Milestone 103

Review of ART Pilot

June 2006

In association with:
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### Abbreviations and Acronyms

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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>A&amp;E</td>
<td>Accident and Emergency</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>AMGH</td>
<td>Angau Memorial Hospital</td>
</tr>
<tr>
<td>AMS</td>
<td>Area Medical Store</td>
</tr>
<tr>
<td>ANC</td>
<td>Ante natal Clinic</td>
</tr>
<tr>
<td>ANGAU</td>
<td>Australia New Guinea Administrative Unit</td>
</tr>
<tr>
<td>ART</td>
<td>Anti-retroviral Therapy</td>
</tr>
<tr>
<td>ARV</td>
<td>Anti-retroviral</td>
</tr>
<tr>
<td>AusAID</td>
<td>Australian Agency for International Development</td>
</tr>
<tr>
<td>CBO</td>
<td>Community Based Organisation</td>
</tr>
<tr>
<td>CHW</td>
<td>Community Health Worker</td>
</tr>
<tr>
<td>CME</td>
<td>Continuing Medical Education</td>
</tr>
<tr>
<td>CPHL</td>
<td>Central Public Health Laboratory</td>
</tr>
<tr>
<td>CSO</td>
<td>Community Service Organization</td>
</tr>
<tr>
<td>CSW</td>
<td>Casual Sex Worker</td>
</tr>
<tr>
<td>DOTS</td>
<td>Directly Observed Treatment Services</td>
</tr>
<tr>
<td>EIA</td>
<td>Enzyme Immuno Assay</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme-Linked Immuno-Sorbent Assay</td>
</tr>
<tr>
<td>ET</td>
<td>Evaluation Team</td>
</tr>
<tr>
<td>FBO</td>
<td>Faith Based Organisation</td>
</tr>
<tr>
<td>FER</td>
<td>Functional Expenditure Review</td>
</tr>
<tr>
<td>GF</td>
<td>Global Fund</td>
</tr>
<tr>
<td>GoPNG</td>
<td>Government of Papa New Guinea</td>
</tr>
<tr>
<td>HAART</td>
<td>Highly Active Antiviral Treatment</td>
</tr>
<tr>
<td>HCW</td>
<td>Health Care Worker</td>
</tr>
<tr>
<td>HEO</td>
<td>Health Extension Officer</td>
</tr>
<tr>
<td>HINARI</td>
<td>Health InterNetwork Access to Research Initiative</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>IC</td>
<td>Infection Control</td>
</tr>
<tr>
<td>ICP</td>
<td>Infection Control Practitioner</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>IMAI</td>
<td>Integrated Management of Adolescent and Adult Illness</td>
</tr>
<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MLT</td>
<td>Medical Laboratory Technician</td>
</tr>
<tr>
<td>MSB</td>
<td>Medical Supply Branch</td>
</tr>
<tr>
<td>MSM</td>
<td>Men who have sex with men</td>
</tr>
<tr>
<td>MTP</td>
<td>Medium Term Plan</td>
</tr>
<tr>
<td>NAC</td>
<td>National AIDS Council</td>
</tr>
<tr>
<td>NACS</td>
<td>National AIDS Council Secretariat</td>
</tr>
<tr>
<td>NCSH</td>
<td>National Centre for Sexual Health</td>
</tr>
<tr>
<td>NDOH</td>
<td>National Department of Health</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-government Organization</td>
</tr>
</tbody>
</table>
NHASP  National HIV/AIDS Support Project
NSI   Needle Stick Injury
NSP  National Strategic Plan
O&G  Obstetrics and Gynaecology
OI  Opportunistic Infections
OIC  Officer in charge
OP  Out Patient
PAC  Provincial AIDS Committee
PEP  Post Exposure Prophylaxis
PLWHA  People Living with HIV/AIDS
PMGH  Port Moresby General Hospital
PMTCT  Preventing Mother to Child Transmission
PNG  Papua New Guinea
STI  Sexually Transmitted Infections
SCHHCT  Strengthening Capacity of HIV Health Care Teams
TA  Technical Adviser
TB  Tuberculosis
TLC  Total lymphocyte count
UK  Unknown
UN  United Nations
VCT  Voluntary Counselling and Treatment
WHO  World Health Organization
Executive Summary, Conclusions and Recommendations

An Evaluation Team (ET) consisting of Dr Esoram Daoni (NDoH), Mr Geoff Clark (WHO), A/Prof Anne Mijch (Short Term Adviser NHASP) visited five sites to assess readiness for ART roll-out:

1) Heduru Clinic, Port Moresby
2) Australia and New Guinea Administrative Unit (ANGAU) Memorial Hospital in Lae, Morobe Province
3) Goroka Hospital, Eastern Highlands Province
4) Mt Hagen Hospital, Mt Hagen, Western Highlands Province (ET also included Dr Paison Dakulala, Physician, Alotau Hospital, Milne Bay Province)
5) Nonga Hospital, Rabaul (ET also included Dr Paison Dakulala)

The Evaluation Team:

1) Assessed if appropriate infrastructure and mechanisms existed to support the development of comprehensive Anti-Retroviral Therapy (ART) programs;
2) Assessed the Pilot Program at Heduru;
3) Assessed the capacity of private clinics and church run services to provide ART;
4) Provided recommendations relevant to provisions of accreditation standards for centres intending to provide ART programs;
5) Assessed training needs for Clinics to support ART roll out;
6) Assessed guidelines and protocols in use for ART.

The Site Readiness Assessment Tool (see Annex 3) designed by the National Department of Health (NDoH), was modified to include key areas of assessment, including:

1) Current services;
2) Clinic facilities;
3) Functions and team organisation;
4) Staff capacity;
5) Infection control;
6) Training audit and maintenance of professional standards;
7) Pharmacy and laboratory support.

This tool was used as a template to gather information and provide a check list to ensure consistency and appropriateness of questions across all sites.

During the site visits the ET identified additional areas considered necessary for ART roll out:

1) Referral systems and documentation of care pathways;
2) Community Health and support linkages (Faith Based Organisations (FBOs) and Non Government Organisations (NGOs));
3) District / Rural linkages and communication pathways;
4) Support of Provincial AIDS Committees (PACs).

**Table 1: ET Summary of findings Jan 2006**

<table>
<thead>
<tr>
<th>Jan-06</th>
<th>Lee</th>
<th>Gwoika</th>
<th>Mt/Hagen</th>
<th>Rabaul</th>
<th>Port Moresby</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinic Site</strong></td>
<td>Yes (requires increased waiting area)</td>
<td>Yes (requires more consulting rooms)</td>
<td>Yes</td>
<td>No</td>
<td>Yes (requires more consulting rooms, more waiting areas and a meeting space)</td>
</tr>
<tr>
<td><strong>Day Treatment Facility</strong></td>
<td>No, plans for extension to clinic</td>
<td>No, no formal plans some concepts of conservation of adjacent buildings or extension to clinic</td>
<td>No, no plans</td>
<td>No, plans for adjacent building Possible</td>
<td>No, plans for adjacent building Possible renovated temporary site adjacent</td>
</tr>
<tr>
<td><strong>HIV Team/Coordinator</strong></td>
<td>Yes Sr. Julie Ve</td>
<td>Yes Sr Cara Hermoti</td>
<td>Yes Mr Kuni Hupigoi</td>
<td>Not as yet</td>
<td>Yes Sr Opina Ragagalo</td>
</tr>
<tr>
<td><strong>HIV Prescriber</strong></td>
<td>Dr Ball Frilling</td>
<td>Dr Paul Anno, Dr Dale Frank</td>
<td>Dr Leslie Kawa, Dr Maggie Le Kapa</td>
<td>Dr Joe Kaven</td>
<td>Dr Goa Tau</td>
</tr>
<tr>
<td><strong>HIV Clinicians trained (n)</strong></td>
<td>Yes 3</td>
<td>Yes 3</td>
<td>Yes 2</td>
<td>Yes 2</td>
<td>Yes 4</td>
</tr>
<tr>
<td><strong>HIV Clinical Pathway</strong></td>
<td>Yes currently being updated</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>HIV Confirmatory Lab</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Referral Network</strong></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Number of Community Based Treatment Support Agencies</strong></td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td><strong>Number of Health Clinics Available for Treatment Support Agencies</strong></td>
<td>8</td>
<td>Not as Yet</td>
<td>3 (Private FEO)</td>
<td>1 (Vunapope)</td>
<td>2</td>
</tr>
<tr>
<td><strong>PAC Linkage and support (+ to ++++)</strong></td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td><strong>Laboratory Support Of diagnosis (+ to ++++)</strong></td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td><strong>Capacity to be Regional Training centre in HIV (+ to ++++)</strong></td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>0</td>
<td>+++</td>
</tr>
</tbody>
</table>

Three hospitals have clinic sites, trained HIV teams and registered patients and are, in varying degrees, capable of supporting ART rollout. Rabaul lagged behind the other sites and is in need of substantial development. To support the next phase of ART roll out, the Rabaul site may need to affiliate with nearby providers. Although the initial roll out phase was slow, there has been rapid growth at Heduru which is likely to be replicated at other sites.
Based on this review of five sites, several key issues need to be addressed, at these and other sites as the program is rolled out, if PNG is to meet the NSP targets.

1. **Staffing**

The **staff ceilings** are inadequate for the programs to function effectively. The Heduru HIV service (not including the STI service) needs two full-time medical officers, one Health Extension Officer (HEO), three nurses, three Community Health Workers (CHW), and one Medical Laboratory Technician (MLT).

The level two hospital clinics (Mt Hagen, Nonga & Goroka) need one full time medical officer, one HEO, three nurses, and three CHWs.

**Training** – the current staff are adequately trained but new staff will need to be trained (possibly via IMAI) and may include specific ARV prescriber training.

**Suggested Strategy to address the staffing issue:**

i) The new Health Strategic Plan needs to include additional staff needs for the ARV Services (national level).

ii) At the local level, during the restructure process for each affected hospital, the needs for new staff must be considered as outlined above.

iii) Hospitals need to prioritise HIV in their restructuring. This has already happened (as of June 06) in Mt Hagen and Goroka hospitals but is still to be achieved for PMGH, Angau Memorial, and Nonga.

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**Table 2: Estimated Numbers of HIV Infected Patients by HIV/STI Clinic Site Potentially Initiating ART Jan 2006**

<table>
<thead>
<tr>
<th>HIV Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB DOTS</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>15%</td>
</tr>
<tr>
<td>ANC**</td>
</tr>
<tr>
<td>Adult Medical Ward</td>
</tr>
<tr>
<td>Adult</td>
</tr>
<tr>
<td>VCT*</td>
</tr>
<tr>
<td>HIV patients seeking ART service Jan 2006</td>
</tr>
<tr>
<td>Lae</td>
</tr>
<tr>
<td>Goroka</td>
</tr>
<tr>
<td>Mt Hagen</td>
</tr>
<tr>
<td>Rabaul</td>
</tr>
<tr>
<td>Port Moresby</td>
</tr>
<tr>
<td><strong>Total pre-ART</strong></td>
</tr>
<tr>
<td>Shalom</td>
</tr>
<tr>
<td><strong>Total on ART</strong></td>
</tr>
<tr>
<td>167</td>
</tr>
<tr>
<td>56</td>
</tr>
<tr>
<td>249</td>
</tr>
<tr>
<td>237</td>
</tr>
</tbody>
</table>

**Notes:**

*VCT within Sexual Health HIV/AIDS Clinic VCT in most centres also available in NGOs, PBOs for which no data available.

**ANC testing is optional in most settings and the current number per month HIV+ represents proportion who actually consent. An underestimate of actual numbers who could and would access ART under optimal conditions.

***Potential per month represents all HIV infected not all with PNG criteria for ART.

**Source Dr Joachim Pantumari, NACS and as reported from sites visited.
With regard to the current pool of physicians – some have already had ARV training (NHASP Feb 04) but significant numbers of others have not and now need to be trained for example in another Prescribers’ course (similar to Madang training but now using local facilitators). Training in PNG is preferable to training overseas so that the basis for training is the national prescribers manual.

There is a need to mainstream HIV/ARV training into Physician’s specialist training – attempts towards achieving this are reflected in the current practice of rotating some medical registrars through the Heduru Clinic but the limited facility also limits the potential for training. It is envisaged that when the new extended facility is available at Heduru this will greatly enhance the opportunities for training (however, dedicated attendance at the clinic by senior specialists is also necessary to achieve this). In-service training in IMAI will need to continue for the rollout of ART.

2. **Drugs and supplies**

The system of procurement and distribution of essential medical supplies for ART needs to be strengthened.

There are ongoing issues with Medical Supplies Branch (MSB) adversely affecting the timely procurement and distribution, especially of drugs related to the management of STIs and OIs. Attempts to address these issues continue but difficulties still occur intermittently.

The procurement of ARVs is currently outside the MSB system. Initially ARVs were procured by ADB via the WHO procurement process which is still being used. However, procurement funding is provided by the Global Fund (GF). Discussion need to continue on options for outsourcing the procurement of ARVs and the drugs needed for the management of OIs (and STIs). Currently the Area Medical Store (AMS) at Badili is used as the store for the ARVs which are distributed by commercial courier to hospital pharmacies, using GF funding. It must be stressed that GF is intended to be supplementary only. The NDoH needs to put in place its own mechanisms for the ongoing, timely and reliable procurement, security and distribution of supplies.

A computerised system including a database of current medications used in the management of HIV infection has already been established at the pharmacies of regional hospitals.

A communication infrastructure needs to be developed to enable HIV teams to contact providers of ART care, other HIV/STI Treatment Centres and the NDoH. This requires an upgrade of all sites to provide an external telephone line, email access, fax and VHF receiver/transmitters in the clinics.

On site HIV confirmatory testing capability (based on WHO guidelines) needs to be available in ARV treatment sites.
In the longer term, microbiology support needs to be upgraded for the diagnosis of opportunistic infections, to enhance availability of cryptococcal antigen reagents; improved techniques of blood and faeces culture; improved diagnostic capacity in STIs; upgrading of Tuberculosis (TB) diagnosis and resistance testing (via links with CPHL); and improved ability to detect Pneumocystis jiroveci.

3. Linkages between services

PMTCT is provided through selected antenatal clinics and labour wards. On discharge from the post natal ward, women are referred to the adult ARV clinic. ART is provided and supervised from the ARV clinic and from the inpatient wards in the case of people who are hospitalised. When PEP is available it will ideally be dispensed from various sites in the hospital but should be coordinated and managed by the ART Clinic.

There is a need to have each hospital develop its own coordination framework and referral system with its own entry points but with the ARV clinic as the hub of the system.

4. Linkages with community services

The key to attaining effective linkages is to utilise the facilities and networks already established by the NACS. Care centres and community based centres under the counselling and care component of NACS already exist and include resource people trained in home based care and counselling. There is a need to assist them to link to the clinical services to further support the effective compliance of ARV use. Good examples of this already in place include the Simon of Cyrene Centre and the Anglicare Centre in Port Moresby which already have established effective relationships with the Heduru clinic and are supporting people on ARVs in their own communities.

The Morobe (ANGAU) Model is specific to their facilities and situation. Each hospital will adopt a system that is relevant to its own needs and facilities (but the Angau Model could be used as a template).

5. Addressing barriers to referral

Referral from communities to hospitals seems to be working adequately but hospital staff need to be educated on the needs of using community based resources such as counselling and home based care teams. There seems to be reticence on the part of some health workers to engage with community based resource people. Work also needs to be done to enhance communication between private practitioners and the available community based support and to keep the private practitioners “in the loop” with both clinical management updates and community based resources such as counsellors and home based care support. This process may take the form of CME sessions for private practitioners such as those instigated in the earlier days of NHASP.
6. **Adherence strategies**

Each hospital needs to have a strategy to ensure compliance to treatment. The first stage of encouraging adherence is in the selection of clients to start ARVs which occurs around the time of the pre-treatment educative process. This process is part of the protocol for beginning ARVs at all clinics. The aim of the pre-treatment sessions should be to ensure supervised treatment by the day to day involvement of a treatment buddy, who is usually a close relative but may be a close friend or other community member who volunteers for this role (e.g., counsellor, pastor, health worker). This treatment supporter needs to be included in the pre-treatment educative process. There may well be a role for trained counsellors in the community, who have been trained in the necessities of ARV adherence, to take a more active part in supporting clients on ARVs.

7. **Integration of HIV, STI, and TB services**

STI services are already closely linked to the HIV/ART service as they share the same facility. All STI clients seen at provincial clinics are offered HIV screening. If positive, they are linked into the ART service. However, TB clinics at provincial hospitals need to be linked into the HIV and ART services by a two-way referral pathway (e.g., in the Morobe model). All TB clinicians need to be encouraged to offer HIV screening to all newly diagnosed TB patients. If found to be positive, clients should be referred to the HIV service for registration and possible enrolment in the ART program. The treatment of the TB is the first priority.

8. **National Centre for Sexual Health (NCSH)**

The capacity of the STI Clinic at PMGH has been greatly increased, moving closer to becoming the NCSH. However, the Centre can only become a reality if a new facility is provided. NHASP has worked closely with the Executive of PMGH in preparations for this new facility and the scope of work for the new building is now complete and ready for submission for donor funding. Once the new facility is in place (adjacent to and including the current STI clinic), staffed and equipped, then it should have a key role in supervising the Heduru and national ARV roll out. It should have a role in training – as pre-service medical and other health worker students gain experience in the Centre during rotations and as post graduate training in STIs / HIV / ARV is provided. The Centre could be a site for registrar rotations from Australian training institutions and hospitals.

The NCSH will become the national referral centre for providing advice for ARV practitioners in the provinces and will also be a centre for research (linked with IMR) in drug resistance, ARV treatment trends, etc. The Centre will also be a site for important links with international partners which will provide further opportunities for research and training possibilities.

9. **Day Treatment**

There are no day treatment care sites. Three clinics are either developing or have identified an alternative building to be used as a day treatment care site. Any day treatment model needs to consider the following:
- The Model of Care needs to be specified. Currently nurse led opportunistic infection diagnosis and management of daily treatment for infections, nutrition defects, blood transfusion is favoured (based on model of Bamrasnaradura Hospital Thailand);
- Appropriate food for patients needs to be provided;
- Integration of HIV/STI clinic activities and Hospital inpatient and outpatients;
- Key Performance Indicators and evaluation needs to be established early.
1. Background and Methodology

1.1 HIV in PNG
Papua New Guinea (PNG) is facing a generalized HIV epidemic with prevalence rates among antenatal women varying between 1 - 2.5%. Following the first reported case of HIV infection in 1987, 13,465 cases had been reported by September 2005 (out of a population of 5.4 million). The epidemic is predominantly driven by heterosexual transmission with other sexual transmitted disease prevalent. Disparity in gender rights, high incidence of rape, sexual aggression and other forms of violence against women are aiding the spread of HIV. Roughly equal numbers of HIV cases are reported in males and females. More women reported as infected in the age groups under 30 and more men in the age groups over 30. A consensus workshop in November 2004 estimated the number of HIV positive persons aged between 15 – 49 years of age to be between 25,000 to 69,000 cases.

1.2 National Strategic Plan (NSP) on HIV & AIDS
PNG has made a formal commitment to facilitate a coordinated and flexible response to HIV and AIDS. The PNG NSP on HIV and AIDS has been developed, placing priority on seven focus areas: Treatment, Counselling, Care and Support; Education and Prevention; Epidemiology and Surveillance; Social and Behavioural Change research; Leadership, Partnership and Coordination; Family and Community; and Monitoring and Evaluation. These focus areas provide the broad strategic framework for an integrated national response for the next five years.

