results:** Aggression is a frequent and problematic aspect of psychiatric in-patient treatment. This study has revealed that perceived causes of aggression and violence among patients at psychiatric department are: environment, long hospital stay, abusive language and poor relationship among nurses. The management approach is mainly chemical restrain. Patients perceived environmental



conditions and poor communication to be provocative of aggressive behavior. Nurses however, viewed the patients' mental illnesses to be the main reason for aggression, although the negative impact of the in-patient environment was recognized. From interview responses, it was evident that patients were dissatisfied with the care and management of aggression. **Conclusion:** There are differences between the views of nurses and patients about causes of aggression and its management. 'Traditional approaches' (such as medication) seemed to be valued more by nursing staff. Training in the use of fundamental therapeutic communication skills was advocated by patients, whilst the need for greater attention to organizational deficits was advocated by nurses. **Recommendations:** It is recommended that, Ministry of Health and Social Welfare should develop, implements, and monitors a national action plan for aggression and violence management. There is also a need to integrate aggression and violence prevention and management into educational policies. The Department of Psychiatry should develop assessment form for aggression and violence and implement training in specific techniques that provide nurses with safe and effective ways of both preventing and dealing with aggression and violence such as therapeutic communication and de-escalation techniques on a regular basis.

234. **Mmbando BP, Vestergaard LS, Kitua AY, Lemnge MM, Theander TG, Lusingu JA. A progressive declining in the burden of malaria in north-eastern Tanzania. *Malar J.* 2010; 9(216): 10-1186.**

**Background:** The planning and assessment of malaria interventions is complicated due to fluctuations in the burden of malaria over time. Recently, it has been reported that the burden of malaria in some parts of Africa has declined. However, community-based longitudinal data are sparse and the reasons for the apparent decline are not well understood. **Methods:** Malaria prevalence and morbidity have been monitored in two villages in north-eastern Tanzania; a lowland village and a highland village from 2003 to 2008. Trained village health workers treated presumptive malaria with the Tanzanian first-line anti-malarial drug and collected blood smears that were examined later. The prevalence of malaria parasitaemia across years was monitored through cross-sectional

surveys. **Results:** The prevalence of malaria parasitaemia in the lowland village decreased from 78.4% in 2003 to 13.0% in 2008, whereas in the highland village, the prevalence of parasitaemia dropped from 24.7% to 3.1% in the same period. Similarly, the incidence of febrile malaria episodes in the two villages dropped by almost 85% during the same period and there was a marked reduction in the number of young children who suffered from anaemia in the lowland village. **Conclusion:** There has been a marked decline in malaria in the study villages during the past few years. This decline is likely to be due to a combination of factors that include improved access to malaria treatment provided by the trained village helpers, protection from mosquitoes by increased availability of insecticide-impregnated bed nets and a reduced vector density. If this decline in malaria morbidity is sustained, it will have a marked effect on the disease burden in this part of Tanzania.

- 235. Mohamed H, Abouelhoda M. Parallel suffix sorting based on bucket pointer refinement. In *Biomedical Engineering Conference (CIBEC), 2010 5th Cairo International* . 2010: 98-102.**

Suffix array is one of the most important data structures in bioinformatics. Much effort has been devoted to find efficient sequential algorithms for its construction, but little is done to introduce parallel construction algorithms. The bucket pointer refinement algorithm is one of the efficient suffix sorting algorithms that is tuned for genomic datasets. In this paper, we introduce a parallel version of this algorithm running on (shared memory) multicore computers. We present experimental results comparing our algorithms to other parallel algorithms running on similar architecture.

- 236. Mohamed H, Alhaidary A, Beynen AC. Nephrocalcinosis in female rats fed diets containing either pectin, galacturonic acid or glucose. *American Journal of Animal and Veterinary Sciences*. 2010; 5(2): 117.**

**Problem statement:** In our earlier study, dietary pectin has been shown to promote nephrocalcinosis in rats when compared with the feeding of cellulose. It was not known

whether this pectin effect relates to its structure or to its monosaccharide component, galacturonic acid. **Approach:** The effects of dietary pectin, galacturonic acid and glucose on kidney calcification were studied in female rats. The purified diets used had similar concentrations of calcium, magnesium and phosphorus. **Results:** It was confirmed that the feeding of pectin (10%, w/w) versus cellulose in diets containing 0.4% phosphorus results in significantly greater calcium and phosphorus concentrations in kidney. The new finding was that pectin had a nephrocalcinogenic effect when compared with either galacturonic acid or glucose. **Conclusion:** The stimulatory effect of pectin on the development of nephrocalcinosis is specific and is related to its structure rather than to its galacturonic acid component.

- 237. Mohamed H, Jaafar A. Development and potential analysis of heuristic evaluation for educational computer game (PHEG). In *Computer Sciences and Convergence Information Technology (ICCIT), 2010 5th International Conference on.2010: 222-227.***

Heuristic Evaluation has expended tremendously from general interface evaluation to more specific evaluation including for computer games application. Computer game plays an important leisure tool nowadays and the potential of it has been explored and being used in teaching and learning. Combination of evaluation method and computer game application that focus on educational purposes, lead to the realization of having comprehensive evaluation method that able to evaluate elements of fun and educational. As a result, Playability Heuristics Evaluation for Educational Computer Game (PHEG) was proposed because of the needs to address important elements especially fun element in educational computer games so that the produced application is fun to be used as well as it incorporates educational elements to help users during the learning process. The development process of PHEG involved five major steps; initial study, proposed heuristics, experts review, evaluation process and final heuristics. The discussions of this paper only focus on the fourth step which is evaluation process on PHEG. At the end of this paper, a potential analysis for PHEG using quantitative method is proposed.

- 238. Mohamed H, Jincai Y, Qian J. Towards integration rules of mapping from relational databases to semantic web ontology. In *Web Information Systems and Mining (WISM), International Conference on.2010; 1: 335-339.***

This paper points towards the integration rules of mapping from relational database such as SQL DDL, schema and data into the semantic web ontology such as OWL which build on top of RDF using vocabulary RDFS and XML schema data type. From the study, different cases are considered: such as tables, relationships, composite-column, single or multiple primary key, foreign key, constraints, check between, check like, etc, and then using one of these cases to mapping data rows to ontology instances. This approach reduces the cost and time for building ontology (OWL).

- 239. Mohamed H, Vadel AM, Khemira H. Estimation of chilling requirement and effect of hydrogen cyanamide on bud break and fruit characteristics of ‘Superior Seedless’ table grape cultivated in a mild winter climate. *Pak J Bot.* 2010; 42: 1761-1770.**

The chilling requirement and optimum time for hydrogen cyanamide (HC) application were determined for Superior Seedless table grape grown in southern Tunisia, an arid mild winter region. The reliability of five models to predict chilling accumulation for this cultivar was also investigated. In mid-November, current season shoots were excised and subjected to artificial chilling at 7°C for different lengths of time. Each time, half the shoots were treated with a 2% (v/v) aqueous solution of HC, the others were sprayed with distilled water. Thereafter, these shoots were forced to budburst. Rest intensity gradually declined due to chilling accumulation. We estimated that the cultivar needed approx. 440 hours (h) of chilling, or chilling requirement (CR), to overcome endodormancy. During two dormant seasons, estimation of chilling accumulation showed that the Positive Chill Unit model was the most suitable to predict rest completion for Superior Seedless grown under our climatic conditions. Using this model, we found that the variety's CR was not always met by mid-February. In both laboratory and field trials, HC was most effective in enhancing and advancing bud break if applied when approx. 2/3 of the cultivar's CR

were met. Moreover, by this application berry weight and diameter were increased and fruit maturity was advanced. Our study indicated that HC (2%) was effective in advancing bud break and fruit maturity of Superior Seedless table grape although its effectiveness depended on application date.

- 240. Mohammad R, Ibrahim T, Begam M, Adam AB. A capacitive discrimination of slaughtered and slaughtered sheep and goat meat. In Intelligent and Advanced Systems (ICIAS), 2010 International Conference on. 2010: 1-5.**

This paper investigates the possibility of differentiating slaughtered and non-slaughtered sheep and goat meat tissue using capacitor. The capacitor designed as two circular parallel plates made from platinum, after putting the meat slice between them an oscilloscope will used to measure the capacitance voltage with different frequencies. Multisim was used to identify output voltage, capacitance, permittivity and conductivity of the meat. From simulation results the capacitance depends on the dielectric property and volume of blood for the meat slice and this lead to change in the output voltage. Also the dielectric properties and output voltage were proposed for slaughtered and non-slaughtered animal's meat at various frequencies.

- 241. Moland KM, De Paoli MM, Sellen DW, van Esterik P, Leshabari SC, Blystad A. Breastfeeding and HIV: experiences from a decade of prevention of postnatal HIV transmission in sub-Saharan Africa. *Int Breastfeed J.* 2010; 5(10).**

Infant feeding by HIV-infected mothers has been a major global public health dilemma and a highly controversial matter. The controversy is reflected in the different sets of WHO infant feeding guidelines that have been issued over the last two decades. This thematic series, 'Infant feeding and HIV: lessons learnt and ways ahead' highlights the multiple challenges that HIV-infected women, infant feeding counselors and health systems have encountered trying to translate and implement the shifting infant feeding recommendations in different local contexts in sub-Saharan Africa. As a background for the papers making up the series, this editorial reviews the changes in the guidelines in

view of the roll out of prevention of mother to child transmission (PMTCT) programmes in sub-Saharan Africa between 2001 and 2010.

- 242. Moland KM, van Esterik P, Sellen DW, De Paoli MM, Leshabari SC, Blystad A. Ways ahead: protecting, promoting and supporting breastfeeding in the context of HIV. *Int Breastfeed J.* 2010; 5:19.**

The HIV epidemic coupled with the assumed benefits of infant formula for the children of all HIV-infected mothers have in complex ways changed public ideas about infant feeding and represents a threat to well established breastfeeding practices. In the wake of the confusion that postnatal prevention of mother to child transmission of HIV (PMTCT) interventions have created among HIV-infected mothers, infant feeding counselors and the public at large, it is time to reinstate the principles of the Innocent Declaration to protect, promote and support breastfeeding in the context of HIV. The challenge that lies ahead is a search for ways to restore the trust in breastfeeding as the normal and safest way to feed an infant. This requires continued research as well as concerted advocacy and action.

- 243. Mori AT. Priority setting in selection and distribution of new antimalarials in Tanzania, analysis and evaluation against accountability for reasonableness. 2010.**

**Background:** Tanzania like many other malaria endemic countries changed its National Malaria Treatment Policy in 2006 due to parasite resistance to Sulphadoxine/Pyrimethamine (SP). Selection of Artemether-Lumefantrine (ALu) as the first line ant malarial drug and its selective distribution to Public and Faith based health facilities were two priority-setting decisions underlying the policy change. However, today, there are people who are still using Sulphadoxine/Pyrimethamine because they have no access to Artemether-Lumefantrine. **Objective:** To analyze and evaluate whether the priority decisions for selection and distribution of subsidized Artemether-Lumefantrine satisfies the conditions of fair process as suggested in the ethical framework of accountability for reasonableness. **Method:** A Qualitative study involving

review of the guidelines and in-depth interviews with key informants from the task force was conducted. The analysis followed an editing organizing style. The audio data was transcribed into text and loaded into QDA program whereby coding, connections and analysis was performed. The results are presented under the four thematic areas of the accountability for reasonableness (AfR) framework which are publicity, relevance, appeals & revision and the enforcement conditions. Results: Publicity: The decision and the rationales for selection of Artemether-Lumefantrine were made public, contrary to the selective distribution decision and its rationales. Public and the patients were indirectly but inadequately represented. There was no explicit mechanism to involve the stakeholders and as a result the task force lacked professional, institutional and countrywide representation. Relevance: Selection of Artemether-Lumefantrine was based on relevant evidence; however its selective distribution was partly based on donor requirement. Appeals & Revision: there was no well defined and reliable appeal mechanism, apart from the use of newspapers. Enforcement: There was not any enforcement mechanism to ensure the other three conditions are fulfilled. VI **Conclusions and Policy implications:** The change of National Malaria Treatment Policy was necessary, however the priority decisions of selection and distribution of Artemether-Lumefantrine which underlined this change does not fully satisfy the four conditions of fair process prescribed in the ethical framework of accountability for reasonableness. Decision making in priority setting is considered to be a technical area for experts and their views are assumed to represent those of other people in the society. This study suggests involvement of 'lay' people and other stakeholders directly through personal representation complemented by inputs obtained from large scale survey studies, focus group discussions and by rapid appraisal method. Task forces or committees are formed to oversee priority setting decisions; however, the whole process is conducted in ad hoc and under limited freedom to discuss issues of significant implications. Reliable appeal and revision mechanisms need to be put in place to accommodate new findings, arguments and deliberations once priority decisions have been made. This will make the whole process of policy making to be continuous rather than an event.

244. Mori AT. Priority setting in selection and distribution of new antimalarials in Tanzania, analysis and evaluation against accountability for reasonableness. Master of Art (Health Policy and Management) *Dissertation 2010*. Muhimbili University of Health and Allied Sciences, Dar es Salaam.

**Background:** Tanzania like many other malaria endemic countries changed its National Malaria Treatment Policy in 2006 due to parasite resistance to Sulphadoxine/Pyrimethamine (SP). Selection of Artemether-Lumefantrine (ALu) as the first line ant malarial drug and its selective distribution to Public and Faith based health facilities were two priority-setting decisions underlying the policy change. However, today, there are people who are still using Sulphadoxine/Pyrimethamine because they have no access to Artemether-Lumefantrine. **Objective:** To analyze and evaluate whether the priority decisions for selection and distribution of subsidized Artemether-Lumefantrine satisfies the conditions of fair process as suggested in the ethical framework of accountability for reasonableness. **Method:** A Qualitative study involving review of the guidelines and in-depth interviews with key informants from the task force was conducted. The analysis followed an editing organizing style. The audio data was transcribed into text and loaded into QDA program whereby coding, connections and analysis was performed. The results are presented under the four thematic areas of the accountability for reasonableness (AfR) framework which are publicity, relevance, appeals & revision and the enforcement conditions. **Results:** Publicity: The decision and the rationales for selection of Artemether-Lumefantrine were made public, contrary to the selective distribution decision and its rationales. Public and the patients were indirectly but inadequately represented. There was no explicit mechanism to involve the stakeholders and as a result the task force lacked professional, institutional and countrywide representation. Relevance: Selection of Artemether-Lumefantrine was based on relevant evidence; however its selective distribution was partly based on donor requirement. Appeals & Revision: there was no well defined and reliable appeal mechanism, apart from the use of newspapers. Enforcement: There was not any enforcement mechanism to ensure the other three conditions are fulfilled. VI **Conclusions and Policy implications:** The change of National Malaria Treatment Policy



was necessary, however the priority decisions of selection and distribution of Artemether-Lumefantrine which underlined this change does not fully satisfy the four conditions of fair process prescribed in the ethical framework of accountability for reasonableness. Decision making in priority setting is considered to be a technical area for experts and their views are assumed to represent those of other people in the society. This study suggests involvement of 'lay' people and other stakeholders directly through personal representation complemented by inputs obtained from large scale survey studies, focus group discussions and by rapid appraisal method. Task forces or committees are formed to oversee priority setting decisions; however, the whole process is conducted in ad hoc and under limited freedom to discuss issues of significant implications. Reliable appeal and revision mechanisms need to be put in place to accommodate new findings, arguments and deliberations once priority decisions have been made. This will make the whole process of policy making to be continuous rather than an event.

- 245. Moshi MJ, Innocent E , Magadula JJ , Otieno DF , Weisheit A , Mbabazi PK , Nondo RSO. Brine shrimp toxicity of some plants used as traditional medicines in Kagera Region, north western Tanzania. *Tanzania Journal of Health Research.*2010; 12 (1): 7.**

Dichloromethane and/or ethanol extracts of 30 plants used as traditional medicines in Bukoba district, northwestern Tanzania were evaluated for brine shrimp toxicity. Among the 50 extracts tested, 32 extracts (64%) showed very low toxicity with LC50 values above 100 µg/ml. Among these 12 (24%) which had LC50 > 500 µg /ml can be categorized as being practically non-toxic. Among the remaining extracts 19 (38%) which showed LC50 > 100< 500 µg /ml are also considered to be nontoxic. Extracts that showed LC50 results between 30-100 µg/ml have been categorized as mildly toxic; these include ethanol extracts of *Lantana trifolia* (LC50 32.3 µg/ml), *Vernonia brad calyx* (LC50 33.9 µg/ml), *Antiaris toxic aria* (LC50 38.2 µg /ml) and *Rubus rigid us* (LC50 41.7 µg /ml) and the dichloromethane extracts of *Gynura scandens* (LC50 36.5 µg /ml) and *Bridelia micrantha* (LC50 32.0 µg /ml). The dichloromethane extracts of *Picralima nitida* (LC50 18.3 µg/ml) and *Rubus rigid us* (LC50 19.8 µg /ml),

were only moderately toxic. *Picralima nitida* and *Rubus rigidus* extracts are only 1.1 and 1.2 less toxic than the standard drug, cyclophosphamide (LC50 16.3 µg /ml). In conclusion, the results indicate that among the 30 plants used as traditional medicines, 28 are safe for short term use. *Picralima nitida* and *Rubus rigidus* extracts are mildly toxic, but by comparison have a remote possibility to yield active anticancer compounds.

**246. Moshi MJ, Otieno DF, Mbabazi PK, Weisheit A. Journal of Ethno biology and Ethno medicine. *Journal of Ethno biology and Ethno medicine*.2010; 6: 19.**

**Background:** The Kagera region of north western Tanzania has a rich culture of traditional medicine use and practices. The dynamic inter-ethnic interactions of different people from the surrounding countries constitute a rich reservoir of herbal based healing practices. This study, the second on an ongoing series, reports on the medicinal plant species used in Katoro ward, Bukoba District, and tries to use the literature to establish proof of the therapeutic claims. **Methodology** Ethno medical information was collected using Semi-structured interviews in Kyamlaile and Kashaba villages of Katoro, and in roadside bushes on the way from Katoro to Bukoba through Kyaka. Data collected included the common/local names of the plants, parts used, the diseases treated, and methods of preparation, dosage, frequency and duration of treatments. Information on toxicity and antidote were also collected. Literature was consulted to get corroborative information on similar ethno medical claims and proven biological activities of the plants. **Results** Thirty three (33) plant species for treatment of 13 different disease categories were documented. The most frequently treated diseases were those categorized as specific diseases/conditions (23.8% of all remedies) while eye diseases were the least treated using medicinal plants (1.5% of all remedies). Literature reports support 47% of the claims including proven anti-malarial, anti-microbial and anti-inflammatory activity or similar ethno medical uses. Leaves were the most frequently used plant part (20 species) followed by roots (13 species) while making of decoctions, pounding, squeezing, making infusions, burning and grinding to powder were the most common methods used to prepare a majority of the therapies. **Conclusion** Therapeutic claims made on plants used in traditional medicine in Katoro ward of Bukoba district are well supported by

literature, with 47% of the claims having already been reported. This study further enhances the validity of plants used in traditional medicine in this region as resources that can be relied on to provide effective, accessible and affordable basic healthcare to the local communities. The plants documented also have the potential of being used in drug development and on farm domestication initiatives

- 247. Moshi MJ, Innocent E, Magadula JJ, Otieno DF, Weisheit A, Mbabazi PK, Nondo RSO. Brine shrimp toxicity of some plants used as traditional medicines in Kagera region, north western Tanzania. *Tanzania Journal of Health Research*. 2010; 12(1): 63-67.**

Dichloromethane and/or ethanol extracts of 30 plants used as traditional medicines in Bukoba district, northwestern Tanzania were evaluated for brine shrimp toxicity. Among the 50 extracts tested, 32 extracts (64%) showed very low toxicity with  $LC_{50}$  values above 100  $\mu\text{g/ml}$ . Among these 12 (24%) which had  $LC_{50} > 500 \mu\text{g/ml}$  can be categorized as being practically non-toxic. Among the remaining extracts 19 (38%) which showed  $LC_{50} > 100 < 500 \mu\text{g/ml}$  are also considered to be non-toxic. Extracts that showed  $LC_{50}$  results between 30-100  $\mu\text{g/ml}$  have been categorized as mildly toxic; these include ethanol extracts of *Lantana trifolia* ( $LC_{50}$  32.3  $\mu\text{g/ml}$ ), *Vernonia bradycalyx* ( $LC_{50}$  33.9  $\mu\text{g/ml}$ ), *Antiaris toxicaria* ( $LC_{50}$  38.2  $\mu\text{g/ml}$ ) and *Rubus rigidus* ( $LC_{50}$  41.7  $\mu\text{g/ml}$ ) and the dichloromethane extracts of *Gynura scandens* ( $LC_{50}$  36.5  $\mu\text{g/ml}$ ) and *Bridelia micrantha* ( $LC_{50}$  32.0  $\mu\text{g/ml}$ ). The dichloromethane extracts of *Picralima nitida* ( $LC_{50}$  18.3  $\mu\text{g/ml}$ ) and *Rubus rigidus* ( $LC_{50}$  19.8  $\mu\text{g/ml}$ ), were only moderately toxic. *Picralima nitida* and *Rubus rigidus* extracts are only 1.1 and 1.2 less toxic than the standard drug, cyclophosphamide ( $LC_{50}$  16.3  $\mu\text{g/ml}$ ). In conclusion, the results indicate that among the 30 plants used as traditional medicines, 28 are safe for short term use. *Picralima nitida* and *Rubus rigidus* extracts are mildly toxic, but by comparison have a remote possibility to yield active anticancer compounds.

248. Moshi MJ, Innocent E, Otieno JN, Magadula JJ, Nondo RSO, Otieno DF, Newssheet A, Mbabazi P. Antimicrobial and brine shrimp activity of *Acanthus pubescens* root extracts. Tanzania. *Journal of Health Research*.2010; 12 (2).

The root dichloromethane and ethyl acetate extracts of *Acanthus pubescens* (Oliv.) Engl (ACANTHACEAE) exhibited weak antibacterial activity against *Staphylococcus aureus*, *Bacillus subtilis*, *Bacillus anthracis*, *Salmonella typhi*, *Streptococcus faecalis*, *Streptococcus agalactiae* and *Pseudomonas aeruginosa*, with MIC values ranging from 1.6-6.25 mg/ml. The two extracts also exhibited weak antifungal activity against *Candida albicans* (MIC 6.25 mg/ml). Using the brine shrimps lethality test ethanol, ethyl acetate and aqueous extracts were virtually non-toxic to brine shrimp larvae, but the dichloromethane extract (LC<sub>50</sub> 38.9 µg/ml) was mildly toxic. These results support the use of the plant in traditional medicine to treat gonorrhoea, syphilis, gastroenteritis and pneumonia. Since the plant is used in combination with other plants it is difficult to make any final conclusions regarding safety and efficacy. Further work is needed to evaluate the activity of an extract made from a combination of the six plants.

249. Moshi MJ, Innocent E, Otieno JN, Magadula JJ, Nondo RSO, Otieno DF, Mbabazi P. Antimicrobial and brine shrimp activity of *Acanthus pubescens* root extracts. *Tanzania Journal of Health Research*. 2010; 12(2): 155-158.

The rootdichloromethane and ethyl acetate extracts of *Acanthus pubescens* (Oliv.) Engl (ACANTHACEAE) exhibited weak antibacterial activity against *Staphylococcus aureus*, *Bacillus subtilis*, *Bacillus anthracis*, *Salmonella typhi*, *Streptococcus faecalis*, *Streptococcus agalactiae* and *Pseudomonas aeruginosa*, with MIC values ranging from 1.6-6.25 mg/ml. The two extracts also exhibited weak antifungal activity against *Candida albicans* (MIC 6.25 mg/ml). Using the brine shrimps lethality test ethanol, ethyl acetate and aqueous extracts were virtually non-toxic to brine shrimp larvae, but the dichloromethane extract (LC<sub>50</sub>38.9 µg/ml) was mildly toxic. These results support the use of the plant in traditional medicine to treat gonorrhoea, syphilis, gastroenteritis and pneumonia. Since the plant is used in combination with other plants it is difficult to make

any final conclusions regarding safety and efficacy. Further work is needed to evaluate the activity of an extract made from a combination of the six plants.

- 250. Moshy JL, Mwakyoma HA, Chindia ML. Evaluation and histological maturation characteristics of fibrous dysplasia and ossifying fibroma: a case series. East African medical journal.2010; 87(5): 215-219.**

**Background:** Fibrous dysplasia (FD) and ossifying fibroma (OF) are benign fibro-osseous lesions (FOLS) that are generally considered to be separate entities distinguishable by histological and radiographic features. The histological maturation of these lesions involves an initial fibrous state, an intermediate mixed and a final mineralised stage. **Objective:** To correlate the mineralization of OF and FD with the duration of the lesion. **Design:** A retrospective histopathological analysis of archival material including sixteen cases documented over a three-year period was performed to distinguish FD from OF. **Setting:** The relevant data of FOLS diagnosed as OF and FD were retrieved from the archival records of the Departments of Oral Surgery/Oral Pathology and Histopathology/Morbid Anatomy, Muhimbili University of Health and Allied Sciences. **Results:** Remarkably, in this series, none of the FD and OF lesions occurred in patients aged below 10 or over 50 years. The histopathological comparison of the various nonmineralised components in both the lesions in relation to lesion age-maturity was not statistically significant ( $P>0.05$ ). **Conclusion:** The histopathological ratio of the mineralised to non-mineralised components may not be directly indicative of the maturity of both OF and FD.

- 251. Moyo S, Aboud S, Kasubi M , Maselle SY. Bacteria isolated from bloodstream infections at a tertiary hospital in Dar es Salaam, Tanzania - antimicrobial resistance of isolates. South African Medical Journal. 2010; 100 (12): 835-838.**

**Objective.** A bloodstream infection (BSI) is a life-threatening condition. We studied the causative agents of BSIs and antimicrobial susceptibility patterns of bacterial isolates at

Muhimbili National Hospital (MNH) in Dar es Salaam, Tanzania. **Methods.** A retrospective analysis of blood culture results obtained at MNH from January 2005 to December 2009 was done. Blood culture isolates judged to be clinically significant and antimicrobial susceptibility results of the bacteria were included. The frequencies and proportions of bacteria isolated and antimicrobial susceptibility results were analyzed and compared using Pearson's chi-square test and Fisher's exact test where applicable, or the Mann-Whitney U-test. **Results.** A total of 13 833 blood cultures were performed. Bacterial pathogens were detected in 1 855 (13.4%), Gram-positive bacteria (1 523; 82.1%) being significantly more prevalent than Gram negative bacteria (332; 17.9%) ( $p=0.008$ ). The most common bacterial pathogens isolated were coagulase-negative staphylococci (CoNS) (1 250; 67.4%), *S. aureus* (245; 13.2%), *Escherichia coli* (131; 7%) and *Klebsiella* spp. (130; 7.0%). All bacteria isolated showed high resistance to penicillin G (70.6%), tetracycline (63.8%), cefotaxime (62.5%) and ampicillin (62.3%). Moderate to high resistance was seen against chloramphenicol (45.2%), erythromycin (35.0%), ciprofloxacin (29.3%), co-trimoxazole (25.0%) and gentamicin (23.5%). Of *S. aureus* isolates, 23.3% were resistant to methicillin. **Conclusions.** CoNS accounted for two-thirds of the bacterial pathogens isolated. High-level resistance was seen to first-line and inexpensive antimicrobial agents. Routine screening for extended spectrum beta-lactamase production and methicillin resistance among Gram-negative rods and *S. aureus* from blood cultures should be instituted to monitor spread of multidrug-resistant isolates.

252. Moyo SJ, Aboud S, Kasubi M, Lyamuya EF, Maselle SY. Antimicrobial resistance among producers and non-producers of extended spectrum beta-lactamases in urinary isolates at a tertiary Hospital in Tanzania. *BMC Research*.2010; 3: 348.

**Background.** Published data on the existence and magnitude of extended spectrum beta-lactamase (ESBL) production in urinary pathogens in local setting is limited. The aim of the present study was to determine the prevalence of antimicrobial resistance and ESBL production among *Escherichia coli* and *Klebsiella* spp from urine samples in a tertiary hospital. This was a cross sectional study conducted at Muhimbili National Hospital in

Dar es Salaam, Tanzania. **Findings.** A total of 270 E.coli and Klebsiella spp urinary pathogens from children and adults isolated from January to March 2010 were included in the study. E. coli and Klebsiella spp isolates were tested for antimicrobial susceptibility by the Clinical and Laboratory Standard Institute's disc diffusion method. These isolates were further screened for ESBL phenotype using cefotaxime and ceftazidime discs. Isolates with reduced sensitivity were confirmed using ESBL E-test strips. Of 270 isolates, 138 (51.1%) were E. coli and 132 (48.9%) were Klebsiella spp. ESBL was detected in 122 (45.2%) of all the isolates. ESBL- producing E. coli strains were significantly more resistance to cotrimoxazole (90.7%), ciprofloxacin (46.3%) and nalidixic acid (61.6%) than strains that did not produce ESBL ( $p < 0.05$ ). Similarly, ESBL- producing Klebsiella spp strains were significantly more resistance to cotrimoxazole (92.6%), ciprofloxacin (25.0%), nalidixic acid (66.2%), and gentamicin (38.2%) than strains that did not produce ESBL ( $P < 0.05$ ). Multi-drug resistance was found to be significantly ( $P < 0.05$ ) more in ESBL producing isolates (90.5%) than non ESBL producers (68.9%). The occurrence of ESBL was significantly higher among isolates from inpatients than outpatients [95 (50.5%) vs. 27(32.9%)] ( $p = 0.008$ ). The occurrence of ESBL was significantly higher among isolates from children than in adults [84 (54.9%) vs. 38(32.5%)] ( $p < 0.001$ ). **Conclusions:** High prevalence of ESBL-producing E. coli and Klebsiella spp strains was found among inpatients and children. Most of the ESBL- producing isolates were multi-drug resistant making available therapeutic choices limited. We recommend continued antibiotic surveillance as well comprehensive multi-center studies to address the emerging problem of ESBL-associated infections in order to preserve the continued usefulness of most antimicrobial drugs. Furthermore conducting molecular studies will help to evaluate the various ESBL types.

253. Moyo SJ, Aboud S, Kasubi M, Maselle SY. Bacterial isolates and drug susceptibility patterns of urinary tract infection among pregnant women at Muhimbili National Hospital in Tanzania. *Tanzania journal of health research.* 2010; 12 (4): 236-240.

Urinary tract infection (UTI) during pregnancy may cause complications such as pyelonephritis, hypertensive disease of pregnancy, anaemia, chronic renal failure, premature delivery and foetal mortality. This study aimed to identify the etiologic agents of UTI and to determine the patterns of antimicrobial drug susceptibility among pregnant women at Muhimbili National Hospital in Tanzania. Retrospective analysis of 200 mid-stream urine specimens processed for culture and antimicrobial drug susceptibility testing between January 2007 and December 2009 was carried out. Significant bacteriuria ( $> 10^5$  colony forming units/mL of urine) was found in 42/200 (21%) specimens. Of the 42 isolates, the most commonly isolated bacteria were *Escherichia coli* 14 (33.3%), *Klebsiella* spp 9 (21.4%) coagulase negative *Staphylococcus* 7 (16.7%), *Staphylococcus aureus* 6 (14.3%), *Proteus* species 3 (7.1%) and *Enterococcus* species 3 (7.1%). Low rate to moderately high rate of antimicrobial drug resistance was observed against first line drugs namely, nitrofurantoin 18.7 % (n=16), co-trimoxazole 38.5 % (n=13) and ampicillin 57.7% (n=26). Relatively low rate of resistance was seen against second line drugs: ciprofloxacin 13.6 % (n=22) and amikacin 5 % (n=20). High rate of resistance was observed in third generation cephalosporin cefotaxime 31.2 % (n=16). Of the Gram-positive organisms tested against vancomycin and methicilin, resistance was found in 25 % (n=13) and 25 % (n=4), respectively. In conclusion, *E coli* were found to be the common cause of UTI among the pregnant women. Low to moderately high level of resistance was found in first line drugs while high level of resistance was found in third generation cephalosporin. It is recommended to monitor the levels of resistance for nitrofurantoin, fluoroquinolone and cefotaxime and to screen for Extended Spectrum Beta Lactamase production among cefotaxime resistant *E. coli* and *Klebsiella* spp.

