

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES



FINAL SCIENTIFIC REPORT FOR THE HIV VACCINE IMMUNOGENICITY STUDY (HIVIS 03) PROJECT AT THE MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS), DAR ES SALAAM, TANZANIA

For the Period 1st January 2007 to 31 December 2010

**TITLE: A Phase I/II trial to assess the Safety and Immunogenicity of a plasmid
DNA-MVA prime boost HIV-1 vaccine candidate among healthy adult volunteers
in Dar es Salaam, Tanzania**

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Summary

The HIVISO3 project aimed at determining the safety and immunogenicity of a HIV-1 DNA plasmids prime, and HIV-1 MVA boost vaccine strategy, as well as building the capacity to conduct HIV vaccine trials at Muhimbili University of Health and Allied Sciences (MUHAS) in Tanzania. The study enrolled the first volunteer on 20th February 2007 and recruited the final, 60th volunteer on 26th February 2008. Forty-two volunteers completed the study after receiving 3 immunizations of 3 HIV-1 DNA or placebo prime and 2 HIV-1 MVA or placebo boosts. Clinical and laboratory follow up for safety and vaccine immunogenicity of the last volunteer was on 18th February 2010. Additional activities included laboratory testing, data compilation and analysis, un-blinding of volunteers and writing of reports and manuscripts for publication (which will continue in the foreseeable future).

The candidate vaccine products displayed impressive safety and cell mediated and humoral immunogenicity as demonstrated by laboratory testing in the volunteers who received all the five vaccinations. Two of the 60 volunteers became HIV infected during the 3 years on the study; one had received candidate vaccine products and the other was a placebo recipient. The immunogenicity results generated have contributed to further understanding of HIV vaccine-induced immune responses.

Capacity built through HIVISO3 has paved the way for the on going European and Developing Countries Clinical Trials Partnership (EDCTP)-funded Tanzania and Mozambique HIV Vaccine Studies (TaMoVaC 01 and 02 Projects) and with help to sustain these and other future HIV vaccine trials.

The Study

The HIV Vaccine Immunogenicity Study (HIVIS) O3 was a randomized, double blinded, placebo-controlled Phase I/II HIV vaccine trial conducted among consenting adult volunteers from the Police Force in Dar es Salaam, Tanzania with the following specific objectives:

- (i) To determine the safety of HIV-I DNA, HIV-I MVA prime boost vaccine strategy among 18-40 years old volunteers in Dar es Salaam, Tanzania
- (ii) To determine the immunogenicity of a DNA-MVA prime boost vaccine strategy among volunteers in Dar es Salaam Tanzania
- (iii) To build capacity for future conduct of HIV vaccine trials in Tanzania

The study was conducted in line with the Tanzania Government's National HIV Vaccine Strategic Framework of 2005.

The Vaccine

Vecura, a Company affiliated with the Karolinska Institutet in Stockholm, Sweden, produced the candidate HIV-1 DNA vaccine. It was a 7 naked plasmids vaccine containing genes from HIV-1 clades A, B and C. The MVA-CMDR was a recombinant Modified non replicating Vaccinia Ankara virus that had genes of HIV-1 from clades A and E inserted in it. It was manufactured by the Walter Reed Army Institute of Research of the USA.

Regulatory and Ethical approvals

The study protocol received inputs from the WHO-UNAIDS HIV Vaccine Advisory Committee (VAC) and the African AIDS Vaccine Programme (AAVP). The first version of the approved study protocol dated 23rd November 2005 received national ethical clearance in Tanzania on 30th January 2006. This was amended to version 02 dated 12th March 2007 which received national approval on 4th April 2007. This also required further amendments to a version dated 13th July 2007 to allow for a 2nd MVA boosting under the TaMoVaC-01 project. Approvals for the fourth protocol version dated 25th May 2008 to allow for change of schedule to administer the second MVA boost were received from the Muhimbili University of Health and Allied Sciences (MUHAS) IRB (Referenced MU/DRP/PA/Vol.I/37 dated 19th June 2008) and the Tanzania National Ethics Committee at the National Institute for Medical research (NIMR) {Referenced NIMR/HQ/R.8c/Vol.I/55 dated 15th July 2008}.

Use of the investigational vaccine products received the approval of Tanzania Food and Drug Administration (TFDA) dated 13th July 2006 (ref No. EA/TFDA.109/01/75).