Critical challenges to the provision of enhanced care and treatment are inadequate human resources, infrastructure and funding. Donor funding is assisting to develop capacity. Rapid scale-up of care and treatment in PNG will require special attention and innovative solutions to ensure access is provided to the rural population (approx 87% of the population). Rural areas have limited infrastructure and face significant logistical difficulties in terms of both transport and procurement systems. Community based service models need to be developed to ensure maximum access.

The NSP on HIV and AIDS (2004-2008) aims to:

- Provide continuum of care including ARV based on a Model of Care/ Clinical Pathway which recognises the primary role of nurses supported by Health Extension Officers (HEOs) and medical practitioners;
- Deliver Anti Retroviral Treatment (ART) in communities close to patients’ residence to enhance access, adherence and timeliness;
- Provide a rapid role out of quality services;
- Develop Centres of Excellence in HIV and Sexually Transited Infections (STI), and associated diseases;
- Provide management, training and collaborative translational research in HIV and AIDS;
- Collaborate with NGOs, FBOs, rural and urban clinics, working with Provincial...
AIDS Committees (PACs) and provincial health authorities;
• Develop day treatment services to improve patient care and reduce the burden on inpatient services of opportunistic infection.

1.3 Antiretroviral Therapy (ART) Roll Out

Resource constraints have limited the effective diagnosis and treatment of HIV and its Opportunistic Infections (OIs). These functions have been initiated and managed in Port Moresby through the Port Moresby General Hospital (PMGH) STI Clinic (Heduru Clinic). Previous inputs in 2003 and 2004 from the Clinical HIV and AIDS Adviser resulted in the establishment of guidelines and strengthening of skills and capacity of staff for the clinical management of ART. The outcome of the work was the commencement of PNG’s first publicly available ART program.

ART is only available through pilot programs at PMGH and Angau Memorial Hospital (AMGH), Lae. There is limited ART available in private clinics and church based health services.

The National Department of Health (NDoH) is responsible for the overall coordination and management of the national ART Program and is supported by various donors, including WHO, ADB, AusAID. The ARVs for the pilot program conducted out of the Heduru Clinic were funded by ADB and procured through WHO systems. A range of NGOs, FBOs, and bilateral donors work alongside the Government of PNG (GoPNG) in supporting people living with HIV and AIDS.

In 2004, WHO estimated PNG’s total treatment need to be 7,000 people, and the WHO “3 by 5” treatment target was calculated to be 1,500 people based on 10% of the estimated people living with HIV in 2004. Twenty sites were expected to begin providing ART by the end of 2004. Only two sites achieved this and by May 2005, 171 people were reported to be receiving ART.

To support ART roll out a number of workshops were conducted during 2004 and 2005:

a) National Consensus Workshop to Develop a Continuum of Care for the Rapid Scale-Up of HIV and AIDS Care and Treatment, Port Moresby, Papua New Guinea, 9-10 May, 2005;
b) Integrated Management of Adolescent and Adult Illness (IMAI) modules delivered November 2005 for HIV Care Teams;
c) Strengthening Capacity of HIV Health Care Teams (SCHHCT), Wewak, PNG (21 health care workers) and Short Course HIV Medicine, Ridge Base Camp, Southern Highlands. 2005 (15 successful participants);
d) Voluntary Counselling and Testing (VCT) Training Programs.
1.4 Methodology

The Evaluation Team (ET) consisting of Dr Esoram Daoni (NDoH), Mr Geoff Clark (WHO), A/Prof Anne Mijch (Short Term Adviser NHASP) visited five sites:

1) Heduru Clinic,
2) Australia and New Guinea Administrative Unit (ANGAU) Hospital in Lae, Morobe Province
3) Goroka Hospital, Eastern Highlands Province
4) Mt Hagen Hospital, Mt Hagen, Western Highlands Province (ET also included Dr Paison Dakulala, Physician, Alatau Hospital, Milne Bay Province)
5) Nonga Hospital, Rabaul (ET also included Dr Paison Dakulala)

The ET:
1) Assessed if appropriate infrastructure and mechanisms existed to support the development of comprehensive ART programs;
2) Assessed the Pilot Program at Heduru;
3) Assessed the capacity of private clinics and church run services to provide ART;
4) Provided recommendations relevant to provisions of accreditation standards for centres intending to provide ART programs;
5) Assessed training needs for Clinics to support ART roll out;
6) Assessed guidelines and protocols in use for ART.

The Site Readiness Assessment Tool (see Annex 3) designed by the NDoH, was modified to include key areas of assessment, including:
1) Current services;
2) Clinic facilities;
3) Functions and team organisation;
4) Staff capacity;
5) Infection control;
6) Training audit and maintenance of professional standards;
7) Pharmacy and laboratory support.

During the site visits the ET identified additional areas considered necessary for ART roll out:
8) Referral systems and documentation of care pathways;
9) Community Health and support linkages (FBOs and NGOs);
10) District / Rural linkages and communication pathways;

At each site the ET was welcomed and supported by the respective HIV team members and where possible hospital management. The ET interviewed staff from each hospital’s HIV unit, infection control, laboratory, pharmacy and inpatient ward.
2. Heduru Clinic Report

Visited January 2006

2.1 Background

The Port Moresby STI Clinic opened in February 1998 with Mr Gairo Kapana, Health Extension Officer (HEO) and supported by Dr Greg Law from March 1998, through the AusAID Foundation Project. After the beginning of the National HIV and AIDS Support Project (NHASP), Dr John Millan supported the clinic from 2001. The clinic has provided syndromic care for individuals presenting with Sexually Transmitted Infections (STIs). From 2002 Voluntary Testing and Counselling (VCT) allowed individuals to have HIV diagnosed and by mid 2003 pre-registration initiation of Anti Retroviral (ARVs) commenced. The first PNG Guidelines for the Care of Individuals with HIV were promulgated in December 2003. In February 2004 individuals began accessing Anti Retroviral Treatment (ART) and OI management at the Heduru Clinic during the short term NHASP input of Dr John McBride. By the end of 2005 the staff were participating in clinical training of teams from other sites in PNG (Lae, Goroka, Mt Hagan and Rabaul) to enable rollout of ART. The PNG National Strategic Plan in HIV/AIDS 2004-2008 documented the first objective “To make ARV treatment available and accessible to at least 10 per cent of people currently infected with HIV and AIDS throughout PNG by 2005 and 25 per cent by 2008”.

The Heduru Clinic target for ART treatment through 2006 is 500 additional patients.

2.2 HIV Seroprevalence and HIV/AIDS at Heduru Clinic and Port Moresby General Hospital

There has been a progressive increase in HIV infection diagnosed at Heduru Clinic over the last few years as is shown below for individuals presenting for STI management and amongst VCT patients.

<table>
<thead>
<tr>
<th>Proportion Individuals Tested HIV+</th>
<th>STI Patients</th>
<th>VCT Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>9%</td>
<td>1.50%</td>
</tr>
<tr>
<td>2004</td>
<td>20%</td>
<td>14.50%</td>
</tr>
</tbody>
</table>

There are 4,500 admissions to Port Moresby Hospital per year, 31% have TB and 19% undergo HIV testing. The medical inpatient service at Port Moresby General admitted 400 individuals with HIV and AIDS in 2004. Individuals presenting late have a mortality rate of 31% and only about one third attend the Heduru Clinic after discharge. TB is the most common opportunistic condition.
2.3 Methodology of Heduru Clinic Review

This report is based on a series of interviews with the HIV Team members at the Heduru Clinic undertaken by the Evaluation Team (ET) in January 2006. The activity data and outcome information is based on an analysis of the HIV Database and patient activity data. Members of the Evaluation Team are identified in Appendix 1.

2.4 Current Staffing at Heduru

The HIV Team at the Heduru Clinic is a multidisciplinary and cohesive group who have accumulated substantial experience and undertaken formal training in ART management, including participating in/providing faculty for the Integrated Management of Adolescent and Adult Illnesses (IMAI) program of November 2005.

### Table 4: Henduru Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Title /Position</th>
<th>Date Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr Opina Ragagalo</td>
<td>Nurse Coordinator Heduru Clinic</td>
<td>24-Jan-06</td>
</tr>
<tr>
<td>Mr Gairo Kapana</td>
<td>HEO – Officer in Charge of Clinic</td>
<td>24-Jan-06</td>
</tr>
<tr>
<td>Dr Goa Tau</td>
<td>Chief Physician</td>
<td>24-Jan-06</td>
</tr>
<tr>
<td>Mr Joseph Bunefa</td>
<td>Manager IT Service</td>
<td>24-Jan-06</td>
</tr>
<tr>
<td>Dr Pariwe</td>
<td>Medical Registrar</td>
<td>24-Jan-06</td>
</tr>
<tr>
<td>Dr Agatha Lloyd</td>
<td>HIV Specialist</td>
<td>24-Jan-06</td>
</tr>
<tr>
<td>Mr Mou Basa</td>
<td>Laboratory Scientist</td>
<td>25-Jan-06</td>
</tr>
</tbody>
</table>

Staffing will need to be reviewed in light of:

- the 12 months study leave for Sr Opina, who will require urgent replacement with a senior experienced Nurse (such as Sr Lydia Seta who has recently located to POM from Mt Hagen where she was coordinator and OIC of the Tininga Clinic). A period of orientation prior to Sr Opina’s departure would be essential
- the requirement to respond to the increasing HIV patient numbers and to nurture the personnel for the PNG HIV Treatment network; ie 2 Nurses; 2 HEOs, 2 CHW, 2 Speciality Registrars and one extra social worker. There is a requirement to further develop specialist venereology in PNG.

2.5 Patient Clinical Pathway

A Referral Pathway has been defined, although the ET did not see the document. Individuals attend for assessment and management of STIs and of HIV. Patients are referred from various sources (see below) or attend as a result of word of mouth.
### Table 5: Sources of Referral Pathways

<table>
<thead>
<tr>
<th>Referral Source</th>
<th>All</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital upon discharge</td>
<td>35.17%</td>
<td>34.80%</td>
<td>35.56%</td>
</tr>
<tr>
<td>NGO community centre</td>
<td>10.31%</td>
<td>14.65%</td>
<td>5.93%</td>
</tr>
<tr>
<td>Other source</td>
<td>11.97%</td>
<td>10.99%</td>
<td>12.96%</td>
</tr>
<tr>
<td>Private doctor</td>
<td>4.60%</td>
<td>4.03%</td>
<td>5.19%</td>
</tr>
<tr>
<td>Self referred</td>
<td>20.07%</td>
<td>16.12%</td>
<td>24.07%</td>
</tr>
<tr>
<td>Social work department</td>
<td>9.39%</td>
<td>13.19%</td>
<td>5.56%</td>
</tr>
<tr>
<td>STD Clinic</td>
<td>8.47%</td>
<td>6.23%</td>
<td>10.74%</td>
</tr>
</tbody>
</table>

Individuals are registered and attend for an appointment in the clinics held Tuesday, Wednesday and Friday for HIV and Monday and Thursday (part days) for STI. At the time of the ET’s visit, 20 to 30 individuals undertook appointments to have HIV assessments and 60 to 80 for STI per clinic. Another 3 to 4 individuals seeking HIV care and 20 individuals with STI issues are asked to return when the clinic is not full, but it is estimated that less than half actually return.

HIV infected individuals are assessed against the National Guidelines for OI management and prophylaxis, ARV access and the best methods of adherence support. It takes approximately 2 to 3 weeks before patients with indications for HIV treatment commence ART. Education and adherence support precede ART management.

The HIV Team members generally consult with each other when deciding to initiate ART, OI prophylaxis and treatment of intercurrent health issues including anaemia, candidiasis and malnutrition.

After initiation of ART the routine follow-up is:

- Week one
- Week three
- Week four
- Week eight
- Thereafter two to three monthly.

Referral to community agencies occurs infrequently but more that 40 operate in Port Moresby. The following are closely affiliated with the Heduru Clinic and are thought to be capable of management of patients stabilised on ART after participating in IMAI training:

- StopAIDS
- Fr Jude, Simon of Cyrene Centre
- Hope World Wide (9 mile Clinic)
- St Mary’s Hospital, Boroko
• St Therese’s Care Program, Hoholoa
Relationships with other parts of the hospital dealing with HIV/AIDS and with community networks were originally supported by the ART Care Committee. This was most active prior to the commencement of ART and included an Obstetrician and Gynaecologist, NGOs and the Heduru Team.

In addition to improving referral from ANC and the TB DOTs Program within the hospital there is a need to reinvigorate the referral pathway to and from the community agencies.

2.6 Data systems
Patients hold their own medical record forming the basis for the abstraction of data for entry into the Access database system. Confidentiality is maintained by locking paper based records away, encrypting the electronic data systems daily and only entrusting transport of records to reliable staff or relying on patients to look after own records.

The entry form for the electronic database is developed in EpiInfo and staff reported that the presence of an IT support expert has been invaluable in the continuing developments of the system. Data entry is undertaken by the Nurse Coordinator of the Heduru Clinic who does this at the end of the working day and over weekends as required.

When registered, patients are given a clinic ID number (which is a text field). When ARV commences each individual has a record number. The “unique key” in the two tables which records these are NOT identical for each individual (the clinic ID number in HIV Registration and that in the ARV start table differ). There is also a problem as the unique key in the Subvisit table is linked to the other unique keys. 1540 visits have occurred and 1,540 new unique keys have been generated. In fact it is the Fkey in the Subvisit table which is identical to the unique identifiers in the other tables (registration and ARV start).

In order to find unique individuals the link should be between HIV Registration. Clinic ID and ARV Start Record No. If the subvisits are to be linked the join is to F-key. SubVisits from HIV Registration Unique Key as shown below in Table 6:
Table 6: F-Key Subvisits from HIV Registration Unique Key

2.7 Clinic Facilities
The Heduru Clinic is located at Port Moresby General Hospital (PMGH) in what was originally designed as a purpose built STI Clinic. Currently there are no identifying signs to assist individuals find the clinic.

Given the demand for HIV and ARV service, the number of consulting rooms is inadequate with the meeting room used as a clinical counselling space. The inclusion of lockable cupboards in the office space has temporarily solved the Pharmacy storage issue. There is no external phone line, email facilities or VHF radio contact. The IT service which supports sites for ARV roll out considers a network should be established to enable reporting, updating and training across the network.

There is no space for Day Treatment for OI to relieve pressure on inpatient beds and there is no appropriate waiting area for individuals with HIV/TB co-infection to be a safe distance from HIV infected patients without TB disease.

There is limited space for teaching and the ability to use counsellors from Non Government Organisations (NGOs) and Faith Based Organisations (FBO) to assist in sharing the workload and to improve the two-way referral.

There no capacity to manage the large numbers of individuals seeking STI management. Plans have been developed for an extension adjacent to the clinic with more consulting rooms, training facilities, STI examination areas and a second floor to support the office and infrastructure needs of the HIV Treatment Centre Network. An adjacent empty building has been renovated to respond to an outbreak of SARS epidemic. The Secretary for Health has indicated that this “SARS” ward must be kept for potential isolation needs and will not be available for any other purpose.
2.8 Pharmacy

The Nurse Coordinator at Heduru provides the individual patients with regular ARV and other OI medication which is stored in the clinic itself. The reporting mechanism is based on a daily tally of available, incoming and dispensed stock. Monthly cumulative reports are kept electronically. Three months of stock is kept and the rotation of ARVs prevents stock from expiry.

There is need to have a logistics office to support the HIV team at Heduru and in other sites to deal with ordering, recording and reporting. This will be of increasing importance as the rollout continues and ARVs are made available closer to patient’s residence.

2.9 HIV Patient Population at Heduru

Demographics

There have been 543 individuals with HIV registered at the Heduru Clinic between Feb 15, 2000 and Jan 24, 2006. Of these, 273 are women and 270 men. Almost 50% have commenced ARVs.
New Attendees are increasing gradually as is shown by the following graph of men and women attending for the first time over the years 2003 to 2005.

**Table 8: Increase in first time attendees**

![Graph showing increase in first time attendees]

NB: The 2006 figures include only the first couple of months of 2006

These individuals come largely via word of mouth networks. There has been little profile raising and no signs or advertisements. The Patients’ Representative Group was concerned about the maintenance of confidentiality.

**Table 9: Number of individuals newly registered at Heduru and proportion starting ARVs**

![Graph showing number of individuals and proportion starting ARVs]
Fewer registrations were recorded towards the end of 2005. This has not yet affected the number of individuals commencing ARVs.

Table 10: Number of patient registrations and patients commencing ART

![Graph showing number of patient registrations and patients commencing ART]
Morata, Hohola, Gerehu and Nine Mile are the most frequent addresses of patients.

2.10 Referral
The commonest origin sites of referral for those individuals accessing ARVs who are referred by NGO community centres are shown in the following table:

**Table 12: Sources of referrals to Hederu Clinic**

<table>
<thead>
<tr>
<th>Referred From</th>
<th>Total</th>
<th>No ARV</th>
<th>ARVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital upon discharge</td>
<td>191</td>
<td>104</td>
<td>87</td>
</tr>
<tr>
<td>NGO community centre</td>
<td>56</td>
<td>20</td>
<td>36</td>
</tr>
<tr>
<td>Other source*</td>
<td>65</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>Private doctor</td>
<td>25</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Self referred</td>
<td>109</td>
<td>59</td>
<td>50</td>
</tr>
<tr>
<td>Social work department</td>
<td>51</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>STI Clinic</td>
<td>46</td>
<td>18</td>
<td>28</td>
</tr>
</tbody>
</table>

*AOPD; AE; TBDOTs

Few referrals come from antenatal clinics or the TB Program and limited transport is thought to be a barrier to increased patient attendance. Poverty and illness increase the level of difficulties for a proportion of patients.

### 2.11 Occupation, Education, Marital Status and HIV Exposure Category

The most common occupation of those with HIV exposure through heterosexual contact was given as housewife, usually claiming contact only with a marriage partner.