**254. Moyo SJ, Aboud S, Kasubi M, Maselle SY. Bacterial isolates and drug susceptibility patterns of urinary tract infection among pregnant women at Muhimbili National Hospital in Tanzania. Tanzania journal of health research. 2010; 12(4): 233-236.**

**255. Mpuya NH. Implementation of the incentive scheme for human health in the public health facilities in Newala district. Master of Art (Health Policy and**



**Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Availability of human resource for health and its distribution to required areas is vital in delivering health care services, especially in rural areas. Deployment, attraction and retention of health workers in rural districts/areas have been a problem for a long period. Various incentives and benefits have been set by the government of Tanzania whereby employers are directed to provide those incentives to improve attraction and retention of health workers. However, its implementation and outcomes is not well explored. **Objectives:** The study aimed at assessing the implementation of the public health sector incentive scheme for attraction, deployment and retention of human resource for health in Newala district. **Materials and methods:** A cross sectional descriptive study was conducted in Newala district between March and May, 2010 using both quantitative and qualitative data collection methods. A total of 120 health workers were interviewed using semi-structured questionnaires, and an interview guide was used for key informants (4 district officials and three heads of facilities) in their respective workplaces. **Results:** Majority of health workers interviewed were not aware of their stipulated benefits and rights. Health workers who had heard about the government documents stipulating health workers rights and benefits were 63.3%, while only 14.5% of those who had heard about the documents reported to had ever read such government documents. Both financial and non financial incentives were implemented but the overtime allowances were less implemented in rural health facilities as compared to urban health facilities. It was also found that majority of health workers had attended seminars (81.7%), while less than fifty percent had been promoted (33.3%), and went for leave (24.2%). Nurses were more likely to have had attended seminars than other cadres. Furthermore, district/health facility official reported that some of the incentives were specific to a certain cadres while some were for all health workers (e.g. overtime allowances). Majority of health workers who reported to had received no financial incentives were satisfied with those incentives which also was reported to create job satisfaction, however, those who reported to had received financial incentives were not satisfied with leave allowances hence created job dissatisfaction. Incentives preferred by

health workers were overtime allowances, improved working conditions and tools, while their leaders preferred to provide hardship allowances and housing. This study also revealed the factors affecting effective implementation of incentive scheme were shortage of funds and district lack authoritative power to implement. **Conclusion and Recommendations:** Majority of health workers interviewed were not aware of their benefits and rights. Both financial and non financial incentives were implemented but overtime allowances were less implemented in rural facilities. Health workers who reported to receive non financial incentives were satisfied with those incentives which also were reported to create job satisfaction. District and facilities leaders should give education to all health workers concerning their benefits and rights. Implementation of non financial incentives (e.g. recognition) should be emphasized. Further research should be conducted to assess the relationship between different types of incentives and improved work performance in hard to reach districts.

**256. Msafiri SZ. Primary school teachers' knowledge and practices to childhood epilepsy in Kilombero district, Tanzania. Master of Science in Nursing (Nursing Mental health) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Like many other countries, Tanzania has been facing challenges on managing childhood epilepsy. Fifty million people globally have active epilepsy and prevalence rates of epilepsy worldwide vary from 2.8 to 19.5 per 1,000 people of the general population. Various studies have shown that epilepsy seems to be more frequent in that less than 10 years old including school children. Worldwide, 60-90% of people with epilepsy receives no treatment and is inadequately treated. **Objective:** The broad objective of this study was to assess the awareness of childhood epilepsy among Primary School Teachers at Kilombero District, Tanzania. Study design, population and setting: A descriptive cross section. Study was conducted involving 151 primary school teachers at Kilombero District- Morogoro, Tanzania. **Methods:** A cross-sectional study was conducted. The results give an overview of teachers understanding and practice about epilepsy during their class hours and in the community. Ethical clearance to conduct this

study was granted by the Directorate of Research and Publications committee of Muhimbili University of Health and Allied Sciences. Permission to conduct the study was obtained from the Regional Administration Secretary for MODgorO Region. Data was obtained using a checklist for assessing the Primary School Teachers' knowledge and practices pertaining to childhood epilepsy at Kilombero District, Tanzania. Demographic data of teachers, Age, Sex, Education level, and teaching experience were determined. **Results:** About 151 individuals were interviewed of which 57 (37.7%) were male. Their age of the sample ranged from 18 to 59 years. Majority of the respondents (55.6%) were between 18 to 29 years. Seven (4.6%) individuals had primary education, 132 (87.4%) secondary education and the rest 12 (8%) had tertiary education. Up to (60.9%) had at least some aspect of knowledge on childhood epilepsy. The present study also found that, about (17%) of the respondents had poor knowledge on epilepsy. Some teachers declared that epilepsy was contagious and (21.8%) is a curable disease. The majority of the respondents (79.0%) prefer for hospital treatment. This was followed by (18%) who choose for traditional medicine, (3 %) did not know a specific treatment for epilepsy and the rest (0%) did not mention about sending epileptic children to the spiritual healers. Almost all teachers heard about epilepsy yet could not demonstrate how they would care for epilepsy care of the disease among the pupils. The present study shows that there was significant difference between those individuals with less teaching experience and those with longer teaching experience with regard to having cared for an epileptic child ( $X^2 = 6.772$ ,  $df = 2$ ,  $P < 0.034$ ). **Conclusion:** There is a need for teachers' educational programmes aimed at encouraging school teachers to have knowledge about handling a child with epilepsy. Teachers' college curriculum should also include special programmes for childhood epilepsy. This study results will help specialist Mental Health Nurses at all level to conduct training for school Teachers in Tanzania. Nurses play an important role as they have an understanding of seizures and medications such as antiepileptic drugs AEDs. Together with school Nurses, Teachers should be able to handle epileptic seizures, understand how AEDs are provided to epileptic child, deciding when to refer and make sure a child is on his/her daily prescribed medication. Due to the fact that Nurses are competent on appropriately handling epileptic seizures, they are likely able to provide the

necessary information on handling seizures in educational setting, teachers in guidance and workshops.

257. **Mshana CE. The effects of social marketing on malaria knowledge among primary school children in Kilombero district. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

This is a cross-sectional case control study design conducted to assess the effect of social marketing intervention aimed to improve malaria knowledge among primary schoolchildren in the Kilombero district. A multi stage sampling technique was used; and a total of 1698 schoolchildren from selected primary schools participated. Self-administered questionnaire with multiple choice options was used to collect data on malaria knowledge, sources of malaria IEC, communication channels and extracurricular activities. Data were entered and analyzed using ST AT a statistical package. Results showed that high proportion of schoolchildren in intervention schools were significantly knowledgeable compared to those of non-intervention ( $p < 0.001$ ). However, schoolchildren in both study groups had very low knowledge on malaria treatment. School-based malaria education and health facilities were the most important primary sources of malaria IEC by 76% and 80% in intervention and non-intervention schools respectively. Malaria booklets were significantly prevalent and preferred communication channels in the intervention schools by 92.7% ( $p < 0.001$ ). Public leaflets were prevalent channel by 69% in non-intervention schools. Malaria songs, Drama and Poems were mostly noticed extracurricular communication activities in intervention schools by 94%, 96% and 96% respectively. Low proportion of extracurricular activities being noticed in non intervention schools. Social marketing with selected communication channels and extracurricular activities could enrich school-based malaria education hence improve malaria knowledge among primary schoolchildren.

258. **Msigwa AG. Prevalence of depressive symptoms and risk factors among postpartum mothers at Sinza and Magomeni health in Kinondoni municipal- Dar es salaam, Tanzania. Master of Metal Health (Nursing) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Postpartum depression is a transient mood that starts within four weeks up to one year after delivery, and is an important cause of morbidity and life threatening condition varying from 8% to 36% among women worldwide. **Objectives:** This study sought to assess prevalence of depressive symptoms and the associated risk factors among postpartum mothers attending reproductive health and child health clinics. **Methods:** Using a cross-sectional methodology, 309 postpartum mothers aged 15 to 45 years delivered within one month to one year within the study period were conveniently enrolled from Sinza and Magomeni Health Centres (Kinondoni Municipality). Coded structured Kiswahili questionnaires were used to collect demographic data and an adapted "SONONA questionnaire" by the Ministry of Health and Social welfare was used to screen for depressive symptoms. Data entry and analysis was done using the SPSS version IS. **Results:** Out of 309 postpartum mothers, 53 (17.2%) mothers were found to have symptoms of postpartum depression (PPD). The overall prevalence of PPD symptoms was 17.2%; 95% CI (13.0 - 21.4). Prevalence for Magomeni Health Centre was 16.9% (n=21); 95% CI (10.3 - 23.5) and for Sinza was 17.3% (n=32); 95% CI (11.9 - 22.8). On multivariate analysis, factors associated with PPD symptoms were; poor relationship with in-laws, poor relationship with husband, miscarriage, death of a child, lack of breastfeeding and having a higher number of children. **Conclusion and recommendations:** Post partum depression is a considerable problem that needs attention. However, early detection of postpartum depression is important in assisting postpartum mothers, and this should begin during prenatal period. Prevention of depression for nursing mothers helps not only the psychological well-being of the mothers but also the entire family. Postpartum depression is under-researched and under-reported, therefore priority should be given.

259. Muganyizi PS, Nyström L, Lindmark G, Emmelin M, Massawe S, Axemo P. Effect of supporter characteristics on expression of negative social reactions toward rape survivors in Dar Es Salaam, Tanzania. *Health care for women international*. 2010; 31(8): 668-685.

Using a community representative sample of 1,505 adults we examined interpretations of rape situations in order to establish attitudes toward rape. We assessed their intentions to express negative social reactions (NSRs) toward rape survivors. We then determined effects of attitudinal and sociodemographic characteristics in logistic regression models assessing the odds of expressing NSRs. Being old, male, and Muslim, and failing to interpret the legal circumstances of rape increased their risks of expressing NSRs. The degree of interpretation of lack of consent as rape affected their intentions to express NSRs, but not how they responded to survivors of different social status.

**260. Mugoyela V, Mwambete KD. Microbial contamination of nonsterile pharmaceuticals in public hospital settings. *Therapeutics and clinical risk management*. 2010; 6: 443.**

**Purpose:** Contamination of pharmaceuticals with microorganisms irrespective whether they are harmful or nonpathogenic can bring about changes in physicochemical characteristics of the medicines. Although sterility is not a requirement in official compendia for nonsterile pharmaceuticals, bio burdens need to be within acceptable limits. Therefore, this study investigated microbial contamination of 10 nonsterile pharmaceuticals frequently delivered to outpatients by identifying and quantifying microbial contaminants and susceptibility pattern testing on the microbes isolated.

**Methods:** The study was carried out at Amana Municipal Hospital in Dar es Salaam, Tanzania. The protocol for the study involved structured selection of representative tablets, syrups, and capsules from the hospital's outpatient pharmacy. Constitutive microorganisms were elaborated and enumerated using standard microbiologic procedures.

**Results:** Results showed that 50% of all tested products were heavily contaminated, and the predominant contaminants comprised *Klebsiella*, *Bacillus*, and *Candida* species. Furthermore, the results showed that the isolated *Bacillus* and *Klebsiella* species were resistant to Augmentin® and cloxacillin. The differences in means for cfu/mL and zones of inhibition among the microorganisms isolated were considered significant at  $P < 0.05$ .

**Conclusion:** The nonsterile pharmaceuticals were presumably microbiologically contaminated due to poor handling during dispensing,

repackaging, and/or no adherence to good manufacturing practice. Therefore, training and educating the dispensers, as well as patients, on the proper handling and use of medicines cannot be overemphasized, because these are key aspects in controlling cross-contamination of medicines.

- 261. Mugusi SF, Mwita JC, Francis JM, Aboud S, Bakari M, Aris EA, Pallangyo K, Sandstrom E. Effect of Improved access to Antiretroviral Therapy on clinical characteristics of patients enrolled in the HIV care and treatment clinic, at Muhimbili National Hospital (MNH), Dar es Salaam, Tanzania. BMC public health. 2010; 10(1): 291.**

**Background:** Sub-Saharan Africa has been severely affected by the HIV and AIDS pandemic. Global efforts at improving care and treatment has included scaling up use of antiretroviral therapy (ART). In Tanzania, HIV care and treatment program, including the provision of free ART started in 2004 with a pilot program at Muhimbili National Hospital in Dar es Salaam. This study describes the socio-demographic and clinical features of patients enrolled at the care and treatment clinic at MNH, Dar es Salaam, Tanzania. **Methods:** A cross-sectional study looking at baseline characteristics of patients enrolled at the HIV clinic at MNH between June 2004 - Dec 2005 compared to those enrolled between 2006 and September 2008. **Results:** Of all enrolled patients, 2408 (58.5%) were used for analysis. More females than males were attending the clinic. Their baseline median CD4 cell count was low (136 cells/ $\mu$ l) with 65.7% having below 200 cells/ $\mu$ l. Females had higher CD4 cell counts (150 cells/ $\mu$ l) than males (109 cells/ $\mu$ l)  $p < 0.001$ ). The most common presenting features were skin rash and/or itching (51.6%); progressive weight loss (32.7%) and fever (23.4). Patients enrolled earlier at the clinic (2004-5) were significantly more symptomatic and had significantly lower CD4 cell count (127 cells/ $\mu$ l) compared to CD4 of 167 cells/ $\mu$ l in those seen later (2006-8) ( $p < 0.001$ ). **Conclusion:** Patients enrolled to the MNH HIV clinic were predominantly females, and presented with advanced immune-deficiency. Improved access to HIV care and treatment services seems to be associated with patients' early presentation to the clinics in the course of HIV disease.

262. **Muhindo J. Application of policy guidelines for resource allocation and provision of quality maternal care in public health facilities in Kyenjonjo district Uganda. Master of Art (Health Policy and Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Resource allocation is one of the most controversial issues in the health sector. The government of Uganda introduced policies to facilitate effective resource allocation targeting especially the most vulnerable groups. The fifth Millennium Development Goal strives towards improving maternal health services in particular, and resource allocation to this area is therefore of high importance. This study aimed at assessing the application of policy guidelines for resources allocation and factors affecting provision of quality of care in public health facilities, focusing on maternal health services in Kyenjojo district, Uganda. **Materials and methods:** This study was conducted in former Kyenjojo district that recently has been divided into Kyenjojo and Kyegegwa districts in western Uganda. It comprised of an in-depth interview of 7 District Health Management Team members, 6 Health Centre three managers, 12 midwives and a cross-sectional survey of 161 mothers of infants. Interview guides were developed for the managers and midwives, and a semi-structured questionnaire was used for the mothers. The study also incorporated 'financial reports' for the financial year 2008/2009. Qualitative data collected was basically on resource allocation process, use of the formula, policy guidelines, allocation to different health activities, timeliness of release of funds and factors affecting provision of quality maternal care. While quantitative data was about utilization of maternal health services. Interviews were upon obtaining signed consent. This study used a mixed method approach. Qualitative and quantitative data were analyzed separately, and triangulated in the interpretation phase, for example constraints faced were reported from both methods. The analysis of qualitative and quantitative data used ATLAS.ti 6.1 and SPSS 13.0 respectively. **Results:** The main findings of this study were: the criterion of resource allocation for health used a level of health facility and a ratio of 1 :2:4 that means HCIII's receive funds which are as twice as that of HCII and HCIV is four times as that of HCII. Maternal services were found not to



be given a priority by Kyenjojo district health officials due to perceived presence of development partners in the district who were thought to provide necessary support for that service. The district health financial report for 2008/2009 revealed allowances and transport took 82.0% and less than 1.0% of the annual expenditure was allocated to repair and upkeep of equipment and buildings. Most policy guidelines were not followed as required. The quality of maternal health services was particularly from midwives and found to be substandard due to inadequate human resources and lack of equipment, medicines, accommodation and supplies, delay in funding, poor referral system and lighting system. The interviews with the mothers supported to a large extent dissatisfaction with the maternity services, reporting absence of the midwife as one of the most negative experiences. **Conclusion:** This study highlights the need for improving quality maternal care. If the fifth Millennium Development Goal by 2015 is to be achieved, maternal health services in Uganda need to be improved on the health agenda especially when allocating resources. **Recommendations:** The district health authority needs to improve and utilize resource allocation guidelines for health, including monitoring quality as a major intermediate objective in all policies. There is also need for research on more equitable and efficiency improving formulae which would facilitate a better provision of quality maternal care.

**263. Muller H, Grossmann H, Chittka L. 'Personality 'in bumblebees: individual consistency in responses to novel colours? *Animal Behaviour*. 2010; 80(6): 1065-1074.**

It is now recognized that many vertebrates and a few invertebrates show individual-specific consistency in their behavior across time and context, sometimes in ways that can be paralleled with human personality. Our work aimed at assessing behavioral consistency in a social insect: the bumblebee *Bombus terrestris*. We focused on a behavioral dimension commonly used in personality studies: the response of an individual to novelty (neophilia/neophobia spectrum). We used a foraging paradigm to quantify individual bees' response to novel flower colours and to assess the repeatability of this response over time. As for vertebrates, most individual bumblebees responded to a

novel stimulus by increasing the time they spent investigating it compared to known stimuli. Using a new statistical approach, the consistency model, we found that individual bees tended to be consistent in their response to novelty over a few hours but were not consistent in their behavior over 3 days. We conclude that for the neophilia/neophobia paradigm used here, bumblebee foragers do not fulfil the criteria for animal personality in the common sense of the term. Instead their behavioral response to novelty appears to be plastic, varying on a day to day basis.

**264. Mullins JI, Pavlakis GN, Felber BK, Brander C, Le Gall S, Weiner D, Winstone N. Abstracts from AIDS Vaccine 2010 Atlanta, Georgia, USA 28 September–1 October, 2010. *AIDS Research and Human Retroviruses*. 2010; 26(10): A-1.**

**Background:** We are developing a global, HIV-1M group vaccine that focuses immune responses on conserved protein elements (CE) essential to the function of the virus while precluding responses against immunodominant decoys, i.e., targets on the virus that can mutate while retaining function. We are testing CE DNA vaccines derived from HIV-1M group Gag p24 as well as the entire HIV-1-M proteome. **Methods:** Two variants of expression-optimized Gag p24 CE DNA constructs (Core 1/2) were generated, with components of p24 joined by linkers chosen to maximize expression and processing in human cells. Each of 7 CE segments differ by one “toggled” amino acid (Core 1 vs. Core 2), to address ~99% of the known variability in HIV-1-M. **Results:** Broad recognition of Clade B and A peptides were elicited in Balb/C mice; including CD4 and CD8 responses and Gag antibodies. Proteolytic processing of CE revealed 87% of the known optimal epitopes. Core 1 expressed in human dendritic cells elicited strong CD4 and CD8 responses in human T cells ex vivo. P24 CE are highly immunogenic in HIV-1 infections and include >30 epitopes (some previously unknown) restricted by >40 HLA. There was no difference in the number or magnitude of responses to CE regions between controllers (n=23, excluding all those with B57, B58 and B27 HLA) and non-controllers (NC, n=21) assessed by a set of 311 peptides (10mers overlapping by 9 AA) covering p24 and including the Core 1/2 CE. Controllers had higher avidity (p<0.01) and more cross-

reactive responses than NC ( $p < 0.01$ ) to the entire p24 and CE regions. Also, responses of high functional avidity showed a superior ability to recognize peptide variants than low avidity responses ( $p < 0.01$ ). **Conclusion:** p24 CE are immunogenic in HIV-1 infection and immune responses can be focused on these elements, to the exclusion of decoy epitopes.

**265. Munseri PJ, Bakari M, Pallangyo K, Sandstrom E. Tuberculosis in HIV voluntary counselling and testing centres in Dar es Salaam, Tanzania. *Scandinavian Journal of Infectious Diseases*. 2010; 42 (10): 767-774.**

The human immunodeficiency virus (HIV) has contributed to an increase in tuberculosis (TB) worldwide. HIV voluntary counselling and testing (VCT) centres are cost-effective for HIV screening. Therefore there is a potential of tapping into the success of VCT centres by incorporating TB screening. The aim of this study was to determine the extent of TB and TB/HIV co-infection among VCT centre attendees. We enrolled 1318 consecutive subjects from 2 VCT centres in Dar es Salaam. The diagnosis of TB was based on evidence of *Mycobacterium tuberculosis* in sputum or tissue aspirates following microscopy or culture. In the absence of *M. tuberculosis*, the presence of 2 of the following was considered: clinical features of TB, suggestive chest radiographs and response to anti-tuberculosis trial therapy. HIV was diagnosed in 347 (26%) subjects. TB was present in 101 (7.7%) subjects of whom 63 (62%) were diagnosed at VCT centres and 38 (38%) were known TB cases who came for HIV testing. Pulmonary TB (PTB) was detected in 52 (83%) subjects. The diagnosis of PTB was based on sputum culture in 35 (67%), sputum microscopy in 20 (38%), and clinical and radiological findings in 17 (33%) subjects. TB/HIV co-infection was detected in 70 (5.3%) subjects. PTB was common in stand-alone VCT centres. Therefore VCT centres could serve as an entry point for TB screening.

**266. Mushaija JE. Nutritional status among children aged 6 to 23 and mothers knowledge on complementary feeding practices in selected villages of Chamwino**

**District. Master of Public Health. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Adequate nutrition during infancy and early childhood is fundamental to the development of each child's full human potential. During the period of complementary feeding, children are at high risk of under nutrition. Complementary food is the additional nutrient-rich food and drink that is recommended for children from six months of life. This study aimed at studying nutritional status by using criteria of stunting and underweight among children of 6 to 23 months. Also the study aimed to ascertain whether mother's knowledge on complementary feeding practices and other factors were associated with nutritional status of these children in Chamwino district. This was a cross-sectional study done in Chamwino district, involving mothers of children aged six to 23 months who were attending RCH clinic. Total sample size was 264. Anthropometric measurements using weight-for-age and height-for-age criterion were employed to assess the nutritional status. Chi-square test was used to examine the association between the dependent and independent variables. Multivariate logistic regression was performed to determine independent variables that predict nutritional status. The study showed that (62.9%) were stunted and (17.1 %) were underweight. Majority of mothers (65%) were found with moderate knowledge on complementary feeding practices followed by (28%) in poor and (7%) in high knowledge categories. The most common type of complementary foods was grains food and green vegetables. There was a statistically significant association between fever and underweight. Nutrition should be improved at this age, in order to have beneficial effects on growth and health of children. There is an urgent need to improve traditional complementary foods in terms of energy density and bioavailability of macro and micronutrients. Efforts should also be undertaken to mobilize the community members to adopt practices that favor good nutrition of children.

- 267. Mushi D, Mpembeni R, Jahn A. Effectiveness of community based safe motherhood promoters in improving the utilization of obstetric care. The case of Mtwara Rural District in Tanzania. *BMC Pregnancy and Childbirth*. 2010; 10: 14 .**

**Background:** In Tanzania, maternal mortality ratio remains unacceptably high at 578/100,000 live births. Despite a high coverage of antenatal care (96%), only 44% of deliveries take place within the formal health services. Still, "Ensure skilled attendant at birth" is acknowledged as one of the most effective interventions to reduce maternal deaths. Exploring the potential of community-based interventions in increasing the utilization of obstetric care, the study aimed at developing, testing and assessing a community-based safe motherhood intervention in Mtwara rural District of Tanzania.

**Method:** This community-based intervention was designed as a pre-post comparison study, covering 4 villages with a total population of 8300. Intervention activities were implemented by 50 trained safe motherhood promoters (SMPs). Their tasks focused on promoting early and complete antenatal care visits and delivery with a skilled attendant. Data on all 512 deliveries taking place from October 2004 to November 2006 were collected by the SMPs and cross-checked with health service records. In addition 242 respondents were interviewed with respect to knowledge on safe motherhood issues and their perception of the SMP's performance. Skilled delivery attendance was our primary outcome; secondary outcomes included antenatal care attendance and knowledge on Safe Motherhood issues.

**Results:** Deliveries with skilled attendant significantly increased from 34.1% to 51.4% ( $p < 0.05$ ). Early ANC booking (4 to 16 weeks) rose significantly from 18.7% at baseline to 37.7% in 2005 and 56.9% ( $p < 0.001$ ) at final assessment. After two years 44 (88%) of the SMPs were still active, 79% of pregnant women were visited. Further benefits included the enhancement of male involvement in safe motherhood issues.

**Conclusion:** The study has demonstrated the effectiveness of community-based safe motherhood intervention in promoting the utilization of obstetric care and a skilled attendant at delivery. This improvement is attributed to the SMPs' home visits and the close collaboration with existing community structures as well as health services.

268. Mwakigonja AR, Kaaya E, Heiden T, Wannhoff G, Castro J, Pak F, Biberfeld P. Tanzanian malignant lymphomas: WHO classification, presentation, ploidy, proliferation and HIV/EBV association. *BMC cancer*. 2010; 10(1): 344.

**Background:** In Tanzania, the International Working Formulation [WF] rather than the WHO Classification is still being used in diagnosing malignant lymphomas (ML) and the biological characterization including the HIV/EBV association is sketchy, thus restraining comparison, prognostication and application of established therapeutic protocols. **Methods:** Archival, diagnostic ML biopsies (N = 336), available sera (N = 35) screened by ELISA for HIV antibodies and corresponding clinical/histological reports at Muhimbili National Hospital (MNH) in Tanzania between 1996 and 2006 were retrieved and evaluated. A fraction (N = 174) were analyzed by histopathology and immunohistochemistry (IHC). Selected biopsies were characterized by flow-cytometry (FC) for DNA ploidy (N = 60) and some by in-situ hybridization (ISH) for EBV-encoded RNA (EBER, N = 37). **Results:** A third (38.8%, 109/281) of the ML patients with available clinical information had extra nodal disease presentation. A total of 158 out of 174 biopsies selected for immunophenotyping were confirmed to be ML which were mostly (84.8%, 134/158) non-Hodgkin lymphoma (NHL). Most (83.6%, 112/134) of NHL were B-cell lymphomas (BCL) (CD20+), of which 50.9%, (57/112) were diffuse large B-cell (DLBCL). Out of the 158 confirmed MLs, 22 (13.9%) were T-cell [CD3+] lymphomas (TCL) and 24 (15.2%) were Hodgkin lymphomas (HL) [CD30+]. Furthermore, out of the 60 FC analyzed ML cases, 27 (M:F ratio 2:1) were DLBCL, a slight majority (55.6%, 15/27) with activated B-cell like (ABC) and 45% (12/27) with germinal center B-cell like (GCB) immunophenotype. Overall, 40% (24/60) ML were aneuploid mostly (63.0%, 17/27) the DLBCL and TCL (54.5%, 6/11). DNA index (DI) of FC-analyzed ML ranged from 1.103-2.407 (median = 1.51) and most (75.0%) aneuploid cases showed high (>40%) cell proliferation by Ki-67 reactivity. The majority (51.4%, 19/37) of EBER ISH analyzed lymphoma biopsies were positive. Of the serologically tested MLs, 40.0% (14/35) were HIV positive, mostly with high ( $\geq$ 40.0%) Ki-67 reactivity. **Conclusions:** According to the 2001 WHO Classification, most subtypes are represented in Tanzanian ML. extra nodal presentation was common among MNH lymphoma patients who also showed high aneuploidy, tumor proliferation (KI-67) and EBER positivity. DLBCL was frequent and phenotype heterogeneity appeared similar to observations in Western countries suggesting applicability of established intervention

approaches. HIV was apparently associated with high ML cell proliferation but extended studies are needed to clarify this.

**Mugetta EJ. Temporomandibular joint disorders among patients treated in the department of oral and maxillofacial surgery at Muhimbili National Hospital. Master of Dentistry (Oral Surgery) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Temporomandibular joint disorders (TMJD) are the most common debilitating conditions of the stomatognathic system. Although they exist in the community they are not mentioned in the literature as an endemic health problem. Their prevalence does not seem to be clear enough for the health system in Tanzania to give them priority as other health problems. Study setting: The study was done in the department of Oral and Maxillofacial Surgery at Muhimbili National Hospital (MNH). **Objective:** To determine the occurrence of temporomandibular joint disorders (TMJD) among patients treated in the department of Oral and Maxillofacial Surgery at MNH. Study Design: A descriptive prospective cross sectional hospital based study. Study population: In and out patients with TMJ disorders attending treatment in the department of Oral Surgery. Study duration: The study was conducted over a period of six months from September 2009 to February 2010. **Methods and materials:** All out patients who attended at the Oral Surgery department and those admitted in wards 23 and 24 with TMJDs and had consented were included in the study. The patients were interviewed using a structured questionnaire. Physical examination was done and findings were recorded on a special clinical form. The study was conducted over a period of six months from September 2009 to February 2010. **Results:** Among 4661 patients who attended at the Oral Surgery department during the study period, 61 (1.3%) patients suffered from TMJDs. The age of patients ranged from 4 to 80 years, with a mean age of 35 +/-18.5 years and a male: female ratio of 1:2. TMJ-alkalosis was the most prevalent disorder comprising 36.1 % of the total TMJD patients. In this disorder the 11-20 years age group was the most (31. 8%) affected. It was noted that the prevalence declined with increase in age whereby 6 (27.3%) were in the 21-30 years age group. TMJ alkalosis showed a

gender predilection whereby females were the most affected accounting for 13 (59.1%) compared to 9 (40.9%) males with a female to male ratio of 2:1. Associated factors were trauma due to fall in 11 (50%) of the patients and infections to the joint in 8 (36.4%) patients. Major clinical features were limited opening of the mouth in 100% of the patients. About 14 (63.6%) of the patients presented with poor oral hygiene. Facial disfigurement was observed in 20 (90.9%) of the patients. X-ray revealed obliteration of the joint space in all the patients. Surgical treatment was provided to 18 (81.8%) and recurrence was found in 6 (33.3%) of the patients. Myofascial pain dysfunction syndrome (MPDs) was the second most (32.8%) prevalent TMJD. Forty percent of the patients were in the 21-30 years age group and 5 (25%) patients in the 31-40 years age group. The prevalence of signs and symptoms was lower in age groups below 20 years and above 40 years. Masticatory muscle tenderness was the major clinical feature in all patients, while clicking sound on mouth opening and closing was present in 15 (75%) of the patients. Radiographs of the joints of all the patients were normal. Medications (NSAIDs and antidepressants) were provided to all patients however, 2 (10%) of patients who were partially edentulous, missing posterior teeth were provided with prosthesis in addition to medications. Eighty percent of the patients improved while signs and symptoms persisted in 2 (10%) patients and the remaining 2 (10%) could not avail themselves for follow up. TMJ dislocation was observed in 19 (31.1%) patients. Females were 11 (57.9%) while males were 8 (42.1 %) with male to female ratio of 1.4: 1. The most affected age groups were those in 21-30 years age group who comprised of 7 (36.8%) patients followed by the 31-40 years age group with 4 (21.1 %) patients. Yawning was the commonest associated factor in 10 (52.6%) of the patients. All patients had the condyle displaced anterior to the articular eminence. Chronic recurrent dislocation was observed in 12 (63.2%) of the patients, acute TMJ dislocation in 5 (26.3%) patients and chronic TMJ dislocation in 2 (10.5%) of the patients. The mean duration of the dislocation before seeking treatment ranged between 2 days to 9 months. Clinically all patients had open mouth while 13 (68.4%) had pain in the joint region and 7 (36.8%) had difficulty in speaking. Radiographic examination revealed displacement of the condyle anterior to the articular eminence in 100% patients. Closed reduction was done in 17 (89.5%) of the patients, open reduction was provided to 2 (10.5%) of the patients and there was no



recurrence reported. **Conclusion:** The temporomandibular joint disorders that were seen in this study occurred at a rather low prevalence of about 1.3%. TMJ alkalosis, MPD and TMJ dislocation were the only TMJDs found. TMJ alkalosis which was the commonest TMJD was mainly a result of trauma and infection. The treatment rendered to these patients was surgery (condylectomy alone or condylectomy and coronoidectomy) with a very low recurrence rate.

- 269. Mwakyoma HA, Maliva GS, Mfinanga SG. Fine needle aspiration cytology and the choice of fixatives in the diagnosis of tuberculous adenitis at Muhimbili National Hospital, Dar-es-Salaam, Tanzania. Tanzania journal of health research.2010; 12(3): 183-187.**

Tuberculosis (TB) is a global public health problem. Despite recent success in improving TB cure rates, diagnosis and case detection remains a major obstacle to its control. In this study the usefulness of four fixatives in improving Acid Fast Bacilli (AFB) microscopy diagnosis of TB was assessed. The study was conducted at Muhimbili National Hospital (MNH) in Dar es Salaam, Tanzania. A total of 560 cases of peripheral lymphadenopathies had fine needle aspiration cytology (FNAC) done. Out of these cases, 110 (19.6%) were diagnosed by ZN stain to be TB lymphadenitis. Different types of fixatives in diagnosis of TB were compared. Each specimen was smeared and fixed on to four glass slides using four fixatives (95% ethyl alcohol, Acetone, Carnoy's fluid and 10% neutral buffered formalin), and one slide fixed using air dried method. Subsequently, Zeelh-Neelsen (ZN) stained slides were examined under a microscope for AFB. Of the 101 cases, 53 were TB adenitis, as diagnosed by AFB smear microscopy on ZN stained slides, and 48 were adenitis due to other causes. The diagnostic yield of AFB was highest when using 95% ethyl alcohol which was observed to be 30.2% (16/53) when AFB was 1+, 58.5% (31/53) when AFB was 2+ and 11.3% (6/53) when AFB was 3+, and making a total yield of 100% (53/53). Air dried smears also gave a relatively high yield with total yield of 94.3% (50/53). When 95% ethyl alcohol was used as a gold standard fixative, air dried slides had highest sensitivity (94.3%) and all fixatives had high specificity. The study has demonstrated that 95% ethyl alcohol is an excellent

fixative. It is therefore recommended that 95% ethyl alcohol be used to form part of the routine fixation of FNAC smears.