Following discovery of an oversight by the investigators that permission from the TFDA to administer the second HIV DNA – MVA/Placebo boost to the volunteers had not been obtained, a request for retrospective approval by the TFDA was submitted and approval was given on 14th July 2010 by their letter CE.57/180/03A/11

Study Procedures

Following enrolment, volunteers received a series of 5 vaccine/placebo injections. The first 3 were HIV-1 DNA/placebo vaccinations, and the subsequent two boosts were HIV-1 MVA /placebo vaccinations.

Candidate vaccine safety was assessed through clinical evaluations (history, physical examination including electrocardiography (ECG), and by laboratory tests for blood, liver and kidney function. In addition female volunteers had urine tested for pregnancy before receiving each of the five vaccine/placebo vaccinations.

Vaccine immunogenicity was determined by interferon gamma ELISpot (IFN- γ) enzyme –linked immunospot (ELISpot), T lymphocyte proliferation (LPA) and by 4 colour intracellular cytokine staining (ICS) assays. In addition, all volunteers had diagnostic HIV antibody tests done during and at the end of the trial.

All volunteers were insured for medical care and for vaccine related injury or death during the entire 36 months duration of the trial by the National Insurance Corporation Ltd, through the Tanzania One Agency. Ten key trial investigators were also insured for indemnity.

Data Management & Study Monitoring

Clinical and laboratory screening and safety data was doubly entered at the clinical trial site under supervision of the Data Manager and was shared with the External Study Monitor in Stockholm (Prof Eric Sandstrom). The data was frozen in July 2010 after it was cleaned and following the final external monitoring.

Laboratory data on vaccine immunogenicity were kept by the laboratory staff and were not shared with the clinic staff until after the study was un-blinded. The laboratory Immunogenicity data was also frozen in July 2010 after the final external laboratory monitoring.

The study was monitored internally by Ms Asteria Ndomba, a member of academic staff in the School of Nursing at MUHAS. She performed detailed monthly assessments, mostly on completion of CRF's. Prof Eric Sandstrom, (Karolinska Institute) performed the external clinical monitoring four times a year and Dr Charlotta Nilsson performed the external laboratory monitoring three times a year at the Muhimbili trial site from the beginning to the end of the trial. All issues raised in their written reports following the internal and external monitoring visits have been responded to in writing by the relevant clinical and laboratory teams.

Progress reports usually at 6 monthly intervals were submitted to the ethical and regulatory authorities (NIMR, MUHAS, and TFDA) and other stakeholders such as the sponsors and the Police authorities. There was one Inspection of the HIVIS 03 Trial performed by the TFDA on 24th and 25th September 2009, which was followed by a detailed report on strengths and weaknesses of the trial. The trial was allowed to continue and the study team responded to all the issues raised by the TFDA in good time.

Data and Safety Monitoring Board.

The trial independent Data and Safety Monitoring Board (DSMB) had a close oversight on the trial safety data. It met first mid-way for an interim review after half of the intended 60 volunteers had been enrolled and it was satisfied that the trial could continue. They had their second meeting in January 2009 as per protocol after the completion of first MVA/placebo boost vaccinations. The board at both meetings approved that the study could continue.

Results

Volunteers' Recruitment and Follow up

Following a series of educational sessions, a total of 177 volunteers came forward for screening at the Clinical Trial Unit at Makuti, Muhimbili National Hospital (MNH). Out of the 177 screened, 60 volunteers, of whom 15 were females, were recruited over a one year period. The first volunteer was enrolled on 20th February 2007, while the last volunteer was enrolled on the 26th February 2008. The 2nd MVA/Placebo vaccination began on 3rd February 2009 and vaccinations were completed in July 2009. The tables 1 and 2 below summarize the enrolment of volunteers into the trial

Table 1: Enrollment of HIVIS 03 Trial volunteers

Volunteers who:	Males (%)	Females (%)	Total (100%)
Attended for Screening	128 (72.3%)	49 (27.7%)	177 (100%)
Screened with available Lab test results	119 (73.5%)	43 (26.5%)	162 (100%)
Randomized	57 (72.2%)	22 (27.8%)	79 (100%)
Exited after Randomization	12 (63.16%)	7 (36.8%)	19 (100%)
Total Enrolled	45 (75%)	15 (25%)	60 (100%)
Received 1 st DNA/Placebo vaccination	45 (75%)	15 (25%)	60 (100%)
Received 2 nd DNA/Placebo	45 (75%)	15 (25%)	60 (100%)
Completed 3 rd DNA/Placebo	44 (74.6%)	15 (25.4%)	59 (100%)
Tested for Immune Response 2 weeks after Priming with 3 rd DNA/Placebo	44 (74.6%)	15 (25.4%)	59 (100%)
Received 1 st MVA/Placebo boost	41 (92.6%)	9 (7.4%)	50 (100%)
Tested for Immune Response 2 weeks after boosting with 1st MVA/Placebo	41 (82%)	9 (18%)	50 (100%)
Tested for Immune Response 2 months after boosting with 1st MVA/Placebo	41 (82%)	9 (18%)	50 (100%)
Tested for Immune Response 6 months after boosting with 1st MVA/Placebo	41 (82%)	9 (18%)	50 (100%)
Received 2 nd MVA/Placebo boost	37 (89%)	5 (11%)	42 (100%)