**Table 13: Occupation of Hederu clinic patients**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Total</th>
<th>No ARV</th>
<th>ARVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>26</td>
<td></td>
<td>9.35%</td>
</tr>
<tr>
<td>Clerical Staff</td>
<td>4</td>
<td></td>
<td>1.44%</td>
</tr>
<tr>
<td>Disciplinary Forces</td>
<td>18</td>
<td></td>
<td>6.37%</td>
</tr>
<tr>
<td>Drivers, trucks/taxi/pmv. etc</td>
<td>7</td>
<td></td>
<td>2.42%</td>
</tr>
<tr>
<td>Housewife</td>
<td>73</td>
<td></td>
<td>26.6%</td>
</tr>
<tr>
<td>Maid</td>
<td>7</td>
<td></td>
<td>2.42%</td>
</tr>
<tr>
<td>Others</td>
<td>28</td>
<td></td>
<td>10.07%</td>
</tr>
<tr>
<td>Politicians</td>
<td>2</td>
<td></td>
<td>0.72%</td>
</tr>
<tr>
<td>Professional blue collars</td>
<td>13</td>
<td></td>
<td>4.68%</td>
</tr>
<tr>
<td>Professional white collars</td>
<td>13</td>
<td></td>
<td>4.68%</td>
</tr>
<tr>
<td>Self employed</td>
<td>8</td>
<td></td>
<td>2.87%</td>
</tr>
<tr>
<td>Students</td>
<td>1</td>
<td></td>
<td>0.36%</td>
</tr>
<tr>
<td>Subsistence farmers</td>
<td>2</td>
<td></td>
<td>0.72%</td>
</tr>
<tr>
<td>Teacher</td>
<td>10</td>
<td></td>
<td>3.60%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>66</td>
<td></td>
<td>23.70%</td>
</tr>
<tr>
<td>Total</td>
<td>278</td>
<td></td>
<td>100.00%</td>
</tr>
</tbody>
</table>


Table 14: Type of HIV exposure reported by patients, Hederu Clinic

<table>
<thead>
<tr>
<th>Exposure Category</th>
<th>Individuals on ARV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterosexual</td>
<td>240</td>
</tr>
<tr>
<td>CSW Sex</td>
<td>10</td>
</tr>
<tr>
<td>Homosexual</td>
<td>1</td>
</tr>
<tr>
<td>Blood Tx</td>
<td>2</td>
</tr>
<tr>
<td>HIV+ partner</td>
<td>4</td>
</tr>
<tr>
<td>Unknown</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 15: Marital status of patients, Hederu Clinic

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>2</td>
</tr>
<tr>
<td>Divorced</td>
<td>29</td>
</tr>
<tr>
<td>Now married</td>
<td>142</td>
</tr>
<tr>
<td>Separated</td>
<td>24</td>
</tr>
<tr>
<td>Single</td>
<td>41</td>
</tr>
<tr>
<td>Widowed</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 16: Educational status of patients, Hederu Clinic

<table>
<thead>
<tr>
<th>Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>37</td>
</tr>
<tr>
<td>College</td>
<td>23</td>
</tr>
<tr>
<td>High school</td>
<td>40</td>
</tr>
<tr>
<td>None</td>
<td>39</td>
</tr>
<tr>
<td>Primary school</td>
<td>82</td>
</tr>
<tr>
<td>Secondary school</td>
<td>35</td>
</tr>
<tr>
<td>University</td>
<td>15</td>
</tr>
<tr>
<td>Vocational School</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>278</td>
</tr>
</tbody>
</table>
2.12 Clinical Status
The WHO Clinical Category at commencement of ARV is mostly advanced disease (three and four). This did not vary by year.

Table 17: Clinical status of Hederu Clinic patients at onset of treatment

<table>
<thead>
<tr>
<th>WHO Stage at ARV commencement</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>4.39</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>5.49</td>
</tr>
<tr>
<td>3</td>
<td>165</td>
<td>60.44</td>
</tr>
<tr>
<td>4</td>
<td>81</td>
<td>29.68</td>
</tr>
</tbody>
</table>

Table 18: Clinical status of Hederu Clinic patients by year of onset of treatment

<table>
<thead>
<tr>
<th>WHO Clinical Stage</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>All Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>2.74</td>
<td>10</td>
<td>5.15</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>2.74</td>
<td>13</td>
<td>6.70</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
<td>65.75</td>
<td>112</td>
<td>57.73</td>
</tr>
<tr>
<td>4</td>
<td>21</td>
<td>28.77</td>
<td>59</td>
<td>30.41</td>
</tr>
</tbody>
</table>

The major clinical illnesses among patients commencing ARVs were: candidiasis in 35 (12.6%); Oral Hairy Leukoplakia in 40 individuals (14%); HIV Wasting in 38 (13.7%). PCP was recorded in 30 (11%) and extra pulmonary TB in 13 (4.7%).

Table 19: WHO performance status of Hederu clinic patients initiating treatment

<table>
<thead>
<tr>
<th>WHO Performance</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Asymptomatic</td>
<td>6</td>
<td>2.16</td>
</tr>
<tr>
<td>2. Symptomatic, normal activity</td>
<td>144</td>
<td>51.80%</td>
</tr>
<tr>
<td>3. Bedridden &lt;50% of day</td>
<td>66</td>
<td>23.74%</td>
</tr>
<tr>
<td>4. Bedridden &gt;50% of day</td>
<td>37</td>
<td>13.31%</td>
</tr>
</tbody>
</table>

Three percent of individuals had serological evidence of syphilis and 60% had recorded Hepatitis BsAG. Five women were pregnant at presentation for ART.
2.13 ARV Therapy

Types of support available for these ART patients are shown in the next table, most commonly family members.

Table 20: Type of home support available to Hederu Clinic patients

<table>
<thead>
<tr>
<th>Type of Support</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>2</td>
</tr>
<tr>
<td>Community</td>
<td>6</td>
</tr>
<tr>
<td>Family</td>
<td>189</td>
</tr>
<tr>
<td>FBO</td>
<td>3</td>
</tr>
<tr>
<td>NGO</td>
<td>30</td>
</tr>
<tr>
<td>Self</td>
<td>49</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>279</td>
</tr>
</tbody>
</table>

**Table 21: Criteria for commencing ARV, Hederu Clinic**

<table>
<thead>
<tr>
<th>Criteria For ARVs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>124</td>
</tr>
<tr>
<td>Low TLC &lt; 1200</td>
<td>22</td>
</tr>
<tr>
<td>Low TLC &lt; 1200 WHO 3</td>
<td>62</td>
</tr>
<tr>
<td>Low TLC &lt; 1200 WHO 4</td>
<td>18</td>
</tr>
<tr>
<td>WHO stage 3</td>
<td>31</td>
</tr>
<tr>
<td>WHO Stage 4</td>
<td>21</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>278</td>
</tr>
</tbody>
</table>

The initial choice of ARVs was Zidovudine, lamivudine and nevirapine in 65% of individuals. The remainder had a stavudine based regimen.

Table 22: Initial ARV regimen, Hederu Clinic patients

<table>
<thead>
<tr>
<th>Initial ARVs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>4</td>
</tr>
<tr>
<td>AZT+3TC+EFV</td>
<td>24</td>
</tr>
<tr>
<td>AZT+3TC+NVP</td>
<td>156</td>
</tr>
<tr>
<td>D4T(30)+3TC+EFV</td>
<td>26</td>
</tr>
<tr>
<td>D4T(30)+3TC+NVP</td>
<td>51</td>
</tr>
<tr>
<td>D4T(40)+3TC/EFV</td>
<td>3</td>
</tr>
<tr>
<td>D4T(40)+3TC/NVP</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>277</td>
</tr>
</tbody>
</table>
Table 23: Number Pills per Day Heduru Clinic Patients on ARVs

<table>
<thead>
<tr>
<th>Number pills per Day</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Pill counts indicated a high level of adherence.

2.14 Outcome

At the most recent assessment 47% of patients would now have WHO Stage 1 or 2 disease indicating satisfactory response to treatment.

Table 24: WHO Stage of HIV-related illness at most recent assessment, Heduru Clinic

<table>
<thead>
<tr>
<th>Most Severe WHO Stage and Associated Condition</th>
<th>All</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHO Stage 1</td>
<td>40%</td>
<td>110</td>
<td>109</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>16%</td>
<td>107</td>
<td>106</td>
</tr>
<tr>
<td>PGL</td>
<td>3%</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>WHO Stage 2</td>
<td>7%</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Weight loss &lt; 10%</td>
<td>5%</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Minor mucocutaneous manifestations</td>
<td>6%</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Herpes Zoster</td>
<td>2%</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Recurrent URTI</td>
<td>7%</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>WHO Stage 3</td>
<td>39%</td>
<td>104</td>
<td>106</td>
</tr>
<tr>
<td>Weight Loss &gt;10%</td>
<td>16%</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Chronic diarrhoea</td>
<td>7%</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Prolongued fever</td>
<td>1%</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Oral Candidiasis</td>
<td>28%</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>OHL</td>
<td>10%</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Pul TB in last year</td>
<td>30%</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>Severe bacterial infections</td>
<td>12%</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>WHO Stage 4</td>
<td>14%</td>
<td>39</td>
<td>37</td>
</tr>
<tr>
<td>HIV Wasting</td>
<td>8%</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>PCP</td>
<td>16%</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Cerebral Toxoplasmosis</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cryptococcus, nonpulmonary</td>
<td>2%</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>CMV</td>
<td>1%</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HSV</td>
<td>4%</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>PML</td>
<td>1%</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Extrapulmonary TB</td>
<td>7%</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>KS</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Furthermore the WHO performance scale has improved in all patients groups, with 26% remaining in Stages 3 and 4.

**Table 25: WHO performance scale at most recent assessment, Hederu Clinic**

<table>
<thead>
<tr>
<th>WHO Performance</th>
<th>All</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44.01%</td>
<td>44.32%</td>
<td>43.70%</td>
</tr>
<tr>
<td>2</td>
<td>29.83%</td>
<td>29.67%</td>
<td>30.00%</td>
</tr>
<tr>
<td>3</td>
<td>17.31%</td>
<td>18.68%</td>
<td>15.93%</td>
</tr>
<tr>
<td>4</td>
<td>8.66%</td>
<td>7.33%</td>
<td>10.00%</td>
</tr>
<tr>
<td>8</td>
<td>0.18%</td>
<td>0.37%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Overall 34% have been lost to follow-up and 21% died.

**Table 26: ARV treatment outcomes, Hederu Clinic patients**

<table>
<thead>
<tr>
<th>Overdue for followup</th>
<th>All</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Died</td>
<td>20.99%</td>
<td>23.81%</td>
<td>18.15%</td>
</tr>
<tr>
<td>Alive</td>
<td>50.09%</td>
<td>52.01%</td>
<td>48.15%</td>
</tr>
<tr>
<td>Unknown</td>
<td>28.91%</td>
<td>24.18%</td>
<td>33.70%</td>
</tr>
</tbody>
</table>

**Table 27: Causes of death in deceased ART patients, Hederu Clinic**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaemia</td>
<td>8</td>
<td>13.56%</td>
</tr>
<tr>
<td>TB</td>
<td>10</td>
<td>16.95%</td>
</tr>
<tr>
<td>Cardio Respiratory Arrest</td>
<td>6</td>
<td>10.17%</td>
</tr>
<tr>
<td>PCP</td>
<td>7</td>
<td>11.86%</td>
</tr>
<tr>
<td>Gastro-intestinal disease</td>
<td>5</td>
<td>8.47%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>5</td>
<td>8.47%</td>
</tr>
<tr>
<td>Meningitis</td>
<td>1</td>
<td>1.69%</td>
</tr>
<tr>
<td>Unknown</td>
<td>15</td>
<td>25.42%</td>
</tr>
<tr>
<td>Kaposi's Sarcoma</td>
<td>1</td>
<td>1.69%</td>
</tr>
<tr>
<td>Brain SOL</td>
<td>1</td>
<td>1.69%</td>
</tr>
<tr>
<td>Deaths</td>
<td>59</td>
<td></td>
</tr>
</tbody>
</table>
Table 28: Patients on ARV surviving compared to those not on ARV.

Survival analysis confirms the substantial early and continuing improvement among those patients who received ARVs compared to the population who did not.

The mean weight at commencement of ART was 58 kg, the standard deviation (SD) 17 kg (range of 29 to 100 kg) compared to estimated base weight average of 74 kg SD 18 kg (range 40 to 120 kg). There was a significant median 8 kg weight gain over follow-up.

2.15 Conclusions

The Heduru Clinic has provided substantial care for more than 500 individuals with HIV and for thousands of STI clients. 270 of these have received ARVs in a three year period.

The HIV Team at Heduru has laudable skills having established a well functioning ARV service despite substantial logistical difficulties. There has been little acknowledgement of the level of skills achieved and the responsibilities undertaken by the HEO in charge and the Nurse Coordinator. Neither has been upgraded in either status or salary in recognition of their role and ongoing responsibilities for ART rollout in PNG. The staff are employed by the PMGH, not by NDoH and were initially recruited as (and are still classified as) STI clinic staff. It is felt that the extra roles of involvement in the ARV service should qualify the staff to a higher grade than they are currently employed on. It should be recognised that there have been numerous requests by staff for promotion but with no result to date. There are anecdotal concerns that the service could be interrupted if staff needs are not met.
It is noted with concern that despite the availability of Sr Lydia Seta, the previous OIC of the Tininga Clinic in Mt Hagen, PMGH have stated that they are unable to employ her at the clinic as the position is still occupied by the incumbent nurse who is on study leave during 2006.

The current facility, provided by AusAID under the Foundation Project, is a purpose designed STI Clinic facility and is currently the centre for HIV and ARV care. These functions have overtaken the clinic’s original purpose. It is of concern that the clinic is now so busy with HIV and ARV care that the STI service is now only available on two “half days” a week.

There is an opportunity for the Heduru Clinic to join with the developing network of HIV Care and Treatment Centres (Lae, Goroka, Mt Hagen and elsewhere) to establish a collegiate group linked to the NCSH and contribute to the management of STIs, HIV and TB. This would enable:

- Sharing of expertise and mentoring of new HIV Teams;
- Development of pathways and treatment algorithms best suited to managing PLWHA in PNG;
- Development of a linked network for reporting, audit and training in PNG;
- Establishment of a clinical research network to address important questions in prevention, treatment and care of HIV/AIDS and associated conditions in PNG.

2.16 Recommendations

1. Increase staff for Heduru, in particular identifying a locum Nurse Coordinator, nurses, HEOs and medical input. Encourage Staff development. It is acknowledged that PMGH has no capacity to achieve this increase in staff in the immediate period, given staff ceilings and shortages in all clinical areas, however the PMGH Executive is already planning to increase the staffing numbers for the clinic in the next human resource restructuring process.

2. Train nurses and other NGO healthcare workers in ART to enable patient referral. This will increase patient access to Heduru and ease the burden of travel on patients (potentially reducing loss to follow-up). *(Note, June 06: The NDoH has decided that this training will be packaged in the IMAI format and roll out of this training has begun).*

3. Identify a temporary location to increase capacity of Heduru to meet demands for patient consultations, until a permanent site is established. As of June 2006, this has not been achieved – all possible alternatives having been explored with the PMGH and NDoH Executive. PMGH is moving forward now with plans for the major extension to the current facility to cater for the needs for increased space. This extension would also be integral to preparations for the advent of the NCSH. Scope of works has been completed by the hospital, which is now in the process of seeking donor funding for the project.
1. Review data system and data tables to account for follow-up of HIV infected individuals not currently on ARV. Re-examine the unique identifier fields. *(Note, June 06: This process is well under way).*

2. Consider the development of a networked protected series of linked databases across the HIV Treatment network. *(Note, June 06: A uniform data base has been set up at the Heduru Clinic and at other clinics involved in the ARV rollout. Investigations are underway to link these data bases although this is proving difficult given the lack of direct phone lines at any of the clinics involved).*

3. Formally approach staff at Heduru to act as mentors for those in other centres commencing ART rollout. It is to be noted that the Heduru staff have already been useful in this capacity but the ongoing issue of the lack of increase in status and remuneration for clinic staff since the beginning of the ARV service remains an issue.

4. Reinstitute the Heduru ART Taskforce and HIV Care Committee to develop Clinical Pathway and networks to enable the referral of stable individuals with HIV back to the community. A previous input into this area of community referrals by Dr Nopporn (WHO) was helpful but needs follow up. The Heduru ART Taskforce is under the leadership of the Chief Physician and is limited by the lack of time input made available.

5. Patients lost to follow-up be sought and that pending the establishment of the network, mechanisms be developed to enable tracing. Possible options include:
   - A clinic vehicle with budget for driver, fuel, maintenance, registration, insurance (given previous experience, the control and sustainability of vehicles is a very real issue. Previous experience has also shown that in the area of STIs, including HIV, active “tracing” of clients has proven to be a vexatious issue, often resulting in community labelling, together with angst and resentment by clients and family.)
   - Collaboration with NGOs and FBOs to refer and follow co-managed individuals lost to the system. This option is certainly the preferred one and seems to work where clients are co-managed. FBOs and CBOs certainly have better chances of following up “lost” clients, than do health care workers.
   - Consider supporting the transport costs of patients which are seen by some as barriers to attending the Heduru clinic. (This option is wrought with difficulties in sustainability and also in setting precedents. It is not feasible to provide transport funds to clients on ARVs and not similarly support other patients who need frequent follow up and care such as those who have TB, malignancies, asthma etc.)
3 Lae, Morobe Province
Population 54,000, visited 9-10 January 2006,

3.1 HIV and AIDS Team
Sr. Julie Vit, Nurse Coordinator HIV and AIDS Clinic
Dr Bairi Feiling, Physician in Charge of ANGAU, Chair of ARV Taskforce
Dr Moki, Registrar in HIV/AIDS, DOT, STI and ANGAU Hospital and Chair of Morobi PAC
Ms Susan Youde, Clerical support, volunteer
Counsellors (including Social Worker)

Other ANGAU staff involved in the team activities are:
Dr Fred Kambual, Obstetrician
Dr Rongap Alphonse Rongap, Paediatrician
NGO representatives and counsellors

3.2 Background
ANGAU (Australian and New Guinea Administrative Unit) Memorial Hospital is the Provincial Hospital and provides a full range of services including emergency, surgical, obstetrics, paediatrics, medicine including TB DOTS and STI services. HIV clients are estimated to utilise between 20% and 33% of the 72 beds.

Following commencement of VCT services in 2001, ANGAU was designated as a second pilot treatment centre for ART in April 2005, under the management of then Physician in Chief Dr Paison Dakulala. ANGAU works with the following partners:

- Lutheran services
- Salvation Army
- Seventh Day Adventists (ADRA)
- Catholic services
- Anglican Services
- Urban Health Clinics (8)
- Unitec University Clinic

3.3 Current ART services
Patents attending the ANGAU HIV and AIDS Clinic are referred by NGOs, inpatient and other outpatient services and occasionally from private medical practitioners. Increasingly, as awareness of the clinic spreads, patients are self-referred.
<table>
<thead>
<tr>
<th>Type*</th>
<th>Located in HIV/AIDS Clinic</th>
<th>Located Elsewhere*</th>
<th>Currently Providing Services</th>
<th>Estimated Number of Current Patients</th>
<th>Number Patients per Month</th>
<th>Location to Which Patients Referred for Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCT</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>100</td>
<td>80</td>
<td>NGO</td>
</tr>
<tr>
<td>PMTCT</td>
<td>Yes</td>
<td>Urban, IP</td>
<td>No</td>
<td>UK</td>
<td>UK</td>
<td>UK</td>
</tr>
<tr>
<td>ART</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>19</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Syphilis Screening Family Planning</td>
<td>Yes</td>
<td>SHC</td>
<td>Yes</td>
<td>NS</td>
<td>UK</td>
<td>SHC</td>
</tr>
<tr>
<td>STI</td>
<td>Yes</td>
<td>Urban</td>
<td>Yes</td>
<td>UK</td>
<td>UK</td>
<td>Urban</td>
</tr>
<tr>
<td>OI Management</td>
<td>No</td>
<td>SHC</td>
<td>Yes</td>
<td>UK</td>
<td>UK</td>
<td>NS</td>
</tr>
<tr>
<td>OI Management</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>UK</td>
<td>UK</td>
<td>IP</td>
</tr>
<tr>
<td>TB Management</td>
<td>No</td>
<td>DOT, TBC</td>
<td>Yes</td>
<td>1000</td>
<td>90</td>
<td>TBC</td>
</tr>
<tr>
<td>PEP</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>0</td>
<td>3 known NSI in 2005</td>
<td>TBC</td>
</tr>
</tbody>
</table>

OI* Opportunistic Infection; PEP* Post Exposure Prophylaxis; IP* Inpatient; Urban* Urban Clinics in Lae; SHC* Sexual Health Clinic; DOT* Directly Observed Treatment Services, TBC* TB Clinic ANGAU; NGO* Non-government partner services; UK* Informants unable to estimate; NS* not specified in questionnaire; NSI* Needle Stick/Sharps Injury from HIV+

The clinic uses WHO guidelines to assess patients’ eligibility to access ART services with a local requirement of permanent housing. It is estimated this requirement excludes about 5% of otherwise eligible individuals. The Salvation Army and the hospital provide some emergency housing.