**270. Mwakyula IH Seroprevalence of herpes simplex virus infections among HIV positive individuals in Mbeya region, Tanzania Master of Medicine (Internal Medicine) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** HIV and AIDS remains a serious health problem, second only to malaria. Results from the Tanzania Household Indicator Survey for 2007/08 indicate that some 6% of Tanzanians in the age group of 15--49 years were infected with HIV. By 2008, regions that had a high HIV prevalence included Iringa (15.7%), Oar es Salaam (9.3%) followed by Mbeya (9.2%). Synergisms between HSV and HIV have been documented in many studies and that Herpes Simplex Viruses increases the risk of HIV transmission 2 to 3 folds. Despite all that knowledge, the prevalence of HSV infection is largely unknown among HIV positive patients in the general Tanzanian population. Objective To describe the Seroprevalence of Herpes Simplex Virus type 1 and 2 infections among HIV infected individuals in Mbeya region. **Materials and Methods:** This study was conducted in wards of Mbeya region among participants from the ongoing EU funded EMINI project. A specially designed questionnaire was used to identify social and demographic characteristics. Physical examination results were obtained from the database initially collected by NIMR MMRP research nurses and medical officers. Archived participants' sera were tested for Herpes Simplex Virus type 1 and 2 infections using Virotech HSV -1 (gG 1) ELISA (Enzygnost, Behring, Germany) and Kalon HSV -2 (gG2) ELISA (Kalon Biological Ltd, Surrey, UK) respectively. Univariate and multivariate poisson regression models were used to identify factors associated with Herpes Simplex Virus infections. **Results** A total of 640 adults were randomly recruited after stratification by HIV status, age and sex. The overall Seroprevalence of HSV-1 was 92.1 % while that of HSV-2 was 57.4%. Men and females were equally affected with HSV-1 (94.2% vs. 89.9%) (PR = 1.04, p-value > 0.05) while prevalence of HSV-2 was significantly lower in males as compared to females (64.5% vs. 50.2%) (PR = 0.72, p-value < 0.001). There was a strong

and significant trend that HSV-2 increases with age (IRR = 1.18, p-value < 0.001), and HIV status (IRR = 2.05, p-value < 0.001) contrary to HSV-1 findings. HSV-1 was more frequent in hypertensives' (IRR = 1.08, p-value < 0.05) while HSV-2 was more common in over weights and obese participants (IRR = 1.67, p-value < 0.05) **Conclusion and Recommendations:** There is a high prevalence of HSV -2 among females and this coincides with higher number of HIV infection in this group. Considering recent accumulating evidences of interaction of Herpes Simplex Virus infections and HIV; control and suppressive treatment of Herpes Simplex Virus should be considered as a possible strategy to control HIV infection.

**271. Mwambete KD, Andrew R. Knowledge on management of fever among mothers of undertens in Dar es Salaam, Tanzania. *East African journal of public health*. 2010; 7 (2): 177-181.**

To explore on mothers' knowledge on fever and its management as well as assess treatment received by under 10 year-old children (under tens) having fever prior to being presented in outpatient departments at two Municipal hospitals. Data were collected using a semi-structured questionnaire interviews among mothers of under tens, who had problems of fever and presented at the two Municipal hospitals viz. Mwananyamala and Temeke Municipal hospitals, in Dar es Salaam. A total of 301 respondents were interviewed. Of those, 151 had male and 150 and female under tens, whose ages ranged from 1 month to 10 years-old with median of 2 years. Minority (32%) of the interviewees were unaware of possible causes of fever, while 52% attributed it to malaria. About 25% of the respondents regard fever as a minor health problem, thus they did not seek medical attention unless other severe symptoms were manifested. Majority (88.4%) of the respondents self-medicated, and out of those 24% used antimalarials and antipyretics, while 7.6% used both antipyretics and antibiotics for alleviation of fever. On arrival in OPDs, only 62.4% of the respondents were prescribed with ant malarial agents. Approximately 18% of the interviewees admitted to have had changed medications due to unresponsiveness to the previously prescribed drugs. Pharmacies were the main sources of the self-medicated drugs (n = 272; 90.4%). Fever is a public health concern among

under tens, which contributed to high rate of self-medication and irrational use of medicines. However, respondents demonstrated adequate knowledge on fever and on its management though fever was associated with underlying causes.

**272. Mwambete KD, Joseph R. Knowledge and perception of mothers and caregivers on childhood diarrhoea and its management in Temeke Municipality, Tanzania. *Tanzania Journal of Health Research*. 2010; 12 (1): 5.**

Diarrhoea is an increase in volume of stool or frequency of defecation. It is one of the most common clinical signs of gastrointestinal diseases, but also can reflect primary disorders outside of the digestive system. This cross-sectional descriptive survey was conducted in Temeke Municipality, Dar es Salaam over a 4-month period to investigate on knowledge and perception of mothers/caregivers of under fives on childhood diarrhoea. Specifically, the study focused on frequency of diarrhoeal episodes and their risk factors as well as effectiveness of traditional remedies used for its management prior to seeking medical attention. A semi-structured questionnaire was used for data collection, through which a total of 161 mothers were interviewed. Of those, 74 (46%) had female and 87 (54%) had male under fives with median age of 2-years. Frequency of diarrhoeal episodes was high among the under fives and was comparable between females and males (87 vs. 74;  $P < 0.05$ ). Medicinal plants were the most common traditional remedies employed by majority (71%) of the interviewees, which have been purported to be effective in management of childhood diarrhoea. Guava (leaves and fruits) was the most commonly used remedy in the treatment of diarrhoea. Mothers' knowledge on predisposing factors of childhood diarrhoea was poor, which was directly correlated with education level. Only about one-third of the respondents (31%) were aware of risk factors for childhood diarrhoea that cited poor sanitation and water as the main factors. Diarrhoeal episodes were perceived wrongly as normal growth stage and that were caused by several other "illnesses". It is important that further studies on traditional remedies should be carried out to validate their usefulness in the treatment of childhood diarrhoea.

273. **Mwambete KD, Joseph R. Knowledge and perception of mothers and caregivers on childhood diarrhoea and its management in Temeke municipality, Tanzania. *Tanzania journal of health research*. 2010; 12(1): 47-54.**

Diarrhoea is an increase in volume of stool or frequency of defecation. It is one of the most common clinical signs of gastrointestinal diseases, but also can reflect primary disorders outside of the digestive system. This cross-sectional descriptive survey was conducted in Temeke Municipality, Dar es Salaam over a 4-month period to investigate on knowledge and perception of mothers/caregivers of under fives on childhood diarrhoea. Specifically, the study focused on frequency of diarrhoeal episodes and their risk factors as well as effectiveness of traditional remedies used for its management prior to seeking medical attention. A semi-structured questionnaire was used for data collection, through which a total of 161 mothers were interviewed. Of those, 74 (46%) had female and 87 (54%) had male under fives with median age of 2-years. Frequency of diarrhoeal episodes was high among the under fives and was comparable between females and males (87 vs. 74;  $P < 0.05$ ). Medicinal plants were the most common traditional remedies employed by majority (71%) of the interviewees, which have been purported to be effective in management of childhood diarrhoea. Guava (leaves and fruits) was the most commonly used remedy in the treatment of diarrhoea. Mothers' knowledge on predisposing factors of childhood diarrhoea was poor, which was directly correlated with education level. Only about one-third of the respondents (31%) were aware of risk factors for childhood diarrhoea that cited poor sanitation and water as the main factors. Diarrhoeal episodes were perceived wrongly as normal growth stage and that were caused by several other "illnesses". It is important that further studies on traditional remedies should be carried out to validate their usefulness in the treatment of childhood diarrhoea.

274. **Mwambete KD, Justin-Temu M, Peter S. Prevalence and management of intestinal helminthiasis among hiv-infected patients at muhimbili national hospital. *Journal of the International Association of Physicians in AIDS Care*. 2010; 9 (3): 150-156.**

**Objective:** A cross-sectional study was conducted at Muhimbili National Hospital (Tanzania) to determine prevalence of helminthiasis among in-patients with HIV/AIDS. **Methodology:** After signing an informed consent form, participants answered a sociodemographic and risk factor questionnaire. Fecal specimens from patients with HIV-infected and uninfected patients were screened for intestinal helminthiasis (IHLs) using coprological methods. **Results:** A total of 146 patients were recruited, of those 66 were HIV-negative while 80 were HIV-positive patients. Thirty-five patients (12 HIV/AIDS and 23 non-HIV/AIDS) had helminthic infections. Hookworms were the most frequently detected helminths among patients living with HIV/AIDS (13.6%) and HIV-negative patients (17.5%), followed by schistosomiasis (9%) detected among HIV-negative individuals only. **Conclusion:** Prevalence of helminthiasis (HLs) was observed to be relatively lower among HIV-infected than uninfected patients, which is ascribable to prophylactic measures adopted for patients with HIV/AIDS. Thus, it is recommended that routine screening for HLs and prophylactic measures should be adopted for the improvement of patients' health status.

**275. Mwanga AH. Risk of conjunctiva contamination from blood and body fluid splashes during surgery at Muhimbili operation theaters master of medicine (General surgery) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Objectives:** To determine the risk of conjunctiva contamination with blood /body fluid splashes during surgery and to assess the utilization rate of protective eye wear at Muhimbili Operating Theatres. **DESIGN** Cross sectional, observational study **Settings** The theatre suits of Muhimbili National Hospital and Muhimbili Orthopedic Institute. **Results:** The contamination rate for provider protective eye wear was 50.52% with the mean droplets being 3.87, 2.79 and 1.57 per procedure for the primary surgeon, first assistant and second assistant respectively. The nature of surgery, professional rank, type of specialty, duration of procedure, role played during surgery and the use of power tools influenced the contamination rate. Utilization rate of protective eye wear was 30% the

.most mentioned reasons for not using protective gears were that the later were uncomfortable, unavailable and misting. **Conclusion:** The risk of conjunctiva contamination was high (50.52%) and utilization rate of special design protective eye wear was low (16%), Changes in attitudes and practices are needed to increase utilization.

**276. Mwanjali G.Prevalence and practises associated with human taeniasolium infection in Mbozi district Mbeya region .Master of medicine (Tropical Diseases Control) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Human cysticercosis/taeniosis is potentially among the zoonotic infections involving humans and swine. In Tanzania, studies on porcine cysticercosis show the disease to be hyperendemic in Northern (17.4%) and Southern (16%) parts of the country. In the Southern part of Tanzania, Mbozi district was leading with a prevalence of 32%. **Objective:** To determine the prevalence of, and identify practices associated with, human Taeniasolium infections in Mbozi district, Mbeya region, Tanzania. **Materials and methods:** A community-based descriptive cross-sectional study using cluster random sampling was conducted from April to July 2009 in Mbozi district, Mbeya region. A total of 830 participants between the ages of 15 to 60 years were enrolled in the study. Participants below 15 and above 60 years; people with mental illness; and people who were not willing to participate were excluded from the study. Accordingly, 830 sera were collected and analyzed using Ag-ELISA (B 158/B60)and Ab-ELISA (rT24h) and 820 stool samples were analyzed for Taenia species taeniosis using Copro-AgELISA while confirmation of T soliumtaeniosis was done using Western blot (r£S38). Furthermore, Formal-ether Concentration (FEC) technique was used for examining the presence of Taenia species eggs and other intestinal parasites. Information on demographic and potential risk factors was obtained using structured questionnaire. **Results:** Seroprevalence of human cysticercosis was 16.7% by Ag-ELISA (active cysticercosis) and 45.3% by Ab-ELIS A (exposure to human cysticercosis). Multivariate analysis on the risk factors associated with human cysticercosis using logistic regression

statistical analysis showed seroprevalence of active cysticercosis to VIII be significantly associated with increase in age, age group 36-45 years (OR= 2.5; 95% CI =1.2-5.0) and age group between 46-60 years (OR =2.6; 95% CI = 1.3-5.3); hand washing practices by dipping (OR= 3.8; 95% CI=2.5-5.9), and being confirmed carrier of *Taenia* species by Copro-AgELISA (OR= 2.6; 95% CI = 1.3-5.2). Furthermore, among participants with active cysticercosis 30 (54.5%) confirmed to have cystic lesion suggestive of neurocysticercosis on CT-scan. On other hand exposure to human cysticercosis showed to be significantly associated with sex (Male) (OR=1.6; 95% CI=1.1-2.1), hand washing by dipping method (OR=5.10; 95% CI=3.7- 6.9), being confirmed carrier of *Taenia* species by Copro- AgELISA (OR= 2.6; 95% CI=1.3-5.2), and using unsafe water (OR=1.9; 95% CI= 1.4- 2.6) Copro-pasitological analysis of stool showed the prevalence of *Taenia* species taeniosis to be 5.2% (by Copro-AgELISA) and *T. solium*taeniosis 4.1 % by western blot (rES38). While it showed a prevalence of 1.1 % by formal-ether concentration technique. On adjusting for other factors in the logistic regression model, only previous history of passing proglottides was found to be statistically significant (OR = 2.8; 95% CI = 1.4 - 5.8). **Conclusions and recommendations:** Findings of the present study show that *Taeniasolium* infection (cysticercosis and taeniosis) is hyper endemic in Mbozi district, Mbeya region. Therefore, multidisciplinary control effort should be carried out in that district in order to prevent the spread of the parasite.

**277. Mwanjali V. Association between alcohol use and sexual risk behaviors for HIV transmission among clients attending HIV voluntary counseling and testing at Muhimbili health information centre in Dar es salaam, Tanzania. Master of Medicine (Psychiatry) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Understanding the association of alcohol use to HIV transmission is of utmost importance particularly in regard to control of the HIV pandemic. As many as 50% of people living in areas of Southern Africa where HIV is most prevalent report current alcohol use 21. Unfortunately, very little is known regarding the patterns of alcohol consumption that are mostly associated with risk for HIV transmission.



**Objective:** This study was designed to determine the association between alcohol use and HIV serostatus as well as sexual risk behaviors among clients who voluntarily seek HIV testing and counseling (VCT) at Muhimbili Health Information Centre (MHIC), Dar es Salaam, Tanzania. **Materials and Methods:** A descriptive cross-sectional study design, using quantitative data collection methods, was conducted using the Alcohol Use Disorders Identification Test (AUDIT) over a period of two months, November 2009 through January 2010 to screen 800 participants, who attended HIV/VCT at MHIC. **Results:** The overall prevalence of HIV was 13.9% (95% CI of 1.5%-16.5%), being higher among women than men (P-value = 0.001). Twenty seven percent of the study participants were alcohol users. Alcohol use behavior was significantly high among study participants who were males (P-value = 0.002), Christians, (P-value = 0.000), single, (P-value = 0.006), and employed (P-value = 0.032). The risk of HIV infection increases with increase in frequency, (P- value = 0.006), and levels (amount) of alcohol use (P- value = 0.000). The majority of the study participants, who drank alcohol at the harmful and dependence level, were highly likely to report non-regular sexual partners (P values = 0.006) and not to use condom in all sexual contacts with non regular sexual partners (P values = 0.000). Female and male drinkers were more likely to test positive for HIV compared to non drinkers, (P value = 0.002, and P value = 0.012) respectively.

**278. Mwanziva C, Daou M, Mkali H, Masokoto A, Mbugi E, Shekalaghe S, Chilongola J. High prevalence of anemia in pastoral communities in Kilimanjaro Region: malnutrition is a primary cause among Maasai ethnic group. *Annals of Biological Research*. 2010; 1(2): 221-229.**

Burden of anemia is widespread, and more pronounced in the sub-Saharan Africa. Malaria has for so long been associated with the prevalence of anemia in most of the areas in Tanzania. Understanding the disease distribution and associated risk factors are important for interventional planning. Hemoglobin assessment was done during the four cross section surveys from June 2006 to March 2008 in which 2434 participants from two villages were examined. All households in the villages were mapped by the use of global position system. Multivariate and univariate regression analyses were used for evaluation

of ecological factors for anemia. Anemia prevalence was heterogeneous between ethnic groups found in the village (Maasai being mostly affected OR= 2.58; CI 95% 1.91 – 3.47, P< 0.001). Anemia affected mostly the young ages and female residence. Malnutrition was a major problem affecting this population as evidenced by the low body mass index (BMI) in majority of the residents. Due to the low prevalence of malaria in the study area (1.5%), the contribution of malaria to the prevalence of anemia was considered insignificant. Socio-economic and cultural factors are important factors that can lead to high anemia prevalence rates among pastoral communities, in particular the Maasai ethnic group. Apart from the immediate, disease mediated anemia, these socio-economic factors should be well considered as fundamental when planning for interventions in the area, if such interventions are to be successful.

**279. Mwanziva C, Mpina M, Balthazary S, Mkali H, Mbugi E, Mosha F, Chilongola J. Child hospitalization due to severe malaria is associated with the ICAM-1Kilifi allele but not adherence patterns of Plasmodium falciparum infected red blood cells to ICAM-1. *Acta Tropica*. 2010; 116 (1): 45-50.**

This study aimed at determining whether the predisposition of a mutation at position 179 of the ICAM-1 gene to child hospitalization due to malaria was mediated by changes in adherence properties of IRBCs to ICAM-1. ICAM-1 genotypes were determined by nested polymerase chain reaction of isolated DNA from filter blood spots followed by Restriction Fragment Length Polymorphism (RFLP). Plasmodium falciparum adherence assays were done on immobilized purified ICAM-1. Our data indicate that the homozygosity for the ICAM-1Kilifi mutation occurs at a frequency of 22.3% in Magugu-Babati, Northern Tanzania. Our results show that there are no differences in IRBC binding profiles across genotypes. We show in this study that homozygosity for the ICAM-1Kilifi is associated with child hospitalization ( $X^2=14.47$ ,  $p<0.001$ ). We have further shown that hospitalization was not associated with cytoadherence ( $X^2=0.17$ ,  $p=0.68$ ). We conclude that the ICAM-1Kilifi allele occurs at a high frequency in Tanzania and that associations of this allele with higher child hospitalization frequencies is independent of cytoadherence patterns of IRBC isolated from ICAM-1 genotypes,

implying that any associations reported to exist between the ICAM-1Kilifi mutation and severe malaria are unlikely to be mediated through altered IRBC cytoadherence properties.

**280. Mwenesano DR. Prevalence of HIV and malaria co infection among HIV and AIDS patients admitted to medical wards at Amana municipal al hospital, Ilala district, Dar es Salaam master of medicine (Internal Medicine) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** HIV and AIDS pandemic has been superimposed on the long standing malaria pandemic, where *P. falciparum* malaria is consistently one of the major causes of death. The high prevalence of both HIV and malaria infection in Tanzania means that even small interactions between the two could have substantial effects on populations.

**Objective:** To determine the prevalence of HIV and Malaria eo-infection among HIV and AIDS patients admitted to medical wards at Amana, Municipal hospital, Ilala, Dar salaam. Study design and setting: A cross-sectional study conducted at Amana hospital, Ilala, in Dar es Salaam, between August 2009 and December 2009. **Methodology:** A standard data collecting forms were used to collect demographic and examination findings from the patients. Laboratory findings were entered into the laboratory data collecting sheet. Results: A total of 180 HIV and AIDS patients, 68% females and 32% males were recruited into the study. The prevalence of HIV and malaria eo-infection was found to be 25.6%.The majority of the patients were in the sexually active age group (15 - 49) years. Prevalence of HIV and malaria eo-infection was high among patients with lower CD4+ T-cell counts. VIII Among patients with HIV and malaria eo-infection 53% of females and 20% of males were married. More than 80% of patients with HIV and malaria eo-infection had malaria parasite density between 1 and 500 per 200wbcs. No significant difference was seen in Anemia by WHO grading classification between the two group of HIV without malaria infection and HIV with malaria eo-infection. • On duration of hospital stay, 46% of HIV and malaria eo -infection stayed longer in the hospital than the 25% of HIV without malaria infection.  $p= 0.001$ . Among HIV patients with malaria eo-infection, those with higher mean CD4+ T- cell counts of 372 cells/ul

stayed in the hospital less than 5 days compared to those with low mean CD4+ T- cell counts of 207cells/ul. Similarly, to those with low mean malarial parasites of 190 per 200wbcs had a shorter hospital stay (less than 5 days) while those with high mean malarial parasites of 246 stayed in the hospital for more than 5 days? **Conclusion and Recommendation:** HIV and malaria eo-infection is common and occurs mostly in HIV and AIDS patients with low CD4+- T cell counts. Fever was a common symptom. (It was associated with long hospital stay and death). There is a need for collaboration between malaria and HIV programmes to spear head for the HIV patients to be screened for malaria infection.

281. **Mwinyimkuu AM. Perceived quality of care by national health insurance fund's clients at public and private health facilities in Dar es Salaam, Tanzania. Master of Public Health (MPH) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

RIV sero discordant couples have fertility desires and intentions to have children in future. There is little information on factors that influence desires and intentions to have children and use of contraceptives among RIV sero discordant couples. An analytical cross sectional study was conducted in Dar es Salaam with the aim of assessing factors that are associated with fertility desires, intentions and contraceptive use among RIV sero discordant couples. A total of 267 men and women participated in this study of which 65.2% were females. Data were analyzed using SPSS computer software. Frequencies cross tabulations and multiple logistic regressions were used to assess desires, intentions and the associated factors. One hundred and twenty six participants (47.2%) desired to have children. Majority of RIV positive women and men who are living in RIV sero discordance and desire to have children are young, have a partner who desire to have a child, have fewer children and have CD4 more than 200 /mm'. Majority of participants who had children of their own and with their current partner intended to have only one child compared to those who had no children of their own or had no children with their current partner. Multiple logistic regression analysis indicated that participants in the older age group are less likely to desire for children as compared to the younger age

groups, while participants who already have children, are significantly less likely than others, to want to have children in future. Almost 90% of participants were using contraceptives where condoms were the most commonly used method. The use of contraceptives was significantly associated with whether or not the participant has children with the current partner. Findings of the study show that men and women living in RIV sero discordance desire to have children, these calls for the need to have reproductive health counseling for this group for them to make informed choices to have children at the time when probability of RIV transmission is lowest.

**282. Mwita JC. Prevalence of hypertension, its control and other cardiovascular risk factors among diabetic patients at Muhimbili national hospital, Dar es salaam Master of science (Cardiology) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Hypertension is a common comorbidity of diabetes that has twice the risk of cardiovascular disease as compared to non-diabetic. This risk is reduced by hypertension treatment to a target blood pressure (BP) level of <130/80 mmHg. However, reaching target BP in hypertensive patients is often difficult and it has only been reached in 9 to 58% of diabetics studied. Generally, hypertension in type 2 diabetic patients clusters with other cardiovascular risk factors such as obesity, hyperglycemia, and dyslipidemia. Little information is available about the magnitude of hypertension, its control and other associated cardiovascular risk factors among diabetics in our setting.

**Objectives:** To determine the prevalence of hypertension, its control and the prevalence of other cardiovascular risk factors among diabetic patients at Muhimbili Diabetic clinic, Dar es Salaam

**Methods:** This was 6 months prospective cross-sectional and descriptive study that consecutively enrolled 150 diabetic patients attending MNH clinic aging 18 years and above. Data on weight and height, blood pressure, random capillary blood glucose, lipid profile and serum creatinine were ascertained. Hypertension and diabetes therapy were also documented. Results: Fifty four percent of all patients were hypertensive. Of these, 67 (81.7%) patients were on anti-hypertensive medications with only 34% of them achieving a controlled target of BP < 130/80 mmHg. Hypertensive

patients were older, more overweight/obese, had a longer duration of diabetes and elevated serum creatinine. Majority of the patients were on glucose-lowering agents but only 23.3% achieved glycolic control (pre-prandial glucose < 7.2 mmol/l). Dyslipidemia was highly frequent (88%) with elevated LDL cholesterol being the commonest FOID. Hypertriglyceridemia was significantly associated with poor glycolic control. Overweight and obesity were found in 48.7% and 18.7% respectively. Active cigarette smoking was uncommon (1.3%). **Conclusion:** Hypertension, hyperglycemia, dyslipidaemia and obesity are prevalent among our diabetic patients. Of all patients who were on antihypertensive drugs only a third reached a control target level of 130/80 mmHg. Similarly most patients had poor glycolic control. It is recommended that a more aggressive and multifactorial approach to address cardiovascular risk factors be used in this high-risk group to prevent cardiovascular events.

283. **Mziray AA. Access to recommend diets on the management of HIV and AIDS among infected pregnant and lactating women in Dar es Salaam. Master of Art (Health Policy and Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** HIV / AIDS infected pregnant and lactating women form a special group that has peculiar characteristics and needs among People living with HIV / AIDS. The physiological changes that occur during pregnancy and lactation call for additional nutritional needs in order to maintain the health status of the mother, fetus and the newborn. In HIV / AIDS infected pregnant and lactating women those additional nutritional needs are further perpetuated by increased nutritional demand caused by illness. Assuring access to health diets for this special group with unique characteristics forms a fundamental component in the management of the disease. This study was conducted to determine access to recommended diets and its associated factors on the management of HIV / AIDS among infected pregnant and lactating women in Dar es Salaam. **Methods:** A hospital-based cross-sectional study was carried out in three municipal hospitals of Dar es Salaam in April, 2009 to determine access to recommended diets among 201 HIV / AIDS infected pregnant and lactating women. It also examined

the association between access to recommended diets and nutritional status, (as the dependent variable,) and some socio- demographic characteristics, economic parameters and dietary intake as explanatory variables. Study respondents were interviewed using structured interview schedule with closed ended questions. Nutritional status was assessed anthropometrically using Body Mass Index (BMI) and reference was made from the WHO cut off points. The quality of food consumed over the past one month was assessed using a short food frequency questionnaire Results: Results revealed that access to recommended diet was a problem among HIV positive pregnant and lactating women whereby only 46.8% of the study participants had access to these diets. A significant proportion of study participants had not received nutritional counseling (57.2%). Moreover, access to recommended diets was significantly associated with Religion ( $p=0.05$ ), level of education ( $p < 0.001$ ), employment ( $p=0.014$ ) and household assets ( $p < 0.001$ ). **Conclusion:** Access to recommended diets to HIV infected pregnant and lactating women in Dar es Salaam is determined by multitude of factors, level of education, occupation, nutrition counseling, were among factors that were positively associated with food access while food price and being Muslims were negatively associated with access to recommended diets, and its only when these factors are addressed then we will witness the impact of good nutrition in the care and management of HIV among pregnant and lactating women. **Recommendations:** There is a need of strengthening and close monitoring of nutritional counseling process at VCT and CTC so that all eligible patients receive counseling from competent counselors, there is a need of strengthening information, education and communication activities to raise awareness on healthy food choices, nutrition, safe food handling and the importance of cheap indigenous foods to meet dietary needs. Government should set price ceiling for those healthy food items which are necessary for the health of its people and this should be supplemented by establishment of household income boost activities together with provision of food aids to those affected households that have difficulties in accessing foods.

- 284. Nair P, Eratne S, John E. A quasi-power-gated low-leakage stable sram cell. In *Circuits and Systems (MWSCAS), 2010 53rd IEEE International Midwest Symposium on* .2010 761-764.**

Leakage power dissipation and stability continues to be a major concern in deep-submicron SRAM cell design. In this paper, a quasi-power-gating approach that reduces the leakage power dissipation in an SRAM cell while maintaining stability is proposed. As compared to a standard 6-transistor SRAM, it consists of four additional NMOS transistors. In the active mode, the cell is activated by enabling two NMOS transistors in the pull-down path of the inverter. In the idle mode, a quasi-power-gating scheme is employed to reduce leakage by utilizing stack effect. It was found that this cell resulted in about 39.54 percent and 30.5 percent leakage power savings at a supply voltage value of 1V and 300mV respectively. A stability increase was also observed when compared to the standard non-power-gated 6-transistor SRAM cell.

- 285. Nasir N, Yahya N, Kashif M, Daud H, Akhtar MN, Zaid HM, Teng LC. Observation of a Cubical-Like Micorstructure of Strontium Iron Garnet and Yttrium Iron Garnet Prepared via Sol–Gel Technique. *J. of Nanosci and Nanotech.* 2010; 10: 1-4.**

This is our initial response towards preparation of nano-inductors garnet for high operating frequencies strontium iron garnet ( $\text{Sr}_3\text{Fe}_5\text{O}_{12}$ ) denoted as SrIGand yttrium iron garnet ( $\text{Y}_3\text{Fe}_5\text{O}_{12}$ ) denoted as YIG. The garnet nano crystals were prepared by novel sol–gel technique. The phase and crystal structure of the prepared samples were identified by using X-ray diffraction analysis. SEM images were done to reveal the surface morphology of the samples. Raman spectra were taken for yttrium iron garnet ( $\text{Y}_3\text{Fe}_5\text{O}_{12}$ ). The magnetic properties of the samples namely initial permeability relative loss factor (RLF) and quality factor (Q-Factor) were done by using LCR meter. From theXRD profile, both of the  $\text{Y}_3\text{Fe}_5\text{O}_{12}$  and  $\text{Sr}_3\text{Fe}_5\text{O}_{12}$  samples showed single phase garnet and crystallization had completely occurred at 900 °C for the SrIGand 950 °C for the YIGsamples . The YIGsample showed extremely low RLF value (0.0082) and high



density 4.623 g/cm<sup>3</sup>. Interesting however the high Q factor (20–60) is shown by the Sr<sub>3</sub>Fe<sub>5</sub>O<sub>12</sub> sample from 20–100 MHz this high performance magnetic property is attributed to the homogenous and cubical-like microstructure. The YIG particles were used as magnetic feeder for EM transmitter. It was observed that YIG magnetic feeder with the EM transmitter gave 39% higher magnetic field than without YIG magnetic feeder.

- 286. Ngaimisi E, Mugusi S, Minzi OM, Sasi P, Riedel KD, Suda A, Aklillu E. Long-Term Efavirenz Auto induction and Its Effect on Plasma Exposure in HIV Patients. *Clinical Pharmacology & Therapeutics*. 2010; 88(5): 676-684.**

We investigated the influence of gender and pharmacokinetic variations on long-term efavirenz auto induction and disposition among patients with HIV in Tanzania ( $N = 129$ ). Plasma concentrations (at 16 h) of efavirenz and 8-hydroxyefavirenz were quantified at weeks 4 and 16 of therapy. Genotyping was performed to identify cytochrome P450 (*CYP*) *2B6*\*6, *CYP3A5*\*3, \*6, and \*7, and *ABCB1*–3435 C/T genotypes. There were reductions in the median efavirenz concentration (Wilcoxon matched-pair test  $P < 0.001$ ) and efavirenz/8-hydroxyefavirenz ratio ( $P < 0.001$ ) by 19 and 32%, respectively, at week 16 as compared with week 4. The proportion of patients with efavirenz concentration  $< 1 \mu\text{g/ml}$  at week 16 was higher by 67, 25, and 5% in *CYP2B6*\*1/\*1, \*1/\*6, and \*6/\*6 genotypes, respectively. The defined therapeutic range based on observed plasma concentrations is affected by the time point of sampling and the *CYP2B6* genotype. The effect of efavirenz auto induction on reducing plasma exposure continues up to week 16 and predominantly affects *CYP2B6* extensive metabolizers. Among *CYP2B6* slow metabolizers, the presence of a *CYP3A5* genotype allele is associated with greater effects of efavirenz auto induction on plasma concentrations of the drug. The cumulative induction may influence the long-term antiretroviral therapy outcome, particularly in *CYP2B6*\*1 carriers.

- 287. Nguyen T, Nyella E, Health Information Systems Implementation in Developing Countries: A Translation Process. 2010.**

This paper takes a look at the political issues involved in the implementation of health information system (HIS) in resource constrained countries. By doing a comparative case, we attempted to understand how two different implementation processes took shape in two countries – Tanzania and Vietnam using Actor network theory (ANT) as our analytical lens. The study suggests that by mobilizing an appropriate number of actors, the HIS implementation as a network building process can earn its effect as a hub to attract other important factors that are still reluctant to join the initiative. Furthermore, the paper argues for the need to make use of detours and pay special attention to the marginal groups of actors as significant approaches in the network building process in resource constrained settings.