Table 2: Summary status of vaccinations as related to mode of DNA or placebo delivery to the Volunteers

Vaccinations	DNA im	DNA id	PLACEBO im	PLACEBO id	Total
1 st DNA/PLACEBO	20	20	10	10	60
2 nd DNA/PLACEBO	20	20	10	10	60
3 rd DNA/PLACEBO	19	20	10	10	59
1 st MVA/PLACEBO	15	20	8	7	50
2 nd MVA/PLACEBO	14	16	6	6	42

A total of eighteen (18) volunteers including 10 out of the 15 females were discontinued from further vaccinations due to various reasons. Most commonly these were medical (but unrelated to vaccinations), and all exited volunteers were followed up for safety in accordance with the study protocol.

To date, 59 of the enrolled volunteers have been un-blinded, i.e. have been told what they received either candidate vaccine or placebo and their responses to the candidate vaccine or placebo. The only one not yet un-blinded has been in Darfur, Sudan and efforts to trace him have not succeeded.

Safety of the Vaccine Products

The candidate vaccine products have demonstrated impressive safety profile. A total of 294 adverse events (AEs) were reported between March 2007 and December 2009, with the commonest being headache, pain at the vaccination site, and malaise. Most of the AEs were mild i.e. 249 (85%) and 173 (59%) were not related to the vaccine. The commonest were mild headache and pain at injection site.

A total of 11 volunteers experienced serious adverse events (SAE's) as defined by the study protocol. None of these was related to vaccination.

The SAEs were:

1. Constipation leading to hospitalization;
2. Soft tissue injury following motor traffic accident;
3. Benign ovarian tumor, which was operated on;

4. Partial seizures disorder;
5. Musculoskeletal chest pain;
6. Fissure in ano;
7. Epistaxis,
8. Acute gastroenteritis
9. Scalp lacerations following assault by thugs,
10. Hematemesis,
11. Haemoptysis,

None of the SAEs were fatal, and all were reported to the relevant regulatory authorities according to the protocol.

HIV infection among the volunteers during the study period (20th February 2007 to 19th February 2010)

Two male volunteers seroconverted with confirmed presence of HIV antibodies and HIV-1 proviral DNA by a polymerase chain reaction (PCR) assay during the three years of being in the study. These were a result of naturally acquired HIV infection as both volunteers confirmed a recent risky sexual encounter. One of the infections was in a vaccinated individual and the other was in a placebo recipient. Follow up of the infected volunteers by HIV RNA viral load and CD4/CD8 counts showed that they were within ranges for recently acquired HIV-1 infection. Both volunteers were stopped from further vaccinations, and continue to be followed up clinically and by laboratory tests. They have also been registered at the MNH HIV Care and Treatment Clinic.

Immunogenicity induced by the Vaccine Products

The DNA-MVA vaccination in the HIVIS-03 induced impressive humoral and cell mediated immune responses.

Immunogenicity results are shown in Tables 3 and 4 below.

Table 3: Cell mediated Immunogenicity Test Results after the first and second HIV-1 MVA Vaccination

IFN- γ ELISpot Responses After HIV-DNA priming and MVA boosting

Responders 2 weeks after the 1st HIV-MVA boost			Responders 2-4 weeks after the 2nd HIV-MVA boost		
Peptide pool	%	n	Peptide pool	%	n
Gag or Env	100	35/35	Gag or Env	97	28/29
Gag	100	35/35	Gag	93	27/29
Env	89	31/35	Env	79	23/29

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Table 4: Proportion of volunteers with Antibody Responses after the 1st and 2nd HIV MVA Vaccination

Antibody responses after the 1st and 2nd HIV-MVA boost

Test	1st HIV-MVA	2nd HIV-MVA
Gp 160 ELISA	7/33 (21%)	26/29 (90%)
Abbott Murex ELISA	0/35 (0%)	30/30 (100%)
Enzygnost Plus ELISA	0/35 (0%)	30/30 (100%)
Inno-Lia immunoblot	0/35 (0%)	30/30 (100%)

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Two weeks after the 3rd HIV-DNA injections, 22/38 (58%) of those given the candidate vaccine had IFN- γ ELISpot responses to Gag (viral core).