In 2005, 26 patients received ART, with 19 still on treatment at the time of the ET’s visit. Of these, two did not attend their last follow-up. Seven patients died, possibly due to opportunistic infections, several months into treatment. Two women were managed on ARVs for PMTCT; both received standard HAART. Given the availability of ARV products, the slow uptake of ART by patients was attributed to a lack of human resources and poor social support.

All ART patients are receiving first line therapy (PNG Guidelines). Clinicians estimated approximately half were receiving zidovudine/ lamivudine and nevirapine and the other half stavudine/ lamivudine and nevirapine. A number of patients had switched therapy mostly a single agent change from zidovudine to stavudine because of anaemia.
In the case of patients with TB, the TB is treated for two months with standard agents before ART is commenced using efavirenz. PMTCT is based on one of the three options in the PNG guidelines (single dose nevirapine monotherapy, short course zidovudine/lamivudine and single dose nevirapine or commencement of HAART).

No Post Exposure Prophylaxis (PEP) was available at ANGAU. There were three reported sharps injuries. However, staff indicated a reluctance to report incidence and participate in PEP as it involved HIV testing which could then be reported to management.

Adherence support is a major focus of the HIV and AIDS Clinic. Methodologies include pill counts, patient calendars, and patient education. At ANGAU the registrar undertakes pill counts. No data is available on the outcomes of these activities.

Future ART service expansion plans for the ANGAU HIV and AIDS Clinic include service integration with NGOs to provide a counsellor one day a week.

The clinic is located within the ANGAU Hospital along an open access corridor, it is accessible to inpatient services, pharmacy and the laboratory. It comprises two rooms with office equipment, storage space, a bed, venesection equipment, patient shower facility, a filing cabinet to lock ART stores, reception, and space for locating a computer. There is a reliable electricity and water supply and internal telephone line.

There is no external phone, fax facility or email. Ventilation is inadequate especially in waiting areas where patients with pulmonary TB wait with other patients. There is limited access to transportation for ill patients. Stationary availability is problematic.

Requests for improved secure storage facilities, additional patient chairs, and access to refreshments for patients have been made to hospital management.
There remains some ambiguity concerning team leadership. The Physician in Charge has overall responsibility for HIV and AIDS care but the Nurse Coordinator convenes bi-weekly meetings, where possible, with NGOs. Client referral and management issues, service delivery (e.g. NGO pre-test protocols), general communication and service and training issues are considered. The ARV Taskforce meets quarterly and deals with cross-sector areas of interest and has undertaken a program of HIV and AIDS training.

Medical records are stored in the clinic consulting rooms using the Heduru Clinic format. Records and requests for HIV testing are coded. However, concerns were raised regarding confidentiality when working with NGO partners, and the continuity of care when patients utilised other services within the hospital. The procurement of a computer (provided by NDoH) will enable the Nurse Coordinator to record and track patient treatment and response. This is in addition to the NHASP provided computer in the STI Clinic.

Training in this EpiInfo-based program has already been undertaken by the Team members during the IMAI course.

The Evaluation Team was unable to meet with Hospital management. Senior clinicians indicated this was indicative of the general lack of support to the HIV and AIDS Clinic which had suffered delays in critical upgrades such as renovation of space and provision of security measures for windows (necessary for the provision of a computer).

The Physician in Charge indicated there was limited auditing capacity. The installation of a clinic computer, commencement of new physician staff and recording and reporting of statistics are necessary.

Staff were concerned about laboratory backup as there had been incorrect negative HIV antibody results (clinical suspicion in symptomatic patient who on repeat test was found to be HIV antibody positive) and lack of opportunistic infection diagnostic support.

3.4 Staff

Current staff:

- one nursing officer,
- one volunteer clerical officer,
- one part-time registrar, and
- two counsellors (social worker and chaplain)
- periodic input is provided from a physician, paediatrician and obstetrician

Clinic staff indicated they required:

- an additional physician,
- a dedicated time allowance from the registrar,
- at least two additional nursing officers and
- one or two Health Extension Officers (HEO)
two lab technicians
one pharmacy technician

3.5 Infection Control and Standard Safety Precautions
Limited funds, and procurement difficulties, hindered stock replacement especially for fuel, disposable syringes, gowns, gloves, masks and combine gauze. Staff indicated they did not always adhere to health and safety guidelines in the use of protective clothing.

3.6 Training, audit and maintenance of professional standards
ANGAU staff have undertaken basic training in HIV, covering infection and transmission, some counselling information and service options. Three doctors and the Nurse Coordinator attended IMAI training in November 2005. The Medical Registrars undertook an in-service program in ARV prescribing in November 2004. Members of the ART Taskforce have been provided with some lectures. At the time of the visit, there was no training program for 2006.

The NDoH is responsible for Accreditation to prescribe ART. Accredited practitioners are recorded on the NDoH approved list and must have attended a formal ARV Prescribers’ Program either in PNG or Australia (ASHM). It is noted that due to the difference in availability of the range of ARVs and that all prescribers must follow the PNG National Guidelines, training in PNG is preferable. Training for the rollout of the ARV service in PNG is provided through the IMAI format. The participants in the IMAI are yet to receive notification of accreditation which will include Nurse initiation and ongoing provision and medical practitioner prescribing rights.

The Pharmacy maintains a list of prescribers at Angau, which currently includes Dr Feiling and Dr Sau from RAMU Sugar.

3.7 Pharmacy
The Pharmacy is managed by a Pharmacy Technician and support staff (two technicians and one storeman), working 0800 to 1600 and on call after hours. The facility is clean, air-conditioned, and the products kept in ordered labelled shelving with a First Expiry/First Out management system. The area is secure (key with OIC) with dangerous drugs stored in a separate locked space with double counting and weekly auditing systems in place. Packaging is ordered and inventory of stock is meticulously kept in a series of paper based files.

One hundred scripts with two hundred items are dispensed each day. A computer is used to record activity against individual patients on an Excel spreadsheet designed and maintained by a staff member. The pharmacy supplies the wards with medications on individual patient requests and is responsible for ordering and supply of gloves, masks and protective equipment.

Major agents used in high frequency (chloroquine, amoxyl, aspirin) are pre-packaged but most items are dispensed into clear plastic bags at time of request. Standard patient name,
agent name, date of dispensing, dosing instruction on printed or hand written labels are attached and patient verbal instruction plus drawings are provided as needed.

Most stock is used before expiring and there is little reported theft. Generally, the OIC is responsible for recording, ordering and reporting. Records are paper based using a system introduced by a UK pharmacist to calculate requirements and order minimum stock from the Area Medical Stores (AMS) as required.

However, stock shortages from AMS continue to be a frequent problem. At the time of the visit there was a two page backlog of line listed items. When AMS is out of stock, the HIV and AIDS Clinic may procure directly from various sources. Receipt of orders is a minimum of two weeks, arriving by airfreight or ship.

ARVs are provided directly from NDoH and stored in the pharmacy. These are provided on an imprest order to the Nurse Coordinator – a system outside the usual pharmacy practice. No record of utilisation is received by Pharmacy, by code or name from the clinic.

An audit of the storage shelves and responses to question revealed the following availability of ARVs and other agents as of 10th January 2006.

### Table 30: Medications available in ANGAU Hospital Pharmacy, Lae

<table>
<thead>
<tr>
<th>Medications Availability at ANGAU Hospital, Lae</th>
<th>At Facility</th>
<th>Stock available at visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multivitamins</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cotrimoxazole tabs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cotrimoxazole syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine tabs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zidovudine syrup</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nevirapine tabs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nevirapine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine/Iamivudine/nevirapine combined</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Stavudine40/Iamivudine/nevirapine combined</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Stavudine30/Iamivudine/nevirapine combined</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Stavudine30/Iamivudine/nevirapine combined</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The Pharmacy OIC identified the need to improve ART training, recording of patient allergies and give pharmacy input to the HIV and AIDS Clinic ART program. Outreach nurses may provide a reliable access for patients initially commencing ARV.

### 3.8 Laboratory Support

ANGAU Hospital is a designated HIV confirmatory testing site for the Momase Region, which includes Morobe Province. Testing involves two rapid tests: Serodia followed by Determine or Immunocomb. The first test is repeated on initial samples. If repeat is reactive, a second test is performed on the two samples. Four additional confirmatory tests are conducted: the Serodia screen is repeated and in the confirmatory panel
(Capillis, Immunocomb and Determine). On occasions Serodia is again repeated. About 50 tests are performed per month, approximately half for PMTCT.

Table 31: Laboratory investigations available at ANGAU Hospital

<table>
<thead>
<tr>
<th>Investigation</th>
<th>At Facility</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>Yes</td>
<td>Coulter</td>
</tr>
<tr>
<td>WCC total/lymphocyte</td>
<td>Yes</td>
<td>Manuel</td>
</tr>
<tr>
<td>CD4</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Malaria Smears</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Blood Group RhD</td>
<td>Yes</td>
<td>Slide Agglutinin</td>
</tr>
<tr>
<td>HIV antibody initial screening</td>
<td>Yes</td>
<td>Serodia</td>
</tr>
<tr>
<td>HIV antibody confirmatory rapid test</td>
<td>Yes</td>
<td>Determin</td>
</tr>
<tr>
<td>Syphilis VDRL/TPHA</td>
<td>Yes</td>
<td>Kit based</td>
</tr>
<tr>
<td>STI diagnosis</td>
<td>Yes</td>
<td>Gram Stain</td>
</tr>
<tr>
<td>OI diagnosis TB</td>
<td>Yes</td>
<td>AFB</td>
</tr>
<tr>
<td>Cryptococcal Antigen</td>
<td>No</td>
<td>Kit based</td>
</tr>
<tr>
<td>Cryptococcal Meningitis</td>
<td>Yes</td>
<td>India Ink Stain</td>
</tr>
<tr>
<td>Sputum Gram Stain</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Histology</td>
<td>No</td>
<td>Sent to POM</td>
</tr>
<tr>
<td>LFTs</td>
<td>Yes</td>
<td>Vitrus 250</td>
</tr>
<tr>
<td>Electrolytes and creatinine</td>
<td>Yes</td>
<td>Vitrus 250</td>
</tr>
<tr>
<td>Pregnancy Test</td>
<td>Yes</td>
<td>Urine Pred Kit</td>
</tr>
<tr>
<td>PAP Smear</td>
<td>Yes</td>
<td>Cytology</td>
</tr>
</tbody>
</table>

Laboratory security is of concern as after hours access has seen the loss of logs books and equipment (including colorimeter). A new refrigerator and a storage inventory system are urgently required. Staff are keen to undertake further training.

3.9 Referral Systems, Community and District/Rural Health Linkages

A referral pathway system was developed prior to the commencement of ART pilot program in 2005. The HIV and AIDS Clinic staff identified a need to update the original Clinical Pathway to include current referral systems, entry points and follow-up.

- ANGAU based services: STI clinic patients, DOTS TB patients, medical and paediatric inpatients and outpatients;
- Urban referral: the eight Urban Clinics and the VCT centres at NGOs including Lutheran services; Salvation Army; Seventh Day Adventists (ADRA) and Unitec University Clinic;
- Rural Health and FBO (other than above) are less well delineated at this time

An ART Taskforce is developing processes to enable follow-up to occur close to patients’ residence. This will enhance the provision of clinical care and ARV adherence support.
3.10 Support and relationship with Provincial Administration:
The Evaluation Team was unable to assess the relationship of the HIV and AIDS Clinical Service and the Provincial Administration.

3.11 Future Plans
Due to the need for expansion of floor space, ANGAU intends to use the open corridor as a waiting area and as additional consultation/counselling space. This will require substantial repair of the wooden floor which is visibly affected by white ants and the enclosure of the space. Long term plans include construction immediately adjacent to the day care facility, an open plan clinical area, ventilated waiting space, and facilities for further clinical activities, including management of TB and other opportunistic infection.

3.12 Conclusion: Issues and Challenges
This pilot site has commenced ARV treatment. Initial uptake was relatively rapid but has subsequently slowed down. This site has achieved:

- a sound communication strategy and working relationship with NGO and FBO partners via ART Taskforce Committee.
- a planned rotation system of community counsellors into the ART Clinic ANGAU: one from each partner organisation on a separate weekday in order to facilitate communication and two-way patient referral, improve skills and alleviate staffing constraints.
- a motivated core team who have completed IMAI training and supported by an Infection Control Practitioner and a Medical Registrar.

The ET was unable to ascertain the level of support from ANGAU Hospital Management for the development of the ANGAU HIV Treatment and Care Centre. The Team members remained concerned in light of the failure of ANGAU to accept the proposed upgrades and support for facility extensions (as previously discussed with NDoH) and their failure to provide leave cover for the Nurse Coordinator of the Clinic. This example of poor staff coverage and the failure of the hospital to accept the proposal for support in providing a new STI and HIV clinic may be seen to indicate a lack of commitment to those patients seeking service at the STI and HIV & AIDS Clinics although the staff shortages combined with increased patient loads affects all clinical areas of the hospital. In the absence of the Nurse Coordinator the QA Nurse provided staffing to ensure patients on ARVs would not be at risk of missing access to therapy.

Patient social factors (eg homelessness) are seen as a potential barrier to the success of ART. The HIV and AIDS Clinic is not secure enough for installation of a computer.

The Ambulant Care Model with Day Care and multidisciplinary team approach is not yet implemented due to lack of an agreed defined clinical pathway and lack of space for day beds, clinical activities and patient waiting areas.
The laboratory is able to screen and confirm HIV testing but has developed a multiple repeat testing algorithm which is outside usual recommendations. There were concerns that results were not accurate.

### 3.13 Recommendations

1. Engage the ANGAU Board of Management and Hospital Executive to actively support the functions of the HIV day care centre and referral to NGO and other community based support systems and district health facilities.

2. Gain formal endorsement from the ANGAU Board of Management and Hospital Executive for the proposed development of the ANGAU Hospital HIV Treatment Centre and proposed staff enhancements. (NDoH STI/HIV Section is currently waiting for ANGAU senior management to inform them of their restructuring program, so that NDoH can have some advisory input.)

3. Secure an interim site for installation of a computer in addition to the STI clinic computer already present. *(Note: In June 06 this had already been achieved and the computer is in the day care centre and databases installed and being used.)*

4. Training and certification of new prescribers of ARVs to support the Clinic Nurse Coordinator. *(Note, June 06: There are two medical officers who are accredited ARV prescribers at ANGAU plus a nursing officer who is a HIV/ARV IMAI facilitator.)*

5. Lae Hospital could improve VCT and ART access and adherence by enhancing community networking with district support services, including: District and Urban Health Clinics and the Braun Memorial District Hospital at Finschhafen. *(Note, June 06: This is an ongoing process which is already underway.)*

6. Develop an updated Model Clinical Pathway for Care and Treatment of Individuals with HIV in PNG. This will assist develop clinical leadership. The Model should be consistent with National Care and Treatment Guidelines. The ANGAU Model was constructed before the PNG National Guidelines were in place and needs to be updated and reformatted to incorporate the Guidelines.

7. Strengthen the TB DOTS program and develop links with the HIV and AIDS service to improve referral, and enhance adherence and support mechanisms for patients on ART. It is acknowledged that indeed links do exist in that the same physicians are active in both TB and HIV clinics but each service needs to be more aware of the other and the need for close cross-linkages.

8. That ANGAU be supported by NDoH to initiate as a priority a new waiting area in the interim whilst the day care centre extension is designed and built as soon as endorsed by the ANGAU leadership. In the interim the current facilities including STI services and inpatient services should be strengthened to provide options for referral and improved ART roll out. It is to be noted with regret that the CEO of...
ANGAU declined to accept funding support to build a new purpose designed free-standing STI facility even although the Hospital Board allocated land within the hospital compound for the facility to be built.

9. Laboratory training should be initiated in rapid testing algorithms for HIV diagnosis and appropriate methodologies for OI diagnosis (enhancement of serology and microbiology techniques). *(Note, June 06: This process is underway at National level.)*

10. Enhance access and storage of reagent provisions (especially for salmonella culture and ID, enhanced TB diagnosis, Cryptococcal antigen testing and toludine blue or giemsa methodologies for PCP diagnosis). This requires storage refrigerators and inventory system upgrade. Currently the capacity to perform Cryptococcal antigen testing is inadequate (India ink testing is performed) and although the capacity to perform salmonella culture exists, it may be intermittently compromised by inconsistency of resource availability.

11. Training for Pharmacy staff should be included in next round of IMAI and interested staff members should be supported to enhance pharmacy based medication recording with a view to participation in clinical audit and translational research projects. *(Note, June 06: This process is underway. WHO originated IMAI training for laboratory and pharmacy workers is being accessed and will be adapted for PNG.)*
4. Goroka, Eastern Highlands

Visited 11-12 January 2006

4.1 Background

The Goroka Hospital is the major Provincial Hospital in the Eastern Highlands. At the time of the ET visit it was undergoing renovations and in the process of staff appointments, including positions for doctors (total of 50 including support positions) and nurses (50). The hospital has 48 medical beds and of the inpatients 5 have HIV infection. There are also TB beds. Two new physicians will join Dr Paul Arino (Medical Registrar) in 2006. There are three paediatricians (including Dr Dale Frank) and an Obstetrician (Dr Alfred Malagisa).

HIV and AIDS are recognised as a substantial health issues by the senior staff and this is confirmed by the last three years of laboratory data.

Table 32: HIV Seroprevalence Goroka Hospital 2003 to 2005

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal Clinic ANC Blood donors BD</td>
<td>420</td>
<td>439</td>
<td>250</td>
</tr>
<tr>
<td>Adult Inpatients Adult IP</td>
<td>130</td>
<td>124</td>
<td>77</td>
</tr>
<tr>
<td>Paediatric Inpatients Paediatric IP</td>
<td>114</td>
<td>126</td>
<td>87</td>
</tr>
<tr>
<td>TB Ward TB WD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Complete to October 2005

The Institute of Medical Research (IMR) is located adjacent to the Goroka Hospital and has an ongoing research relationship with the Paediatric service (including doing blood cultures) and has research projects with the Michael Alpers Clinic. The IMR has little involvement with other hospitals.

Goroka Hospital houses the Sexual Health Service and the Michael Alpers Clinic, but they are managed by the Provincial Health Office, along with the TB DOTS program, the Family Planing Program, and also responsibility for HIV education and community care.

The HIV and AIDS Team has not as yet been designated. The staff members of Michael
Alpers Clinic are employed by Provincial Health and have had numerous inputs of training seminars and “on the job” in-service training in the management of STIs, provided by NHASP and the Foundation Project. They have had basic training in HIV and AIDS and NHASP has supported staff from the clinic to attend National HIV and AIDS seminars. They are enthusiastic and supportive of ART services, but concerned at the lack of human resources and parity of remuneration. Further training would be needed to build the capacity of the clinic staff.