- 288. Ng'walali MP, Shigeyuki S. Self-destruction by multiple methods during a single episode: a case study and review of the literature. *African health sciences*.2010; 10(3).**

**Background:** Although the prevalence of suicide in the world is not clear, however, the reported rates of suicides are consistently higher among men than women regardless of age group. **Methods:** A case employing multiple methods during a brief time of self-destructive behavior is presented. A 44-year-old postmaster who was under criminal investigation by his head office for embezzlement, leaped down a high river cliff and drowned after an initial attempt to commit suicide by hanging from the bridge over the river. The autopsy and scene investigations were both employed and very helpful. **Results:** Three different methods of suicide were apparent in this instance: hanging, leaping down the cliff and drowning as was evidenced by the autopsy and positive diatom test. The complexity of this case was the planned protection against the failure of one method employed to commit suicide. The methods used were all highly lethal ones. There was neither history of previous suicide attempts nor psychiatric disorder. **Conclusion:** Although the cause of death may appear clear at autopsy in cases of self-destruction by multiple highly lethal methods during a single episode, scene investigation is important for the forensic pathologist to understand the whole story of the case and

determine the manner and actual cause of death. Scene investigation and autopsy is emphasized as part of the whole postmortem investigation of death in cases of unusual suicide using multiple methods of self-destruction.

- 289. Ng'walali PM, Tsunenari S. Self-destruction by multiple methods during a single episode: A case study and review of the literature. *African Health Sciences*. 2010; 10 (3): 273-275.**

**Background:** Although the prevalence of suicide in the world is not clear, however, the reported rates of suicides are consistently higher among men than women regardless of age group. **Methods:** A case employing multiple methods during a brief time of self-destructive behavior is presented. A 44-year-old postmaster who was under criminal investigation by his head office for embezzlement, leaped down a high river cliff and drowned after an initial attempt to commit suicide by hanging from the bridge over the river. The autopsy and scene investigations were both employed and very helpful. **Results:** Three different methods of suicide were apparent in this instance: hanging, leaping down the cliff and drowning as was evidenced by the autopsy and positive diatom test. The complexity of this case was the planned protection against the failure of one method employed to commit suicide. The methods used were all highly lethal ones. There was neither history of previous suicide attempts nor psychiatric disorder. **Conclusion:** Although the cause of death may appear clear at autopsy in cases of self-destruction by multiple highly lethal methods during a single episode, scene investigation is important for the forensic pathologist to understand the whole story of the case and determine the manner and actual cause of death. Scene investigation and autopsy is emphasized as part of the whole postmortem investigation of death in cases of unusual suicide using multiple methods of self-destruction.

- 290. Njau JC, Aboud S. Tuberculosis in HIV-infected Tanzanian children below 14 years. *East African journal of public health*. 2010; 7 (3): 199-205.**

Tuberculosis (TB)-human immunodeficiency virus (HIV) co-infection is an important public health problem. Diagnosis of TB in children usually follows discovery of an adult case, and relies on clinical presentation, sputum examination and chest radiograph. However, clinical features are non-specific, chest radiographs are difficult to interpret, and routine laboratory tests are not helpful. The aim of the current study was to determine the prevalence of TB in HIV-infected children below 14 years attending a tertiary hospital. A cross-sectional study was conducted in HIV-infected children below 14 years of age at Muhimbili National Hospital, in Dar es Salaam, Tanzania, between July 2008 and January 2009. Information on socio-demographic and anthropometric characteristics was collected using a structured questionnaire. Following assessment of clinical presentation, physical examination, tuberculin skin test, and chest radiograph were performed for each child. Two consecutive sputum specimens and blood sample were collected for microscopy and culture, and CD4 T-lymphocyte percentage test, respectively. Chi-square test was used to compare differences in proportions. Odds ratio (OR) and their 95% confidence interval (CI) are presented as the risk estimator. Of 182 HIV-infected children enrolled in the study, 104 (57.1%) were males. Overall, thirty-seven (20.3%) children had TB. The prevalence of TB was highest in males (78.4%) compared to females ( $p = 0.003$ ). There was a higher proportion of TB (45.9%) in the age group below 24 months compared to other age groups ( $p = 0.001$ ). Male gender, history of positive TB contact and severe immunosuppression were found to be significant risk factors for TB while use of antiretroviral therapy was found to be associated with decreased risk for TB. One-fifth of children had TB/HIV co-infection. Presence of four or more clinical manifestations and a low CD4+ T-lymphocyte percentage can be used to predict active TB in HIV-infected children.

- 291. Nkrumbih Z. Fetal Biometric Measurement Reliability on Estimating Gestation Age among Normal Pregnant Women Attending Antenatal Clinic at Muhimbili National Hospital. Master of Medicine (radiology) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam**

292. Nkya TE. Risk factors for schistosomahaematobium infection among school pupils in areas receiving annual mass treatment with praziquantel in Morogoro region, Tanzania Master of Science (parasitological and medical entomology) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.

**Introduction:** There is a gap in the area of linking prevalence of Schistosomahaematobium infection, praziquantel benefits and associated risk factors together with behavior of the primary school pupils that expose them to infection. This has led to an increase in the urban transmission of *S. haematobium* causing urinary schistosomiasis; therefore, data from urban settings was needed to help in formulating and evaluating control policies and strategies. **Objective:** This study aimed at determining the prevalence and intensity of *S. haematobium* infection among primary school children and associated risk factors in an area with annual administration of praziquantel in Morogoro municipality. **Methods** A cross sectional, stage wise random sampling survey of *S. haematobium* infection, factors influencing its transmission and praziquantel intake were studied among primary school pupils in Morogoro Municipality. A semi-structured questionnaire was used and urine from each pupil was collected in a plastic container and examined under a light microscope. Results were analyzed using SPSS version 12.0. **Results:** The overall prevalence was 35.2% based on microscopic examination of urine sample. The proportion of students that did receive Praziquantel in the last general distribution was found to be 14.3% while 25.8% of the students had low infection intensity and 9.3% had high infection intensity. The contributing risk factors included playing in water, bathing in rivers, fishing in rivers and helping parents work in rice fields, were all found to be statistically significant ( $p$ -value<0.001) associated with *S. haematobium* infection. **Conclusion:** The prevalence and intensity is high enough to cause re-infection. Still more effort is needed to enforce mass praziquantel administration among primary school pupils, alternative water sources for recreational activities, provision of proper latrines and further studies needed to explore the risk factors. **Recommendations:** More effort should be directed at Morogoro municipal to restore the faith of community in mass administration of praziquantel. The factors that do put these

children at risk, also needs to be further assessed and explored and more data needed so as to draw a reasonable conclusion that reflects the true population of the primary school children of Morogoro municipal. Pupils should also be instructed to correct personal habits which are conducive to infection and practice good personal hygiene can be an effective and safe substitute for repeated de-worming, reducing the opportunity for the emergence of drug-resistance, which should prolong the time anti-helminthes drugs such as praziquantel may be used for treatment of urinary schistosomiasis. In addition, complementary integrated control activities, such as environmental management measures, should be planned with other sectors such as agriculture and water resource development programs. It is also important to ensure that any development activity likely to favor the emergence or spread of schistosomiasis and other parasitic diseases is preceded by a proper health impact assessment and accompanied by preventive measures to limit their impact.

**293. Nsimba SE. Methadone maintenance therapy as evidence based drug abuse planning in developed countries: can developing countries afford and learn from this experience? *East African journal of public health*. 2010; 7 (1): 54-57.**

Use of illicit substances of abuse is a major public health problem in developed countries like the US. However, this problem of illicit substance use has spread like a tumor to include currently developing countries where most of its youths and adolescents are actively engaged in this illegal practice. This problem is even worse in poor resource countries, as uses of these substances is accompanied with a lot of HIV- risk behaviors, and for cocaine and heroin drug injectors often share injecting equipments hence increasing the chances of contracting and spreading HIV infection. Apart from HIV infection, other infections include hepatitis B, C, abscesses and other ill-health problems such as drug dependence manifested with complex set of behaviors related to mental illnesses. For non-drug injectors, the chances of contracting and spreading HIV through their unsafe/unprotected sexual behaviors especially those having multiple partners is there. Use of these illicit substances has other consequences like compromising the dosing schedule or adherence / poor compliance to ARTs/ARVs among those enrolled.

Furthermore, use of illicit substances may be accompanied with domestic sexual violence which is done without using any protective (condoms) measures) leading to HIV/AIDS and unplanned pregnancies. However, various studies and preventive approaches have been tried in the US on drug abusers in order to prevent the associated adverse health outcomes. There are many reasons why people use drugs. In many situations, drugs are being used as artificial problem-solvers such as frustrations, stress or tiredness. Drugs can often make a problem disappear for a short time but not usually the answer for solving the problem. They just help to remove it temporarily. Other people choose to use drugs to enjoy the feelings or for recreational purposes which many drugs produce. For example, many people, especially young people, experiment with using drugs to find out more about the sensations they produce. Drug use is a problem to users when it begins to cause some damage to their physical health, mental health and social well-being. These include mental illness, diseases caused by or related to use of drugs e.g. practice of sharing needles or syringes among drug injectors and also non-drug injectors may acquire HIV/AIDS and Hepatitis, crimes and violence. However, the number of harm associated with the use of drugs is increasing in Tanzania and other developing countries in Sub-Saharan Africa and globally in developed nations like the US and many others.

- 294. Nsimba SED, Mujinja PG. Assessment of compliance to sulfadoxine-pyrimethamine 18 months after phasing out chloroquine in Mkuranga District, Coast region – Tanzania. *Asian Pacific Journal of Tropical Medicine*. 2010; 3 (6): 451-453.**

**Objective:** To observe and assess the compliance to sulfadoxine-pyrimethamine (SP) one and a half years after phasing out chloroquine (CQ) in Mkuranga District, Coast region, Tanzania. **Methods:** A randomly controlled baseline community study was conducted in rural areas of Mkuranga district, Tanzania. Semi-structured questionnaire consisted of open-and closed -ended questions including home stocking, home use, last fever episodes and treatment of under fives with malaria using CQ or SP. **Results:** The prevalence of fever or reported fever rate during the last 48 hours by their mothers or guardians was high (70%). Of all 117 blood samples, only 8 children after drug analysis were found to

have CQ and 13 had SP concentrations within their blood respectively. None of these blood drug levels were above therapeutic ranges. **Conclusions:** Community interventions are urgently needed in rural communities and should specifically target household's nucleus on early malaria fever recognition and provision of recommended antimalarials for the sick under five children. However, sadly, there was an increase in underweight and undernourishment in the study areas, probably because of malaria in the area and poverty which are associated with poor nutrition in these youngsters.

**295. Nsimba SED. A focus on malaria research and interventions should be based on accessing the feasibility, effectiveness, safety, availability, cost /affordability and acceptability of artemisinin combination therapy in home management of malaria in urban and rural communities of Tanzania. *Journal of Malaria Research*. 2010; 1 (1-2): 99-118.**

Malaria represents a major health and socio-economic problem in Tanzania (with a total population 35.6 million people) as in all of sub-Saharan Africa. Generally, malaria ranks number one in terms of morbidity and mortality. Malaria case-management has lately been hampered significantly by rapid development and spread of chloroquine parasite resistance in the mainland, like elsewhere, especially for *P. falciparum* malaria to the long-time established first line anti-malarial drug - chloroquine (CQ). The current recommended first and second line ant malarial drugs in the country are sulphadoxine - pyrimethamine (SP) and amodiaquine respectively. However, SP is reported to develop resistance rapidly and has necessitated changing the malaria treatment policy in most subs-Saharan Countries. Tanzania again will be changing first line therapy to artemisinin fixed combination (ACT) therapy by November, 2006. Early diagnosis and prompt effective treatment represent the fundamental strategy of malaria control. National treatment guidelines are essential tools for health workers to exercise such a control. Following reports of increasing chloroquine (CQ) resistance the government on the Tanzanian mainland changed drug policy from chloroquine to sulphadoxine-pyrimethamine (SP) as first line drug for uncomplicated malaria. For example Zanzibar (Tanzania islands) as well as other countries in the region), the Ministries of Health has



embarked directly on more efficacious artemisinin based fixed drug combination therapies a bit earlier than Tanzania mainland because of SP treatment failure mostly in east, central and southern Africa. Fixed combination therapy (ACT), is a new strategy for malaria treatment, which is based on the hypothesis that two (or more) components of different mechanisms of action protect each other from development of resistance, simultaneously enhancing the efficacy and promoting compliance. Artemisinin as well as its two derivatives, e.g. artemether and artesunate, constitute a family of compounds with several attractive features for such a combination, due mainly to their rapid onset of effective action against multidrug-resistant *P. falciparum* and their gametocytocidal effect, which potentially reduces transmission of resistant strains. No cross-resistance with other known anti-malarials has been shown both in vivo and in vitro.

**296. Nsojo A, Aboud S, Lyamuya E. Comparative evaluation of Amplicor HIV-1 DNA test, version 1.5, by manual and automated DNA extraction methods using venous blood and dried blood spots for HIV-1 DNA PCR testing. Tanzania journal of health research.2010; 12 (4): 229-235.**

Human immunodeficiency virus (HIV) DNA polymerase chain reaction (PCR) test using venous blood sample has been used for many years in low resource settings for early infant diagnosis of HIV infection in children less than 18 months. The aim of this study was to evaluate and compare the performance characteristics of Amplicor HIV-1 DNA assay version 1.5 following processing of venous blood and dried blood spot (DBS) samples by Roche manual DNA extraction and automated Roche MagNA Pure LC instrument (MP) for HIV-1 DNA PCR testing in Dar es Salaam, Tanzania, in order to scale up early infant diagnosis of HIV infection in routine practice. Venous blood samples from children under 18 months born to HIV-infected mothers between January and April 2008 were collected. Venous blood was used to prepare cell pellet and DBS samples. DNA extractions by manual procedure and MP were performed each on cell pellet, venous blood and DBS samples and tested by Amplicor HIV-1 DNA assay. Of 325 samples included, 60 (18.5%) were confirmed HIV-infected by manual extraction performed on cell pellets. Sensitivity of the assay following MP processing of venous

blood was 95% (95% CI; 86.1-99.0%) and 98.3% (95% CI; 91.1 to 99.9%) for the manual extraction and processing by MP performed on DBS samples. Specificity of the assay with all DNA extraction methods was 99.6% (95% CI; 97.9 to 100%). Performance of the assay with Roche manual extraction and processing by MP on DBS samples compared well with Roche manual extraction performed on cell pellet samples. The choice of DNA extraction method needs to be individualized based on the level of laboratory facility, volume of testing and cost benefit analysis before it is adopted for use.

**297. Nyamtema AS, Urassa DP, Pembe AB, Kisanga F, van Roosmalen J. Factors for change in maternal and perinatal audit systems in Dar es Salaam hospitals, Tanzania. *BMC pregnancy and childbirth*. 2010; 10(1): 29.**

**Background:** Effective maternal and perinatal audits are associated with improved quality of care and reduction of severe adverse outcome. Although audits at the level of care were formally introduced in Tanzania around 25 years ago, little information is available about their existence, performance, and practical barriers to their implementation. This study assessed the structure, process and impacts of maternal and perinatal death audit systems in clinical practice and presents a detailed account on how they could be improved. **Methods:** A cross sectional descriptive study was conducted in eight major hospitals in Dar es Salaam in January 2009. An in-depth interview guide was used for 29 health managers and members of the audit committees to investigate the existence, structure, process and outcome of such audits in clinical practice. A semi-structured questionnaire was used to interview 30 health care providers in the maternity wards to assess their awareness, attitude and practice towards audit systems. The 2007 institutional pregnancy outcome records were reviewed. **Results:** Overall hospital based maternal mortality ratio was 218/100,000 live births (range: 0 - 385) and perinatal mortality rate was 44/1000 births (range: 17 - 147). Maternal and perinatal audit systems existed only in 4 and 3 hospitals respectively, and key decision makers did not take part in audit committees. Sixty percent of care providers were not aware of even a single action which had ever been implemented in their hospitals because of audit recommendations. There were neither records of the key decision points, action plan, nor

regular analysis of the audit reports in any of the facilities where such audit systems existed. **Conclusions:** Maternal and perinatal audit systems in these institutions are poorly established in structure and process; and are less effective to improve the quality of care. Fundamental changes are urgently needed for successful audit systems in these institutions.

**Nyella E, Mndeme M. Power Tensions in HIS Integration in Developing Countries: The Need for Distributed Control. *Power*. 2010; 8: 1-2010.**

As part of health sector reform, most developing countries are in the process of standardizing and integrating various vertical reporting systems. Nevertheless, the pressure resulting from the vertical systems supported by donors renders the integration goal challenging and unachievable. While studies have argued for the heterogeneity of interests and donors' multiple needs as the major causes, this paper argues for more critical analysis of the problem. The paper contribute by arguing for the need to understand the main factors involved, in terms of their resources and rules as they are implicated in HIS integration. Using an empirical case and Structuration theory concepts, we identified dialectic power relations between the actors resulting from control of resources and rules. The need to build shared meanings of the integration process through communication approaches; and to distribute control of the integrated HIS, facilitating 'tapping on' the resources available to the actors is discussed.

**298. Nyella E, Nguyen T, Braa J. Collaborative Knowledge Making and Sharing across sites: *the Role of boundary Objects*. In *MCIS*. 2010: 64.**

A numbers of researchers on Science and Technology Studies (STS) have criticized the western view treating knowledge as objective and universal, with the argument that all knowledge's are locally situated. In this article we draw on this view of *decentring* of scientific knowledge and on the concept of boundary objects to discuss an empirical case of a 'global' collaborative network called Health Information System Programme (HISP) involving a number of countries in a process of knowledge creation and sharing. The

network consists of knowledge objects with seemingly universal characteristics shareable across sites. The paper discuss the ‘localness’ of the knowledge produced by looking at its originality and how it is made mobile, thereby giving it the seemingly universal characteristics. The article further, discuss how the involved multiple social worlds characterized by different knowledge practices, cultures and visions, participate through boundary objects shareable across the network and thereby contribute new knowledge in the network. The collective boundary objects created and shared within the network play a significant role in creating synergies which in turn sustains the involved countries’ local initiatives.

**299. Nyirenda EMTarimo AKKihupi NI Yield response of different local and hybrid rice varieties to different ponding depths of water.2010.**

The combined increase in demand for food and scarcity of water worldwide necessitates saving water and increasing its productivity. This study determined varietal performance of four paddy cultivars - TXD306, TXD220, TXD88 and SUPA in terms of yield as influenced by four different ponding levels. The study assessed the yield and water productivity for each ponding depth, the differences in seepage and percolation as a result of differences in hydrostatic pressure. Results showed no significant difference in yield of varieties as a result of ponding treatments. This implies that a lot of water can be saved for other uses if the optimum ponding level, i.e., zero level is adopted.

**300. Obogo MMW. Perceived needs and level of satisfaction with care by family members of critically ill patients at Muhimbili Intensive care units Dar es Salaam. Master of Critical care and trauma (Nursing) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Family members of critically ill patients are affected in one way or another when their critically ill patient is admitted at reu, taking in consideration that these family members serve as a bridge between health care providers and critically ill patients who are physiologically or psychologically compromised. However, in Tanzania no study has

been documented to address the needs and level of satisfaction with care provided to themselves and their patients in reu. **Objectives:** This study aimed to assess perceived needs and level of satisfaction with care by family members of critically ill patients admitted at reu. Two specific objectives guided the study; the first was to identify the perceived needs of family members of critically ill patients. Second was to determine the level of family members' satisfaction with care provided to them and to their critically ill patients. **Methods:** A quantitative research methodology using a descriptive cross-sectional design was adopted. Perceived needs and level of satisfaction with care were assessed using structured questionnaires. Study population was one hundred and ten family members who visited their relatives who were critically ill and admitted at leu. Data was analyzed using statistical packages to interpret the findings. The duration of the study was two months and the results will be disseminated to relevant stakeholders. **Results:** Results revealed that 72% of the family members perceived the need of having a specific person to call at the hospital when a family member is not there as the very important need. Only 23% of the respondents perceived the need of talking about the possibility of patient's death as very important. The study showed that educational background had associations with many perceived needs compared to other demographics. The care given to the patients by nurses more satisfied the family members compared to other care, 31 % was very satisfied with this care. Satisfaction with ICU environment scored the least among all cares itemized. **Conclusion:** The perceived needs showed by the family members of critically ill patients and level of satisfaction with care could have serious outcome on patients' recovery in ICU. Nurses who are always nearby and taking care of these patients have to know the needs of family members and use part of their time to care for them and hence raise their level of satisfaction and hence good outcome to the patients' recovery.

301. **Ogotu B, Tiono AB, Makanga M, Premji Z, Gbadoé AD, Ubben D, Gaye O. Treatment of asymptomatic carriers with artemether-lumefantrine: an opportunity to reduce the burden of malaria. *Malar J.* 2010; 9(30): 10-1186.**

**Background:** Increased investment and commitment to malaria prevention and treatment

strategies across Africa has produced impressive reductions in the incidence of this disease. Nevertheless, it is clear that further interventions will be necessary to meet the international target of a reversal in the incidence of malaria by 2015. This article discusses the prospective role of an innovative malaria control strategy - the community-based treatment of asymptomatic carriers of *Plasmodium falciparum*, with artemisinin-based combination therapy (ACT). The potential of this intervention was considered by key scientists in the field at an Advisory Board meeting held in Basel, in April 2009. This article summarizes the discussions that took place among the participants. Presentation of the hypothesis: Asymptomatic carriers do not seek treatment for their infection and, therefore, constitute a reservoir of parasites and thus a real public-health risk. The systematic identification and treatment of individuals with asymptomatic *P. falciparum* as part of a surveillance intervention strategy should reduce the parasite reservoir, and if this pool is greatly reduced, it will impact disease transmission. Testing the hypothesis: This article considers the populations that could benefit from such a strategy and examines the ethical issues associated with the treatment of apparently healthy individuals, who represent a neglected public health risk. The potential for the treatment of asymptomatic carriers to impair the development of protective immunity, resulting in a 'rebound' and age escalation of malaria incidence, is also discussed. For policymakers to consider the treatment of asymptomatic carriers with ACT as a new tool in their malaria control programmes, it will be important to demonstrate that such a strategy can produce significant benefits, without having a negative impact on the efficacy of ACT and the health of the target population. Implications of the hypothesis: The treatment of asymptomatic carriers with ACT is an innovative and essential tool for breaking the cycle of infection in some transmission settings. Safe and effective medicines can save the Lives of children, but the reprieve is only temporary so long as the mosquitoes can become re-infected from the asymptomatic carriers. With improvements in rapid diagnostic tests that allow easier identification of asymptomatic carriers, the elimination of the pool of parasites is within reach.

302. Ogotu B, Tiono AB, Makanga M, Premji Z, Gbadoé AD, Ubben D, Marrast AC, Gaye O. Treatment of asymptomatic carriers with artemether-lumefantrine: An opportunity to reduce the burden of malaria? *Malaria Journal*. 2010; 9 (1): 30

**Background:** Increased investment and commitment to malaria prevention and treatment strategies across Africa has produced impressive reductions in the incidence of this disease. Nevertheless, it is clear that further interventions will be necessary to meet the international target of a reversal in the incidence of malaria by 2015. This article discusses the prospective role of an innovative malaria control strategy - the community-based treatment of asymptomatic carriers of *Plasmodium falciparum*, with artemisinin-based combination therapy (ACT). The potential of this intervention was considered by key scientists in the field at an Advisory Board meeting held in Basel, in April 2009. This article summarizes the discussions that took place among the participants. Presentation of the hypothesis. Asymptomatic carriers do not seek treatment for their infection and, therefore, constitute a reservoir of parasites and thus a real public-health risk. The systematic identification and treatment of individuals with asymptomatic *P. falciparum* as part of a surveillance intervention strategy should reduce the parasite reservoir, and if this pool is greatly reduced, it will impact disease transmission. Testing the hypothesis. This article considers the populations that could benefit from such a strategy and examines the ethical issues associated with the treatment of apparently healthy individuals, who represent a neglected public health risk. The potential for the treatment of asymptomatic carriers to impair the development of protective immunity, resulting in a 'rebound' and age escalation of malaria incidence, is also discussed. For policymakers to consider the treatment of asymptomatic carriers with ACT as a new tool in their malaria control programmes, it will be important to demonstrate that such a strategy can produce significant benefits, without having a negative impact on the efficacy of ACT and the health of the target population. Implications of the hypothesis. The treatment of asymptomatic carriers with ACT is an innovative and essential tool for breaking the cycle of infection in some transmission settings. Safe and effective medicines can save the lives of children, but the reprieve is only temporary so long as the mosquitoes can become re-infected from the asymptomatic carriers. With improvements in rapid diagnostic tests that

allow easier identification of asymptomatic carriers, the elimination of the pool of parasites is within reach.

**303. Okeng'OK. Quality of diabetic care at Muhimbili national hospital diabetic clinic Dar es Salaam, Tanzania .master of medicine (Internal Medicine) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Diabetes is a disease of increasing magnitude worldwide. It leads to acute and chronic complications, which are preventable if there is good diabetic care. Good diabetes care encompasses all good practice patterns, on how diabetic patients should be handled by clinicians and nurses, and good treatment strategies in order to treat and prevent diabetes related acute and chronic complications. Diabetic care can be assessed by several international indicators which have been put forward and improved. **Study objective:** To assess the quality of diabetic care at Muhimbili diabetic clinic. 60% of patients had received education on diet, insulin, oral hypoglycemic drugs, foot care and physical exercises. Blood pressure was measured in 68.9% and 31.6% of patients on the current and previous one visit respectively. Blood glucose levels were found high (fasting blood glucose ~ 6.1 mmol/l and random blood glucose ~ 11.1 mmol/l in 67.6% of patients during their current visit and especially in those who were aged more than 40 years 47.8% , who were females (59.4%) , were married (59.4%) , and employed 47% . None of the patients with records of HbA<sub>1c</sub> measurements had reached the target levels of:  $\leq 6.5\%$  and none of the 52 patients who had their HbA<sub>1c</sub> measured had reached the target level. Eighty percent of patients with records of cholesterol measurements had target levels  $< 5.2$  mmol/l. On the current visit, 61.7% had diastolic blood pressure less than 80 mmHg and 58% had systolic blood pressure less than 130 mmHg, on the previous one visit 37.2% had systolic blood pressure less than 130 mmHg and 47.9% had diastolic blood pressure less than 80 mmHg. Feet examination was never done in 69.5% of patients. Seven percent of patients had kidney disease, 2.9% had stroke, and 1.8% had diabetic foot. **Conclusion and recommendations:** The quality of diabetic care at the Muhimbili Diabetic Clinic was quite satisfactory in terms of blood glucose measurements, diabetic education on diet and foot care. However the quality of diabetes care was not adequate



enough in terms of proportion of patients with good or satisfactory blood glucose control, cholesterol and HbA1c measurements, and feet examination .Quality of care assessed using proportion of patients with records of cholesterol measurements and good cholesterol levels was very low. International and national diabetes guidelines need to be made more accessible to the attending medical personnel to remind about attained quality of diabetes care in their clinic and areas which they need to put more efforts to improve. More interventions for those above forty years of age and married are warranted to improve their glycolic control.

- 304. Oлдashi F, Kerçi M, Zhurda T, Ruçi K, Banushi A, Traverso MS, Jiménez J , Balbi J, Delleria C, Svampa S, Quintana G, Piñero Gh , Teves J, Seppelt I, Mountain D, Hunter J, Balogh Z, Zaman M, Druwé P, Rutsaert R, Mazairac G, Pascal F, Yvette Z, Chancellin D, Okwen P, Djokam-Liapoe J, Jangwa E, Mbuagbaw L, Fointama N, Pascal N, Baillie F, Jiang J, Gao G, Bao Y, Morales C, Sierra J, Naranjo S, Correa C, Gómez C, Kajaia N, Dakubo J, Naaeder S, Sowah P, Yusuf A, Ishak A, Selasi-Sefenu P, Sibiri B, Sarpong-Peprah S,..... Chengo C. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): A randomised, placebo-controlled trial. *The Lancet*. 2010; 376 (9734): 23-32.**

**Background** Tranexamic acid can reduce bleeding in patients undergoing elective surgery. We assessed the effects of early administration of a short course of tranexamic acid on death, vascular occlusive events, and the receipt of blood transfusion in trauma patients. **Methods** This randomised controlled trial was undertaken in 274 hospitals in 40 countries. 20 211 adult trauma patients with, or at risk of, significant bleeding were randomly assigned within 8 h of injury to either tranexamic acid (loading dose 1 g over 10 min then infusion of 1 g over 8 h) or matching placebo. Randomisation was balanced by centre, with an allocation sequence based on a block size of eight, generated with a computer random number generator. Both participants and study staff (site investigators and trial coordinating centre staff) were masked to treatment allocation. The primary outcome was death in hospital within 4 weeks of injury, and was described with the

following categories: bleeding, vascular occlusion (myocardial infarction, stroke and pulmonary embolism), multiorgan failure, head injury, and other. All analyses were by intention to treat. This study is registered as ISRCTN86750102, Clinicaltrials.gov NCT00375258, and South African Clinical Trial Register DOH-27-0607-1919. Findings 10 096 patients were allocated to tranexamic acid and 10 115 to placebo, of whom 10 060 and 10 067, respectively, were analysed. All-cause mortality was significantly reduced with tranexamic acid (1463 [14.5%] tranexamic acid group vs 1613 [16.0%] placebo group; relative risk 0.91, 95% CI 0.85-0.97; p=0.0035). The risk of death due to bleeding was significantly reduced (489 [4.9%] vs 574 [5.7%]; relative risk 0.85, 95% CI 0.76-0.96; p=0.0077). Interpretation Tranexamic acid safely reduced the risk of death in bleeding trauma patients in this study. On the basis of these results, tranexamic acid should be considered for use in bleeding trauma patients.

- 305. Olotu A , Fegan G, Williams TN , Sasi P , Ogada E , Bauni E , Wambua J , Marsh K , Borrmann S, Bejon P. Defining Clinical Malaria: The Specificity and Incidence of Endpoints from Active and Passive Surveillance of Children in Rural Kenya. *PLoS ONE*. 2010; 5 (12): 1-8.**

**Background:** Febrile malaria is the most common clinical manifestation of *P. falciparum* infection, and is often the primary endpoint in clinical trials and epidemiological studies. Subjective and objective fevers are both used to define the endpoint, but have not been carefully compared, and the relative incidence of clinical malaria by active and passive case detection is unknown. **Methods:** We analyzed data from cohorts under active and passive surveillance, including 19,462 presentations with fever and 5,551 blood tests for asymptomatic parasitaemia. A logistic regression model was used to calculate Malaria Attributable Fractions (MAFs) for various case definitions. Incidences of febrile malaria by active and passive surveillance were compared in a subset of children matched for age and location. **Results:** Active surveillance identified three times the incidence of clinical malaria as passive surveillance in a subset of children matched for age and location. Objective fever (temperature  $\geq 37.5^{\circ}\text{C}$ ) gave consistently higher MAFs than case definitions based on subjective fever. **Conclusion:** The endpoints from active and passive

surveillance have high specificity, but the incidence of endpoints is lower on passive surveillance. Subjective fever had low specificity and should not be used in primary endpoint. Passive surveillance will reduce the power of clinical trials but may cost-effectively deliver acceptable sensitivity in studies of large populations.

**306. Ott I, Schulz S, Mehilli J, Fichtner S, Hadamitzky M, Hoppe K, Schömig A. Erythropoietin in patients with acute st-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention a randomized, double-blind trial. *Circulation: Cardiovascular Interventions*, 3(5), 408-413.**

**Background:** Erythropoietin improves myocardial function in experimental models of myocardial infarction. The aim of the present study was to determine the value of erythropoietin in patients with acute ST-elevation myocardial infarction. **Methods and Results:** This randomized, double-blind study included 138 patients admitted with acute ST-elevation myocardial infarction and treated with primary percutaneous coronary intervention. Patients were randomly assigned to receive epoetin- $\beta$  ( $3.33 \times 10^4$  U, n=68) or placebo (n=70) immediately and at 24 and 48 hours after percutaneous coronary intervention. The primary end point was left ventricular ejection fraction after 6 months measured by MRI. Other end points included infarct size at 5 days and 6 months. Clinical adverse events (death, recurrent myocardial infarction, stroke, and infarct-related artery revascularization) were investigated at 30 days and 6 months. Left ventricular ejection fraction at 6-month follow-up was  $52.0 \pm 9.1\%$  in the erythropoietin group compared with  $51.8 \pm 9.3\%$  in the placebo group (P=0.92). Five days after percutaneous coronary intervention, left ventricular ejection fraction was  $49.4 \pm 8.0\%$  in the erythropoietin group and  $50.8 \pm 7.3\%$  in the placebo group (P=0.32); infarct size was  $26.8 \pm 20.9\%$  and  $28.3 \pm 24.4\%$  (P=0.76) and decreased to  $17.3 \pm 14.3\%$  and  $20.9 \pm 16.4\%$  at 6-month follow-up (P=0.27). The cumulative 6-month incidence of death, recurrent myocardial infarction, stroke or target vessel revascularization was 13.2% in the erythropoietin group and 5.7% in the placebo group (hazard ratio, 2.36; 95% confidence interval, 0.73 to 7.66; P=0.15). **Conclusions:** In patients with acute ST-elevation myocardial infarction treated with primary percutaneous coronary intervention, erythropoietin treatment did not improve left

ventricular ejection fraction or reduce infarct size but may increase clinical adverse events.