Two weeks after the 1st HIV-MVA boost all the 35 (100%) given the vaccines responded to Gag and 31 (89%) to Env (Envelope) antigens.

Two to four weeks after the 2nd HIV-MVA boost, 28/29 (97%) vaccinees had IFN- γ responses. The volunteers who received the DNA vaccination given under the skin (skin-primed) followed by HIV-MVA boost had significantly higher IFN- γ ELISpot responses to Env than those who were primed by DNA given into the muscle (muscle-primed).

Four weeks after the second HIV-MVA boost, 4-colour ICS assay showed Gag-specific IFN- γ /IL-2 production by both CD8⁺ and CD4⁺ T cell responses.

All vaccinees had HIV-1 specific lymphoproliferative responses two weeks after the first and second HIV-MVA boosts.

Seven out of 33 (21%) vaccinees showed antibody responses on gp160 ELISA after the 1st HIV-MVA boost.

More over, all the 29 who received all the vaccines including the second MVA boost reacted in diagnostic ELISA and western blot HIV-1 serological tests and 26/29 (90%) had binding antibodies to HIV-1 gp160 envelope antigen.

There are continuing laboratory studies to establish if the detected HIV specific antibodies will be able to prevent the replication of HIV-1. It is also planned to follow up the vaccinated volunteers to determine the rate of decay of the vaccine induced antibody seropositivity, cell mediated immune responses and social behaviour changes of those who received the HIVIS 03 candidate vaccine.

There is also a consideration to provide a fourth HIV-DNA or a third HIVMVA boost to the vaccinees.

Following un-blinding of the 59 out of the 60 volunteers, those given the active vaccine have been advised on their HIV sero status and that their future HIV tests will have to be done in laboratories with HIV PCR facilities to rule out vaccine related seropositivity.

Those who had received placebo, except the one who became infected by the HIV, were informed that they were free to join future HIV Vaccine trials.

Improved Capacity for the conduct of HIV Vaccine Trials in Dar es Salaam, Tanzania

(a) Training of Personnel:

From the beginning of the trial and through out the study, several study laboratory technologists received training and retraining in peripheral blood monocyte cells (PBMC) separation and in performing cellular immunological assays including IFN- γ ELISpot by enzyme-linked immunospot assay (ELISpot), lymphocyte proliferation assay (LPA), intracellular cytokine staining (ICS) and other assays. Training was done at the Swedish Institute for Infectious Disease Control (SMI) in Stockholm, Sweden and at MUHAS in Dar es Salaam.

In July 2008, four laboratory technologists (Scolastica Mahundi, Colman Mchau, Nasra Said and Magdalena Kasya) were trained to operate and troubleshoot Beckman Coulter 5-part differential AcT5 Diff hematology analyzer at MUHAS, which replaced the 3-part differential hematology analyzer.

In January 2009, four laboratory technologists (Scolastica Mahundi, Colman Mchau, Fausta Mgaya and Magdalena Kasya) were trained to operate and troubleshoot the newly installed Roche Cobas Integra 400 Plus clinical chemistry analyzer at MUHAS, which replaced a smaller one that could not perform all the required assays

One other technologist, Fausta Mgaya underwent training to perform Roche HIV-1 DNA PCR and Roche HIV-1 RNA PCR (viral load) at MUHAS PCR laboratory and was validated to perform the two assays in May 2009. HIV-1 DNA PCR is used to exclude possibility of natural HIV-1 infection should HIV antibody/antigen ELISAs and Western blot confirmatory antibody assays give serological positivity. As explained earlier most of the HIV antibody positivity results (except for the two volunteers who became HIV infected) were a response to the trial vaccination.

Following initial training at MUHAS, Zakaria Mtulo attended additional ICS assay training at SMI from 21st Feb to 21st March, 2010.

Said Aboud who is doing most of his PhD research training within the HIVIS 03 attended a 2-weeks course in clinical immunology of infectious disease at the Karolinska Institute and a total of eight 3-6 week lab trainings on HIV vaccine immunological assays at SMI at different periods between January 2007 and October 2010.