The proposed designated HIV Team:
Dr Arino, Registrar in HIV and AIDS, DOTS, STI
Sr Clara Hemoti, Nurse OIC STI/HIV and AIDS Clinic
Mr Timothy, CHW, Michael Alpers Clinic
Mr Paul Koren, Nurse trained IMAI
Dr Alfred Malagisa, Obstetrician and Gynaecologist
Dr Dale Frank, Paediatrician
New Physician
Counsellors (including Social Worker)
NB: according to the NDOH TA/STI&HIV all the above positions are funded.

4.2 Current ART services
The planned ART therapy sites are the Michael Alpers Clinic and the STI service at the Goroka Hospital. Currently, there are nine patients who have commenced stavudine/lamivudine/nevirapine managed here. There is a weekly half day clinic for the Medical Registrar to see patients. The VCT Service commenced in November 2004, ART in November 2004 and the PMTCT service in April 2005.

Table 33: Summary of Services

<table>
<thead>
<tr>
<th>Type*</th>
<th>Located in HIV/AIDS Clinic</th>
<th>Located Elsewhere*</th>
<th>Currently Providing Services</th>
<th>Estimated Number of Current Patients</th>
<th>Number Patients per Month</th>
<th>Location to Which Patients Referred for Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCT</td>
<td>Yes</td>
<td>SHC, IP, DOT, Urban, Kama Clinic</td>
<td>Yes</td>
<td>60</td>
<td>10</td>
<td>NGO</td>
</tr>
<tr>
<td>ART</td>
<td>No</td>
<td>Ant, IP</td>
<td>Yes</td>
<td>9</td>
<td>0</td>
<td>Nil</td>
</tr>
<tr>
<td>Syphilis</td>
<td>Yes</td>
<td>SHC</td>
<td>Yes</td>
<td>Na</td>
<td>300</td>
<td>SHC, IP</td>
</tr>
<tr>
<td>Screening</td>
<td>No</td>
<td>FP clinic</td>
<td>No</td>
<td>UK</td>
<td>UK</td>
<td>SHC</td>
</tr>
<tr>
<td>Family Planning</td>
<td>Yes</td>
<td>SHC</td>
<td>Yes</td>
<td>60</td>
<td>300</td>
<td>NGO</td>
</tr>
<tr>
<td>STI</td>
<td>No</td>
<td>IP</td>
<td>Yes</td>
<td>2</td>
<td>5</td>
<td>NGO</td>
</tr>
<tr>
<td>OI Management</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>10</td>
<td>10/131</td>
<td>IP, DOT</td>
</tr>
<tr>
<td>TB Management</td>
<td>No</td>
<td>DOT, TBC</td>
<td>Yes</td>
<td>10</td>
<td>10/131</td>
<td>IP, DOT</td>
</tr>
</tbody>
</table>
The eligibility criteria for ARV treatment are based on WHO and GoPNG guidelines plus a local requirement for being of “good character” and free from recurrent STI. During 2005, ART was provided to nine individuals who were initiated on treatment by the previous physician. Other patients have been unable to commence therapy and no capability is in place to continue therapy commenced in Port Moresby. All patients are receiving stavudine/lamivudine and nevirapine for fear of anaemia with zidovudine. 19 HIV positive women received nevirapine monotherapy, 13 were confirmed HIV infected by confirmatory tests from Mt Hagen.

There is currently no Clinical Pathway in place for management of HIV and AIDS. VCT is available at the Michael Alpers Clinic, but only about 10% of clients consent to testing, of these approximately 19-20% are positive. No records are kept of patients who may require follow-up treatment, although assessment and prophylaxis is provided at a weekly clinic by the Medical Registrar. ARV patients from elsewhere are unable to access follow up treatment.

The TB DOTS program, managed by Provincial Health, screens 4-5 patients annually, 4 over 2003 to 2005 were HIV infected (28.6%). 327 of those inpatients with TB received VCT and were tested with 28 HIV positive (8.6%). In 2005, over 3000 women delivered at the Goroka Hospital, of these, 95% had attended antenatal clinic. As yet VCT is not routinely provided. Results reported from the laboratory of HIV antibody testing from Jan 2003 to October 2005 showed HIV prevalence was 3.4%.(13 of 390 in 2004) and 1.9% (13 of 678 in 2005). Sixteen children between the age of two-months and six-years have died of AIDS related illness in 2005. No paediatric preparations of ARVs are available.

Barriers to ART roll-out include: the lack of on site confirmatory testing, the absence of staff to prescribe ARV and the lack of training of the antenatal clinic.

PEP was provided at Goroka Hospital to three individuals with dual therapy.

The Medical Registrar encourages adherence support by conducting pill counts at each visit and insisting patients attend to collect monthly supplies. He believes that adherence remains 100% for the nine patients.

Future ART service expansion plans include the designation of the already appointed Physician, increased accreditation of ARV prescribers, allocated OP space in adjacent consulting area (until extensions completed) and staff training in ART and computer skills.
Michael Alpers Clinic STI/HIV Goroka Hospital, Waiting room and entrance to Male Clinical Consultation Room

Although the clinic is clean, the small waiting area enhances the risk of cross infection from patients with TB. There is a counselling space which includes both a male and female STI clinic room and a female STI assessment room. There is a shower facility, a small laboratory area (not functioning at time of visit) and a meeting room which currently houses the computers purchased by NHASP and NDoH. There is an internal phone line but no means of external communication (phone, email, fax). The TV in the waiting room would be better used if a VCR were attached so staff could show educational videos they have available for patients and staff (a previously supplied VCR was stolen from the clinic).

There are plans to convert one of the few rooms into extra storage space. The drug supplies are well organised but the cupboard is inadequate to store ARVs. There is a chronic lack of pharmaceuticals due to “out of stock” status of Augmentin and other items on a recurrent basis. These are ordered from AMS via the hospital pharmacy. Occasionally stocks are sourced by the nurse OIC from City Pharmacy and IMR.

4.3 Record Keeping

Patient held medical records are maintained. Inpatient records are separate.

Major challenges to ART roll out include the limited number of physicians and the consequent lack of prescribers for adults with HIV. There is no registry of patients who are, or have been, assessed for ARV. The management of co-morbidities including anaemia, diarrhoeal disease and nutritional difficulties have not commenced and opportunities for adherence education and partner support are lacking.

Michael Alpers Clinic is not involved in mainstream hospital planning. Staff have enthusiasm but little training in ARVs and are expressing strong preference for integration into the hospital structure rather than remain isolated and unsupported by the
Provincial Health authorities. (This initiative has been suggested and promoted by NHASP advisers for the past 5 years but to date there seems no accord by the Provincial Health Office to hand the service over to the hospital). The nurse who was sent to IMAI training (Mr Paul Koren) has never been rostered in the STI clinic and was not involved in the Team Evaluation.

The recently established Clinical HIV Committee, based at Goroka Hospital, includes medical staff and the provincial HIV Response coordinator but could be strengthened by including key nursing members, the Micheal Alpers Clinic, community (NGOs and FBO) and district health.

The TB DOTs program has an inconsistent HIV VCT policy and the ET was concerned that this program could not demonstrate optimum service outcomes (cure rates, follow-up rates and community linkages). This will be the source of substantial referrals for ART in co-infected individuals.

4.4 Staff Capacity
The Michael Alpers Clinic has

- one nursing officer,
- one clerical officer,
- two CHWs,
- one part time registrar.
- input of one physician (when available), one paediatrician and one obstetrician occurs from time to time.
- 5 lab technicians.

The clinic has the following additional staff requirements:

- physician,
- a dedicated time allowance from the registrar,
- at least 2 nursing officers and HEOs.

Staff who attended the IMAI training (Ward Nurse, Obstetrician, Paediatrician), and the CPHL training (Laboratory technician) received training specific to HIV management. Updated computer training was considered necessary to build on NHASP training in data entry and analysis.

4.5 Infection Control and Standard Safety Precautions
The Infection Control Practitioner (ICP) at Goroka Hospital is competent and uses protocols based on the current PNG Infection Control guidelines. She is awaiting the next version for inclusion of updates in areas of occupational health, including needle stick and sharps exposure. Management has not designated an Infection Control Committee. There is a lack of hand hygiene materials and sharps containers. Medical wards are not maintained to the required standard and the locked TB room has no hand wash or toilet facilities for patients.
The ICP has procured mackintosh rolls which have been used to produce cleanable aprons. Eye protection is distributed to the theatre, labour ward and other areas. The ICP has no official role in planning renovations (input would be valuable in relation to prevention of airborne and other modes of cross-infection) and has no input into audit, surveillance and quality improvement.

4.6 Training, audit and maintenance of professional standards

Although there is a training officer for Goroka Hospital, there was no formal training program for 2006 at the time of the visit. There has been no formal HIV and AIDS training for staff. There is no lecture theatre or dedicated training facility.

With the arrival of new nursing, medical and support staff, a basic training program in HIV, STI, TB should be developed for the hospital. The ICP should also have a role in staff education and orientation programs.

Training occurs weekly for the entire hospital. Although there have been sessions on HIV previously, it is not currently included. A new electronic library is planned adjacent to the CEO’s office but neither the hospital nor the School of Nursing have accessed the HINARI. This should be made available in this new library redevelopment.

No student nurses from the Highlands Regional College of Nursing attended STI/ HIV training in 2004-2005.

4.7 Pharmacy

The renovated pharmacy is adjacent to the Michael Alpers Clinic and outpatients consulting rooms. About 200 patients visit the pharmacy each day which is serviced by two pharmacy technicians.

Outpatients collect medications whilst those attending the TB and Michael Alpers Clinic use an imprest system. As no ARVs are stored in the Pharmacy, patients on continuation ARVs collect stores from Michael Alpers Clinic.

Pharmaceuticals stocks take about three weeks (emergency stores take about one week) by road to arrive from Lae AMS store. It was reported that orders are often not provided as requested. Orders are estimates based on the previous month’s use. At the time of the visit some essential items have been out of stock for six months, including augmentin and pethidine. Disposable and sterile gloves are occasionally out of stock. There is a refrigerator but no thermometer of ambient temperature record.

The Acting OIC was not aware of any mechanisms for quality assurance or for pharmacy inputs on rational drug use at Goroka Hospital. There has been no formal training for the pharmacy technicians at Goroka Hospital. No electronic recording is in use.

The OIC holds the key to the pharmacy. There is a locked dangerous drugs cupboard with a double counting system. There has been no reported loss from the pharmacy. No
unannounced audits have occurred. An audit of the storage shelves and responses to question revealed the following availability of ARVs and other agents.

**Table 34: Medical supplies for ART, Goroka Hospital**

<table>
<thead>
<tr>
<th>Agent</th>
<th>At Facility</th>
<th>Stock available at visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Multivitamins</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cotrimoxazole tabs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cotrimoxazole syrup</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zidovudine tabs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nevirapine tabs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nevirapine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine40/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine30/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine30/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### 4.8 Laboratory Support

Goroka Hospital is an HIV testing site for the Eastern Highlands but does not perform the confirmatory testing. Testing includes three rapid tests using Serodia followed by referral of the specimen to Mt Hagen for confirmatory testing. As there is a substantial delay for confirmatory results (those for last quarter of 2005 have not yet returned) clinicians report acting on screening results alone. As a result, a small number of uninfected mothers have received ARV prophylaxis and there are delays in commencing prophylaxis and ART. This may result in a loss of community trust in VCT services.

The laboratory has internal controls for HIV testing and haematology, and has a set of documented laboratory protocols.

200 Serodia tests are used per month, ordered from the CPHL and supplemented by St Johns Blood Transfusion Service. Two boxes (about one months testing) are kept in reserve. Other reagents, including those for serological screening for Salmonella typhi, are sometimes unavailable requiring expensive international procurement.

Available investigations are shown tabulated below.
The laboratory is secure and is locked after hours. HIV results are stored in locked cupboards. After hours access is available by key.

There is a fax and telephone in the laboratory. The OIC identified refurbishment of the blood donor area as a priority. Blood collection occurs in a basement where the overhead pipes continuously leak water. There are shortages of blood collection bags. The TB biohazard hood was functioning and the scientist performs 4 to 6 ZN smears per day.

The OIC further identifies microbiology training and access to repaired steriliser to recommence media production and reagents restock (including cryptococcal antigen for which there has been a 10 year gap; kits ceased because of cost at K100 per kit).

Universal precautions are practiced in the laboratory but there are problems with availability of goggles and disposable gloves.

### 4.9 Referral Systems, Community and District/Rural Health Linkages

No referral pathway system or Clinical Pathway has been developed for Goroka Hospital. However, this is a key priority for the recently established Clinical HIV Committee. The committee includes key Michael Alpers Clinic Staff, ICP, Labour Ward Staff and community partners, PAC, Provincial Health and rural and urban clinic representatives. The entry points to the HIV and AIDS Service are undefined. The University of Goroka, the IMR research clinic, the Highlands Regional Nursing College are potential referral sources.
Patient follow-up in locations close to the patient’s home have not been formally established but needs to be addressed as a priority. Potential community partners include:

- Seventh Day Adventists (have a care Centre in Goroka)
- Salvation Army (involved in community service)
- Evangelical Brotherhood Church (largest accounting for 30 to 40% of activity)
- Save the Children’s Fund

Rural and Urban Health services will need to be involved in training once the Goroka HIV Centre of Excellence is established. This is important for the delivery of community adherence support and care.

### 4.10 Support and relationship with Provincial Administration

The Provincial Health Office Advisor, Mr Ben Haili expressed support for roll-out of ART from the Goroka Hospital. Whilst supportive of Global Fund, AusAID and other partner inputs, he emphasised the need for PNG leadership and consistency of implementation of HIV and AIDS programs according to National and Provincial Plans.

In Eastern Highlands, the PAC, chaired by the CEO of Kainantu Hospital, Dr Koimba, is the principle vehicle for planning and communicating with community partners.

Mr Haili was supportive of HIV and AIDS activity generally and, in particular, capacity building. He identified a need for a provincial focus, especially at Kainantu, supported, if necessary, by Private/Public partnerships. He noted the lack of a Care Centre in the Goroka community for homeless and that SDA, the Catholic Mission and the Eastern Highlands Women’s Council were all planning a drop in centre in Goroka. To avoid a malalignment of facilities and referral options he indicated that it was preferable for large infrastructure investments rather than a series of small extensions.

The Provincial Disease Control Officer, Mr Jackson Apo, also expressed support for HIV and AIDS activity and indicated that the relationship with STI/AIDS run by Provincial Health at Goroka Hospital and the PAC was strong. This was in direct contrast to the reports from those involved in service provision at the Hospital and Michael Alpers Clinic.

The IMR, which undertakes research in malaria, STIs, and HIV, is located adjacent to Goroka Hospital. However, important research findings are not being translated or being used to train HCWs from the hospital.

The Highlands Regional College of Nursing (HRCN) is located within the campus of the Goroka Hospital and at the time of the visit had 90 students. Although lacking computers and electronic library facilities, the HRCN has a strong community based curriculum and linkages with the PAC. The HIV and AIDS Treatment Centre provides an ideal opportunity for training rotations of nurses (who will be the deliverers of ART in the PNG treatment network). Given that 90% of new health graduates are unemployed, a
relationship with the HRCN may help develop a workforce for HIV and AIDS treatment - a need that is likely to arise in the Eastern Highlands.

4.11 Future Plans
Goroka Hospital has recruited the following additional staff:

- two physicians;
- two Obstetricians (one in place);
- three paediatricians (one to be responsible for HIV and AIDS activity;
- three laboratory technicians (including one HIV qualified);
- four nurses (2 male and 2 female) to be allocated to HIV OP service;
- a social worker for HIV service;
- a total of 50 nursing positions and 50 medical and support positions.

The new pharmacy building is yet to be commissioned. A space adjacent to the CEOs office has been converted into a library and has computers available for staff research.

Other options under consideration include: renovation of the Nurses Home as an auditorium and Day Treatment and Care Clinic for HIV and AIDS.

The Hospital management and Board have endorsed HIV and AIDS care at the Goroka Hospital but their relationship with Provincial Health (which manages Michael Alpers, TB DOT, Family Planning and Urban and Rural Clinics) remains ambiguous.

4.12 Conclusion, Issues and Challenges
There are several attributes at Goroka hospital which auger well for ART roll out:

- This site has been involved in IMAI training with support from hospital management and provincial health department
- This site has continued the management of nine self-funded patients
- The PMTCT program has commenced consistent with National guidelines and the paediatric service is capable of HIV diagnosis and care

The additional criteria to the National guidelines of ‘social responsibility’ need to be defined in a Clinical Pathway which is widely endorsed in the service.

The HIV/STI Clinic needs to treat HIV positive clients from Kainantu until services can be rolled out to Kainantu, which already has a purpose designed STI clinic provided under the AusAID Foundation Project.

The Michael Alpers Clinic has limited, unventilated, space. This limits patient access to the clinic and will be a major impediment to ART roll-out.

The uncertainty concerning the role and function of the HIV Care Team, in particular nursing and HEO roles, is a barrier to service roll-out. The nurse who undertook IMAI training has never worked in the clinic. The Nurse in the clinic is organised and highly efficient but has had no formal STI or HIV training. Experience shows that in PNG,
where Provincial STI Clinics are owned and supervised by the Provincial Hospital, there tends to be continuity of staff, allowing for ongoing training and the development of greater clinical skills. In cases where the STI clinic is under the Provincial Health Office (such as Lae and Goroka), there tends to be higher staff turnover, making it difficult to develop clinical expertise. There is a major disparity in pay and conditions of the current Michael Alpers Staff and this is likely to relate to the four new nurse positions for the ART roll-out. These nursing officers and the new physician will need IMAI training.

NHASP has provided a computer in the office/meeting room area. Staff have been trained in data entry and report compilation. The Laboratory provides initial screening for HIV using Serodia rapid test but sends all confirmatory tests to Mt Hagen. Confirmed results are not available for three to six months. Whilst the Medical Registrar confirmed there were considerable delays, it was estimated it was generally less than three months. He suggested the delay was probably that Goroka may not have a proper coding system for the HIV requests and are still reliant on using names. It was thought that due to the legislation of the HAMP Act, Mt Hagen confirmatory lab may be taking more time to code the samples there and then decode the results to send back to Goroka. To alleviate this, the Goroka Hospital should introduce a coding system. The OIC of the laboratory highlighted the poor physical location of the blood bank donation area.

4.13 Recommendations

1. A Nurse co-ordinator be appointed and the HIV and AIDS Team be designated. This team (including incoming physician) will support the ART roll out. Parity of conditions and lines of responsibility needs to be clear. IMAI training is an urgent priority to the delivery of the ART program in Michael Alpers Clinic. (Note: By the end of June 2006, all these points have been accomplished.)

2. The laboratory at Goroka should be designated as a confirmatory testing site with training and support being provided to the laboratory technicians. This is essential to all aspects of ART roll out (PMTCT, adult and paediatric ART) and to the role of the Goroka Hospital as a centre of excellence in HIV clinical care, regional support and HCW training. (Note: This was achieved during May 2006.)

3. Goroka Hospital needs to establish an ART Taskforce to assist link the Hospital Clinical HIV Care Committee to community partners and the PAC. The Nurse Coordinator of the Michael Alpers Clinic, Pharmacy OIC and Laboratory OIC join the ART Taskforce and the Clinical HIV Care Committee. (Note: This was achieved during May 2006.)