- 307. Outwater AH, Mgaya E, Campbell JC, Becker S, Kinabo L, Menick DM. Homicide of children in Dar es Salaam, Tanzania. *East African journal of public health*. 2010; 7 (4): 345-349.**

**Background:** Although data are sparse, it has been estimated that the highest rates of homicide death amongst children are in Africa. Little information is available on ages 0-14 years. No known quantitative surveillance of early neonaticide (killed at less than one week) has been conducted previously in Africa. A Violent Death Survey following WHO/CDC Guidelines was completed in Dar es Salaam region, Tanzania (population 2.845 million) in 2005. Qualitative and quantitative data were gathered and analyzed. The overall age adjusted rate of discarded and killed children in DSM was 2.05 per 100,000. The rate of early neonaticide was 27.7 per 100,000 while the rate of homicide incidence for children older than one week was 0.54 per 100,000 the overall estimated homicide rate for Africa of children under age 15 was 4.53 per 100,000. The rate in DSM was closer to the estimated global rate of 1.7 per 100,000. The results in DSM show that broad age groupings such as "< 1 year", "0-4 years" and "0-14 years" may mask a high incidence of neonaticide and an otherwise low incidence of murdered children. The print media provided good in-depth coverage for a few cases but it is not known if the reported cases are representative. Eighty percent of homicides of children in DSM were neonaticides. Since it is believed that the forces behind neonaticide are fundamentally different than homicides of older children, it is suggested that data of future surveys be parsed to include neonates, until the phenomenon is more clearly understood and addressed. Further understanding of the mother and father of the deceased is needed. Continued surveillance data collection is important to expand the sample size.

- 308. Pembe AB , Carlstedt A , Urassa DP , Lindmark G. Maternal referral system in Rufiji rural district in Tanzania . 2010.**

**Objective:** To evaluate the effectiveness of the maternal referral system through determining proportion of women reaching the hospitals after referral advice, appropriateness of the referral indications, reasons for non-compliance and to find out if compliance to referrals makes a difference in the perinatal outcome. Data collection: Referred women were identified at hospitals. Those not reaching the hospitals were traced and interviewed. **Main outcome measures:** Compliance to referral advice, reasons for non-compliance, appropriateness of referral indication, and perinatal outcome. **Results:** Out of 1538 women referred 70% were referred for demographic risks, 12% for historical obstetric risks, 12% for prenatal complications and 5.5% for natal and immediate postnatal complications. Five or more pregnancies as well as age <20 years were the most common referral indications. The compliance rate was 37% for women referred due to demographic risks and more than 50% among women referred in the other groups. Among women who did not comply with referral advice, almost half of them mentioned financial constraints as the major factor. Lack of compliance with the referral did not significantly increase the risk for a perinatal death. **Conclusion:** Majority of the maternal referrals was due to demographic risks, where few women complied. To improve compliance to maternal referrals there is need to review referral indications and strengthen counseling on birth preparedness and complication readiness.

309. Pembe AB, Carlstedt A, Urassa DP, Lindmark G, Nyström L, Darj E. Effectiveness of maternal referral system in a rural setting: A case study from Rufiji district, Tanzania. *BMC Health Services Research*. 2010; 10: 326.

**Background:** The functional referral system is important in backing-up antenatal, labour and delivery, and postnatal services in the primary level of care facilities. The aim of this study was to evaluate the effectiveness of the maternal referral system through determining proportion of women reaching the hospitals after referral advice, appropriateness of the referral indications, reasons for non-compliance and to find out if compliance to referrals makes a difference in the perinatal outcome. **Methods.** A follow-up study was conducted in Rufiji rural district in Tanzania. A total of 1538 women referred from 18 primary level of care facilities during a 13 months period were

registered and then identified at hospitals. Those not reaching the hospitals were traced and interviewed. **Results.** Out of 1538 women referred 70% were referred for demographic risks, 12% for obstetric historical risks, 12% for prenatal complications and 5.5% for natal and immediate postnatal complications. Five or more pregnancies as well as age <20 years were the most common referral indications. The compliance rate was 37% for women referred due to demographic risks and more than 50% among women referred in the other groups. Among women who did not comply with referral advice, almost half of them mentioned financial constraints as the major factor. Lack of compliance with the referral did not significantly increase the risk for a perinatal death. **Conclusion.** Majority of the maternal referrals were due to demographic risks, where few women complied. To improve compliance to maternal referrals there is need to review the referral indications and strengthen counseling on birth preparedness and complication readiness.

**310. Pembe AB, Carlstedt A, Urassa DP, Lindmark G, Nyström L, Darj E. Quality of antenatal care in rural Tanzania: Counselling on pregnancy danger signs. *BMC Pregnancy and Childbirth*. 2010; 10: 35.**

**Background:** The high rate of antenatal care attendance in sub-Saharan Africa should facilitate provision of information on signs of potential pregnancy complications. The aim of this study was to assess quality of antenatal care with respect to providers' counselling of pregnancy danger signs in Rufiji district, Tanzania. **Methods:** A cross-sectional study was conducted in 18 primary health facilities. Thirty two providers were observed providing antenatal care to 438 pregnant women. Information on counselling on pregnancy danger signs was collected by an observer. Exit interviews were conducted to 435 women. **Results:** One hundred and eighty five (42%) clients were not informed of any pregnancy danger signs. The most common pregnancy danger sign informed on was vaginal bleeding 50% followed by severe headache/blurred vision 45%. Nurse auxiliaries were three times more likely to inform a client of a danger sign than registered/enrolled nurses (OR = 3.7; 95% CI: 2.1-6.5) and Maternal Child Health Aides (OR = 2.3; 95% CI: 1.3-4.3) and public health nurses (OR = 2.5; CI: 1.4-4.2) were two times more likely to

provide information on danger signs than registered/enrolled nurses. The clients recalled less than half of the pregnancy danger signs they had been informed during the interaction. **Conclusion:** Two out of five clients were not counseled on pregnancy danger signs. The higher trained cadre, registered/enrolled nurses were not informing majority of clients pregnancy danger signs compared to the lower cadres. Supportive supervision should be made to enhance counselling of pregnancy danger signs. Nurse auxiliaries should be encouraged and given chance for further training and upgrading to improve their performance and increase human resource for health.

**311. Pembe AB, Othman MK. Pregnancy outcome after one previous caesarean section at a tertiary university teaching hospital in Tanzania. *Tanzania Journal of Health Research*. 2010; 12(3): 188-194.**

The aim of this study was to assess outcome of pregnancy in women with one previous caesarean section at Muhimbili National Hospital in Dar es Salaam, Tanzania. A cross sectional descriptive study was conducted at Muhimbili National Hospital (MNH) from 13th September 2006-2nd February 2007. All women with one previous caesarean section coming for delivery at MNH in that period were identified. Data on medical history, socio-demographic and obstetric characteristics, decision on mode of delivery, and pregnancy outcomes were collected. There were 3285 deliveries during the study period, out of which 365 (11%) women had one previous caesarean section. Almost half (48%) of the women with one previous caesarean section attended antenatal care in the dispensaries and health centres. Trial of scar was decided in 80 (21.9%) women. A total of 278 women had the decision for repeat caesarean section made on admission whereby 180 (64.4%) were for emergency caesarean section and 98 (35.6%) were for elective caesarean section. A total 52 women delivered vaginally, 44 after trial of the scar and eight among women decided for emergency repeat caesarean section on admission. The incidence of uterine rupture was 2% and perinatal mortality ratio was 55 per 1000 live birth. In conclusion, a significant proportion of women delivering at MNH had one previous caesarean section among which few underwent trial of scar. Half of the women attended antenatal care in the dispensaries and health centres. Women with previous

caesarean section should be encouraged to attend hospitals providing comprehensive emergency obstetric care. The quality of intrapartum monitoring should be audited to improve maternal and newborn outcome.

**312. Pembe AB. Quality Assessment and Monitoring of Maternal Referrals in Rural Tanzania.2010.**

An efficient referral system is essential in providing access to emergency obstetric care at higher levels of care by supporting antenatal and delivery services in the primary level of care facilities (PLCF). The aim of this thesis was to assess community and health service factors affecting the quality of maternal referrals in rural Tanzania. Ten focus group discussions (FGDs) with health workers and community members were conducted to describe their perceptions on maternal referrals. Women (n=1118) were interviewed to determine awareness of obstetric danger signs and associated factors. Compliance with referral advice was analyzed for 1538 women referred from PLCF. Counseling on danger signs and adherence to referral criteria was observed in 438 antenatal consultations. FGDs indicated that women had limited influence, especially on emergency referrals. The process of deciding to seek referral care considered the perception of seriousness and past experience of referral, access to transport, and the cost involved. Women had low awareness of danger signs of obstetric complications: higher years of schooling increased the likelihood of being aware of danger signs. Demographic risks accounted for 70% of referred women but less than half complied with the advice. Compliance was higher for historical obstetric risks, prenatal, natal, and postnatal complications groups. Few women were counseled on pregnancy danger signs and a significant number with  $\geq 5$  pregnancies and primigravidae <20 years were not informed of the risk factors. This thesis demonstrated a need for reviewing referral guidelines and an increase in supportive supervision for health workers counseling on obstetric danger signs to enhance acceptance of referrals advices. Women's education should be given priority for increasing participation in decisions and becoming more aware of danger signs. Costs involved in maternal referrals can be relieved by improving family income,



infrastructure, and alleviating the cost of referral through mobilizing community transport and financial schemes.

**313. Pembe AB. Quality of antenatal care in rural Tanzania: Counseling on danger signs of obstetric complications and adherence to referral criteria. 2010.**

**Background:** The high rate of antenatal care attendance in sub-Saharan Africa, should facilitate information on signs of potential pregnancy complications and advice the women on referral where indicated. The aim of this study was to assess quality of antenatal care with respect to providers' counseling of pregnancy danger signs and adherence to referral criteria in Rufiji district, Tanzania. **Methods:** A cross-sectional study was conducted in 18 primary health facilities. Thirty two providers were observed providing antenatal care to 438 pregnant women. Information on counseling on pregnancy danger signs and women's use of health facility for delivery was collected by an observer. Exit interviews were conducted to 435 women. **Results:** One hundred and eighty five (42%) clients were not informed of any pregnancy danger signs. The most common pregnancy danger sign informed on was vaginal bleeding 50% followed by severe headache/blurred vision 45%. Maternal Child Health Aides (MCHAs) were three times more likely to inform a client of a danger sign than nurse auxiliaries (OR=3.7; 95% CI: 2.1-6.5) while public health nurses and registered/enrolled nurses were both two times more likely to inform on danger signs (OR=2.3; 95% CI: 1.3-4.3 and OR=2.4; CI: 1.4-4.2 respectively). Among grand multiparous and primigravida below 20 years identified on exit interview, 63% and 71% had been informed of the risk factors during the during interaction with providers. **Conclusion:** Two out of five clients were not counseled on danger signs of obstetric complication and not advised to use referral services, despite of having a risk factor. Nurse auxiliaries were less capable of counseling clients. Supportive supervision should be made to enhance counseling of danger signs and adherence to referral indications. Nurse auxiliaries should be encouraged and given chance for further training and upgrading to improve their performance and increase human resource for health.

314. **Pietri E, Medri L, Bravaccini S, Scarpi E, Rocca A, Maltoni R, Amador D. Association between c-myc amplification and other biologic features and prognosis in primary breast cancer. In ASCO Annual Meeting Proceedings. 2010; 28(15): 673.**

**Background:** Amplification of c-myc is found in about 15% of breast cancers, half of which show HER2 coamplification. C-myc protein regulates cell proliferation, differentiation and apoptosis, but its prognostic impact remains controversial and varies on the basis of levels of cyclins and growth factors. **Methods:** c-myc amplification was retrospectively assessed in 67 consecutive HER2-amplified primary breast cancers (PBCs) and in 70 HER2-negative PBC controls using fluorescence in situ hybridization. We evaluated the correlation between c-myc and HER2 amplification, the association between c-myc amplification and pathological features such as estrogen receptors (ER), progesterone receptors (PgR), grade, tumor size, and lymph node metastasis, and the impact of c-myc and HER2 amplification on disease-free survival (DFS) and overall survival (OS). Correlations among qualitative variables were assessed using the chi-square test, while DFS and OS were estimated by the product-limit method and compared using the log-rank test. **Results:** c-myc amplification was present in 31 out of 67 (46%) HER2-amplified PBCs and in 15 out of 70 (21%) HER2-nonamplified PBCs ( $p > 0.002$ ). It was significantly associated with high tumor grade ( $p < 0.0001$ ), negative ER ( $p > 0.006$ ) and PgR ( $p > 0.01$ ), whereas no correlation was found with lymph node metastasis or tumor size. At a median follow up of 59 months, 5-year DFS was 71% (95%CI 55-86) in c-myc-amplified PBC and 80% (95%CI 71-89) in c-myc no amplified PBC ( $p > 0.32$ ). Five-year OS was 74% (95%CI 55-93) in c-myc-amplified PBC and 85% (95%CI 78-93) in c-myc no amplified PBC ( $p > 0.39$ ). **Conclusions:** C-myc amplification is associated with unfavorable biological features. We found an absolute, albeit not statistically significant, difference in DFS and OS of 9% and 11%, respectively, in favor of the group without c-myc amplification. Our results highlight the need for further investigation into the predictive role of c-myc in response to endocrine and anti-HER2 therapies, and also into its potential role as a therapeutic target.

315. Plantinga TS , Hamza OJM , Willment JA , Ferwerda B , Van De Geer NMD, Verweij PE , Matee MI, Banahan K, O'Neill LAJ , Kullberg,BJ , Brown GD , Van Der Ven AJ , Netea MG. Genetic variation of innate immune genes in HIV-infected African patients with or without oropharyngeal candidiasis. *Journal of Acquired Immune Deficiency Syndromes*. 2010; 55 (1): 87-94.

**Background:** The occurrence of oropharyngeal candidiasis (OPC) in combination with HIV disease progression is a very common phenomenon. However, not all HIV-infected patients develop OPC, even when they progress to low CD4 + T-cell counts. Because T-cell immunity is defective in AIDS, the innate defence mechanisms are likely to have a central role in antifungal immunity in these patients. We investigated whether genetic variations in the innate immune genes DECTIN-1, TLR2, TLR4, TIRAP, and CASPASE-12 are associated with the presence of OPC in HIV-infected subjects from East Africa. **Methods:** A total of 225 HIV patients were genotyped for several single nucleotide polymorphisms (SNPs), and this was correlated with the occurrence of OPC in these patients. In addition, primary immune cells obtained from individuals with different genotypes were stimulated with *Candida albicans*, and cytokine production was measured. **Results:** The analysis revealed that no significant differences in the polymorphism frequencies could be observed, although a tendency toward a protective effect on OPC of the DECTIN-1 I223S SNP was apparent. Furthermore, interferon  $\gamma$  production capacity was markedly lower in cells bearing the DECTIN-1 SNP I223S. It could also be demonstrated that the 223S mutated form of the DECTIN-1 gene exhibits a lower capacity to bind zymosan. **Conclusions:** These data demonstrate that common polymorphisms of TLR2, TLR4, TIRAP, and CASPASE-12 do not influence susceptibility to OPC in HIV-infected patients in East Africa but suggest an immunomodulatory effect of the I223S SNP on dectin-1 function and possibly the susceptibility to OPC in HIV patients.

316. Prentice AM, Cox SE, Nweneka CV. Asymptomatic malaria in the etiology of iron deficiency anemia: A nutritionist's viewpoint. *American Journal of Clinical Nutrition*. 2010; 92 (6): 1283-1284.

- 317. Priebe S, Jacob M, Jastrow C, Kleine-Ostmann T, Schrader T, Kurner T. A comparison of indoor channel measurements and ray tracing simulations at 300 GHz. In *Infrared Millimeter and Terahertz Waves (IRMMW-THz), 2010 35th International Conference on. 2010: 1-2.***

This paper presents ultra broadband channel measurements in a typical office room. The measured channel impulse response and transfer function is compared to a ray tracing simulation performed with a 3D model of the scenario. Additionally, we show reflection losses of the building materials in the room which are required as input data for the ray tracing algorithm

- 318. Qureshi AA, Ibrahim T. Study design in clinical orthopaedic trials. *Orthopaedics and Trauma. 24(3), 229-240.***

This article addresses the explicit and salient aspects of clinical orthopaedic trial design for those requiring a concise overview of this topic. Planning and conducting a clinical trial requires an understanding of the key components of study design to appreciate the relative strengths and weaknesses of a particular design in answering a specific research question. At the outset of a research project a mandatory planning phase should produce an effective protocol. This should state the scientific basis of the study and utilize an appropriate study design, addressing the key concepts of validity and reliability. In the context of randomized controlled trials, one must consider how the population of interest is sampled and randomly assigned, the use of a control group and the outcome measures to be employed. In some circumstances other study designs may be preferable and it is important to note their indications so as to limit their misuse.

- 319. Rabinovici GD, Furst AJ, Alkalay A, Racine CA, O'Neil JP, Janabi M, Jagust WJ. Increased metabolic vulnerability in early-onset Alzheimer's disease is not related to amyloid burden. *Brain.2010: 326.***

Patients with early age-of-onset Alzheimer's disease show more rapid progression, more generalized cognitive deficits and greater cortical atrophy and hypo metabolism compared to late-onset patients at a similar disease stage. The biological mechanisms that underlie these differences are not well understood. The purpose of this study was to examine *in vivo* whether metabolic differences between early-onset and late-onset Alzheimer's disease is associated with differences in the distribution and burden of fibrillar amyloid- $\beta$ . Patients meeting criteria for probable Alzheimer's disease (National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's; Disease and Related Disorders Association criteria) were divided based on estimated age at first symptom (less than or greater than 65 years) into early-onset ( $n = 21$ , mean age-at-onset  $55.2 \pm 5.9$  years) and late-onset ( $n = 18$ ,  $72.0 \pm 4.7$  years) groups matched for disease duration and severity. Patients underwent positron emission tomography with the amyloid- $\beta$ -ligand [ $^{11}\text{C}$ ]-labelled Pittsburgh compound-B and the glucose analogue [ $^{18}\text{F}$ ]-labelled fluorodeoxyglucose. A group of cognitively normal controls ( $n = 30$ , mean age  $73.7 \pm 6.4$ ) was studied for comparison. [ $^{11}\text{C}$ ]-Labelled Pittsburgh compound-B images were analyzed using Logan graphical analysis (cerebella reference) and [ $^{18}\text{F}$ ]-labelled fluorodeoxyglucose images were normalized to mean activity in the pons. Group differences in tracer uptake were assessed on a voxel-wise basis using statistical parametric mapping, and by comparing mean values in regions of interest. To account for brain atrophy, analyses were repeated after applying partial volume correction to positron emission tomography data. Compared to normal controls, both early-onset and late-onset Alzheimer's disease patient groups showed increased [ $^{11}\text{C}$ ]-labelled Pittsburgh compound-B uptake throughout frontal, parietal and lateral temporal cortices and striatum on voxel-wise and region of interest comparisons ( $P < 0.05$ ). However, there were no significant differences in regional or global [ $^{11}\text{C}$ ]-labelled Pittsburgh compound-B binding between early-onset and late-onset patients. In contrast, early-onset patients showed significantly lower glucose metabolism than late-onset patients in presumes/posterior cingulated, lateral temporo-parietal and occipital cortices (voxel-wise and region of interest comparisons,  $P < 0.05$ ). Similar results were found for [ $^{11}\text{C}$ ]-labelled Pittsburgh compound-B and [ $^{18}\text{F}$ ]-labelled fluorodeoxyglucose using atrophy-corrected data. Age-at-onset correlated positively with glucose metabolism in presumes,

lateral parietal and occipital regions of interest (controlling for age, education and Mini Mental State Exam,  $P < 0.05$ ), while no correlations were found between age-at-onset and [ $^{11}\text{C}$ ]-labelled Pittsburgh compound-B binding. In summary, a comparable burden of fibrillar amyloid- $\beta$  was associated with greater posterior cortical hypo metabolism in early-onset Alzheimer's disease. Our data are consistent with a model in which both early amyloid- $\beta$  accumulation and increased vulnerability to amyloid- $\beta$  pathology play critical roles in the pathogenesis of Alzheimer's disease in young patients.

**320. Range NS, Malenganisho W, Temu MM, Changalucha J, Magnussen P, Krarup H, Andersen AB, Friis H. Body composition of HIV-positive patients with pulmonary tuberculosis: A cross-sectional study in Mwanza, Tanzania. *Annals of Tropical Medicine and Parasitology*. 2010; 104 (1): 81-90.**

To estimate the weight deficit and body composition of cases of pulmonary TB (PTB), and assess the roles of HIV and the acute-phase response, a cross-sectional study was carried out in Tanzania. Weight, body mass index (BMI), arm muscle area (AMA), arm fat area (AFA) and the serum concentration of the acute-phase protein  $\alpha$ 1-antichymotrypsin (serum ACT) were evaluated for each of 532 cases of PTB and 150 'non-TB' controls. On average, the female cases of PTB not only weighed 7.8 kg less but also had BMI that were 3.1-kg/m<sup>2</sup> lower, AMA that were 14.8-cm<sup>2</sup> lower, and AFA that were 7.6-cm<sup>2</sup> lower than those seen in the female subjects without TB. Similarly, on average, the male cases of PTB weighed 7.1 kg less and had BMI that were 2.5-kg/m<sup>2</sup> lower, AMA that were 18.8-cm<sup>2</sup> lower and AFA that were 1.6-cm<sup>2</sup> lower than those seen in the male subjects without TB. Although HIV infection was associated with a 1.7-kg lower weight and a 0.6-kg/m<sup>2</sup> lower BMI (with deficits in both AMA and AFA) among males, it was not associated with any such deficits among the female subjects. Elevated serum ACT was found to be a negative predictor of BMI, AMA and AFA, partially explaining the effects of the PTB but not those of the HIV. There is need for a better understanding of the determinants and effects of loss of fat and lean body mass in HIV-positive tuberculosis.

321. **Read JS, Samuel NM, Srijayanth P, Dharmarajan S, Van Hook HM, Jacob M, Stoszek SK. Infants of human immunodeficiency virus type 1-infected women in rural south India: feeding patterns and risk of mother-to-child transmission. *The Pediatric infectious disease journal*. 2010; 29(1): 14-17.**

**Background:** We assessed the infant feeding choices of HIV-1-infected women in rural Tamil Nadu, India, and risk factors for mother-to-child transmission of HIV-1. **Methods:** The study population comprised live born infants of HIV-1-infected women from the antenatal clinics of 2 public hospitals in rural Tamil Nadu, India who were enrolled in a prospective cohort study. All women enrolled in the cohort were offered antiretroviral prophylaxis and infant feeding counseling based on WHO/UNAIDS/UNICEF training materials. Infant study visits were scheduled at birth (within the first 24 hours of life), at 1 week, 1 month, and 2 months after birth, and then every 2 months between 4 and 12 months of age. **Results:** One-third of women did not breast-feed their infants. Of those who initiated breast-feeding, the median duration of breast-feeding was approximately 3 months. Among those infants who initiated breast-feeding, the proportion exclusively breast-feeding declined from approximately 70% during the first week of life to 0% by the 8 month visit. The observed rate of mother-to-child transmission of HIV-1 in the entire cohort was 6.5% (95% CI: 1.4%–17.9%). The observed HIV-1 incidence among breast-fed infants was 0% (95% CI: 0%–8.9%). **Conclusion:** The overall transmission rate was relatively low, suggesting effectiveness of antiretroviral transmission prophylaxis. The infant feeding choices made may reflect knowledge gained through the educational program and infant feeding counseling provided. Ensuring HIV-1-infected women receive appropriate HIV-1 treatment (for those who meet criteria for treatment) and access to known efficacious interventions to prevent mother-to-child transmission of HIV-1, are essential.

322. **Reynolds HW, Beauvais HJ, Lugina HI, Gmach RD, Thomsen SC. A survey of risk behaviors for unintended pregnancy and human immunodeficiency virus among youth attending voluntary counseling and testing (VCT) services in nine**

**centers in urban Haiti and Tanzania. *Vulnerable Children and Youth Studies*. 2010; 5 (1): 66-78.**

Little is known about the behavioral risks for both human immunodeficiency viruses (HIV) and unintended pregnancy among sexually active youth attending voluntary counseling and testing (VCT) in developing countries, and whether youth engaging in risky sexual behaviors perceive themselves to be at risk for HIV. Data are from two cross-sectional studies with youth VCT clients in four facilities in Dar es Salaam, Tanzania and five facilities in Port-au-Prince, Haiti. We measured risky behavior for HIV and unintended pregnancy and perceptions of risk among VCT clients who reported ever having had sex. The majority of sexually active clients, 69% of men and 62% of women in Haiti and 65% of men and 60% of women in Tanzania, reported recent risky behaviors for HIV. Clients also reported risk behaviors for unintended pregnancy: 15% of men and 53% of women in Haiti and 21% of men and 29% of women in Tanzania. The majority of clients with risk behaviors in Tanzania, but not in Haiti, perceived themselves at risk. Strategies to meet youth VCT clients' broader reproductive health needs and avoid any missed opportunities should be tested.

323. **Ritte SA. Nutritional status and associated factors among adults living with HIV-AIDS attending care and treatment clinics in Ilala District, Dar es Salaam. Master of Public Health. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Food and nutrition interventions are critical components of a full response to the HIV / AIDS pandemic which is highly prevalent in sub-Saharan Africa, the region where malnutrition is already endemic. In recent years clinical care providers, program managers and other stakeholders increasingly recognize the critical importance of nutrition for the treatment of HIV and AIDS, but the interventions that link nutritional support to treatment are relatively new. Tanzania is one of the countries that suffer a huge burden of malnutrition and food poverty with approximately 2.2 million people living with HIV / AIDS. Despite the ongoing nutritional interventions provided in care and



treatment clinics to people living with HIV / AIDS, a high proportion of these people still face nutritional problems with almost 29% of them being underweight. A cross sectional study was therefore conducted in Ilala district, Dar es Salaam region to determine factors associated with nutritional status among adults living with HIV/AIDS (PLWHA) attending care and treatment clinics (CTCs). A total of 412 adult patients attending care and treatment clinics in Ilala district were interviewed in this study. It was found that 18.4% of PL WHA was underweight basing on their body mass index; this prevalence was found to be equal to both males and females. However, those who were at younger age; never married; with no formal education; depended on family/friends for income and those residing in Kinondoni district were more at risk of being underweight. Statistical test showed that among the factors that had a significant association with the nutritional status of people living with HIV / AIDS were the kind of support that one was getting, living companion, alcohol drinking, duration of ART, and frequency of eating vegetable with meals. More efforts are required to advice, support and encourage PL WHA within social context of lives so that the current nutritional care and support services provided to them could give the best outcomes. Collaborative actions are required to solve this problem of poor nutrition among PL WHA.

- 324. Roman F. Dental fluorosis. Impact on quality of life and treatment need among adolescents with dental fluorosis in an endemic area, Kilimanjaro Region, Tanzania. Master of Dentistry (Restorative Dentistry) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Dental fluorosis is the hypo mineralization of dental enamel caused by chronic ingestion of fluoride during the formative stages of the dental hard tissues. Fluoride in excess of 1.5 mg/L in water is the principle cause of endemic dental fluorosis. Other causes of dental fluorosis are fluoride supplements (e.g. toothpaste) and food additives like traditional salt "trona". Dental fluorosis has social and psychological effects, whereby individuals affected even with the mild form demonstrate significant dissatisfaction over their appearance thus affecting their ability to interact and form relationships leading to exclusion, loneness, long term depression and other undesirable

social behaviors. **Aim** The aim of this study was to determine the impact of dental fluorosis on quality of life using Or DP index, to determine the normative and subjective oral treatment need among individuals with dental fluorosis, the relationship between clinically defined dental fluorosis at different diagnostic cut-off points and self-rated appearance among adolescents. **Methodology:** This cross-sectional study was conducted at Kibosho, a known area for endemic dental fluorosis in Kilimanjaro between August and September 2009. A sample of 269 secondary school students aged 15-18 years with dental fluorosis was involved. Data were collected using self administered questionnaire and clinical examination forms, or DP questions were used to assess the impact of dental fluorosis on quality of life. Clinical examinations were carried out by one calibrated dentists ( $Kappa = 0.90$ ) under natural light. Prior to examination the front teeth and first premolars of both maxilla and mandible were cleaned and dried with gauze. Dental fluorosis was diagnosed according to TF index. Data analysis was done using SPSS version 15 and statistical level of significance was  $p < 0.05$ . **Results:** Total of 269 students with dental fluorosis aged 15-18 years (mean age 17.3) were involved in this study where 62.5% were female. Majority of the participants (65.4%) had severe dental fluorosis (TFI 6-9), while (29.4%) had TFY 4-5 and (5.2%) had dental fluorosis of TFI 1-3. Most of the students (92.6%) perceived at least one oral impact on daily performance. The performances most affected were smiling 88.1%, emotional stability (81.4%), and having contact with others (75.5%). Brown discoloration of teeth was the most frequent perceived actual cause of oral impact on all eight performances. The treatment most frequently perceived was removal of brown discoloration 95.2% and 72.0% required esthetic veneer for treatment. **Conclusions:** Dental fluorosis has impact on quality of life especially on smiling, emotional stability and having contact. Treatment of dental fluorosis at Kibosho is highly desired as expressed by subjective and objective treatment need. Low awareness of the role of "magadi" as a principal cause dental fluorosis at Kibosho was observed. **Recommendations:** Oral health education programme on causes, prevention and treatment of dental fluorosis should be initiated in Kibosho. Efforts should be made to identify alternative salt for tenderization. Esthetic veneer should be promoted among dentists especially in endemic dental fluorosis area.

325. **Rugalabamu EK. Effect of co-trimoxazole prophylaxis alone, zidovudine alone and co-trimoxazole prophylaxis plus zidovudine on hemoglobin level in Tanzania patients on antiretroviral therapy. Master of Pharmacy (Hospital and Clinical Pharmacy) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) are a major global health problem and Sub-Saharan Africa is the world's most severely affected region. Prophylaxis against opportunistic infections and drug treatment directed to the virus has been associated with a decline in morbidity, mortality and improvement in the quality of life. However, use of these interventions is associated with side effects and toxicity. For example, anemia is one of the important side effects of zidovudine. Co-trimoxazole prophylaxis is given to all patients with high risk of opportunistic infections, yet co-trimoxazole can cause anemia. When co-trimoxazole is given together with zidovudine the likelihood of getting anemia is higher. In Tanzania, the new National Guidelines for the Management of HIV and AIDS (2008 3rd Edition). Recommends zidovudine (AZT)-containing Highly Active Antiretroviral Therapy (HAART) as default first line regimen and co-trimoxazole (CTX) prophylaxis when T-lymphocyte cell count CD4 < 350 Cells/uL. Both drugs have possible side effects that include blood abnormalities which end up with neutropenia and anemia. HIV Patients receiving both co-trimoxazole and zidovudine for long time are at risk of developing anemia. **Objective:** To determine the effect of zidovudine-containing HAART regimen in combination with co-trimoxazole prophylaxis on hemoglobin concentration. **Methodology:** This was retrospective, observational study conducted at Mwananyamala care and treatment center (CTC) located in Kinondoni Municipality. Study populations: The study involved 407 Patients files of HIV -infected patients who were attending HIV CTC. The study had three arms: - Those who were receiving none zidovudine-containing HAART regimen plus co-trimoxazole for prophylaxis those who were receiving zidovudine-containing HAART regimen alone.

- 326. Runyoro D, Ngassapa O, Vagionas K, Aligiannis N, Graikou K, Chinou I. Chemical composition and antimicrobial activity of the essential oils of four *Ocimum* species growing in Tanzania. *Food Chemistry*. 2010; 119 (1): 311-316.**

As part of ongoing research on Tanzanian plants used as edibles or spices, six samples of essential oils from four *Ocimum* species (*O. basilicum*, *O. kilimandscharicum*, *O. lamiifolium*, *O. suave*) were analyzed by GC and GC-MS. Eighty-one compounds, corresponding to 81.1-98.2% of the chemical components of the oils, were identified. Major compounds were either phenyl propane derivatives or terpenoids, including methyl eugenol, 1,8-cineole, camphor, bornyl acetate, germacrene-D, E-myroxide, germacrene-B, caryophyllene oxide and p-cymene. The oils were also evaluated for antimicrobial activity against eight bacterial strains and three fungi. The oil of *O. suave* (B) showed the strongest antibacterial activity; *O. suave* (A), *O. kilimandscharicum* and, *O. lamiifolium* were moderately active, while *O. basilicum* oil was weakly active. However, none of the oils was active against the fungi species. The study has shown that, *Ocimum* oils could potentially be used as anti-infective agents.