(b) Laboratory Capacity

As stated above a Beckman Coulter 5-part differential AcT5 Diff hematology analyzer was also acquired and installed in July 2008. The analyzer is used for screening of volunteers and for the safety tests.

A Roche Cobas Integra 400 Plus analyzer for clinical chemistry for screening of volunteers and for safety assays (ALT, total and direct bilirubin and creatinine) among other assays was acquired and installed in December 2008 and validation studies on it were performed before the analyzer could be used to test study volunteers' samples.

The ICS assay was optimized, established at MUHAS and started to be used for monitoring of vaccine cell-mediated immune responses in study volunteers following the 2nd MVA boost vaccination.

A mini proposal, to establish normal (background) ICS reactivity among healthy male and female adults in Dar es Salaam, was developed and ethical clearance from MUHAS was obtained and the study was completed. Results from this study provided reference ranges that formed the basis of decision-making.

A 200 KVA stand by electricity generator with an automatic switch served the project to ensure un-interrupted flow of electricity to the laboratories and equipment.

(c) Clinical Trial Site

Due to inadequate clinical space for the study, plans were prepared and the University invited bids for construction of additional rooms in the HIVIS trial building at Makuti, which are provided for the study by the MNH through a Memorandum of Understanding (MOU) with MUHAS. Renovations and installation of furniture and office equipment were completed to enable occupancy. A stand-by generator was installed for the clinical site and is fully functional.

Human Resource Capacity

Study personnel were trained at various levels within the context of the HIVIS-03 trial. The training included Good Clinical Practice (GCP), Good Clinical Laboratory Practice (GCLP), Development and operation of Standard Operating Procedures (SOPs) once every year as well as on Data management.

There was also specific training in special laboratory procedures (cellular and humoral immunology) which were conducted at the SMI in Sweden, at the Makerere University-Walter Reed Research Laboratory in Kampala, Uganda and at MUHAS.

Dr Said Aboud (Laboratory), Dr Patricia Munseri (Clinical) and Ms Edith Mroso Tarimo (Social Behavioural studies) continued with PhD training within the HIV vaccine trial, under a sandwich arrangement between the Karolinska Institute in Sweden and MUHAS.

Dissemination of Research Findings from the project

(a) National Stakeholders

The study progress has been shared through reports and at seminars at various times with various local stakeholders that included:

- i) Enrolled volunteers in the trial in seminars convened for them at the MNH at regular intervals during the trial and at the end of clinical follow up in February 2010.
- ii) Police Authorities
- iii) Local print and electronic media
- iv) Ethical and Regulatory authorities (National Ethics Committee at NIMR, Research and Publications Committee at MUHAS, and TFDA)
- v) Ministry of Health and Social Welfare, National AIDS Control Programme (NACP), Tanzania Commission for AIDS (TACAIDS) and the Tanzania Commission for Science and Technology
- vi) Swedish Embassy in Tanzania
- vii) Presentations made at the National Multisectoral Conference on HIV/AIDS and the NIMR Annual Joint conference
- viii) Progress reports by MUHAS to the Tanzania Parliamentary sessions

(b) Dissemination in International Conferences/Seminars and Scientific Publications

Results from the HIVIS 03 project have been presented at several international conferences or meetings that involved AIDS Vaccine experts from various parts of the world. These included:

- (i) The annual, All Collaborators meetings held in Bagamoyo, Tanzania in either January or February of every year. At these meetings progress and future plans were

discussed in great detail. The meetings were attended by investigators and collaborators from the Swedish Institute for Infectious Disease Control and the Karolinska Institute both in Stockholm, Sweden; Munich University in Germany; Maputo, Mozambique; Mbeya Medical Research Programme (NIMR-MMRP), Mbeya; Walter Reed Army Institute for Medical Research (WRAIR), USA; Imperial College-London; Ministry of Health and Social Welfare, Tanzania, Tanzania Police Force, TACAIDS and the NIMR.

- (ii) Presentations made at relevant International Conferences such as
 - The African AIDS Vaccine Program (AAVP) meeting in Kampala in 2009
 - The AIDS Vaccine Conferences including
 - the 9th held in and in Paris France in 2009 and
 - the 10th held in Atlanta, Georgia, USA in Sept/October 2010,
 - The International AIDS Society (IAS) Conferences on HIV pathogenesis, Treatment and Prevention
 - The International Military HIV/AIDS Conference, held in April 2010 in Arusha Tanzania.
- (iii) Articles published in Peer-reviewed Journals are shown in the appendix and are attached

Finances for the trial

HIVIS-03 received financial support initially from the European Union (ICA4-CT200210036). Subsequently funding was obtained from the Swedish Embassy in Tanzania through the Treasury and the Ministry of Health and Social Welfare (MoH&SW) under the National AIDS Control Programme (NACP) Support to the National HIV and AIDS Care and Treatment Plan 2005-2007.