4. A Clinical Pathway in HIV Care be designed de novo or modified from a Model national Pathway and piloted at Goroka Hospital in association with the Community partners and the Michael Alpers Clinic. Expert advice should be sought from experienced PNG HIV Specialist (medical and nursing) in the design, implementation and evaluation of the Clinical Pathway. The Clinical Pathway should be consistent with National HIV Care and Treatment Guidelines. The achievement of these goals will be encouraged with the new Task Force.
5. Renovate the Michael Alpers Clinic to enhance access to adequate waiting room facilities. During design and construction interim additional consultation rooms need to be allocated for HIV and AIDS patients. The hospital’s proposal to redesign and reorganise OPs adjacent to the Michael Alpers Clinic should be further examined as an option for day treatment area. It is to be noted that when the current STI clinic was provided under the Foundation Project, the Hospital was given the option of a free standing new building the same as the current Tininga and PMGH Clinics but declined this in favour of renovating the then ambulance bay, which is the current clinic facility. It is acknowledged that the current facility is indeed inadequate and since the construction of the Eye Clinic adjacent to it, soon after the completion of the STI facility, there is no capacity for natural ventilation. Extension of the current facility is not possible due to the extreme proximity of other buildings, unless the extension was upwards but this is not ideal for access by physically compromised or very unwell clients.

6. Include Urban Clinics and Kainantu in the VCT and ART roll out in Goroka. *(Note: Plans for this extension of the service are already in place.)*

7. Strengthened medical inpatient care by:
   - introducing appropriate methodologies for OI diagnosis (enhancement of serology and microbiology techniques) and improved reagent provision (especially for salmonella culture and ID, enhanced TB diagnosis, Cryptococcal antigen testing and toludine blue or giemsa methodologies for PCP diagnosis) as well as storage refrigerators and inventory system upgrade. *(Note: As of June 2006, the process to realise this recommendation is underway through the “Human Security Fund”.*
   - Improved attention to IC by developing, and enforcing, occupational health protocols.
5. Mt Hagen, Western Highlands Province
   Population 400,000, visited 15-17 January 2006

On Sunday 15 Jan 2006 the Team visited the Shalom, Catholic HIV Care Centre, run by Sr Rose Bernard.

5.1 Background

The Mt Hagen Hospital is the major Provincial Hospital in the Western Highlands. Located close to the town centre it has 300 beds (including 60 medical ward beds and 60 paediatric ward beds) but at the time of the visit lacked key staff, including a physician. 20-33% of patients had advanced HIV related disease often with concomitant TB disease. There are six high dependency beds in ICU.

Mt Hagen Hospital as the pivotal point in healthcare delivery in the Western Highlands, with substantial numbers of patients from Enga, Southern Highlands and Simbu, faces an enormous challenge in management of HIV and AIDS. Current background population seroprevalence shows antenatal clinic rates in young healthy women of 3.7% and hospital data show volunteer blood donor rates at 4%. Thirty three percent of inpatients in the medical ward have HIV or AIDS and 80 children have died of AIDS related illness over the last twelve months.

HIV is a substantial clinical burden at Mt Hagen Hospital as presented powerfully in the ‘Tininga STI & HIV Clinic Annual Report 2005’ of Mr Kuni Hunpio and the Mt Hagen Submission the Special Parliamentary Committee on HIV and AIDS and the report by Dr Leslie Kawa: Report on Current Progress.

Table 36: HIV Seroprevalence Tininga Clinic, Mt Hagen Hospital 2005

![Graph showing HIV seroprevalence data]

Thus, among 5085 individuals presenting at Mt Hagen’s Tininga Clinic 150 new HIV diagnoses were made during 2005, even though only 26.8% of attendees receive VCT and consented to HIV testing. Staff shortages towards the end of the year impacted substantially on this proportion. In 2005, there were 2408 cases of gonorrheae, 577 Chlamydia/NSU, 95 cases of primary syphilis, 178 cases of secondary syphilis, and 18 cases of donovanosis.
The **HIV and AIDS Team** has been designated as:
Dr Leslie Kawa, Registrar in Internal Medicine
Dr Magdelene Kaupa, Paediatrician
N/O Mr Kuni Hunpio, Nurse OIC Tininga Clinic
Nrs Rose Kopil, CHW Tininga Clinic
Mr Gabriel Ning, CHW Tininga Clinic
Mr Peter Moga, CHW Tininga Clinic
Dr Tore Jeffrey O and G Registrar
Counsellors (including Social Worker and Anglican Stop AIDS Counsellor)

Sr Lydia Seta the former Team Leader of the Tininga Clinic has transferred to Port Moresby and the previous physician was preparing to leave. The position of registrar is under threat as there is no supervision from physicians to enable training to continue and to support the work of the Tininga Clinic.

**5.2 Current ART services**

The planned ART site is Tininga Clinic, which provides the STI service for Mt Hagen Hospital. Whilst no patients were on ARV therapy, the Nurse Coordinator and Medical Registrar had commenced patient preparation for ART. This included a weekly pre-ART clinic where patient registration, management of and prophylaxis for opportunistic infections, patient education and identification of networks for individual patient follow-up. However, due to staff shortages, this pre-ART clinic was operating less frequently by the end of 2005. No Clinical Pathway is in place for the management of HIV and AIDS.

About 350 women deliver each month at Mt Hagen, of which, about 30-40 women consent to HIV testing. Labour ward activities are recorded in ward registries and specified notes in patient’s health chart (no mention of PMTCT is included).
### Table 37: Services at Tininga Clinic, Mt Hagen

<table>
<thead>
<tr>
<th>Type*</th>
<th>Located in HIV/AIDS Clinic</th>
<th>Located Elsewhere*</th>
<th>SHC Currently Providing Services</th>
<th>Estimated Number of Current Patients</th>
<th>Number of Patients per Month</th>
<th>Location to Which Patients Referred for Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCT</td>
<td>Yes</td>
<td>IP, ANC</td>
<td>Yes</td>
<td>74</td>
<td>109</td>
<td>NGO</td>
</tr>
<tr>
<td>PMTCT</td>
<td>No</td>
<td>Ant, IP</td>
<td>No</td>
<td>0</td>
<td>42/350</td>
<td>NS</td>
</tr>
<tr>
<td>ART</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>46 (pre-ART)</td>
<td>12</td>
<td>Nil</td>
</tr>
<tr>
<td>Family Planning STI Management</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OI Management</td>
<td>Yes</td>
<td>SHC</td>
<td>Yes</td>
<td>150</td>
<td>423</td>
<td>NGO</td>
</tr>
<tr>
<td>TB Management</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>15</td>
<td>13</td>
<td>NGO</td>
</tr>
<tr>
<td>PEP</td>
<td>No</td>
<td>OP Clinic, TBC</td>
<td>Yes</td>
<td>10</td>
<td>10/131</td>
<td>Urban Provincial SHC</td>
</tr>
</tbody>
</table>
| OI* Opportunistic Infection; PEP* Post Exposure Prophylaxis; IP* Inpatient; Urban Provincial* Urban Clinics in Mt Hagen; SHC* Sexual Health Clinic (Tinga); DOT* Directly Observed Treatment Services, *ANC Ant Antenatal Clinic; TBC* TB Clinic Mt Hagen; NGO* Non-government partner services; UK* Informants unable to estimate; NS* not specified in questionnaire; NSI* Needle Stick/ Sharps Injury from HIV+

There is no functioning TB DOTS program (managed by Provincial Health) and HIV VCT activities in the seven VCT sites in the Western Highlands are unknown to the Mt Hagen clinicians. There are three private doctors in MT Hagen, one a surgeon Dr Kulunga is said to have an interest in HIV care on a fee for service basis. Anecdotal evidence suggests that ARV therapy (of varying types and combinations costs K200 per month). The PAC is considering establishing a ‘one stop shop’ for HIV.

The eligibility criteria to access ART are based on WHO and GoPNG guidelines. In addition, the clinic requires patients to be from local area and have family/community support to assist with adherence. No ART was provided during 2005. Adherence education is provided in the pre-ART clinic.

PEP was provided at Mt Hagen Hospital to two individuals with dual therapy (thought to be nevirapine and lamivudine used because of availability).

Future ART service expansion plans for the Tininga Clinic include renovations to increase space and develop linkages with Shalom, Rabiamual, Minj Health Centre, Kagamuga Urban Health Centre, Togoba Health Centre, Kudjip District Hospital and Tinsley District Hospital.
The Tininga Clinic (“It’s Ours” in Melpar dialect) is a functioning STI / HIV clinic located in a prefabricated purpose built building. It has a waiting area with ceiling fans but limited ventilation thus enhancing the risk of cross infection with TB.

The clinic is clean with three consultation areas. Although there is space for a laboratory, the Mt Hagen Hospital laboratory is used. There is a meeting room and storage area which is locked in preparation for the computer purchased by NDoH for ART recording (in addition to the 2 computers already purchased by NHASP and currently still in use for STI and HIV records). The internal phone line is non-functional. There is no external communication (phone, fax, e-mail, VHF radio receiver).

WHO registration forms are used to keep patient information, with a photocopy of each patient’s registration kept in the clinic folder. Patient notes are added to the patient health book. Coded entries for laboratory tests are used.

Key challenges identified by the Team include shortage of staff, delays in receiving NDoH guidelines, limited laboratory support and no communications equipment. They identified a need to integrate into the Mt Hagen Clinical Care Committee with FBO, NGOs, PLWHA, and PAC, urban and rural health services. Large distances, poor social support and law and order impacted on patients’ willingness to use the clinic.

5.3 Staff capacity
The Tininga Clinic has:

- one nursing Officer;
- one clerical officer;
- three Community Health Workers;
• one part time registrar;
• A paediatrician and O&G registrar attend the clinic from time to time.

Staff indicated a requirement for:

• dedicated time allowance from the registrar;
• 2-3 further nursing officers;
• HEOs;
• Three technicians.

5.4 Infection Control and Standard Safety Precautions

The Infection Control Practitioner, Mr Peter Pinda, is supported by Sr Sabrina Kerepa. He is highly competent and uses protocols based on the current PNG IC guideline. The ICP has an official role in planning renovations and is a member of the HIC Care Committee.

At the time of the visit, there were no hand hygiene materials or sharps containers. There are continuous shortages of gloves, aprons, goggles/glasses and fuel for the incinerator. It was reported that, at times, there are shortages of sterile syringes.

Disinfection protocols are based on bleach and some confusion exists as to the appropriate dilution factors. There are no spill kits. Six needle stick/sharps injuries were reported, although there may be non-reporting due to lack of confidentiality and fears of retribution from administration.

5.5 Training, audit and maintenance professional standards

The Medical Registrar has conducted some training in HIV, covering basic information on infection, transmission, counselling information and service options, including ART. Staff who attended the IMAI training (Nurse Coordinator, Obstetrician) and ASHM training (CEO, Dr Kintwa and Dr Leslie Kawa) have undertaken HIV training. At the time of the visit, there was no training program for 2006. The Nurse Coordinator is seeking further training to support the clinics’ needs. There are no regular audit activities at Mt Hagen Hospital.

5.6 Pharmacy

There are three Pharmacy Technicians and a clerk. A paper based ordering system is used with annual reporting. No linkage to clinical practice or outcome is available for medication utilisation. On the job training is provided, but no formal HIV training.

Ordering of stock occurs via AMS but is subject to delays and limited availability. Orders are estimated based on last months use. The Pharmacy had limited stocks of bleach, gloves, sharps disposal containers, masks and aprons.

Medication is dispensed into plastic bags with labels attached and pictures are used to help explain when medications should be taken.
Clerical staff record medication electronically on an Excel spreadsheet. The pharmacy is secure and has processes in place to double count and audit dangerous drugs. Pharmacy packs TB medication for clinics but does not directly dispense to patients.

Table 38: Medications available at Mt Hagen Hospital

<table>
<thead>
<tr>
<th>Agent</th>
<th>At Facility</th>
<th>Stock available at visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multivitamins</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cotrimoxazole tabs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cotrimoxazole syrup</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zidovudine tabs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nevirapine tabs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nevirapine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine40/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine30/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine30/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

5.7 Laboratory Support

Mt Hagen Hospital is a HIV confirmatory testing site for the Highlands region. Goroka and the Eastern Highlands send specimens to this laboratory. Shalom reported other VCT sites also use Mt Hagen Hospital laboratory. Reporting delays between 3-6 months are common.

The laboratory has two scientists, two technicians and four assistants. It performs 150 to 200 HIV initial rapid tests per week. Confirmatory test series are performed weekly. The Testing algorithm includes Serodia repeat reactive samples confirmed with three confirmatory assays (Determine, Immunocom, and Capillus). Indeterminate results are repeated and further sample requested at three months. Access to kits is problematic, particularly to Immunocom and Capillus, monthly stocks are frequently low and more indeterminate results are detected. While test kits are available there are delays in distribution.
The laboratory is secure and is locked after hours. The OIC has sole access to HIV results stored in locked cupboards. The laboratory staff have limited access to hand washing facilities. Goggles and gloves are either not available or in short supply.

Microbiological methods and access to testing is limited. In particular blood culture media was out of date and few positive isolates recorded. The space and resources available for AFB diagnosis was limited. No cryptococcal antigen tests were performed.

### 5.8 Referral Systems, Community and District/Rural Health Linkages

No referral pathway system has been developed although this is now a priority item on the agenda of the Mt Hagen HIV and AIDS Clinical Response Committee, led by Dr Leslie Kawa. Developing an integrated HIV and AIDS care and treatment system in the committee is being strengthened by the inclusion of ICP, Labour Ward NOIC, ANC OIC and community partners, PAC, Provincial Health and rural and urban clinic representatives.

Entry points to the HIV and AIDS service are not defined. They could include TB OPs, ANC, previous inpatients and community partners where VCT, support and counselling and drop-in facilities offered. The Shalom Care Centre and Rabiamul Catholic health centre are currently providing quality VCT and pre-ART preparation.

Follow-up close to the patient’s home has been recognised as important in the Mt Hagen area. At least four partner organisations have established care-share management of patients accessing ART. Other community partners require education, networking, communication and support to provide such collaboration. Included in the Western
Highlands region are:

- Kagamuga Urban Health Clinic
- Shalom Care Centre, Banz
- Rabiamul Catholic Health centre
- Togoba Health Clinic
- Minj Health Centre
- Kindjip Hospital
- Tinsley Hospital
- Mingende Hospital (Simbu Province), with established links in Western Highlands Province (Banz).
- Rural and other Urban Health services

**5.9 Support and relationship with Provincial Administration.**

The ET was not able to directly ascertain the level of support of the Provincial Health Administration. It was reported that the provincial aims and objectives in HIV and AIDS were closely aligned with those of Mt Hagen Hospital.

Key PAC leaders were supportive of an integrated Centre of Excellence in HIV Treatment and Care in Mt Hagen.

Women require permission from husbands and families to have the HIV testing required for ART treatment. The PAC is currently involved in training of community leaders in HIV and has recommended inclusion of ART information in the curriculum.

Linkage pathways between PAC affiliated CBO, FBO and the Tininga Clinic need to be enhanced. To ensure confidentiality and privacy, the PAC is considering a HIV/AIDS “One Stop Shop”.

The rural and regional community health coordinator was supportive of training district health workers to support of ART adherence and care. Radio was considered the most practical means of communicating with the Tininga Clinic.

Located close to the hospital, the Shalom Centre for care and Support is managed by Sr Rose Bernard. The Centre provides five day rest and recuperation breaks for patients with HIV. They come in groups of four to six and receive care, nutrition support, education, OI prophylaxis. Sr Rose provides VCT and links with the nearby Health Clinic to gain treatment for health issues. There is occupational training and partner help. Currently 49 patients are awaiting ART at this site.
5.10 Conclusions, Issues and Challenges

Considering ART roll out from Mt Hagen hospital:

- This site has been involved in IMAI training
- This site has considerable burden of HIV and AIDS and senior clinicians are enthusiastic about ART roll out and have prepared patients.
- The Shalom Centre has 46 prepared patients and offers a considerable asset to the ART roll out.

Mt Hagen Hospital is structurally sound and has a stand alone, purpose-built STI clinic. It has consulting rooms, lab, shower facilities, storage space and a meeting room. Despite staff shortages, this site has commenced a pre-ART weekly clinic, recording patients in a paper based system whilst awaiting the NDoH computer with EpiInfo data system program. The Tiniga Clinic requires a phone line and VHF radio receiver/transmitter.

The ET was unable to ascertain the level of support from the CEO and Board of the Hagen Hospital for the development of the Tininga HIV Treatment and Care Centre as the CEO was on leave. Anecdotally, both the CEO and the Board are supportive.

The Laboratory provides confirmatory HIV testing for Western Highlands (from hospital VCT sites), community HIV care centres, and for Eastern Highlands, Southern Highlands, Simbu and Enga Provinces.

The laboratory OIC has identified a site, and costed a plan, for renovations to provide space for HIV testing and the imminent commencement of CD4 testing. Current blood culture system is not performing and microbiology expertise and access to reagents and training is limited. There is a need for improved OI diagnosis capability. Training in
microbiological methods was provided in Mt Hagen during 2005, by the NDoH Medical Microbiologist, with NHASP support. However, technicians have been unable to practice due to a lack of reagents. Any further training requires access to reagents, stains and basic infrastructure.

5.11 Recommendations
1. As an interim arrangement, a physician support system should be provided for the Registrar.

2. Until a physician is employed, a system of rotation of physicians with expertise in HIV and AIDS be considered both from within the PNG pool of expertise and from outside PNG. *(Note: As of June 2006 this recommendation is already realised and the rotation is underway using PNG physicians)*

3. Appoint two service medical registrars and two clinical HEOs. *(Note, June 06 – two service medical registrars are now in place. Discussions with the DMS of the Hospital regarding the recruiting of clinical HEOs is underway.)*

4. Approach the Board of Management and Hospital Executive to gain endorsement of the proposed development of the Mt Hagen Hospital HIV Treatment Centre. This should include the proposed staffing enhancements and a commitment to improve infrastructure of the Tininga clinic, and logistics in other hospital areas.

5. Establish a HIV Team to develop a Clinical pathway, assess, manage and prepare and document potential patients for ARV and to develop relationships with community, rural and other partners for ART roll out. It is acknowledged that this will necessitate extra staff for the service since all the current Tininga (STI) service staff are already overburdened with the existing workload. Mt Hagen Hospital, with its ever increasing patient load, has for years been facing great challenges with staff shortages in all areas of clinical care and needs to undergo restructure of staffing levels to allow for considerable increases.

6. Commence a paper-based register of patients eligible for ART and associated preparation for treatment. *(Note: As of June 2006 the paper based register has already been accomplished as well as an accompanying computer based system.)*

7. The Mt Hagen Hospital with the PAC should establish an ART Taskforce to link the HIV Team and the Mt Hagen Hospital to community partners. The Nurse Coordinator of the Tininga Clinic, the Pharmacy OIC and Laboratory OIC should join the ART Taskforce and the Clinical HIV Care Committee. This should also include Sr Rose Bernard and the Shalom Centre. *(Note, June 06: Preparations for the establishment of the Task Force are underway.)*

8. Establish linkages with TB, STI and family planning services for the assessment and maintenance of a comprehensive referral, assessment and care system for individuals accessing ART. *(Note, June 06: The STI Clinic is now intimately linked*
to the HIV/ARV service, using the same staff and facility. The FP clinic already has linkages to Tininga for referral of clients. There does still need to be closer linkages between the TB and HIV services.)