- 327. Rusheke HA. Abdominal ultrasonographic abnormalities in patients with sickle cell anemia at Muhimbili national hospital. Master of medicine (Radiology) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Sickle cell disease, particularly in homogeneous state, has significant contribution to the morbidity and mortality of this disorder during crisis. The various types of crises cause changes in different organs of the body, some of which may have long term complications to the sickle cell patient. Most of these changes occur in the abdominal organs, that is the liver, kidneys, spleen, gall bladder as well as the pancreas. Early detection of these changes which are mostly due to vaso-occlusion enables those involved in the care of sicklers to take preventive measures which may help reduce the degree of morbidity and mortality due to sickle cell anemia. Ultrasound being the simplest, cheap and easily accessible imaging investigation modality may play an important role in early

detection of these changes so that appropriate intervention measures can be carried out. Determination of the pattern and prevalence of abnormal ultrasonographic findings in sickle cell patients in our set up was an important step to enable us decide whether or not there is importance of early ultrasonographic screening for all sickle cell patients.

**Objective:** The aim of this study was to evaluate the types and prevalence of abdominal ultrasonographic abnormalities in patients with sickle cell disease, attending sickle cell clinics of MNH. **Materials and Methods** A total of 152 patients with sickle cell anemia at Muhimbili National Hospital were screened for intra-abdominal abnormalities in the liver, gall bladder, spleen and kidneys from October 2009 to January 2010. Their ages ranged from 3 to 46 years. 32% were below the age of 10 years and 79% below 20 years. 41.4% were males and 58.6 % were females. All patients were homozygous for HbSS. None of the patients had any clinical evidence of acute sickle cell crisis at the time of ultrasonographic examination. At the time of examination, 4 (2.6%) patients had undergone splenectomy and 2 (1.3%) patients had undergone cholecystectomy. **Results:** The most frequent US findings were hepatomegaly (28.3%), splenomegaly (22.4%) and cholelithiasis (17%). Bright liver was identified in 19(12.5%) patients, increased renal echogenicity in 15(10%) patients, shrunken spleen in 14(9%) patients, and renal enlargement in 6 (4%) patients. Biliary sludge was identified in 4(3%) patients, autosplenectomy in 10(6.6%) patients and renal cysts in 5(3%) patients. **Conclusion:** In conclusion, abdominal US imaging of patients with sickle cell anemia revealed a significant prevalence of abdominal abnormalities, in the liver, gall bladder, kidneys, and spleen. **Recommendations:** There is a need to conduct further similar studies in order to establish the average prevalent rates for each of the abdominal pathologies in sickle cell patients also there is a need for correlation studies, to establish whether or not there is any association between US findings and biochemistry changes in these patients.

- 328. Rwegerera GM. Adherence to ant diabetic drugs and associated factors among patients with diabetes type 2 in Dar es salaam, Tanzania. Master of Medicine (internal Medicine) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Introduction:** Diabetes is the chronic disease that requires long term medical attention to limit the development of complications. Low cost strategies such as lifestyle modifications, increasing physical activity and effective drug use have been shown to reduce the impact of diabetes and associated complications (1). Despite the compelling evidence about the effectiveness of medications, adherence to treatment has been recognized to be a major problem in patients with chronic illnesses. In Tanzania, no studies have been done on the extent of ant diabetic drug adherence and factors affecting drug adherence, information on this area will enhance effective interventional strategies to improve diabetes care and reduce costs associated with preventable morbidity and mortality. **Objective:** To determine extent of adherence to ant diabetic drugs and associated factors among patients with diabetes type 2 in Muhimbili National Hospital, Dar es Salaam, Tanzania **Methodology:** A descriptive cross-sectional study was conducted at the Diabetic clinic of Muhimbili National Hospital from 14th May 2009 to 31st December 2009. A structured questionnaire was used to get patient information. Additionally patient's files/folders were also used to obtain the information. Patients' adherence to ant diabetic treatment was assessed through patient self-reporting modality. **Results:** A total of 216 diabetes type 2 patients were interviewed during the study period. Out of these, 144(66.7%) were females and 72(33.3%) were males, 157(72.7%) of patients were either overweight or obese. Adherence to ant diabetic drugs was found to be 60.2% and 71.2% at one week and three months recall respectively. Good adherence to ant diabetic treatment was observed in patients who were below 40 years and those above 60 years ( $p < 0.05$ ); also addition of extra medications for chronic conditions other than diabetes had positive impact on extent of ant diabetic drug adherence at one week analysis. Religion, education, duration of diabetes, and number of ant diabetic drugs were not significantly associated with ant diabetic.

329. Sacanna E, Ibrahim T, Gaudio M, Mercatali L, Ricci, R, Scarpi E, Amador D. Role of tissue markers in the prediction of bone metastases from breast cancer. *Cancer Research*. 2010; 70(8): 2241-2241.

**Introduction:** Bone metastasis is a frequent event in patients with breast cancer. OPG (osteoprotegerin) protects bone from excessive resorption by binding to RANK-L (receptor activator of nuclear factor- $\kappa$ B-ligand) and by preventing it from binding to RANK. These molecules are closely involved in the process of metastasization to bone. CXCL12/SDF-1 $\alpha$ , the ligand of CXCR4, is overexpressed in bone, and the local chemokine milieu is now emerging as a key determinant in organ selectivity by tumor cells. We carried out a retrospective analysis to evaluate the potential role of these biological markers in predicting bone metastasization in breast cancer patients. **Materials and methods:** OPG and CXCR4 expression was determined by avidin-biotin immunohistochemistry using a polyclonal (H-249, Santa Cruz) and monoclonal (Ab58176, Abcam) antibody, respectively. Immunohistochemical staining was carried out on sections from paraffin-embedded blocks of 40 primary breast cancers. Ten patients (median age of 64 years, range 48-78) were disease-free (DF) at a median of 9.8 (range 6.9-11.5) years, while 30 (median age 67 years, range 42-87) had relapsed. In the latter group, 10 (median age 66 years, range 42-87) had visceral metastases (VM) and 20 (median age 69 years, range 42-87) had bone metastases (BM). **Results:** Considering only strong cytoplasmic expression as positive, 22.5% of tumors were positive for OPG and 25% for CXCR4. In particular, OPG was expressed in 20% of tumors in DF patients and in 25% in BM patients. Conversely, CXCR4 was expressed in 10% of tumors in DF patients and in 45% in BM patients. OPG was expressed in only 20% of tumors in VM patients. There was no correlation between OPG and CXCR4 expression, and positivity to at least one of the two markers was observed in 30% of tumors in DF patients, 20% in VM patients and 55% in BM patients. In this last subgroup, there were no statistically significant associations between marker expression and tumor characteristics. Furthermore, no relation was observed between marker expression and disease-free or overall survival in BM patients. **Conclusions:** Our preliminary results suggest that cytoplasmic CXCR4 expression in primary breast cancers could play a role in predicting bone metastases. Enrolment of breast cancer patients in a larger study is ongoing to confirm these data and to evaluate the predictive role of RANK and RANK-L in bone metastasization.

- 330. Sacanna E, Ibrahim T, Gaudio M, Mercatali L, Scarpi E, Zoli W, Amador D. The role of CXCR4 in the prediction of bone metastases from breast cancer: a pilot study. *Oncology*. 2010; 80(3-4): 225-231.**

**Objective:** The chemokine receptor CXCR4 is involved in tumor growth and homing of cancer cells to distant sites. The aim of our retrospective case-control study was to evaluate whether CXCR4 expression is more effective than conventional markers (estrogen receptor and HER-2) in predicting bone relapse in breast cancer. **Methods:** CXCR4 expression was evaluated by immunohistochemical staining in paraffin-embedded tissue sections of primary breast cancers from 20 patients with bone metastases (BM), 10 with visceral metastases (VM) and 10 with no evidence of disease (NED) at a median follow-up of 10.5 years (range 10.1-11.8). **RESULTS:** Cytoplasm CXCR4 expression was high in BM patients (45%, 95% CI 23-67), much lower in NED patients (10%, 95% CI 0-29) and negative in the VM group. CXCR4 expression in the nucleus and cytoplasm was observed in about half of the BM patients (45%) but never in NED or VM patients ( $p = 0.013$ ). Conversely, estrogen receptor-positive and HER-2-negative status identified 80 and 95% of bone relapse patients, respectively, but did not discriminate between cases and controls. **Conclusions:** Our results suggest a pivotal role of CXCR4 expression as a predictor of BM in primary breast cancer. A larger study is ongoing to confirm these results.

- 331. Said SA, Moshi MJ, Nondo RSO, Masimba PJ, Innocent E, Guantai A. Evaluation of the potential of the marine sponges of the Zanzibar Island to yield antimalarial and antimicrobial active compounds. *Tanzania Journal of Health Research*, 12(3), 195-202.**

**Background:** Emergence of new and re-emergence of old infections continue to elude prospects of reducing morbidity and mortality caused by microbial infections. Trends of resistance to currently in use antimicrobials and antimalarials threaten to increase mortality caused by these infections. This study explores the potential of marine invertebrates as a source for new antimicrobials and antimalarials. **Methods:** The lactate



dehydrogenase method was used to assay marine sponges for activity against *Plasmodium falciparum*, while the disc diffusion method was used to assay the extracts for antibacterial and antifungal activity. **Results:** Extracts of some marine sponges from the Zanzibar Island exhibited both antiplasmodial and antimicrobial activities. Among the 55 marine sponge extracts that were tested 23 (41.8%) inhibited *Plasmodium falciparum* W2 strain by more than 50% at both 250 and 50 µg/ml concentrations. Moderate polar extracts were more active against *Plasmodium falciparum* W2 strain than polar and non-polar extracts. None of the 12 extracts that were tested on *Plasmodium falciparum* strain D6 exhibited inhibitory activity reaching 50%. Among 18 marine sponge extracts that were tested for antimicrobial activity 12 (66.7%) showed activity against one or more of the bacteria and fungi used ranging from weak to strong on an arbitrary criterion. The ethyl acetate extracts of *Agelas Mauritania* and *Oceanopia* sp. exhibited high activity against the fungi *Candida albicans* and *Cryptococcus neoformans*. The best antibacterial profile was exhibited by ethyl acetate extracts of *Aplysinopsis* sp., *Halichondrida* sp. 1 and *Oceanopia* sp. **Conclusion:** These results support the need for intensified efforts to search for active antimalarial and antimicrobial compounds from the Zanzibar marine sponges.

332. Sandesara A. **Factors associated with refugee men's involvement in family planning in Nyarugugu camp, Kasulu District Tanzania. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Refugees are a marginalized group at high risk for poor health outcomes due to their displacement and vulnerable state. Reproductive health in refugee camps has become an issue of public health concern within the last two decades, but refugee men's involvement in family planning remains a neglected area of study. In refugee camps around the world, the use of contraceptives is frequently low while crude birth rates remain high. A cross-sectional study of 454 married Congolese refugee men was conducted during June of 2010 in Nyarugusu camp in Kasulu District within Kigoma Region using face-to-face interviews with a standard questionnaire. Additionally, 5 focus group discussions were

carried out, 3 with refugee men and 2 with refugee women. Finally, key informant interviews were completed with 10 health providers from the Tanzanian Red Cross Society. Results from the questionnaires show that 35.2% of the refugee men reported that they or their wives had ever used family planning methods while in the camp, while condom use as a means of family planning stood at 4.4% among respondents. Strong cultural barriers to family planning approval and use were evident from both men and women. Perceived benefits from humanitarian agencies for having large families within the camp influence the use of family planning and the desired family size. Having employment in Nyarugusu was found to be a predictor of ever having used family planning in the camp (OR=1.92, 95%CI: 1.16-3.18). Those who discussed family planning with their wives were significantly more likely to have ever used family planning during their time as a refugee (OR=42.88, 95%CI: 15.26-120.54). Those who did not see any benefit or incentives to having a large family in the camp were also more likely to have ever used family planning in the camp (OR=1.77, 95%CI: 1.10-2.86). The main provider-related barriers to men's involvement in family planning included the lack of pertinent campaigns targeting men and the lack of in-service training for staff regarding family planning. Overall, gender sensitizations, men-specific family planning campaigns, and revision of certain camp policies should be promoted. Further research should be undertaken to better understand this neglected area of study.

**333. Sandström E. Performance Art: A Mode of Communication. 2010.**

This paper is a phenomenological approach to the field of performance art. It is a qualitative study based on observations and interviews. The aim is to understand how and why do artists use performance art. The empirical result shows that artists use performance art to challenge what art is. The study explains how artists use performance art as a mode of communication, a communication based on using the voice in different modes. Through using an electronic filtered voice, the artists capture the audience's attention and at the sometime they challenge their own narrative and presence. Performance art is seen as a mode of communication, which constitutes a social structure

within communities. The study finds that the artists generate an existential and political awareness for their audience.

- 334. Sangeda RZ, Vandepitte J, Huygens A, Van Cleynenbreugel B, Van Poppel H, de Witte PA. Prevention of tumor cell reimplantation during transurethral resection: the in-vitro ant adhesive and cytotoxic properties of an irrigant containing polyethylene glycol 400. *Anti-cancer drugs*. 2010; 21(6): 645-650.**

A major challenge to urologists with respect to bladder cancer is the high rate of tumor recurrence after transurethral resection (TUR). Implantation of resected tumor cells on traumatized bladder urothelium is believed to be the main cause of tumor recurrence. The aim of this study was to find a safe irrigant fluid and modality that prevents reimplantation of malignant cells during TUR. Therefore, the cytotoxicity and ant adherence effects of polyethylene glycol 400 (PEG400) and PEG4000 were investigated and compared with currently used irrigant fluids, water and 1.5% glycine (G-IF), on the RT112 urothelial cell carcinoma cell line. PEG400 (20%), G-IF, water and to a lesser extent 10% PEG400 and PEG4000 showed dramatic cytotoxic effects, besides exhibiting interesting ant adherence characteristics. The presence of serum proteins did not interfere with the activity of PEG400. In a clonogenic assay, both water and 20% PEG400 showed a better cytotoxic profile than G-IF, and it was found that these two fluids were able to induce a 5-log kill. This study shows that a solution of 20% PEG400 in water is a promising irrigant with ant adhesive and cytotoxic properties, which could be used to prevent tumor cell reimplantation during TUR. The irrigant remains active in the presence of serum proteins, is transparent, inexpensive and possesses an excellent safety profile.

- 335. Santini D, Virzi V, Fratto ME, Bertoldo F, Sabbatini R, Berardi R, Ibrahim T. Can we consider zoledronic acid a new antitumor agent? Recent evidence in clinical setting. *Current cancer drug targets*. 2010; 10(1): 46-54.**

New emerging data suggest that bisphosphonates may exert antitumor properties. Preclinical studies have demonstrated that zoledronic acid (ZA) can induce direct and indirect antitumor activities such as inhibition of angiogenesis, invasion and adhesion of tumor cells, and overall tumor progression, stimulation of adoptive and innate immunity and emerging evidence suggests that the use of these agents may prevent the development of skeletal and extra skeletal metastases. This review will critically describe the new growing evidence of antitumor activity exerted by bisphosphonates in cancer patients, both in metastatic disease and in the adjuvant setting. The effects of bisphosphonates on survival in metastatic cancer patients will be described and evidence from retrospective analyses and prospective studies will be critically reported. The early evidence from prospective analyses of survival impact by ZA in the adjuvant setting in breast cancer will be discussed together with the recently published results of the ABCSG-12 study. A new “era” for bisphosphonates in the oncological setting is opening. The clinical data that will be reported in this review represent the first step in a path that will conduct us to explore new horizons in the field of adjuvant and metastatic cancer therapies.

**336. Schack M, Jacob M, Kurner T. Comparison of in-car UWB and 60 GHz channel measurements. In Antennas and Propagation (EuCAP), 2010 Proceedings of the Fourth European Conference on. 2010: 1-5.**

A comparison of ultra-wideband (UWB) and 60 GHz channels inside a car is carried out in this paper. Measurements with a vector network analyzer (VNA) in the frequency bands of 5–8.5 GHz and 67–70.5 GHz have been carried out and the large-scale and small-scale parameters have been investigated. The results are shown for different antenna configurations and polarizations as well as for an empty car and a car occupied with persons. Furthermore, a link budget analysis for both systems based on the measurements is carried out.

337. **Semali IA. Trends in immunization completion and disparities in the context of health reforms: The case study of Tanzania. *BMC Health Services Research*.2010; 10:299.**

**Background:** Of global concern is the decline in under five children mortality which has reversed in some countries in sub Saharan Africa (SSA) since the early 1990 s which could be due to disparities in access to preventive services including immunization. This paper is aimed at determining the trend in disparities in completion of immunization using Tanzania Demographic and Health Surveys (DHS). **Methods:** DHS studies randomly selected representative households from all regions in Tanzania since 1980 s, is repeated every five years in the same enumeration areas. The last three data sets (1990, 1996 and 2004) were downloaded and analyzed using STATA 9.0. The analysis included all children of between 12-23 months who would have completed all vaccinations required at 12 months. **Results:** Across the time periods 1990, 1996 to 2004/05 the percentage of children completing vaccination was similar (71.0% in 1990, 72.7% in 1996 and 72.3% in 2005). There was no disparity in completion of immunization with wealth strata in 1990 and 1996 ( $p > 0.05$ ) but not 2004. In 2004/05 there was marked disparity as most poor experienced significant decline in immunization completion while the least poor had significant increase ( $p < 0.001$ ). All three periods children from households whose head had low education were less likely to complete immunization ( $p < 0.01$ ). **Conclusion:** Equity that existed in 1990 and more pronounced in 1996 regressed to inequity in 2005, thus though at national level immunization coverage did not change, but at sub-group there was significant disparity associated with the changing contexts and reforms. To address sub-group disparities in immunization it is recommended to adopt strategies focused at governance and health system to reach all population groups and most poor.

338. **Sembuche S. Uptake of vaccination services and associated factors among under fives in Bariadi district, shinyanga region, Tanzania. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** The Expanded Program on Immunization (EPI) services have been provided in Tanzania since 1975. However between 2004 and 2007 coverage of third dose of Diphtheria- Tetanus-Pertussis-Hepatitis (DTP-HB3) dropped from 81% to 47% in Bariadi District. This study investigated factors associated with the uptake of vaccination services among children aged 12-23 months in this district. Methods: A cross-sectional survey was conducted to assess uptake of vaccinations among children and the knowledge of their caretakers on vaccination services. Multistage random sampling was conducted to select wards, villages and households with children aged 12-24 months. Logistic regression was performed to identify determinants of full vaccination status. Analysis was done using EpiInfo 3.5.1. **Results:** A total of 243 caretakers with their children aged between 12-23 months were studied. The mean age of the children was 17 months. Out of 243 caretakers, RCH cards for 219 (90.1 %) children were reviewed. A total of 77 (35.2%) children were vaccinated for oral polio vaccine at birth; 204 (93.2%) for DTP-HB3, and 180 (82.2%) for measles. One hundred and seventy children (77.6%) were fully vaccinated. Of 243 caretakers, 174 (71.6%) knew the purpose of vaccinations in children, 143 (58.8%) knew at least one of the immunizable diseases in Tanzania, and 13 (5.3%) knew the vaccination schedule. Logistic regression found caretakers' understanding of the purpose of vaccination was significantly correlated with full vaccination status of the child (A OR = 2.80, CI 1.32-5.94, p=0.01). **Conclusions:** The proportion of fully vaccinated children was not optimum, however, uptake of individual routinely administered antigens was high with the exception of OPV. It is recommended that community awareness on vaccination and vaccination services is increased to improve uptake further.

339. Senkoro M, Mfinanga SG, Mørkve O. Smear microscopy and culture conversion rates among smear positive pulmonary tuberculosis patients by HIV status in Dar es Salaam, Tanzania. *BMC Infectious Diseases*.2010; 10: 210.

**Background:** Tanzania ranks 15th among the world's 22 countries with the largest tuberculosis burden and tuberculosis have continued to be among the major public health problems in the country. Limited data, especially in patients co infected with HIV, are

available to predict the duration of time required for a smear positive pulmonary tuberculosis patient to achieve sputum conversion after starting effective treatment. In this study we assessed the sputum smear and culture conversion rates among HIV positive and HIV negative smear positive pulmonary tuberculosis patients in Dar es Salaam. **Methods:** The study was a prospective cohort study which lasted for nine months, from April to December 2008. **Results:** A total of 502 smear positive pulmonary tuberculosis patients were recruited. HIV test results were obtained for 498 patients, of which 33.7% were HIV positive. After two weeks of treatment the conversion rate by standard sputum microscopy was higher in HIV positive(72.8%) than HIV negative(63.3%) patients by univariate analysis( $P = 0.046$ ), but not in multivariate analysis. Also after two weeks of treatment the conversion rate by fluorescence microscopy was higher in HIV positive (72.8%) than in HIV negative(63.2%) patients by univariate analysis ( $P = 0.043$ ) but not in the multivariate analysis. The conversion rates by both methods during the rest of the treatment period (8, 12, and 20 weeks) were not significantly different between HIV positive and HIV negative patients. With regards to culture, the conversion rate during the whole period of the treatment (2, 8, 12 and 20 weeks) were not significantly different between HIV positive and HIV negative patients. **Conclusion:** Conversion rates of standard smear microscopy, fluorescence microscopy and culture did not differ between HIV positive and HIV negative pulmonary tuberculosis patients.

- 340. Shafiq M, Asad S, Zafar Y, Briddon RW, Mansoor S. Pepper leaf curl Lahore virus requires the DNA B component of Tomato leaf curl New Delhi virus to cause leaf curl symptoms. *Virology*. 2010; 7: 367.**

**Background:** Begomoviruses are whitefly-transmitted geminiviruses with genomes that consist of either two components (known as DNA A and DNA B) or a single component (homologous to the DNA A component of bipartite begomoviruses). Monopartite begomoviruses are often associated with a symptom-modulating DNA satellite (collectively known as betasatellites). Both bipartite and monopartite begomoviruses with associated satellites have previously been identified in chillies showing leaf curl

symptoms in Pakistan. **Results:** A chilli plant (*Capsicum annum*) with chilli leaf curl disease symptoms was found to contain a begomovirus, a betasatellite and the DNA B component of Tomato leaf curl New Delhi virus (ToLCNDV). The begomovirus consisted of 2747 nucleotides and had the highest sequence identity (99%) with Pepper leaf curl Lahore virus (PepLCLV-[PK: Lah: 04], acc. no. AM404179). Agrobacterium-mediated inoculation of the clone to *Nicotiana benthamiana*, induced very mild symptoms and low levels of viral DNA, detected in systemically infected leaves by PCR. No symptoms were induced in *Nicotiana tabacum* or chillies either in the presence or absence of a betasatellite. However, inoculation of PepLCLV with the DNA B component of ToLCNDV induced leaf curl symptoms in *N. benthamiana*, *N. tabacum* and chillies and viral DNA accumulated to higher levels in comparison to plants infected with just PepLCLV. **Conclusions:** Based on our previous efforts aimed at understanding of diversity of begomoviruses associated with chillies, we propose that PepLCLV was recently mobilized into chillies upon its interaction with DNA B of ToLCNDV. Interestingly, the putative rep-binding iterons found on PepLCLV (GGGGAC) differ at two base positions from those of ToLCNDV (GGTGTC). This is the first experimental demonstration of the infectivity for a bipartite begomovirus causing chilli leaf curl disease in chillies from Pakistan and sug.

- 341. Shafiq M, Hassan M, Shahzad K, Qayyum A, Ahmad S, Rawat RS, Zakaullah M. Pulsed ion beam-assisted carburizing of titanium in methane discharge. *Chinese Physics B*. 2010; 19(1): 012801.**

The carburizing of titanium (Ti) is accomplished by utilizing energetic ion pulses of a 1.5 kJ Mather type dense plasma focus (DPF) device operated in methane discharge. X-ray diffraction (XRD) analysis confirms the deposition of polycrystalline titanium carbide (TiC). The samples carburized at lower axial and angular positions show an improved texture for a typical (200) TiC plane. The Williamson–Hall method is employed to estimate average crystallite size and microstrains in the carburized Ti surface. Crystallite size is found to vary from ~ 50 to 100 nm, depending on the deposition parameters. Microstrains vary with the sample position and hence ion flux, and are converted from



tensile to compressive by increasing the flux. The carburizing of Ti is confirmed by two major doublets extending from 300 to 390  $\text{cm}^{-1}$  and from 560 to 620  $\text{cm}^{-1}$  corresponding to acoustic and optical active modes in Raman spectra, respectively. Analyses by scanning electron microscopy/energy dispersive x-ray spectroscopy (SEM/EDS) have provided qualitative and quantitative profiles of the carburized surface. The Vickers micro hardness of Ti is significantly improved after carburizing.

- 342. Shafiq M, Khan IU, Arshad MN, Mustafa G. 3, 3, 6-Tribromo-1-methyl-1H-2, 1-benzothiazin-4 (3H)-one 2, 2-dioxide. *Acta Crystallographica Section E: Structure Reports Online*. 2010; 66(12): o3109-o3109.**

In the title compound,  $\text{C}_9\text{H}_6\text{Br}_3\text{NO}_3\text{S}$ , a halogenated benzothiazine derivative, the thiazine ring adopts a sofa conformation. The crystal studied was a racemic twin with a contribution of 72 (1) % of the major domain.

- 343. Shafiq M, Maqsood T. Response of rice to model based applied boron fertilizer. *J Agr Resour*. 2010; 48: 303-314.**

A field experiment was conducted on a sandy clay loam soil to monitor the response of rice crop to model based applied B fertilizer. For this purpose, B adsorption isotherm of the soil was constructed at the Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad, Pakistan during 2006-07. Adsorption process was executed by equilibrating 2.5g soil in 0.01M  $\text{CaCl}_2$  solution containing different B concentrations (0, 3, 4, 5, 6, 7, 8, 9, 10 and 15 mg). Freundlich and Langmuir adsorption models were applied to the data to check the sorption of B on sandy clay loam soil. Freundlich model showed better fit of the sorption ( $r^2=0.99$ ) data than Langmuir model ( $r^2= 0.88$ ). Ten B treatments (0, 0.28, 0.79, 1.27, 1.74, 2.21, 2.64, 3.10, 3.32, 3.54 kg/ha) were applied with recommended N, P and K doses. Boron was applied at rice. Transplanting time as basal dose. The data indicated that grains per panicle, 1000-grain weight and paddy yield responded positively to fertilizer B but vegetative growth i.e. plant height, tillering and total biomass did not respond significantly to B application. B rate of 1.74 kg per hectare

(T4) proved better for number of grains (164.7/panicle), 1000-grain weight (21.07 g) and paddy yield (3.2 Mg/ha). Concentration of boron in both rice straw and paddy increased with B application but there was no effect of B on NPK concentration of straw and paddy. These results are very encouraging suggesting that for a particular soil, B adsorption isotherm need to be constructed for site specific fertilizer B application.

- 344. Shafiq M, Pericas M, Navarro N, Ayguadé E. FEM: A Step Towards a Common Memory Layout for FPGA Based Accelerators. In *Field Programmable Logic and Applications (FPL), International Conference on. 2010: 568-573.***

FPGA devices are mostly utilized for customized application designs with heavily pipelined and aggressively parallel computations. However, little focus is normally given to the FPGA memory organizations to efficiently use the data fetched into the FPGA. This work presents a Front End Memory (FEM) layout based on BRAMs and Distributed RAM for FPGA-based accelerators. The presented memory layout serves as a template for various data organizations which is in fact a step towards the standardization of a methodology for FPGA based memory management inside an accelerator. We present example application kernels implemented as specializations of the template memory layout. Further, the presented layout can be used for Spatially Mapped-Shared Memory multi-kernel applications targeting FPGAs. This fact is evaluated by mapping two applications, an Acoustic Wave Equation code and an N-Body method, to three multi-kernel execution models on a Virtex-4 L×200 device. The results show that the shared memory model for Acoustic Wave Equation code outperforms the local and runtime reconfigured models by 1.3-1.5×, respectively. For the N-Body method the shared model is slightly more efficient with a small number of bodies, but for larger systems the runtime reconfigured model shows a 3× speedup over the other two models.

- 345. Shafiq M, Tahir MN, Khan IU, Arshad MN, Haider Z. Methyl 2-[(methylsulfonyl)(propyl) amino] benzoate. *Acta Crystallographica Section E: Structure Reports Online. 2010; 66(1): 248-248.***

The asymmetric unit of the title compound, C<sub>12</sub>H<sub>17</sub>NO<sub>4</sub>S, contains two molecules, both of which show disorder of the two terminal C atoms of the propyl chain over two sets of sites with an occupancy ratio of 0.581 (6):0.419 (6). Intermolecular C-H...O interactions help to establish the molecular conformations: in one molecule, the dihedral angle between the methyl ester group and the benzene ring is 41.0 (2)°, whereas in the other molecule it is 36.12 (17)°. In the crystal, molecules are linked by intermolecular C-H...O and C-H... $\pi$  interactions.

**346. Shagdara MS. Factors that predict very severe maternal morbidity among eclamptic mothers managed at Muhimbili national hospital. *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Eclampsia is a condition known to be associated with serious obstetric complications including severe maternal morbidity and mortality. Although eclampsia as an entity causes severe morbidity, from a practical point of view and literature, most eclamptic patients clinically recover within 72 hours of childbirth. A proportion of mothers, however, develop very severe morbidity as indicated by the need for prolonged admission in ICU, and extra medical! Nursing care measures. This study focuses on predictors of very severe morbidity among eclamptic mothers. **Objectives:** To identify factors that independently predict very severe maternal morbidity outcome among eclamptic patients admitted at Muhimbili National Hospital (MNH). **Materials and Methods:** A retrospective, cross sectional-analytical study was conducted at MNH and eclamptic mothers with very severe morbidity (VSM) were identified. Using Multiple Logistic Regression, the odds of factors that predict VSM and their 95% Confidence Interval were calculated. **Results:** A total of 366 eclamptic patients were studied. Out of these, 132 (36.1 %) had VSM. From all the eclamptic mothers, 121 patients needed duration of stay in ICU of more than three days, 20 patients needed insertion of nasogastric tube for feeding, 14 patients needed physiotherapy, and 49 patients needed resuscitation drugs. Factors that independently predicted VSM were, mode of delivery [OR 2.80, 95% C I (1.50 - 5.10)], time interval from admission to delivery [OR 2.25, 95% C I (1.23 - 4.10)], and number of fits [OR 1.81, 95% C I (1.04 - 3.14)]. XIV

**Conclusions:** These results underscore the importance of prompt, timely and less invasive delivery in prevention of VSM among eclampsia patients. **Recommendations:** More efforts are needed to improve and strengthen the municipal hospitals to be able to provide standard care for eclamptic mothers in order to avoid VSM and death.

**347. Shaki MH. Knowledge, attitude and practices of emergency contraception among health care providers and medical students in Dar es Salaam. Master of medicine (Obstetric and Gynecology) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Emergency Contraception (EC) refers to a group of birth control modalities that, when used after an unprotected intercourse within defined time limits, can prevent an unwanted pregnancy. In many low income countries, the lack of knowledge about and access to EC may result in women resorting to unsafe abortions. Health care providers play an important role in making emergency contraceptives (ECs) available to clients. Emergency contraception is particularly appropriate for adolescents because of their patterns of sexual behavior and contraceptive use. **Objectives:** The broad objective of the study was to assess knowledge, attitude and practices on emergency contraception among health care providers and medical students in Dar es Salaam. **Methodology:** A cross sectional study was conducted in the public and private health facilities as well as three medical schools in Dar es Salaam, from 22<sup>nd</sup> October to 20<sup>th</sup> November 2009. Twelve health facilities of which 3 public municipal hospitals, 3 public health centers, 3 private hospitals and 3 private health centers from each municipality were included in addition to Muhimbili National Hospital. Once the facility was selected, all the health care providers dealing with reproductive health services that were available on the day of data collection were requested to participate. Those who consented to participate were given self administered questionnaires to fill within a 24 to 48 hours period. Medical students from Muhimbili University of Health and Allied Sciences (MUHAS), Hubert Kairuki Memorial University (HKMU) and International Medical and Technological University (IMTU) were included whereby a list of students from each university was used to select the participants randomly. Coding of the open ended

questions was done and data cleaning and analysis was done using Epi info 6. **Results:** There were 268 health care providers and 300 medical students who responded to the questionnaires. More than half (59%) of the health care providers and 53.7% of the medical students were aware of EC. A lack of knowledge about EC was found as only 30.4% of the health care providers and 32.9% of the medical students were found to have adequate knowledge of EC. EC provision was reported by 31 % of the providers and EC utilization was found to be 14.9% among medical students. Majority of health care providers (94.9%) and 90.7% of medical students had positive attitudes towards EC provision and utilization respectively. **Conclusion:** The awareness of emergency contraception among health care providers and medical students was found to be moderate (59% vs. 53.7%). Despite this, adequate knowledge on emergency contraception on both groups was low (30.4% vs. 32.9%). Provision of EC by the health care providers as well as utilization of EC among medical students was found to be low. . Majority of the providers and students had positive attitudes towards EC practices i.e. provision among the health care providers as well as EC utilization among the medical students. 9.0: **Recommendations:** Continuing education programmes about Emergency contraception are required for health care providers to update them with the information regarding EC. There is a need to provide information about EC together with the reproductive health education in schools to include the young population who are at a high risk of unintended pregnancy.