EURO 449,229 (TZS 800 Million) from the European Union, and SEK 9 Million (TZS 1.629 Billion) was disbursed to MUHAS from the Swedish Embassy in Tanzania through the Tanzania Government TREASURY.

Further support, especially for the provision of the 2nd MVA boosting to the volunteers and follow up was received from the European and Developing Countries Clinical Trials Partnership (EDCTP) under the Tanzania and Mozambique HIV Vaccine Programme (TaMoVaC-1).

Thus the total amount of funds expended in Tanzania for the trial amounted to approximately TZS 3 Billion (USD 2.5 million).

This amount excludes the costs of producing the candidate vaccines and costs of other project development activities in the partner institutions.

More over, the costs of salaries of the key staff in Tanzania and costs of infrastructure and other support were born by the local partner institutions.

The Future

Following the successful implementation and impressive results from the HIVIS-03, a new project, the Tanzania and Mozambique HIV vaccine Programme (TaMoVaC 1) has taken off since May 2010 with the aim of further optimizing the delivery of HIV-DNA vaccine. The TaMoVac project is being funded by the EDCTP, and will enhance further North-South, as well as South-South collaboration in the search for an HIV vaccine with an emphasis on leadership from the developing countries. There will therefore be continued networking between partners and institutions in Europe {Sweden (SMI, KI), Germany (LMU), UK (Imperial College)} and sub-Saharan Africa {Tanzania (MUHAS, NIMR & Mbeya Medical Research Programme) and Mozambique (National Institute of Health and Maputo Central Hospital)}

TaMoVac-01 aims at identifying the best HIV-DNA vaccine dose, and whether the naked HIV-DNA plasmid products should be delivered as combined or separate pools. The PI of the project is Prof. Muhammad Bakari and a total of 120 volunteers will be recruited 60 in Dar es Salaam and 60 Mbeya.

A second TaMoVac-02 project also receiving funding from the EDCTP, is in Protocol development stage, and will further explore a DNA delivery method known as electroporation for the optimization of DNA delivery. The PI of this project is Prof Eligius Lyamuya, and a total of 240 volunteers will be recruited in Dar es Salaam, Mbeya and Maputo.

It is hoped that the results from HIVIS 03 and the two TaMoVac trials will make it possible for the eventual participation in Phase IIB (Trial of concept) or Phase III (efficacy trials) in Tanzania

Challenges

The HIVIS-03 study was met with a number of challenges.

These included:

1. Public misconceptions that the investigators were injecting an HIV virus to the volunteers.
2. Problem of personnel recruitment and retention whereby qualified personnel left the project and moved to better paying jobs,
3. Inadequate Clinical and Laboratory space
4. Very slow pace of procuring various essential study materials, supplies, reagents and equipment from inside and outside of the country

Conclusions

The HIVIS-03 was a big success. The vaccine products were shown to be safe and highly immunogenic. The capacity built at MUHAS and in other institutions in Tanzania has been significant and laid the foundation for the additional and expanded TaMoVac 01 and 02 trials in Dar es Salaam, Mbeya and Maputo, Mozambique.

Acknowledgements

Many institutions including Governments, organizations and individuals have made it possible to develop, implement and complete the trial; to all of them, we are greatly indebted.

Foremost of all we are very thankful to the wonderful Police Officer volunteers for their participation in the trial.

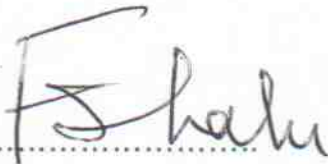
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- Swedish Embassy in Tanzania
- European and Developing Countries Clinical Trials Partnership (EDCTP)

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- Tanzania Commission for AIDS (TACAIDS)
- World Health Organization and UNAIDS HIV Vaccine Initiative, Geneva, Switzerland
- African AIDS Vaccine Program (AAVP)
- All the Investigators, Support staff, Community Advisory Board Members, and DSMB Members.

Further inputs and editorial comments provided by Professor Gunnel Biberfeld and Dr Said Aboud are very much appreciated.

This report was prepared by:



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Date: 23rd Feb. 2011



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