9. Review Mt Hagen laboratory HIV testing procedures to hasten confirmatory test results. Examine the utility of four confirmatory test algorithm nationally and locally in light of current data and the practical availability and performance of a number of test kits (namely those confirmatory tests kits with particular problems Capillus and Immunocomb test kits). *(Note: June 06 – the testing algorithm has already been updated at National level and now recommends two tests – Serodia and HIV Determine.)*

10. Reconsider the laboratory’s use of expired microbiology reagents and seek training and advice in OI diagnostic testing for appropriate microbiological experts. Seek AusAID support for technical assistance in appropriate OI diagnostic methodologies. Expertise is available at national level in the Medical Microbiologist. He has already conducted training at all provincial hospitals on microbiological testing methods. The issue of in-date reagents is a perennial one all over the country. Even at national level, the Medical Microbiologist has only once been able to supervise post graduate students in research into identifying OIs microbiologically, when NHASP procured the reagents specifically for the purpose. Since then, neither PMGH nor the NDoH have been able to maintain the supply of reagents.

11. Strengthen IC within the hospital, especially in the laboratory, and enforce good practice.

12. Strengthen and accelerate the PMTCT Program in the Western Highlands.

13. Enhance the pharmacy’s ability to collaborate with the National Distribution System of ARVs. NDoH is already accessing training materials through WHO in order to achieve this goal.
6. Rabaul, East New Britain Province
Population 185,000, visited 19-20 January 2006

6.1 Background
Nonga Hospital is the major Provincial Hospital. Together with Vunapope Hospital, the private Roman Catholic hospital, it is the centre of healthcare for the province.

The Nonga Hospital has 300 beds and is currently struggling under the burden of volcanic dust, staffing shortages and a transitional management structure. There are two medical wards, a high dependency ward and a TB ward with 42 patients cared for by two nurses and an assistant nurse.

Table 40: HIV Seroprevalence Nonga Hospital 2000-2005

<table>
<thead>
<tr>
<th>Year</th>
<th>BD (blood donors)</th>
<th>VCT (Clinical testing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>160</td>
<td>1958</td>
</tr>
<tr>
<td>2001</td>
<td>293</td>
<td>2068</td>
</tr>
<tr>
<td>2002</td>
<td>325</td>
<td>2166</td>
</tr>
<tr>
<td>2003</td>
<td>151</td>
<td>2172</td>
</tr>
<tr>
<td>2004</td>
<td>64</td>
<td>1962</td>
</tr>
<tr>
<td>2005</td>
<td>1787</td>
<td></td>
</tr>
</tbody>
</table>

6.2 Current ART services
There have been few patients with HIV and AIDS at Nonga Hospital. A maximum of 2 or 3 individuals of 42 inpatients have been diagnosed usually with advanced disease of TB or HIV. There are an average of 20 to 30 patients with TB per month of which approximately 1.2% have HIV infection. There is no clinic available for HIV or STI or TB management all are seen as outpatients. Antenatal testing is not universal but the latest sero-surveillance identified one HIV infected mother amongst 1200 tested.
Table 41: Services in Nonga Hospital, Rabaul

<table>
<thead>
<tr>
<th>Type*</th>
<th>Located in HIV/AIDS Clinic</th>
<th>Located Elsewhere*</th>
<th>Currently Providing Services</th>
<th>Estimated Number of Current Patients</th>
<th>Number Patients per Month</th>
<th>Location to Which Patients Referred for Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCT</td>
<td>Yes</td>
<td>IP, Op</td>
<td>Yes</td>
<td>0</td>
<td>2</td>
<td>NGO</td>
</tr>
<tr>
<td>PMTCT</td>
<td>No</td>
<td>Ant, IP</td>
<td>No</td>
<td>0</td>
<td>4</td>
<td>NS</td>
</tr>
<tr>
<td>ART</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>0</td>
<td>0</td>
<td>Nil</td>
</tr>
<tr>
<td>Syphilis</td>
<td>Yes</td>
<td>OP</td>
<td>Yes</td>
<td>6</td>
<td>11</td>
<td>IP</td>
</tr>
<tr>
<td>Screening</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Planning</td>
<td>Yes</td>
<td>OP</td>
<td>Yes</td>
<td>80</td>
<td>34</td>
<td>Nil</td>
</tr>
<tr>
<td>STI Management</td>
<td>Yes</td>
<td>OP</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>Nil</td>
</tr>
<tr>
<td>OI Management</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>20</td>
<td>20</td>
<td>DOTS</td>
</tr>
<tr>
<td>TB Management</td>
<td>Yes</td>
<td>IP</td>
<td>Yes</td>
<td>10</td>
<td>10</td>
<td>Nil</td>
</tr>
<tr>
<td>PEP</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>0</td>
<td>0</td>
<td>Nil</td>
</tr>
</tbody>
</table>

OI* Opportunistic Infection; PEP* Post Exposure Prophylaxis; IP* Inpatient; Urban Provincial* Urban Clinics; DOT* Directly Observed Treatment Services, Antenatal Clinic; TBC* TB Outpatient Clinic NGO* Non-government partner services; UK* Informants unable to estimate; NS* not specified in questionnaire; NS* Needle Stick/Sharps Injury from HIV+

There is currently no Clinical Pathway in place for management of HIV and AIDS but a HIV Technical Committee has been established (chair Dr Kaven (physician), Dr John Maku (O &G), Dr Samai (anaesthesics), Sr Monica Abrams ICP, Mr Jack Melki (HEO) Sr Ettie Selep (AE Nurse). A member of PAC and the District Disease Control Officer have been invited.
No clinic is currently available for ART rollout. The old physiotherapy department has been identified as a possible site. However, funds have not been allocated from the hospital. During 2004 and 2005 NHASP worked with the then CEO and the Facilities Manager of the hospital to develop an STI clinic facility. Access plans were drawn up for the proposed clinic and the Hospital was invited to have the renovation plans costed and submitted to the NACS/NHASP Activity Grants Funds. However, the submission was never made.

The HIV and AIDS Team has not been established and no Team Leader officially designated. The Registrar, Dr Boas, is in Westmead for 12 months of training (M.Med [STI/HIV]) majoring in HIV/TB co-infection.

Records are kept on patient held medical records. There is no registry of potential ART patients. EpiInfo training by Sr Ettie and those involved in IMAI training may be useful in the future.

6.3 Staff capacity
The Nonga Hospital HIV service has one part time nursing Officer, three counsellors and one part time physician.

A Paediatrician, Obstetrician and Gynaecologist provide input from time to time. There is a requirement for a dedicated time allowance from the registrar, two-three nursing officers and one HEO.

The laboratory has one technician conducting STI and HIV screening. Another technician is required to enable timely confirmatory testing and microbiology support. During 2005, the NDoH Medical Microbiologist, supported by NHASP provided in-service training for ten days in microbiological methods at Nonga Base Hospital.

Those who attended IMAI training (HEO, Obstetrician and Physician) received HIV training.

6.4 Infection Control and Standard Safety Precautions
No ICP was available for interview. A senior nurse, who previously had this responsibility, indicated there were shortages of sterile syringes, masks and gloves.

One senior clinician identified the need for an isolation ward for HIV infected patients for “protective isolation”. Staff are reported to be uncomfortable managing HIV and AIDS patients and are concerned there is a risk of cross infection.

Although there were sharps injuries reported, no accurate records were available. No splash or NSI protocol was available.

6.5 Training, audit and maintenance of professional standards
In November 2005, IMAI training was attended by two doctors and one nurse from Nonga Base Hospital. The Medical Registrar is currently undertaking the M.Med
(STI/HIV) training in Sydney, conducting research in HIV and TB co-infection. No pharmacy or general hospital training has been conducted.

### 6.6 Pharmacy

There are three Pharmacy Technicians and a clerk. A computer based system is used for procurement and annual reporting according to central requirements. Stock is ordered, using AMS, based on the previous months use. Problems of orders not being met and arriving late were reported.

Medication is dispensed into plastic bags with labels attached. Pictures are used to help explain to patients when medications should be taken.

Clerical staff record medication electronically on an Excel spreadsheet and on a Stocker paper based system.

The pharmacy is relatively secure (outside door open during visit) and has processes in place to double count and audit dangerous drugs.

**Table 42: Medications available at Nonga Hospital**

<table>
<thead>
<tr>
<th>Medication</th>
<th>At Facility</th>
<th>Stock available at visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multivitamins</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cotrimoxazole tabs</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cotrimoxazole syrup</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zidovudine tabs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nevirapine tabs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nevirapine syrup</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zidovudine/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine40/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine30/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stavudine30/lamivudine/nevirapine combined</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### 6.7 Laboratory Support

Nonga Base Hospital is a HIV confirmatory testing site for the New Guinea Islands Region. The laboratory has a scientist, two technicians and one assistant. It performs 150 to 200 HIV initial rapid tests per month. Confirmatory test series are performed weekly. The Testing algorithm includes Serodia repeat reactive samples confirmed with three confirmatory assays (Determine, Immunocomb, and Capillus). Indeterminate results repeated and further sample requested at three months. Other sites and Islands testing locations do not send confirmatory test to Nonga because of transport constraints.
Table 43: Laboratory investigations available at Nonga Hospital

<table>
<thead>
<tr>
<th>Investigation</th>
<th>At Facility</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>Yes</td>
<td>Manual</td>
</tr>
<tr>
<td>WCC total/lymphocyte</td>
<td>Yes</td>
<td>Manual</td>
</tr>
<tr>
<td>CD4</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Malaria Smears</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Blood Group RhD</td>
<td>Yes</td>
<td>Slide Agglutinin</td>
</tr>
<tr>
<td>HIV antibody initial screening</td>
<td>Yes</td>
<td>Serodia</td>
</tr>
<tr>
<td>HIV antibody confirmatory rapid test</td>
<td>Yes</td>
<td>Determine, Immunocom, Capillus</td>
</tr>
<tr>
<td>Syphilis VDRL/TPHA</td>
<td>Yes</td>
<td>Kit based</td>
</tr>
<tr>
<td>STI diagnosis</td>
<td>Yes</td>
<td>Gram Stain</td>
</tr>
<tr>
<td>OI diagnosis TB</td>
<td>Yes</td>
<td>AFB</td>
</tr>
<tr>
<td>Cryptococcal Antigen</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Cryptococcal Meningitis</td>
<td>Yes</td>
<td>India Ink Stain</td>
</tr>
<tr>
<td>Sputum Gram Stain</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Histology</td>
<td>No</td>
<td>Sent to POM</td>
</tr>
<tr>
<td>LFTs</td>
<td>Yes</td>
<td>PT60</td>
</tr>
<tr>
<td>Electrolytes and creatinine</td>
<td>Yes</td>
<td>PT60</td>
</tr>
<tr>
<td>Pregnancy Test</td>
<td>Yes</td>
<td>Urine Pred Kit</td>
</tr>
<tr>
<td>PAP Smear</td>
<td>No</td>
<td>Cytology</td>
</tr>
</tbody>
</table>

The laboratory is secure with only the OIC able to access after hours. HIV results are stored in locked cupboards. No coding system exists.

There is limited access to microbiological methods and testing is limited. Blood culture resulted in few positive isolates recorded. No cryptococcal antigen tests were performed. A new area for microbiology is planned.

6.8 Referral Systems, Community and District/Rural Health Linkages

No referral pathway system has been developed. Entry points to the HIV and AIDS service are not specified.

Vunapope Hospital and rural and urban clinics were suggested by senior clinicians as possible locations to enable follow up closer to patients’ home. Michael and Rosemary Malaguna Community Based Organisation (CBO), have education and support groups in Kokopo and may be a useful partner organisation.
6.9 Support and relationship with Provincial Administration

The Evaluation Team was not able to ascertain the level of support of the Provincial Health Administration or the PAC all of whom were away at the time of the visit.

6.10 Future Plans of Institution

The Nonga Base Hospital plans to develop an STI / HIV Clinic. Planning has begun but funds are required for building renovations.

A new physician and increased nursing resources are hoped for in the future. For HIV Services two HEOs, two nurses and counsellors are required.

6.11 Conclusions, Issues and Challenges

At the Nonga Base Hospital, Rabaul:

- Key personnel interviewed expressed a strong desire to implement the National ART Roll out plan.
- Preliminary work has begun to identify a suitable site for combined Day Care Centre HIV treatment and care and STI Clinic. Planning and costing are in progress.
- Some key staff members have trained in HIV and ART treatment and care (IMAI, November 2005); Sr Ettie Selep (Senior Nursing Officer); Dr Joe Kaven (Physician); Mr Jack Melki (HEO), Dr John Maku (Obstetrician). Dr Boas Medical Registrar is currently completing a Masters in Medicine (STI/HIV) in Westmead Hospital, Australia, majoring in HIV and TB co-infection. He is planning to return to Nonga at the end of 2006.

Infection Control is not a priority. Staff turnover is high, and management have not demonstrated strong commitment to the Infection Control Committee. The hospital is
failing to meet National Infection Control standards. There are limited sterile supplies, poorly trained staff and limited auditing.

There is no Clinical Pathway for HIV management. HIV policy in relation to VCT, PMTCT and OI management and prophylaxis is unclear. It was reported that confidentiality of HIV diagnosis in New Guinea Islands region is a concern and that the community has reacted against past breaches with reluctance to be tested. Nonga Base Hospital has not established relationships with any partner organisations.

The Nonga Base Hospital has not identified HIV and AIDS as a major health issue in the region. There is no coordinated response to the VCT, OI management, HIV diagnosis and prevention of HIV and AIDS and prophylaxis. The interim arrangements of the BOM and CEO make longer term planning difficult. There is currently no designated STI Service. Patients are inadequately treated in outpatients’ ward. The TB DOTS program has not been established at the Nonga Base Hospital. TB treatment is limited to inpatients, where staff shortages and poor ventilation hinder the delivery of care.

There is no multidisciplinary ART Team identified. The individuals who have undergone IMAI training are currently occupied in multiple complex roles (eg AE Nurse, Infection Control, Psychiatric Nurse Practitioner as well as Nurse with HIV and AIDS portfolio). Further resources will be needed prior to a HIV Day Treatment Centre being successfully established at Nonga Base Hospital.

### 6.12 Recommendations

1. The NDoH work with the Nonga Base Hospital CEO and BOM to engage their support for HIV Care and Treatment within a new STI and a reinvigorated TB DOT service.

2. Delay ART Roll until HIV Care and Treatment services in the New Guinea Islands can be established. Consideration should be given to developing private public collaboration with Vunapope Hospital or other sites. Vunapope Hospital has already established PMTCT and VCT. (*Note, June 06: the ARV service at Nonga Base Hospital has already commenced despite the valid limitations outlined in this report. Vunapope Hospital is now referring clients to Nonga Base for ART.*)

3. Develop plans for the location and design of a STI Clinic at Nonga Base Hospital taking account of future HIV ART roll out. It is to be noted that NHASP previously provided technical assistance to the Hospital towards the renovation of an existing building into an STI clinic and invited the Nonga Base Hospital to apply for funding to achieve the renovation. That initiative was not followed up by the Hospital despite verbal assurances that it would. The TA STI/HIV, NDoH is now pushing that development with funds from other donors.

4. The East New Britain Provincial Health Office identifies the community and urban requirements for STI, HIV and TB services and develops relationships with the Nonga Base Hospital clinical and management team perhaps via an ART Taskforce Committee which involves the appropriate PAC membership and community based
organisation. The process to achieve this is underway but linkages with the PAC need to be strengthened.

5. The PAC facilitates the development of care and support organisations for individuals with HIV and reinvigorates community education, especially in relation to confidentiality and privacy issues.
Appendix 1
Adviser Terms of Reference
Project Background

To date resource constraints have limited effective diagnosis and treatment of HIV and its opportunistic infections. These functions have been initiated and managed in Port Moresby through the PMGH STI Clinic (Heduru Clinic). Previous inputs in 2003 and early 2004 from the Clinical HIV/AIDS Adviser resulted in the establishment of guidelines and strengthening of skills and capacity of staff for the clinical management of ART. The outcome of this work and collaboration with WHO was the commencement of PNG's first publicly available ART program.

To date ARTs are only available in the public sector, through pilot programmes at the Port Moresby General Hospital and the Angau Memorial Hospital, Lae. Within the private sector, there is limited anti-retroviral treatment available, in some private clinics and church health services.

Further input of a Clinical ART Adviser is now required to review the training and progress in the ARV program to date and to be part of a team who will advise on the readiness of centres in Lae and Mt Hagen to begin ARV programs, including OI management, VCT and counselling support. There is also a need to review guidelines and strengthen skills and capacity for the clinical management of ART.

Relevant Clauses in Scope of Services

This short-term consultant input is related to the following output/s in the Project Scope of Services:

Output 5.3.9: Provide research, technical and funding support for the introduction of anti-retroviral drugs.

Output 5.10.4: Assist in the development of protocols for conducting VCT

Purpose of Consultancy

1. Advise and work closely with the Technical Adviser, STI/HIV/AIDS, NDoH, Chief Physician and designated team, to conduct site assessments to determine whether appropriate infrastructure and mechanisms are in place to support the development of comprehensive programs including ART at Lae and Mt Hagen for people living with HIV/AIDS.

2. As part of the designated team, assess the Pilot Program for the introduction of ART at the Heduru Clinic (Port Moresby) and furnish a report of a standard acceptable by AusAID.
3. Assess private clinics and church run health services that already provide ART.

4. Provide recommendations relevant to the provision of accreditation standards for centres wishing to provide ART programs.

5. Make recommendations for the provision of training programs including IMAI (HIV).

6. Collaborate closely with the Chief Physician, CSTIA and SMA to review and update guidelines and protocols for the ART pilot programme, that are relevant, practical and achievable in PNG’s resource-scarce setting.

Tasks

1. Work closely with the appointed team to conduct site assessments at Lae and Mt Hagen Hospitals to determine their readiness to begin and roll out an ART program. This will include the collection of basic data at each site, guided by a pre-determined site assessment checklist instrument.

2. Advise and work closely with the appointed team to assess the status and potential for ongoing development of a comprehensive treatment clinic for PLWHA at PMGH (Heduru Clinic). The clinic includes the provision of services to enable the diagnosis and management of opportunistic infections as well as appropriate antiretroviral therapy including the monitoring of clients on ART.

3. Collaborate with the appointed team to assess private clinics and church run health facilities that are already providing ART.

4. Provide recommendations for the provision of accreditation standards for centres in PNG wanting to provide ART services.

5. Provide input and advice in the training of clinical health workers including Specialist Medical Officers, Medical Registrars, Resident Medical Officers, Health Extension Officers and Clinical Nurse Practitioners at PMGH to achieve the effective running of the programme and monitoring of clients.

6. Collaborate closely with the Chief Physician, CSTIA, SMA and other relevant clinicians, to review guidelines and protocols for the ART pilot programme that are relevant, practical and achievable in PNG’s resource-scarce setting. The ART pilot programme is seen as being vital in establishing the protocols that will be essential to the later establishment of a wider ART programme both in Port Moresby and in other centres. In light of the existing conditions and constraints in PNG, the adviser will present for review and consideration, possible suggested amendments to the ART treatment protocols, gained from previous experience and publications outlining successful programmes in other similar resource scarce settings.
Outputs and Reporting

1. Collaborative site inspection reports – Lae and Mt Hagen
2. Collaborative evaluation report – Heduru Service, Port Moresby
3. Recommendations report for accreditation and training needs.
4. Adviser Trip Report

Counterparts
The key counterparts will be the TA – STI/HIV/AIDS, Chief Physician and relevant clinical staff at PMGH and also the SMA (NACS) and CSTIA (NHASP).