348. **Shayo JE. Household and health facility related factors contributing to low enrolment to community fund in Romeo district. Master of Art (Health Policy and Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Tanzania like many other developing countries is facing challenges in finding proper mechanism of health care financing that would ensure equitable access to health care for all her citizens especially those employed in non-formal sector. The government of Tanzania has initiated a number of prepayment schemes as an effort to provide health care financial protection for its citizen. Community Health Fund (CHF) is

one of the schemes aimed for rural population. CHF have proved to provide well functioning health care financial protection to its members. However, its enrolment level in all districts has remained unexpectedly very low. **Objectives:** The main objective of this study was to identify household and health facility related factors that contribute to low enrolment to CHF scheme in Rombo District. **Methods:** It was a cross-sectional study which employed mixed methods of data collection. Both qualitative and quantitative data were concurrently collected. The study involved four samples: 144 household heads; 150 exit patients; 36 health staff and 3 CHF district officials. The four samples were included in order to obtain enough triangulation of information. Data from each method were analyzed separately; Quantitative data were entered and analyzed in the SPSS computer program where descriptive statistics were derived; Qualitative data were analyzed by generating themes according to the study objectives with the aid of ATLAS.ti 6 computer program. The generated themes were embedded in to the quantitative results to enrich where it fits. **Results:** Health staffs' practices were highly accepted by exit patients; also health staff had positive opinions on CHF usefulness. These were potential optimistic findings that were expected to attract more community members to join the scheme. However, lack of knowledge about CHF operations and use of private health facilities among household heads had significant negative effect in CHF enrolment. In addition, lack of fixed time for registration of CHF members was identified to create a loophole for drop out and non-enrolment. **Conclusion and Recommendation:** Based on the results of this study it is therefore recommended that District CHF Management should strengthen community sensitization and education about CHF scheme. Additionally, revisiting the rules that guide implementation of CHF in Rombo district is necessary in order to remove the loopholes that contribute to non-enrolment and drop out of the scheme.

349. Sheriff FG, Manji KP, Manji MP, Chagani MM, Mpembeni RM, Jusabani AM, Alwani ZR, Karimjee TS. Latent tuberculosis among pregnant mothers in a resource poor setting in Northern Tanzania: A cross-sectional study. *BMC Infectious Diseases*.2010; 10: 52.

**Background:** Untreated latent TB infection (LTBI) is a significant risk factor for active pulmonary tuberculosis, hence predisposing to adverse pregnancy outcomes and mother to child transmission. The prevalence of latent tuberculosis in pregnancy and its association, if any, with various socio-demographic, obstetric and clinical characteristics was evaluated. **Methods:** Northern Tanzania was chosen as the study site. In a cross-sectional study, a total of 286 pregnant women from 12 weeks gestational age to term were assessed. Screening was undertaken using an algorithm involving tuberculin skin testing, symptom screening in the form of a questionnaire, sputum testing for acid fast bacilli followed by shielded chest X-rays if indicated. HIV serology was also performed on consenting participants. **Results:** Prevalence of latent infection ranged between 26.2% and 37.4% while HIV sero prevalence was 4.5%. After multivariate logistic analysis it was found that age, parity, body mass index, gestational age, and HIV sero status did not have any significant association with tuberculin skin test results. However certain ethnic groups were found to be less vulnerable to LTBI as compared to others (Chi square = 10.55,  $p = 0.03$ ). All sputum smears for acid fast bacilli were negative. **Conclusion:** The prevalence of latent tuberculosis in pregnant women was found to be relatively high compared to that of the general population. In endemic areas, socio-demographic parameters alone are rarely adequate in identifying women susceptible to TB infection; therefore targeted screening should be conducted for all pregnant women at high risk for activation (especially HIV positive women). As opposed to the current policy of passive case detection, there appears to be an imminent need to move towards active screening. Ethnicity may provide important clues into genetic and cultural differences which predispose to latent tuberculosis, and is worth exploring further.

350. **Sigalla NG. High risk sexual behaviors and perceived susceptibility to HIV infection among bar workers in Temeke district, Dar es Salaam. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

Heterosexual contact has remained the major route for HIV transmission in the expanding HIV epidemic and is responsible for over 80% of all new infections in sub-Saharan

Africa. Promotion of safer sexual practice has continued to be the 1110st single important method of prevention of HIV transmission in African countries that lack effective vaccine or readily available antiretroviral therapy. Such interventions are important to Most at Risk Populations (MARPs) that include bar workers who form a group with significantly higher HIV prevalence than that of the general population. The main objective of this study was to determine extent and factors associated with high risk sexual behaviors among bar workers in Temeke district Oar es Salaam and their perceived susceptibility to HIV infection. A multi-stage sampling strategy was used for selecting the study sample. A total of 419 bar workers were interviewed. Data was generated using structured interview. Unprotected sex was found to be fairly common. While 69.7% practiced unprotected vaginal sex, 22.5% had anal sex experience. 35.4% had tried oral sex and 23.5% had practiced masturbation. Only 30% used condoms during their last sexual experience. Incentives for engaging in risk sexual behaviors were receiving gifts or cash, drinks or alcohol, getting job or job security and getting or maintaining a place of residence. In conclusion, there is a large unmet need for interventions to raise awareness and supporting behavior change for HIV prevention among bar workers to effectively reduce HIV transmission.

- 351. Simba D, Kamwela J, Mpembeni R, Msamanga G. The impact of scaling-up prevention of mother-to-child transmission (PMTCT) of HIV infection on the human resource requirement: The need to go beyond numbers. *International Journal of Health Planning and Management*. 2010; 25 (1): 17-29.**

Although the mother-to-child transmission (MTCT) contributes only 5% of transmission of HIV infection, its impact has reversed the decline in infant and child mortality rates. With antenatal service coverage of over 90%, the integration of prevention of MTCT (PMTCT) of HIV infection into the Reproductive and Child Health (RCH) services in Tanzania, this is likely to overstretch the staff capacity and undermine the already compromised quality of health care services. A retrospective study was conducted to assess the impact of integrating and scaling-up PMTCTof HIV infection into routine RCH services, on the magnitude of staff workload in RCH clinics. The study was



conducted in 60 health facilities identified from five regions that had participated in the pilot phase of PMTCT implementation in the Mainland Tanzania. The average staff workload was calculated from staff-load obtained from attendance records and activity-time obtained by direct observation; and staff-time from records that were kept at the clinic. The average staff workload was found to be 50.5% (8-147%) for facilities providing PMTCT of HIV infection and 37.8% (11-82%) for facilities without PMTCT services. The average staff workload was computed on the assumption that all clients attending various antenatal clinics received PMTCT services from trained staff only and the result revealed staff workload of 87.2%. This study concludes that services for PMTCT of HIV infection can easily be scaled-up and integrated into RCH services using the already existing staff. In the wake of the human resource crisis in the health sector in developing countries, strategies to address the problem will need to go beyond numbers to address issues of staff productivity and their distribution.

- 352. Simba DO, Kakoko DC, Warsame M, Premji Z, Gomes MF, Tomson G, Johansson E. Understanding caretakers' dilemma in deciding whether or not to adhere with referral advice after pre-referral treatment with rectal artesunate. *Malaria Journal*.2011; 9 (1): 123.**

**Background:** Malaria kills. A single rectal dose of artesunate before referral can reduce mortality and prevent permanent disability. However, the success of this intervention depends on caretakers' adherence to referral advice for follow-up care. This paper explores the dilemma facing caretakers when they are in the process of deciding whether or not to transit their child to a health facility after pre-referral treatment with rectal artesunate. **Methods:** Four focus group discussions were held in each of three purposively selected villages in Mtwara rural district of Tanzania. Data were analysed manually using latent qualitative content analysis. **Results:** The theme «Caretakers dilemma in deciding whether or not to adhere with referral advice after pre-referral treatment with rectal artesunate» depicts the challenge they face. Caretakers' understanding of the rationale for going to hospital after treatment - when and why they should adhere - influenced adherence. Caretakers, whose children did not improve,

usually adhered to referral advice. If a child had noticeably improved with pre-referral treatment however, caretakers weighed whether they should proceed to the facility, balancing the child's improved condition against other competing priorities, difficulties in reaching the health facilities, and the perceived quality of care at the health facility. Some misinterpretation were found regarding the urgency and rationale for adherence among some caretakers of children who improved which were attributed to be possibly due to their prior understanding. **Conclusion:** Some caretakers did not adhere when their children improved and some who adhered did so without understanding why they should proceed to the facility. Successful implementation of the rectal artesunate strategy depends upon effective communication regarding referral to clinic.

- 353. Simba DO, Warsame M, Kakoko D, Mrango Z, Tomson G, Premji Z, Petzold M. Who gets prompt access to artemisinin-based combination therapy? A prospective community-based study in children from rural kilosa, Tanzania. *PLoS ONE*. 2010; 5 (8): e12104.**

**Background:** Effective and timely case management remains one of the fundamental pillars for control of malaria. Tanzania introduced artemisinin-combination therapy [ACT] for uncomplicated malaria; however, the policy change is challenged by limited availability of ACTs due to high cost. This study aimed to determine factors influencing prompt access to ACTs among febrile children in rural Kilosa, Tanzania. **Methods and Findings:** In a community-based study, 1,235 randomly selected children under five were followed up weekly for six months, in 2008. Using a structured questionnaire, children's caretakers were asked about the child's febrile history in the last seven days, and treatment actions including timing, medicines used and source of care. Caretakers' knowledge about malaria and socioeconomic and demographic data were also obtained. About half of followed-up children had at least one episode of fever. Less than half (44.8%) of febrile children were taken to government facilities. Almost one-third (37.6%; 95% CI 33.1-42.1) of febrile children had prompt access to ACT. Care-seeking from a government facility was the overriding factor, increasing the likelihood of prompt access to an ACT 18 times (OR 17.7; 95% CI 10.55-29.54; adjusted OR 16.9; 95% CI 10.06-

28.28). Caretakers from the better-off household (3rd-5th quintiles) were more likely to seek care from government facilities (OR 3.66; 95% CI 2.56-5.24; adjusted OR 1.80; 95% CI 1.18-2.76). The majority of antimalarials accessed by the poor were ineffective [86.0%; 295/343], however, they paid more for them (median Tsh 500) compared to the better-offs (median Tsh 0). **Conclusions:** Prompt access to ACT among febrile children was unacceptably low, due mainly to limited availability of subsidised ACT at the location where most caretakers sought care. There is urgent need to accelerate implementation of strategies that will ensure availability of ACT at an affordable price in remote rural areas, where the burden of malaria is highest.

**354. Simba M. Alidity of data from prevention of mother to child HIV transmission programme in estimating general population HIV prevalence in Mbeya region, Tanzania 2003-2008. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Monitoring trends in HIV -1 infection is crucial for planning and evaluation of intervention measures. ANC sentinel surveillance data have been used for that purpose; however, they require significant resources to operate and are biased. Recent literature shows that data from Prevention of Mother to Child HIV Transmission (PMTCT) programmes could be a cheaper and comparable source of data for monitoring HIV -1 trend. However, its validity as compared to ANC sentinel surveillance data has not been well examined. Objective: The objective of this study was to assess the validity of PMTCT programme data as a proxy measure of the general population HIV -1 prevalence estimates compared to the ANC sentinel surveillance data. **Materials and Methods:** This was a cross-sectional study which involved a review of facility-based data from ANC PMTCT registers. Comparison of age-adjusted HIV-1 prevalence estimates were made between ANC sentinel surveillance, PMTCT programme and the Tanzania HIV Indicator survey of 2003-2004 together with the Tanzania HIV and Malaria Indicator survey of 2007-2008. Comparison was made for the same geographical area and time period, i.e. 2003-2008. Overall and age-specific HIV -1 prevalence estimates were compared between women in the ANC sentinel surveillance and those who

participated in the PMTCT programme both for the overall study period and separately for each year. **Results:** In total, 6390 records were retrieved from ANC PMTCT registers in nine PMTCT sites during the study period 2003-2008. Most women in the study population were in the age group 15-24 years (Mean age 25 years, SD: 5.7). Overall HIV-1 PMTCT-based prevalence estimates from 2003-2006 were comparable to HIV-1 prevalence estimates based on ANC sentinel surveillance ( $p=0.89$  and  $p=0.43$  for the year 2003/2004 and 2005/2006 respectively). For 2007/2008, the HIV-1 prevalence estimate from PMTCT programme and that from the ANC sentinel surveillance were significantly higher than the estimate from the population-based survey ( $p=0.00$  for both PMTCT and ANC sentinel surveillance). Women attending clinics at urban and border areas were more likely to be HIV-1 infected than those who attended clinics located at rural areas (OR=1.35,  $p=0.00$ , OR=1.99,  $p=0.04$  respectively). HIV-1 testing uptake was more than 99%. There was a notable varying data quality across the sites. **Conclusions and Recommendations:** HIV-1 prevalence estimates from PMTCT programme were comparable to those from the ANC sentinel surveillance as well as to estimates from the general population. However, for the period 2007/2008, estimates from PMTCT programme and the ANC sentinel surveillance significantly overestimated the estimates in the general population. The HIV testing uptake in the PMTCT environment was very high. PMTCT data was of moderate data quality, Behavioral change HIV programmes in Mbeya region should target urban and border areas and male participation in PMTCT programmes should be encouraged. Improvement of data can be done by standardizing data collection tools, regular training and supervision. PMTCT programme has a potential to replace ANC sentinel surveillance for monitoring of HIV epidemic trends in Mbeya region.

355. Siril MKM. Uncomplicated malaria case management practises using arthemether-lumefantrine in settings without microscopy in underfives in Kibaha and Kisarawe districts, 2009. Mster of science (Tropical disease control) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.

Tanzania has high burden of morbidity and mortality caused by malaria which is the leading cause of outpatients, inpatients, and admissions of children less than five years of age at health facilities in the country. This burden has been attributed to increasing malaria parasite resistance to most of the antimalarials used as monotherapies. Tanzania has amended the malaria treatment policy twice, the first amendment being in August 2001 when SP replaced chloroquine and the second being in January 2007 when artemether-lumefantrine (Alu) replaced SP for the treatment of uncomplicated malaria. The goal of the amendments was to reduce morbidity, mortality and economic losses and to encourage rational drug use in order to minimize the development of drug resistance. Resistance can develop if artemisinin combination therapies (ACTs) are used injudiciously as in presumptive diagnosis and treatment of malaria, which is the case in many health care facilities. There are very few reports on the quality of clinical practices following implementation of Alu policies in Africa in general and Tanzania in particular. Furthermore, it is not known what percentages of children suffering from uncomplicated malaria receive ACTs on clinical grounds while in fact they have or have no malaria as confirmed by laboratory diagnosis. The aim of this study was to examine the quality of childhood malaria case management practices using Alu and the accuracy of clinical malaria diagnosis in settings without microscopy. Health care facility-based, cross-sectional, cluster random sample survey was conducted in 17 government health facilities to examine uncomplicated malaria case management practices using artemether-lumefantrine in settings without microscopy in under fives in Kibaha and Kisarawe districts. IV Using structured questionnaires data were collected and analyzed from 916 children aged less than 5 years who were brought to the health facilities with history of fever and/or other symptoms of malaria. Blood smears to detect the presence of malaria parasites were taken from the selected children and were subsequently processed and examined in the Medical Parasitological Laboratory at Muhimbili University of Health and Allied Sciences. Of the 916 caregivers of under five children, 469 (51.2%) sought care within 24 hours of onset of symptoms and 572 (64.6%) knew correctly more than 3 uncomplicated malaria symptoms in under fives. This knowledge was associated with early care seeking (OR= 1.4, 95%CI: 1.2- 1.7). Moderate to high socioeconomic status was associated with increasing knowledge of symptoms of uncomplicated malaria in

under fives as well as knowledge on correct use of all! Under directly observed therapy and subsequent use at home (OR=3.6, 95%CI: 1.5-9.2). Malaria was suspected in 846 children (92.4%), 527 of whom (62.3%; 95%CI (58.9-65.6) were appropriately managed according to IMCI and malaria treatment guidelines. Suspected malaria cases were more likely to receive appropriate management than those who had not been diagnosed to have malaria (OR= 36.9, 95%CI: 16 to 118). Presence of fever or history of fever as main presenting symptom was significantly associated with the quality of management given to the patients (OR = 20, 95%CI: 6-68). Of 723 children who were prescribed with Alu, 459 (63.5%) were properly counseled. Alu was more likely to be prescribed in consultations by a clinical officer (OR=1.2, 95%CI: 1.06- 1.8); which took more than 5 minutes (OR=1.9, 95%CI:1.3-3.0), and where Alu alone was available as an ant malarial (OR= 1.4, 95%CI: 1.05-1.8) than in consultations by non clinical officers, which took less than 5 minutes and where alu and other antimalarials were available. Quality of counseling was associated with the counseling by the clinical officer (OR=1.4, 95%CI: 1.2-1.5) and with the counseling by a provider with above 2 years of working experience (OR=1.5, 95%CI: 1.3-1.7). v Of the suspected malaria cases, 179 (26.0 %, 95%CI: 22.8-29.5) had laboratory confirmed malaria. With PPV=26%, post-test probability of absence of disease in clinically positive malaria = 74% and NPV = 88.5%, post-test probability of presence of malaria parasites in clinically negative malaria = 11.5%. LR+ >1 (1.06) and LR- <1 (0.4). Early care seeking, clinical diagnosis and treatment of malaria using Alu in under fives in settings without microscopy has not reached the set target of appropriately managing 80% malaria in children by 2010. A lot of misdiagnosis and mistreatment with anti malarials well as omission of true cases of malaria calls for swift deployment of specific and sensitive diagnostic facilities.

- 356. Sissya HA. Prevalence of malnutrition and associated feeding problems among children with cerebral palsy attending Muhimbili National Hospital, Dar es Salaam, Tanzania master of medicine (Pediatrics and child health) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Cerebral palsy (CP) is a chronic disorder of posture and movement associated with other disabilities. Among these is failure of normal development of feeding ability which leads in slowness and inefficiency in feeding. As a result of the feeding problems children with cerebral palsy are at increased risk of inadequate intake of nutrients compared to the general population of children. Ultimately they are at a higher risk of developing malnutrition. **Objectives:** To determine the magnitude of malnutrition and associated feeding problems among children with cerebral palsy who were attending at Muhimbili National Hospital, Dar-es-Salaam, Tanzania. **Methods:** A descriptive cross-sectional study was conducted for a period of six months. During the study period, 239 children with cerebral palsy were consecutively recruited. Their nutritional status was assessed clinically and using anthropometric measurements (weight and length/height). Malnutrition was categorized using Waterlow classification. **Results:** A total of 239 children with CP aged between three months and 14 years were recruited. Among them 146(61.1 %) children were males. Spastic type of motor disorder was the most prevalent (56.1 %) type of cerebral palsy. About half (50.2%) of the children had severe type of CP. Among the enrolled children 73.1 % had variable degrees of wasting. The prevalence of severe wasting was found to be 20.1% while severe stunting accounted for 49.4% . There was a statistical significant direct relationship between the severity of CP and severity of malnutrition. Severe wasting prevailed more among children with severe CP accounting for 28.3 % (  $p=0.001$ ). More children with dyskinetic/athetoid type of CP 15(28.6%) had severe wasting. However, this finding was not found to be statistically significant ( $p=0.616$ ). Feeding problems commonly noted among the children were inability to self feed 133(73.5%), inability to chew solids 80(34.3%), swallowing problems 71(29.7%), cough/chocking during feeding 65(27.2%), cry/extensor dystonia during feeding 52(21.8%) and inability of tongue lateralization in 47(20.2%) of children. In general, majority of the children, were taking less than 30minutes time to finish a feed. However, for those children who were taking longer time, more than 30 minutes to more than one hour to finish their feeds, majority were children with feeding problems. This was significant in children who were unable to feed themselves, inappropriate wide mouth opening, inability to open mouth when fed, inadequate/absent tongue lateralization, no closure of lips around the spoon, chewing problems and cough/chocking

during feeding. The presence of feeding problems was associated with increased prevalence of severe wasting (11.1 %-45.5%) and stunting (52.5%-72.3%). Illiteracy of the mothers/care givers was associated with having more children who were wasted to variable degrees ( $p=0.044$ ). **Conclusion:** This study has shown that among this selected population of children with CP attending MNH, the prevalence of malnutrition was relatively high. The severity of malnutrition was found to be directly related to the severity of CP and the presence of feeding problems. **Recommendation:** Growth monitoring among children with cerebral palsy should be intensified in order to identify malnutrition and feeding problems early on, and instituting appropriate feeding programmes, nutritional counseling and follow-up actions.

357. **Sonmez O, Mohamed H, Epema DH. On the benefit of processor co allocation in multicluster grid systems. *Parallel and Distributed Systems, IEEE Transactions on.* 2010; 21(6): 778-789.**

In multicluster grid systems, parallel applications may benefit from processor co allocation, that is, the simultaneous allocation of processors in multiple clusters. Although co allocation allows the allocation of more processors than available in a single cluster, it may severely increase the execution time of applications due to the relatively slow wide-area communication. The aim of this paper is to investigate the benefit of co allocation in multicluster grid systems, despite this drawback. To this end, we have conducted experiments in a real multicluster grid environment, as well as in a simulated environment, and we evaluate the performance of co allocation for various applications that range from computation-intensive to communication-intensive and for various system load settings. In addition, we compare the performance of scheduling policies that are specifically designed for co allocation. We demonstrate that considering latency in the resource selection phase improves the performance of co allocation, especially for communication-intensive parallel applications.

358. **Sorensen BL , Rasch V , Massawe S , Nyakina J , Elsass P , Nielsen BB. Impact of ALSO training on the management of prolonged labor and neonatal**



care at Kagera Regional Hospital, Tanzania. *International Journal of Gynecology and Obstetrics*. 2010; 111 (1): 8-12.

**Objective:** To evaluate the management of prolonged labor and neonatal care before and after Advanced Life Support in Obstetrics (ALSO) training. **Methods:** Staff involved in childbirth at Kagera Regional Hospital, Tanzania, attended a 2-day ALSO provider course. In this prospective intervention study conducted between July and November 2008, the management and outcomes of 558 deliveries before and 550 after the training were observed. **Results:** There was no significant difference in the rate of cesarean deliveries owing to prolonged labor, and vacuum delivery was not practiced after the intervention. During prolonged labor, action was delayed for more than 3 hours in half of the cases. The stillbirth rate, Apgar scores, and frequency of neonatal resuscitation did not change significantly. After the intervention, there was a significant increase in newborns given to their mothers within 10 minutes, from 5.6% to 71.5% (RR 12.71; 95% CI, 9.04-17.88). There was a significant decrease from 6 to 0 neonatal deaths before discharge among those born with an Apgar score after 1 minute of 4 or more (P = 0.03). **Conclusion:** ALSO training had no effect on the management of prolonged labor. Early contact between newborn and mother was more frequently practiced after ALSO training and the immediate neonatal mortality decreased.

359. Sorensen BL, Elsass P, Nielsen BB, Massawe S , Nyakina J , Rasch V. Substandard emergency obstetric care - A confidential enquiry into maternal deaths at a regional hospital in Tanzania. *Tropical Medicine and International Health*. 2010; 15 (8): 894-900.

**Objective** (i) To identify clinical causes of maternal deaths at a regional hospital in Tanzania and through confidential enquiry (CE) assess major substandard care and make a comparison to the findings of the internal maternal deaths audits (MDAs); (ii) to describe hospital staff reflections on causes of substandard care. **Methods** A CE into maternal deaths was conducted based on information available from written sources supplemented with participatory observations and interviews with staff. The compiled

information was summarized and presented anonymously for external expert review to assess for major substandard care. Hospital based maternal deaths between 2006 and 2008 (35 months) were included. Of 68 registered maternal deaths sufficient information for reviewing was retrieved for 62 cases (91%). As a supplement, in-depth interviews with staff about the underlying causes of substandard care were performed. **Results** The causes of death were infection (40%), abortion (25%), eclampsia (13%), post-partum haemorrhage (12%), obstructed labor (6%) and others (4%). The median time available for hospital staff to manage the fatal complication was 47 h. The CE identified major substandard care in 46 (74%) of the 62 cases reviewed. During the same time period MDA identified substandard care in 18 cases. Staff perceived poor organization of work and lack of training as important causes for substandard care. Local MDA was considered useful although time-consuming and sometimes threatening, and staff dedication to the process was questioned. **Conclusion** Quality assurance of emergency obstetric care might be strengthened by supplementing internal MDA with external CE.

**360. Stöckl H, Watts C, Mbwambo JK. Physical violence by a partner during pregnancy in Tanzania: Prevalence and risk factors. *Reproductive Health Matters*. 2010; 18 (36): 171-180.**

Violence by an intimate partner, including violence during pregnancy, is an important human rights and public health issue. This paper presents the findings from large household surveys conducted in Mbeya and Dar es Salaam, Tanzania, in 2001-2002, as part of the WHO Multi-Country Study on Women's Health and Domestic Violence against Women. Seven (n=88) and twelve per cent (n=147) of ever-partnered, ever-pregnant women in Dar es Salaam (n=1,298) and Mbeya (n=1,205), respectively, reported being physically assaulted during pregnancy by their partner. Of those experiencing partner violence during pregnancy, 38% (n=33) and 23% (n=34) reported blows to the abdomen. More than a third of women experiencing the violence in each setting reported that it started during pregnancy. In both settings, the violence was significantly associated with adverse maternal health behaviours and outcomes, including drinking during pregnancy, having had a child that died and the partner preventing or

discouraging attendance for antenatal care. Factors significantly associated with higher likelihood of partner violence during pregnancy included being currently unmarried, having had children from different fathers, partner's unfaithfulness and his refusal to use contraception. While interventions on partner violence during pregnancy have been tested in antenatal services in some developed countries, effective solutions for how to intervene in low-resource settings like Tanzania are still needed.

- 361. Stringer E, Read JS, Hoffman I, Valentine M, Aboud S, Goldenberg RL. Treatment of trichomoniasis in pregnancy in sub-Saharan Africa does not appear to be associated with low birth weight or preterm birth. *South African Medical Journal*. 2010; 100 (1): 58-64.**

**Objectives.** To determine whether treatment of trichomoniasis increases the risk of prematurity. **Design.** Sub-analysis of a randomized trial. **Setting.** We analyzed data from HPTN 024, a randomized trial of antenatal and intrapartum antibiotics to reduce chorioamnionitis-related perinatal HIV transmission. **Subjects.** Pregnant women from four sites in Africa. **Outcome measures.** Gestational age at the time of delivery or mean birth weight. **Results.** Of 2 428 women-infant pairs included, 428 (18%) had trichomoniasis at enrolment. There were no differences in infant age or birth weight between women with or without trichomoniasis. By randomization group, there were no differences in gestational age at birth or birth weight. Of the 428 women diagnosed with trichomoniasis, 365 (83%) received antibiotics and 63 (15%) did not. In analysis of actual use of antibiotics, women with trichomoniasis who received no treatment were more likely to deliver a preterm infant when the symphysis-fundal height was used to estimate gestational age (36% v. 23%;  $p=0.03$ ), but not when the Ballard score was used (16% v. 21%;  $p=0.41$ ). There were no differences in mean birth weight between groups. **Conclusions.** In pregnant women in sub-Saharan Africa, most of whom were HIV-infected, neither trichomoniasis nor its treatment appears to influence the risk of preterm birth or a low-birth-weight infant.

362. Subi SM. HIV drivers in ngerengere and Tawa wards in Morogoro district: a comparative study. Master of Public Health. Master of Art (Health Policy and Management) *Dissertation* 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.

**Background:** Tanzania is one of the sub-Saharan African countries that have been affected by the HIV/AIDS epidemic. However, there is a diverse pattern of trends in HIV prevalence for different geographical areas in the country. This study explored and compared factors underlying this differential in Ngerengere and Tawa wards. **Objectives:** To explore and compare HIV drivers between Ngerengere and Tawa wards in Morogoro District, specifically by comparing the level of HI V knowledge, condom availability, community attitudes towards condom use, and existing cultural practices exposing community to HIV infection between these wards. **Methods:** Qualitative research methods using Focus group discussion and in-depth interview methods were used for data generation. 70 FGD participants and 21 key informants were recruited purposively. Participants consisted of male and female aged 15-49 years residing in Ngerengere and Tawa wards and key Informants were 21 Health workers working in Ngerengere and Tawa health centres. Interview guide with semi-structured open ended questions were used to explore and compare HIV drivers in Ngerengere and Tawa wards. **Results:** Most of the FGD Participants in Ngerengere and Tawa wards possess comprehensive HIV knowledge. Low HIV knowledge was found in remote villages in Tawa ward. Condoms were available in shops and health facility in Ngerengere throughout the year while in Tawa throughout in health facility but not in shops. Several of the respondents indicated negative attitudes towards condom use in both wards. Cultural practices contributing to the transmission of HI V existed in both wards mentioned by all focus group discussions were; polygamy, alcohol consumption, multiple sexual partners, and male circumcision using non-sterile instruments. Those mentioned by key informants were multiple sexual partners, heavy alcohol consumption and polygamous marriages.

363. Tarimo E.A, Thorson A, Kohi TW, Mwami J, Bakari M, Sandström E, Kulane A. **Balancing collective responsibility, individual opportunities and risks: a qualitative study on how police officers reason around volunteering in an HIV vaccine trial in Dar es Salaam, Tanzania.** *BMC public health.* 2010; 10(1): 292.

**Background:** Results from HIV vaccine trials on potential volunteers will contribute to global efforts to develop an HIV vaccine. The purpose of this study among police officers in Dar es Salaam, Tanzania, was to explore the underlying reasons that induce people to enrol in an HIV vaccine trial. **Methods:**We conducted discussions with eight focus groups, containing a total of 66 police officers. The information collected was analyzed using interpretive description. **Results:**The results showed that participants were motivated to participate in the trial by altruism, and that the participants experienced some concerns about their participation. They stated that altruism in the fight against HIV infection was the main reason for enrolling in the trial. However, young participants were seriously concerned about a possible loss of close relationships if they enrolled in the HIV vaccine trial. Both men and women feared the effect of the trial on their reproductive biology, and they feared interference with pregnancy norms. They were unsure about risks such as the risks of acquiring HIV infection and of suffering physical harm, and they were unsure of the intentions of the researchers conducting the trial. Further, enrolling in the trial required medical examination, and this led some participants to fear that unknown diseases would be revealed. Other participants, however, saw an opportunity to obtain free health services. **Conclusions:**We have shown that specific fears are important concerns when recruiting volunteers to an HIV vaccine trial. More knowledge is needed to determine participants' views and to ensure that they understand the conduct of the trial and the reasons it is being carried out.

364. Thoms C, Gattinger A, Jacob M, Thomas FM, Gleixner G. **Direct and indirect effects of tree diversity drive soil microbial diversity in temperate deciduous forest.** *Soil Biology and Biochemistry.* 2010; 42(9): 1558-1565.

We investigated the link between aboveground and belowground diversity in temperate deciduous forest ecosystems. To this end, we determined the effects of the tree species composition on the biomass and composition of the soil microbial community using phospholipid fatty acid (PLFA) profiles in the Hainich National Park, a deciduous mixed forest on loess over limestone in Central-Germany. We investigated the effects of the leaf litter composition on the microbial community, hypothesizing that distinctive leaf litter compositions increase signature PLFAs. In addition, we studied the impact of clay content, pH and nutrient status of the soil on the microbial community in different surface soil layers. Consequently, soil was sampled from depths of 0–5 cm, 5–10 cm and 10–20 cm. Plots with highest leaf litter diversity had the largest total amounts of fatty acids, but only PLFA 16:1 $\omega$ 5, which is a common marker for arbuscular mycorrhizal fungi, was significantly increased. In the uppermost soil layer, the pH explained most of the variance in microbial composition. In the deeper surface soil layers, nutrients such as carbon, nitrogen and phosphorus determined the microbial abundances and composition. Our results suggest that the soil microbial community is mainly indirectly influenced by aboveground diversity. Changes in soil pH or the soil nutrient status that are driven by specific plant traits like leaf litter quality drive these indirect changes. Specific direct interactions are most reasonable for mycorrhizal fungi.

- 365. Traube D, Dukay V, Kaaya S, Reyes H, Mellins C. Cross-cultural adaptation of the child depression inventory for use in Tanzania with children affected by HIV. *Vulnerable Children and Youth Studies*. 2010; 5 (2): 174-187.**

Understanding the impact of the acquired immune deficiency syndrome (AIDS) epidemic is critical for developing appropriate interventions to create supportive environments for orphans and vulnerable children (OVC). Unfortunately, there are very few studies on the psychosocial wellbeing of children orphaned by AIDS in Africa, and even fewer in Tanzania. It has been difficult to make generalizations across studies and to identify and track children suffering from mental health difficulties, given the lack of culturally sensitive, standardized screening scales and diagnostic procedures. As a contribution to filling that gap, the current study demonstrates the applicability of an existing depression

screening instrument (CDI) to evaluate both the needs of OVC as well as the effectiveness of interventions designed to support them.

- 366. Turgut M, Ali AT. Some characterizations of special curves in the Euclidean space E4. *Acta Univ. Sapientiae, Mathematical.* 2010; 2(1): 111-122.**

In this work, first, we give some characterizations of helices and ccr curves in the Euclidean 4-space. Thereafter, relations among Frenet-Serret invariants of Bertrand curve of a helix are presented. Moreover, in the same space, some new characterizations of involute of a helix are presented.

- 367. Unwin N, James P, McLarty D, MacHybia H, Nkulila P, Tamin B, Nguluma M, McNally R. Rural to urban migration and changes in cardiovascular risk factors in Tanzania: A prospective cohort study. *BMC Public Health.*201; 10: 272.**

**Background.** High levels of rural to urban migration are a feature of most African countries. Our aim was to investigate changes, and their determinants, in cardiovascular risk factors on rural to urban migration in Tanzania. **Methods.** Men and women (15 to 59 years) intending to migrate from Morogoro rural region to Dar es Salaam for at least 6 months were identified. Measurements were made at least one week but no more than one month prior to migration, and 1 to 3 monthly after migration. Outcome measures included body mass index, blood pressure, fasting lipids, and self reported physical activity and diet. **Results.** One hundred and three men, 106 women, mean age 29 years, were recruited and 132 (63.2%) followed to 12 months. All the figures presented here refer to the difference between baseline and 12 months in these 132 individuals. Vigorous physical activity declined (79.4% to 26.5% in men, 37.8% to 15.6% in women,  $p < 0.001$ ), and weight increased (2.30 kg men, 2.35 kg women,  $p < 0.001$ ). Intake of red meat increased, but so did the intake of fresh fruit and vegetables. HDL cholesterol increased in men and women (0.24, 0.25 mmol<sup>-1</sup> respectively,  $p < 0.001$ ); and in men, not women, total cholesterol increased (0.42 mmol<sup>-1</sup>,  $p = 0.01$ ), and triglycerides fell (0.31 mmol<sup>-1</sup>,  $p = 0.034$ ). Blood pressure appeared to fall in both men and women.

For example, in men systolic blood pressure fell by 5.4 mmHg,  $p = 0.007$ , and in women by 8.6 mmHg,  $p = 0.001$ . **Conclusion.** The lower level of physical activity and increasing weight will increase the risk of diabetes and cardiovascular disease. However, changes in diet were mixed, and may have contributed to mixed changes in lipid profiles and a lack of rise in blood pressure. A better understanding of the changes occurring on rural to urban migration is needed to guide preventive measures.

368. **Urrio RF. Factors Influencing Fertility Desire, Intentions and contraceptive use among HIV sero discordant couples in Dar es Salaam Region. Master of Public Health. Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

HIV sero discordant couples have fertility desires and intentions to have children in future. There is little information on factors that influence desires and intentions to have children and use of contraceptives among HIV sero discordant couples. An analytical cross sectional study was conducted in Dar es Salaam with the aim of assessing factors that are associated with fertility desires, intentions and contraceptive use among HIV sero discordant couples. A total of 267 men and women participated in this study of which 65.2% were females. Data were analyzed using SPSS computer software. Frequencies cross tabulations and multiple logistic regressions were used to assess desires, intentions and the associated factors. One hundred and twenty six participants (47.2%) desired to have children. Majority of HIV positive women and men who are living in HIV sero discordance and desire to have children are young, have a partner who desire to have a child, have fewer children and have CD4 more than 200 /mm<sup>3</sup>. Majority of participants who had children of their own and with their current partner intended to have only one child compared to those who had no children of their own or had no children with their current partner. Multiple logistic regression analysis indicated that participants in the older age group are less likely to desire for children as compared to the younger age groups, while participants who already have children, are significantly less likely than others, to want to have children in future. Almost 90% of participants were using contraceptives where condoms were the most commonly used method. The use of



contraceptives was significantly associated with whether or not the participant has children with the current partner. Findings of the study show that men and women living in HIV sero discordance desire to have children, these calls for the need to have reproductive health counseling for this group for them to make informed choices to have children at the time when probability of HIV transmission is lowest.

- 369. Viberg N, Kalala W, Mujinja P, Tomson G, Lundborg CS. "Practical knowledge" and perceptions of antibiotics and antibiotic resistance among drug sellers in Tanzanian private drugstores. BMC Infectious Diseases.2010; 10: 270.**

**Background:** Studies indicate that antibiotics are sold against regulation and without prescription in private drugstores in rural Tanzania. The objective of the study was to explore and describe antibiotics sale and dispensing practices and link it to drug seller knowledge and perceptions of antibiotics and antibiotic resistance. **Methods:** Exit customers of private drugstores in eight districts were interviewed about the drugstore encounter and drugs bought. Drug sellers filled in a questionnaire with closed- and open-ended questions about antibiotics and resistance. Data were analyzed using mixed quantitative and qualitative methods. Results: Of 350 interviewed exit customers, 24% had bought antibiotics. Thirty percent had seen a health worker before coming and almost all of these had a prescription. Antibiotics were dispensed mainly for cough, stomachache, genital complaints and diarrhea but not for malaria or headache. Dispensed drugs were assessed as relevant for the symptoms or disease presented in 83% of all cases and 51% for antibiotics specifically. Non-prescribed drugs were assessed as more relevant than the prescribed. The knowledge level of the drug seller was ranked as high or very high by 75% of the respondents. Seventy-five drug sellers from three districts participated. Seventy-nine percent stated that diseases caused by bacteria can be treated with antibiotics but 24% of these also said that antibiotics can be used for treating viral disease. Most (85%) said that STI can be treated with antibiotics while 1% said the same about headache, 4% general weakness and 3% 'all diseases'. Seventy-two percent had heard of antibiotic resistance. When describing what an antibiotic is, the respondents used six different kinds of keywords. Descriptions of what antibiotic resistance is and how it

occurs were quite rational from a biomedical point of view with some exceptions. They gave rise to five categories and one theme: Perceiving antibiotic resistance based on practical experience. **Conclusions:** The drug sellers have considerable "practical knowledge" of antibiotics and a perception of antibiotic resistance based on practical experience. In the process of upgrading private drugstores and formalizing the sale of antibiotics from these outlets in resource-constrained settings, their "practical knowledge" as well as their perceptions must be taken into account in order to attain rational dispensing practices.

**370. Villamor E, Koulinska IN, Aboud S , Murrin C, Bosch RJ , Manji KP , Fawzi WW. Effect of vitamin supplements on HIV shedding in breast milk. *American Journal of Clinical Nutrition*. 2010; 92 (4): 881-886.**

**Background:** Supplementation in lactating HIV-1-infected women with preformed vitamin A and  $\beta$ -carotene (VA/BC) increases the risk of mother-to-child transmission of HIV through breastfeeding. Identifying a biological mechanism to explain this unexpected finding would lend support to a causal effect. **Objective:** The aim of the study was to evaluate the effect of VA/BC or multivitamin (B complex, vitamin C, and vitamin E) supplementation of HIV-infected women on HIV shedding in breast milk during the first 2 y postpartum. **Design:** We quantified viral (cell-free) and proviral (cell-associated) HIV loads in breast-milk samples collected  $\leq 15$  d after delivery and every 3 mo thereafter from 594 Tanzanian HIV-1-infected women who participated in a randomized trial. Women received 1 of the following 4 daily oral regimens in a 2 x 2 factorial fashion during pregnancy and throughout the first 2 y postpartum: multivitamin, VA/BC, multivitamin including VA/BC, or placebo. **Results:** The proportion of breast-milk samples with detectable viral load was significantly higher in women who received VA/BC (51.3%) than in women who were not assigned to VA/BC (44.8%;  $P = 0.02$ ). The effect was apparent  $\geq 6$  mo postpartum (relative risk: 1.34; 95% CI: 1.04, 1.73). No associations with proviral load were observed. The multivitamin had no effects. In observational analyses,  $\beta$ -carotene but not retinol breast-milk concentrations were significantly associated with an increased viral load in milk. **Conclusions:** VA/BC

supplementation in lactating women increases the HIV load in breast milk. This finding contributes to explaining the adverse effect of VA/BC on mother-to-child transmission.  $\beta$ -Carotene appears to have an effect on breast-milk viral load, independent of preformed vitamin A.

- 371. Viswanathan V, Wadud JR, Madhavan S, Rajasekar S, Kumpatla S, Lutale JK, Abbas ZG. Comparison of post amputation outcome in patients with type 2 diabetes from specialized foot care centres in three developing countries. *Diabetes Research and Clinical Practice*.2010; 88 (2): 146-150.**

**Objective:** To evaluate post amputation outcome and associated complications in type 2 diabetic patients who had undergone major amputations in developing countries. Patients and **Methods:** A total of 526 (M:F; 369:157) subjects from three centers [India (IND), n=194, Bangladesh (BAN) n=177 and Tanzania (TAN) n=155 who had undergone amputation and subsequently visited the hospital were included in this analysis. Details on foot problems and associated complications were recorded. **Results:** The prevalence of amputations was similar in all centres. The history of minor amputation and foot deformity was high in BAN. Recurrence of foot ulceration was more in TAN (30%) than in IND (9%) and BAN (11%). Re-amputation rate was similar in all groups (3%). The use of artificial limb was most in BAN (97%). Myocardial infarction was more prevalent in IND (15%). In Tanzania, 31% had died during the follow-up period and it was 16% and 5% in IND and BAN. The causes of death were infection due to septicemia and cardiovascular events which finally led to multisystem organ failure. **Conclusion:** The outcome following a major diabetic foot amputation was compared in three developing countries. Recurrence of foot infection was common in Tanzania. The most frequent causes of death were infection and cardiovascular events.

- 372. Von Reyn CF, Mtei L, Arbeit RD, Waddell R, Cole B, Mackenzie T, DarDar Study Group. Prevention of tuberculosis in Bacille Calmette–Guérin-primed, HIV-infected adults boosted with an inactivated whole-cell mycobacterium vaccine. *Aids*. 2010; 24(5): 675-685.**

**Objective:** To determine whether a multiple-dose series of an inactivated whole cell mycobacterial vaccine, *Mycobacterium vaccae*, can prevent HIV-associated tuberculosis.

**Design and methods:** The DarDar trial was a randomized, placebo-controlled, double-blind trial. The study was carried in an outpatient facility in Dar es Salaam, Tanzania. HIV-infected patients with CD4 cell counts of at least 200 cells/ $\mu$ l and a Bacille Calmette–Guérin scar were chosen for the study. The intervention was carried out by random 1:1 assignment to five intradermal doses of *M. vaccae* or placebo. Tuberculin skin tests were performed, and patients with reactions of at least 5 mm were administered isoniazid for 6 months. The main outcome measures were disseminated (primary endpoint), definite, and probable tuberculosis (secondary endpoints).

**Results:** Two thousand thirteen individuals were randomized (1006 to *M. vaccae*, 1007 to placebo) and followed every 3 months for a median of 3.3 years. The trial was terminated early because of slow accrual of cases of disseminated tuberculosis and significant protection against definite tuberculosis. Hazard ratios were disseminated tuberculosis 0.52 (95% confidence interval 0.21–1.34; seven cases in *M. vaccae*, 13 cases in placebo; log-rank  $P = 0.16$ ), definite tuberculosis 0.61 (95% confidence interval 0.39–0.96; 33 cases in *M. vaccae*, 52 cases in placebo;  $P = 0.03$ ), and probable tuberculosis 1.17 (95% confidence interval 0.76–1.80; 48 cases in *M. vaccae*, 40 cases in placebo;  $P = 0.46$ ). Immunization was well tolerated, with no adverse effect on CD4 cell count or HIV viral load, and no increase in the rate of serious adverse events.

**Conclusion:** Administration of a multiple-dose series of *M. vaccae* to HIV-infected adults with childhood Bacille Calmette–Guérin immunization is safe and is associated with significant protection against definite tuberculosis. These results provide evidence that immunization with a whole cell mycobacterial vaccine is a viable strategy for the prevention of HIV-associated tuberculosis.

373. Wagutu AW, Thoruwa TFN, Chhabra SC, Lang'at-Thoruwa CC, Mahunnah RLA. Performance of a domestic cooking wick stove using fatty acid methyl esters (FAME) from oil plants in Kenya. *Biomass and Bioenergy*. 2010; 34 (8): 1250-1256.

With depletion of solid biomass fuels and their rising costs in recent years, there has been a shift towards using kerosene and liquefied petroleum gas (LPG) for domestic cooking in Kenya. However, the use of kerosene is associated with health and safety problems. Therefore, it is necessary to develop a clean, safe and sustainable liquid bio-fuel. Plant oil derivatives fatty acid methyl esters (FAME) present such a promising solution. This paper presents the performance of a wick stove using FAME fuels derived from oil plants: *Jatropha curcus* L. (Physic nut), *Croton megalocarpus* Hutch, *Calodendrum capense* (L.f.) Thunb. *Cocos nucifera* L. (coconut), soyabeans and sunflower. The FAME performance tests were based on the standard water-boiling tests (WBT) and compared with kerosene. Unlike kerosene all FAME fuels burned with odorless and non-pungent smell generating an average firepower of 1095 W with specific fuel consumption of 44.6 g L<sup>-1</sup> (55% higher than kerosene). The flash points of the FAME fuels obtained were typically much higher (2.3-3.3 times) than kerosene implying that they are much safer to use than kerosene. From the results obtained, it was concluded that the FAME fuels have potential to provide safe and sustainable cooking liquid fuel in developing countries.

- 374. Wahnische H, O'Neil J, Janabi M, Brennan K, Seo Y, VanBrocklin H, Gullberg G. Cardiac metabolism as a function of cardiac hypertrophy using micro PET/CT imaging of [F-18] FTHA and [F-18] FDG. In *Society of Nuclear Medicine Annual Meeting Abstracts. 2010; 51(2): 324.***

**Objectives:** The goal of this project is to develop radionuclide molecular imaging technologies for the study of heart failure. The work involves molecular imaging of the spontaneous hypertensive rat (SHR) as a model of hypertensive related path physiology, utilizing a micro PET/CT scanner to quantify changes in metabolism as a function of hypertrophy and age. **Methods:** 16 SHR and 16 normotensive Wistar Kyoto (WKY) rats were imaged at 6, 12, and 16 months of age using the micro PET/CT Invenio scanner (Siemens). Dynamic gated list mode data of approximately 2,000,000,000 counts were acquired over 60 mins immediately after injecting a dose of 1-2 mCi of 14(R,S)-[F-18]Fluoro-6-thia-heptadecanoic acid ([F-18]FTHA) or 1-2 mCi of [F-

<sup>18</sup>Fluorodeoxyglucose ([F-18]FDG) in separate rat studies. The data were reconstructed as a dynamic sequence of 3D images for obtaining time activity curves for blood input sampled from the left ventricular blood pool (~40mm<sup>3</sup>) and for the left ventricular myocardial (~250 mm<sup>3</sup>). The time-activity curves generated from the myocardial tissue and blood regions of interest were fit to a 2-compartment model to obtain the metabolic rate of [F-18] FTHA and [F-18] FDG in the myocardium. **Results:** [F-18] FDG demonstrated a higher metabolic rate in the SHR model than the WKY rat and the rate in both models seemed to decrease with age. Compared with [F-18] FDG, the metabolic rate of [F-18] FTHA did not show a consistent difference between the rat models except at 16 months of age when the WKY rat demonstrated a much higher dependency on fatty acid metabolism than did the SHR model. **Conclusions:** [F-18] FDG provides an outstanding tracer for analyzing glucose metabolism in the SHR model and together with [F-18] FTHA may provide a means of comparing glucose and fatty acid metabolism in the study of metabolic dysfunction in the progression of heart failure.

**375. Waibe MJ. Mtari Examining community participation and involvement through primary health care committees in implementation of malaria control activities in Iringa municipality, Tanzania. Master of Art (Health Policy and Management) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** Community participation is a key concept under primary health care programmers and health service delivery in many countries. However, at this stage community participation has been passive and most of the activities have been designed and planned centrally. This has led to unattainment of Primary Health Care mission of bringing down burden of diseases through informed interventions accepted by communities that remains a big challenge to date. **Objectives:** The study sought to meet the main objective of assessing community participation through Primary Health Care committees in implementation of malaria control activities in Iringa municipality. **Methods and materials:** A qualitative research was carried out using semi-structured interviews for both in-depth and in focus group discussions. The information was

collected through in-depth interview for Council Health Management team at district level. The focus group discussions with members of ward health committees and community. ATLAS. Ti version 6.1 computer software was used in data analysis. **Results:** The majority reported of inadequate community participation in processes of planning and budgeting. Even if involved in those stages many experienced that nothing is being implemented or included into the final plans. There was a report on existence of local Primary health care committees but most are defunct. People are dissatisfied with the current malaria policy intervention which gives priority to under fives and pregnant mothers alone leaving other groups in the society un-addressed. **Conclusion:** Community participation has not been realized particularly in planning and decision making. Therefore, it remains pertinent for the Government to incorporate indigenous knowledge into various health programs as a tool in strengthening community participation.

**376. Walker R, Whiting D, Unwin N, Mugusi F, Swai M, Aris E, Alberti G. Stroke incidence in rural and urban Tanzania: a prospective, community-based study. The Lancet Neurology. 2010; 9(8): 786-792.**

**Background:** There are no methodologically rigorous studies of the incidence of stroke in sub-Saharan Africa. We aimed to provide reliable data on the incidence of stroke in rural and urban Tanzania. **Methods:** The Tanzania Stroke Incidence Project (TSIP) recorded stroke incidence in two well defined demographic surveillance sites (DSS) over a 3-year period from June, 2003. The Hai DSS (population 159 814) is rural and the Dar-es-Salaam DSS (population 56 517) is urban. Patients with stroke were identified by use of a system of community-based investigators and liaison with local hospital and medical centre staff. Patients who died from stroke before recruitment into the TSIP were identified via verbal autopsy, which was done on all those who died within the study areas. **Findings:** There were 636 strokes during the 3-year period (453 in Hai and 183 in Dar-es-Salaam). Overall crude yearly stroke incidence rates were 94.5 per 100 000 (95% CI 76.0–115.0) in Hai and 107.9 per 100 000 (88.1–129.8) in Dar-es-Salaam. When age-standardized to the WHO world population, yearly stroke incidence rates were 108.6 per 100 000 (95% CI 89.0–130.9) in Hai and 315.9 per 100 000 (281.6–352.3) in Dar-

es-Salaam. Interpretation: Age-standardized stroke incidence rates in Hai were similar to those seen in developed countries. However, age-standardized incidence rates in Dar-es-Salaam were higher than seen in most studies in developed countries; this could be because of a difference in the prevalence of risk factors and emphasizes the importance of health screening at a community level. Health policy makers must continue to monitor the incidence of stroke in sub-Saharan Africa and should base future funding decisions on such data.

- 377. Wang J, Ibrahim T, Howe D. Prediction and measurement of iron loss in a short-stroke, single-phase, tubular permanent magnet machine. *Magnetics, IEEE Transactions on.* 2010; 46(6): 1315-1318.**

This paper describes analytical prediction and measurement techniques for quantifying iron loss in a short-stroke, single-phase, tubular permanent-magnet machine which is developed for direct-drive linear compressors in domestic refrigeration applications. The technique is based on the analytically derived magnetic field distributions in three discrete regions of the stator core and a well-established iron loss model, and is validated by finite element analysis. An iron loss measurement technique is developed in which the moving magnet armature is supported by flexural springs that eliminate frictional loss and facilitate resonant operation during measurement. A good agreement between the prediction and measurement is observed.

- 378. Winkler AS, Dent W, Stelzhammer B, Kerschbaumsteiner K, Meindl M, Kaaya J, Matuja WBP, Schmutzhard E. Prevalence of migraine headache in a rural area of northern Tanzania: A community-based door-to-door survey. *Cephalalgia.* 2010; 30 (5): 582-592.**

Our aim was to assess the 1-year prevalence of migraine headache in a rural population within the catchment area of the Haydom Lutheran Hospital in northern Tanzania. From December 2003 until June 2004 a community-based door-to-door survey was carried out, using a questionnaire based on the criteria of the International Headache Society,



including 1192 households with 7412 individuals selected by multistage cluster-random sampling. The overall 1-year prevalence of migraine headache was found to be 4.3% [316/7412, 95% confidence interval (CI) 3.8, 4.7] with an age-adjusted rate of 6.0% and a male: female ratio of 1:2.94 ( $P < 0.001$ ). Of these individuals, 132 did not fulfil all criteria for migraine headache; hence, these patients had to be classified as migrainous disorders with a crude prevalence rate of 1.8% (132/7412, 95% CI 1.5, 2.1). The remaining 184 patients met all criteria for migraine resulting in a 1-year prevalence of 2.5% (184/7412, 95% CI 2.1, 2.9) and a male: female ratio of 1:2.51 ( $P < 0.001$ ). The present survey shows that migraine headache is not uncommon in northern Tanzania. The recorded prevalence of migraine headache is located within the median of previous African prevalence surveys, which confirms the trend of lower migraine frequencies in rural Africa compared with western countries.

- 379. Winkler AS, Katrin F, Michael M, Kidunda A, Nassri a, Jilek-Aall L, Matuja W, Schmutzhard E. Clinical characteristics of people with head nodding in southern Tanzania. *Tropical Doctor*. 2010; 40 (3): 173-175.**

We have previously described a seizure disorder characterized by head nodding (HN). In a prospective study in southern Tanzania, we evaluated 62 patients with HN. Here, we report the patients' clinical characteristics and those of their seizures, which indicate high seizure frequency, unsatisfactory seizure control, a high burden of cognitive impairment and disease-associated barriers to education.

- 380. Woitek P, Bräuer P, Grossmann H. A novel tool for capturing conceptualized audio annotations. In *Proceedings of the 5th Audio Mostly Conference: A Conference on Interaction with Sound*. 2010: 15.**

For each supervised classification task some sort of ground truth data is needed in order to train the data models or classifiers and to evaluate the obtained result. Although there are a number of such data sets publically available for mainstream audio and music classification tasks, most often one will end up annotating new content by oneself when a

novel or a specialized classifier needs to be developed. Though often necessary, the gathering of manually annotated metadata is a time-consuming and expensive exercise. Moreover, such metadata need to be structured in a proper way and assigned to the respective audio excerpts in order to be able to automatically process them. In this paper we present a novel software tool that facilitates the gathering of conceptualized annotations for any kind of audio content. The tool can be configured using arbitrary annotation schemas, which makes it flexible for multiple application fields. It furthermore provides automated audio segmentation which helps to intuitively navigate through different parts of the audio file during the annotation process and select the right segment. The tool was originally developed to assist musicologists in collecting detailed metadata for global music contents, but it turned out to be more widely applicable, e.g. for annotating audiobooks or podcasts.

- 381. Yahya N, Kamel NS, Malik AS. A subspace approach for restoring image corrupted by white noise. In Circuits and Systems (APCCAS), 2010 IEEE Asia Pacific Conference on. 2010:128-131.**

A new subspace approach is proposed for enhancement of image corrupted by additive white noise. In subspace filtering methods, the noisy image is decomposed into two orthogonal subspaces, a signal subspace and a noise subspace. This decomposition is possible under the assumption of a low-rank model for image and the availability of an estimate of the noise covariance matrix. It is shown in this paper that the proposed image restoration method performs better than the Wiener filtering and wavelet denoising techniques.

- 382. Yahya N, Puspitasari P, Koziol K, Zabidi NAM, Othman MF. Novel Electromagnetic Microreactor Design for Ammonia Synthesis. *International Journal of Basic and Applied Sciences*. 2010; 10(1): 95-100.**

Microreactor design for ammonia synthesis with electromagnetic (EM) induction is reported. The Y-shape reactor with dimension of 50mm by 120mm has 5 mixing

channels. This microreactor was designed using 2D AUTOCAD software. It was fabricated using MAZAK milling machine that operates using a numerical control functionality computer which was interfaced with MASTERCAM software. Aluminum metal plate with 2mm thickness was used as the microreactor. It was milled for 30 minutes with 0.5mm width of the channel. After the milling process was done two inlets and one outlet with pipe connectors were assembled. To reduce the leakage, a gasket paper was placed between the two plates. Hydrogen and nitrogen gas were mixed and flowed (1.2 bar) into the inlet with 0.05g manganese based ferrite used as the nano-catalyst. The reaction was done in ambient condition. The microreactor was placed in a Helmholtz Coils to induced strong EM field. We used Kejl Dahl method to calculate the 24.9% ammonia yield.

- 383. Yamanis TJ, Maman S, Mbwambo JK, Earp JAE, Kajula LJ. Social venues that protect against and promote HIV risk for young men in Dar es Salaam, Tanzania. *Social Science and Medicine*.2010; 71 (9): 1601-1609.**

Developing effective place-based health interventions requires understanding of the dynamic between place and health. The therapeutic landscape framework explains how place-based social processes and physical geography interact and influence health behavior. This study applied this framework to examine how venues, or social gathering places, influenced HIV risk behavior among young, urban men in Tanzania. Eighty-three public venues where men aged 15-19 met new sexual partners were identified by community informants in one city ward. The majority (86%) of the venues were called 'camps', social gathering places that had formal leaders and members. Observations were conducted at 23 camps and in-depth interviews were conducted with 36 camp members and 10 camp leaders in 15 purposively selected camps. Geographic and social features of camps were examined to understand their contributions to men's behaviors. Camps were characterized by a geographic space claimed by members, a unique name and a democratic system of leadership and governance. Members were mostly men and socialized daily at their camp. They reported strong social bonds and engaging in health-promoting activities such as playing sports and generating income. Members also

engaged in HIV risk behaviors, such as meeting new sexual partners and having sex in or around the camp at night. Some members promoted concurrent sexual partnerships with their friends and resisted camp leaders' efforts to change their sexual risk behavior. We conclude that camps are strategic venues for HIV prevention programs for young Tanzanian men. They served as both protective and risk landscapes, illustrating three domains of the therapeutic landscape framework: the built environment; identities of landscape occupants; and sites for collective efficacy. The framework and data suggest HIV intervention components might augment the protective features of the camps, while changing environmental features to reduce risk.

384. **Yohana E. Availability and affordability of anticancer medicines: a case study at ocean road cancer institute in Dar es salaam, Tanzania. Master of Pharmacy (Hospital and Clinical Pharmacy) Dissertation 2010. Muhimbili University of Health and Allied Sciences, Dar es Salaam.**

**Background:** In Tanzania and other East African countries little is documented regarding the availability and affordability of anticancer medicines at the patient level. Also it is not known if anticancer medicines prescribed at the Ocean Road Cancer Institute (ORCI) are available for the patients. The number of anticancer medicines prescribed to the cancer patients is also not known. It is also not known if there were other financing mechanisms for anticancer medicines to the patients treated at chemotherapy department. **Objective:** To determine and assess the availability of anticancer medicines to patients attending chemotherapy clinic at ORCI in Dar es salaam. Also to find out the prices of anticancer medicines in private pharmacies which are accessible by patients treated at ORCI!. Alternative sources of funds to the ORCI in Dar es Salaam were also reflected in the process of the study. **Methodology:** A cross-sectional study was carried out to patients attending the ORCI chemotherapy clinic between March and May 2010. Total of 384 cancer patients aged 18 and above and on chemotherapy treatment were included in the study. Some health care providers at the chemotherapy department and dispensing personnel in the private pharmacies were interviewed for availability and accessibility of anticancer medicines. **Results:** The mean

anticancer medicines prescribed were 2.01 with the mean anticancer cost reported by patients to be TSh 106,300. The availability of medicines at the ORCI for the management of cancer patients was about 50% of all surveyed medicines. In private pharmacies the unit cost for medicines was very high ranging from TSh 2,500 to 744,000 which were equivalent from one day income of the respondents to seven month income. The average amount of money the patients paid to buy anticancer medicines was TSh 151,100 for one course of treatment. More than 90% of the medicines surveyed at both ORCI and private 'pharmacies accessible by ORCI cancer patients were generics. **Conclusion:** Availability of anticancer medicines at ORCI in Dar es Salaam is not adequate. As a result, patients are required to buy anticancer medicines from private pharmacies in Dar es Salaam. In these private pharmacies anticancer medicines are too costly and most patients are not covered by health insurance to purchase their medicines. Efforts should be made to Increase budgetary allocation for purchase of anticancer medicines at ORC!

**385. Zama IN, Hutson TE, Elson P, Cleary JM, Choueiri TK, Heng DY, Rini BI. Sunitinib rechallenge in metastatic renal cell carcinoma patients. *Cancer*. 2010; 116(23): 5400-5406.**

**Background:** Sunitinib was a standard initial therapy in metastatic renal cell carcinoma (mRCC). Given the fact that many patients progressed through many available therapies and antitumor activity had been demonstrated with sequential vascular endothelial growth factor-targeting approaches, a retrospective review was performed of the experience of rechallenge with sunitinib in sunitinib-refractory mRCC. **Methods:** mRCC patients who received sunitinib therapy after disease progression on prior sunitinib and other therapy were retrospectively identified. Patient characteristics, toxicity, clinical outcome, Response Evaluation Criteria in Solid Tumors (RECIST) objective response rate, and progression-free survival (PFS) were recorded. **Results:** Twenty-three mRCC patients who were rechallenged with sunitinib were identified. Upon rechallenge, 5 patients (22%) achieved an objective partial response. The median PFS with initial treatment was 13.7 months and 7.2 months with rechallenge. Patients with >6-month interval between

sunitinib treatments had a longer PFS with rechallenge than patients who started the rechallenge within 6 months (median PFS, 16.5 vs. 6.0 months;  $P = .03$ ). There was no significant difference in outcome to sunitinib rechallenge based on number or mechanism of intervening treatments. Substantial new toxicity or significantly increased severity of prior toxicity was not seen during rechallenge in this cohort. **Conclusions:** Sunitinib rechallenge had potential benefits and was tolerated in select metastatic RCC patients.

- 386. Zellner H, Maier D, Gasser A, Doppler M, Winkler A, Dharsee J, Schmutzhard E. Prevalence and pattern of spinal pathologies in a consecutive series of CTs/MRIs in an urban and rural Tanzanian hospital—a retrospective neuroradiological comparative analysis. *Wiener klinische Wochenschrift*, 122(3), 47-51.**

The prevalence of spinal pathologies in sub-Saharan Africa has received little attention so far. The aim of the survey was to investigate and compare the prevalence pattern of spinal lesions in two different populations of Tanzania, one coming from the urban and semi-urban catchment area of Aga Khan Hospital in Dar es Salaam and the other coming from the rural catchment area of Haydon Lutheran Hospital in Mbulu, northern Tanzania. At the Aga Khan Hospital a total number of 1163 patients were included in the survey. In 50 cases (4.3%) no radiological findings were available and 150 patients (12.9%) showed no pathological abnormality. 90.4% ( $n = 1051$ ) of screened population were classified in the category of extradural-extramedullary pathologies. Intradural-extramedullary lesions were observed in only three cases (0.3%). Intramedullary pathologies accounted for 2.1% ( $n = 24$ ). Mean age of the screened population was 46.6 years, male–female ratio 1.08:1. At the Haydon Lutheran Hospital 105 cases were included into the study. Twenty-six patients (24.8%) showed no pathological abnormalities. Extradural-extramedullary pathologies occurred in 72.4% ( $n = 76$ ) of overall cases. However, intradural-extramedullary pathologies were not seen in Haydon. Intramedullary pathologies were diagnosed in two patients (1.9%). Mean age was with 39.8 years clearly younger compared to urban areas, male–female ratio being 1.21:1, only non-significantly higher than in the Aga Khan Hospital's population. Beside this, one of the main goals of this

study was to assess the frequency of infections to the spinal cord and vertebral column in rural and urban Tanzania. Surprisingly there were only few radiological findings at the Aga Khan Hospital, which suggested diagnoses consistent with tropical diseases, a striking difference from rural Haydon Lutheran Hospital, where nearly 30% of all patients showed changes on radiograph consistent with infections/infestations.

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