Inputs
The final input for this position of the Clinical HIV/AIDS Adviser will be for 34 days.

Qualifications and Experience
The Adviser will be a Sexual Health Physician or Infectious Diseases Physician who is an ART prescriber. Excellent communication and interpersonal skills are essential. The person must also have experience in setting up similar programmes in resource-scarce settings in the developing world.

Understanding the Adviser Role
It is crucial that the Adviser understands the advisory role and that s/he will be able to transfer knowledge and skills to counterpart staff.
Appendix 2
Membership Site Assessment Team
1. Dr Esorom Daoni
   Technical Advisor STI/HIV
   National Department of Health
   3rd Floor AOPI Centre
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   Port Moresby
   Tel: (675) 3013737
   Fax: E-mail: daoni_esorom@health.gov.pg

2. Dr Paison Dakulala
   Physician
   Alotau General Hospital
   P.O. Box 402, Alotau
   Milne Bay Province
   Tel: (675) 641 12000 / 641 1308
   Fax: (675) 641 00 40
   E-mail: alotaugh@daltron.com.pg

3. Mr Geoff Clark
   Nursing HRD Officer
   WHO
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   Waigani Drive, PNG
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   Fax: (675) 6868790 E-mail: Clarkg@png.wpro.who.int

4. Associate Professor Anne Mijch
   Head of the Victorian HIV Service
   Alfred Hospital
   Commercial Rd
   Prahran VIC 3181
   Tel: (613) 9276 6077
   Fax: (613) 9276 6093 E-mail: Anne.Mijch@med.monash.edu.au
Appendix 3

Individuals interviewed at Site visited
## Lae

### Goroka

<table>
<thead>
<tr>
<th>Name</th>
<th>Title /Position</th>
<th>Date Interview</th>
<th>ARV Member</th>
<th>Team</th>
<th>ARV Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Joseph Apa</td>
<td>A/CEO and DMS Goroka Hospital</td>
<td>11-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Alfred Malagisa</td>
<td>Obstetrician Goroka Hospital</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Dale Frank</td>
<td>Paediatrician Goroka Hospital</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Dr Paul Arino</td>
<td>Medical Registrar Registrar Goroka Hospital</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mr Timothy</td>
<td>CHW Michael Alpers Clinic</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>No</td>
<td></td>
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<tr>
<td>Dr Alfred Malagisa</td>
<td>Obstetrician Goroka Hospital</td>
<td>11-Jan-06</td>
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<tr>
<td>Dr Dale Frank</td>
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<td>Yes</td>
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</tr>
<tr>
<td>Dr Paul Arino</td>
<td>Medical Registrar Registrar Goroka Hospital</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
<tr>
<td>Mr Timothy</td>
<td>CHW Michael Alpers Clinic</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Clara Hemoti</td>
<td>Nurse OIC Michael Alpers Clinic</td>
<td>11-Jan-06</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Seva Korape</td>
<td>Pharmacy Technician a/OIC Pharmacy</td>
<td>11-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Thio Ilhio</td>
<td>OIC Laboratory Services</td>
<td>12-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Fine Fino</td>
<td>Infection Control Practitioner</td>
<td>13-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Ben Haili</td>
<td>Director, Provincial Health Office</td>
<td>12-Jan-05</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Jackson Apo</td>
<td>Provincial Disease Control Officer</td>
<td>!2-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Molley Marawa</td>
<td>Principal HRCN Nursing School</td>
<td>12-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Leslie Ririke</td>
<td>Deputy Principal Nursing School Training Officer Goroka Hospital</td>
<td>12-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Lotti</td>
<td>Director, PNG Institute of Medical Research</td>
<td>!2-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

## Mt Hagen

<table>
<thead>
<tr>
<th>Name</th>
<th>Title /Position</th>
<th>Date Interview</th>
<th>ARV Member</th>
<th>Team</th>
<th>ARV Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr John Kiap</td>
<td>SMO Anaesthetics, A/DMS</td>
<td>16-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Magdelene Kaupa</td>
<td>SMO Paediatrics</td>
<td>16-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Sr Sabina Kerepa</td>
<td>Assistant Infection Control Nurse</td>
<td>16-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Leslie K Kawa</td>
<td>Medical Registrar</td>
<td>16-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mr Peter Pindan</td>
<td>OIC Infection Control</td>
<td>16-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Seva Raupe</td>
<td>Assistant Laboratory Manager</td>
<td>16-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Wot Nixon Kornar</td>
<td>Acting OIC Pharmacy</td>
<td>17-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Tore Jeffrey</td>
<td>O&amp;G Registrar</td>
<td>16-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Theresia SIC</td>
<td>Labour Ward</td>
<td>16-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Title/Position</td>
<td>Date Interview</td>
<td>ARV Team Member</td>
<td>ARV Training</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
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<td>-----------------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Dr Lucas Samof</td>
<td>Acting DMS</td>
<td>19-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr John Maku</td>
<td>Obstetrician</td>
<td>19-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mr Edward Lamur</td>
<td>Acting CEO</td>
<td>19-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mr Jack Melki</td>
<td>HEO</td>
<td>19-Jan-06</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Lucas Samoi</td>
<td>A/DMS</td>
<td>19-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Carol Tanaen</td>
<td>DNS</td>
<td>19-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sr Ettie Selep</td>
<td>AE Nurse</td>
<td>20-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Dr Boas</td>
<td>Medical Registrar</td>
<td>19-Jan-06</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mr Francis Soli</td>
<td>OIC Laboratory</td>
<td>19-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Ms Rakraker Toarino</td>
<td>OIC Pharmacy</td>
<td>19-Jan-06</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4
Site Readiness Assessment for HIV/AIDS Services Tools (Version January 2006)
Site Readiness Assessment for HIV/AIDS Services

January 2006
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INTRODUCTION

(Greetings) We are here on behalf of National Department of Health to obtain information on the provision of HIV/AIDS services in your institution. The overall goal of this assessment is to gain an understanding of the current status and challenges of providing HIV/AIDS services in the public sector and to inform the response of NDoH, AusAID and other development partners.

BACKGROUND INFORMATION

Date: __________________________ (day/month/year)
Interviewers: ____________________________________________________________
Name of Facility: _______________________________________________________

Type of Facility:
- Regional Hospital
- Provincial hospital
- District hospital
- Teaching Hospital
- Private
- NGO
- FBO
- Research Institution

Name and title of interviewees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Contact details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
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<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1. Is the Site providing</td>
<td>2. Is the service provided for</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Y= Yes</td>
<td>Inpatient = IN</td>
</tr>
<tr>
<td>N= No</td>
<td>Outpatient = OP</td>
</tr>
<tr>
<td></td>
<td>Outreach = OR</td>
</tr>
<tr>
<td></td>
<td>All services = ALL</td>
</tr>
<tr>
<td></td>
<td>Non of Services available = NA</td>
</tr>
</tbody>
</table>

| a. VCT?                  | □ IN                           | □ ARV prophylaxis (mother & infant) |
|                          | □ OP                           | □ VCT                        |
|                          | □ OR                           | □ FP                         |
|                          | □ All                          | □ Nutritional /BF counseling |
|                          | □ NA                           | □ Infant Co-trimoxazole prophylaxis |
|                          |                               | □ Child immunization         |
|                          |                               | □ Syphilis screening         |

| b. PMTCT?                | □ IN                           | □ Treatment                  |
|                          | □ OP                           | □ Monitor side effects/toxicity |
|                          | □ OR                           | □ Monitor resistance          |
|                          | □ All                          | □ Adherence counseling        |
|                          | □ NA                           | □ DOT                        |

| c. ART                   | □ IN                           | □ RPR testing                |
|                          | □ OP                           | □ VDRL or TPHA testing       |
|                          | □ OR                           | □ TPPA/ "Determine"          |
|                          | □ All                          | □ Syphilis treatment         |
|                          | □ NA                           | □ Partner notification       |

<p>| d. Syphilis Screening?   | □ IN                           | □ RPR testing                |
|                          | □ OP                           | □ VDRL or TPHA testing       |
|                          | □ OR                           | □ TPPA/ &quot;Determine&quot;          |
|                          | □ All                          | □ Syphilis treatment         |
|                          | □ NA                           | □ Partner notification       |</p>
<table>
<thead>
<tr>
<th></th>
<th>e. Family Planning?</th>
<th>f. STI?</th>
<th>g. OI?</th>
<th>h. Clinical Care Toxicities (hepatitis, rash + fever syndrome)</th>
<th>i. TB?</th>
<th>General Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Y □ N</td>
<td>□ Y □ N</td>
<td>□ Y □ N</td>
<td>□ Y □ N</td>
<td>□ Y □ N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ IN □ OP □ OR □ All □ NA</td>
<td>□ IN □ OP □ OR □ All □ NA</td>
<td>□ IN □ OP □ OR □ All □ NA</td>
<td>□ IN □ OP □ OR □ All □ NA</td>
<td>□ IN □ OP □ OR □ All □ NA</td>
<td>□ Family Planning counseling □ Contraceptive distribution □ Condom distribution</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□ Diagnosis □ Treatment □ Syndromic approach □ Condom distribution □ VCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□ Laboratory diagnosis □ Chest X-ray □ Treatment □ Counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□ Diagnosis □ Treatment □ Manage side effects/toxicity □ Refer to another service (nominate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□ Skin test □ X-Ray □ Sputum smear □ Treatment □ DOT □ TB Prophylaxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
**MODULE I: SERVICE CAPACITY**

<table>
<thead>
<tr>
<th>Name and title of interviewees:</th>
<th>Name</th>
<th>Title/Contact details</th>
<th>Name card</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>

### I. Service Provision

<table>
<thead>
<tr>
<th>1. Are patients referred for these services?</th>
<th>2. Number of patients per month (average)</th>
<th>3. If yes, where are patients referred to?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ART</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. PMTCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. VCT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Describe the referral process.
6. How is referral system working? (Prompt: do people go to referral sites?)

8. What eligibility criteria are used for selecting patients to be enrolled in ART?

10. Are families of employees covered in this program?
12. How many people received these services in 2005?

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Number of people</th>
<th>Data (specify)</th>
<th>Informants' knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. VCT</td>
<td>_______</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. PMTCT</td>
<td>_______</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. ART</td>
<td>_______</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

13. How many patients do you have today on

a. ART _______  

b. PMTCT _______

14. How long have they been on ART? (interviewer ask for the range of patients on ART the longest and the most recent)

15. How many patients have had to change ARV drug regimen due to side effects, toxicity, or viral resistance?

16.  
   a.  
   b.  

17.  

18.  
Part of program monitoring and data can be retrieved easily at central level

II. Uptake of Program Services

1. How long have these services (ART, PMTCT, VCT) been provided?

2. What has been the uptake of services? (high demand? low coverage?)

3. How has availability of products affected uptake of services?

4. Does the facility have plans for service expansion? If so what are the plans?

III. Human Resource Capacity
### Papua New Guinea Assessment

**June 2005**

1. At this facility what cadres and number of staff are required?
2. How many of each cadre currently on staff?
3. Among the staff, how many were trained in these services (ART, VCT, PMTCT, Lab diagnosis) within the last one year?

<table>
<thead>
<tr>
<th>Cadre</th>
<th>Required</th>
<th>Currently On Staff</th>
<th>Trained in Last Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Physician</td>
<td></td>
<td></td>
<td>VCT-</td>
</tr>
<tr>
<td>b. Nurse</td>
<td></td>
<td></td>
<td>PMTCT</td>
</tr>
<tr>
<td>c. Laboratory Tech</td>
<td></td>
<td></td>
<td>ART-</td>
</tr>
<tr>
<td>d. Pharmacist</td>
<td></td>
<td></td>
<td>Lab -</td>
</tr>
<tr>
<td>e. Counselor</td>
<td></td>
<td></td>
<td>ART-</td>
</tr>
<tr>
<td>f. Other</td>
<td></td>
<td></td>
<td>HBC-</td>
</tr>
</tbody>
</table>

4. How much staff turnover has there been in last one year?

5. What are training needs for each service (s) provided at this site?
### IV. Teamwork for PMTCT and ART

1. Is there an interdisciplinary team?
   - Yes
   - No

2. Who are staff members?

3. How often are interdisciplinary meetings held?
   - Weekly
   - Bi-weekly
   - Monthly
   - Quarterly
   - Other

4. What service coordination issues and problem solving is addressed in these meetings?

### V. Record Keeping

1. What clinical patient records are used for the service(s) at this site? Is there a comprehensive HIV/AIDS clinical patient form?
2. Is there a data system in place for tracking patients’ response to treatment? (e.g. side effects/toxicity/resistance/discontinuation) (Please describe)

VI. Leadership and Program Management

1. Who is responsible for coordinating service(s) provided at this site?
   - Administrator
   - Physician
   - Nurse
   - Laboratory Tech
   - Pharmacist
   - HBC Coordinator
   - Community Liaison
   - Counselor
   - Other (specify)
2. What challenges have you faced in implementation of services?

3. What solutions have been proposed or implemented?

4. How have they worked?

VII. Standard Treatment Guidelines/Product Selection

1. What ART guidelines are used at this facility? *(Obtain a copy if possible)*
2. Are other clinicians in the private sector using the same ones? If not what are they using?
3. What are the standard ARV drug regimens prescribed at this facility?

<table>
<thead>
<tr>
<th></th>
<th>1st line regimen</th>
<th>2nd line regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. HAART</td>
<td>□ Offered</td>
<td>□ Not offered</td>
</tr>
<tr>
<td></td>
<td>Single drug substitutes</td>
<td></td>
</tr>
<tr>
<td>b. PMTCT</td>
<td>□ Offered</td>
<td>□ Not offered</td>
</tr>
<tr>
<td></td>
<td>□ AZT</td>
<td>□ AZT + 3TC</td>
</tr>
<tr>
<td></td>
<td>□ NVP syrup 10mg/ml (2mg/2kg body weight)</td>
<td></td>
</tr>
<tr>
<td>c. Post-exposure Prophylaxis (PEP)</td>
<td>□ Offered</td>
<td>□ Not offered</td>
</tr>
<tr>
<td></td>
<td>High risk:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low risk:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regimen</td>
<td></td>
</tr>
<tr>
<td>d. Drugs for HIV/TB Patients</td>
<td>□ Offered</td>
<td>□ Not offered</td>
</tr>
</tbody>
</table>

4. What ARV drugs are used at this site? (Please list by branded and generic. If possible, obtain a copy of the list of drugs)
<table>
<thead>
<tr>
<th>5. What system or strategies are used by staff and patients to support patient adherence to ARV drug regimens? <em>(Describe)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. What are some of the issues affecting patient adherence to ART? <em>(e.g. improper dispensing, lack of drugs, inability to pay, stigma, sharing medicines with others ……….)</em></td>
</tr>
<tr>
<td>7. What do you think should be the role of private pharmacies in supporting patient adherence?</td>
</tr>
</tbody>
</table>
VIII. Universal Safety Precautions

1. Do written policies exist for: *(request to see copy)*

<table>
<thead>
<tr>
<th></th>
<th>Yes, observed</th>
<th>Yes, not seen</th>
<th>No</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Infection Prevention?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. Safe disposal of sharps, biohazardous waste?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. Use of protective gear (e.g. masks, gloves, apron)?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

2. Have you experienced problems in implementing these policies? Please describe.

3. Is protective gear available? (e.g. gloves, gown, masks, eye shield, aprons)  
   ☐ Yes Specify……………..  
   ☐ No

4. Is equipment functioning? (e.g. lab, autoclave, incinerator)  
   ☐ Yes Specify……………..  
   ☐ No

5. Are consumable supplies available in sufficient quantities? (e.g. syringes, needles, disinfectant, gauze, cotton, alcohol swabs etc)
### IX. Infrastructure and Utilities

1. Does your facility have:
   - [ ] Reliable electrical power supply
   - [ ] Reliable water supply
   - [ ] Convenient waiting areas
   - [ ] Private counseling rooms (Specify number)
   - [ ] Adequate storage space for pharmaceuticals and supplies
   - [ ] Secure storage for high value products
   - [ ] Furniture's (Specify)
   - [ ] Adequate ventilation
   - [ ] Laboratory (if yes, complete attached Lab Services Questionnaire)
   - [ ] Communication facility (phone/fax/email) (specify)

*Interviewer comment on how infrastructure and utilities problems affect service provision and product availability*
### Papua New Guinea Assessment

**June 2005**

**X 1 Training Audit and Maintenance of Professional Standards**

<table>
<thead>
<tr>
<th></th>
<th>1. At this facility what <strong>initial</strong> training in ARV is provided for? Specify Name/description and Month /Year (mm/yyyy) If not applicable insert NA</th>
<th>2. At this facility what <strong>initial</strong> training in OI Rx is provided for? Specify Name/description and Month /Year (mm/yyyy) If not applicable insert NA</th>
<th>3. At this facility what ongoing training opportunities in ARV are provided for? Specify Name/description and Month /Year (mm/yyyy) If not applicable insert NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Specialist Medical Officers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Physicians</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. OBGYN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Medical Registrars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Resident Medical Officers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Health Extension Officers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Clinical Nurse Practitioners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Others Specify</td>
<td></td>
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<tr>
<td>k.</td>
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</tbody>
</table>
4. What training methodologies best suit your healthcare workers needs (didactic lectures, self directed reading, case studies, individual or group programs, multidisciplinary or cadre based programs.)

5. Does your service provide regular audits of patient management specify type and frequency (individual case discussion, adverse outcome reviews, mortality reviews, topic reviews)

6. What is the optimal frequency of training programs/audits and reviews of professional performance for healthcare workers at your institution

7. What additional resources would help training, audit and better support maintenance of professional standards at your facility?
### MODULE II: LOGISTICS CAPACITY

#### Name and title of interviewees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Contact details</th>
<th>Name card</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>□ Y  □ N</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>□ Y  □ N</td>
</tr>
</tbody>
</table>

#### I. Products

<table>
<thead>
<tr>
<th>Products</th>
<th>Managed at Facility? Y/N</th>
<th>Available today Y/N</th>
<th>Stock on hand</th>
<th>Duration of Stock Out (6 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracer Commodities</td>
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<tr>
<td>DDA</td>
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<tr>
<td>Disposable Latex Gloves</td>
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<tr>
<td>B complex</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Multivitamins</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Zidovudine (AZT)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Nevirapine 200 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevirapine syrup</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Cotrimoxazole syrup</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
II. Patient Access to Drugs

1. Where do your patients access the ARVs you prescribe?
   - On-site pharmacy
   - Government ART center
   - Private retail pharmacy
   - Open market
   - Other

2. How do patients pay for the ARV drugs?
   - Self pay
   - Health Insurance
   - Employer subsidized
   - Cost sharing
   - Free Access

3. How does cost sharing work?
4. What is the source of supply of ARV drugs for the facility?
   - International tender & procurement
   - Local purchase
   - Donations
   - Other ____________________________

5. How reliable is the drug supply? Describe any problems experienced in ensuring reliable supply of quality ARV drugs [e.g. supply interruptions from lack of funding, allocated funds not available at time of procurement; irregular source of supply; shipment delays; unexpected increase in consumption; received less than what was ordered]

6. What is the source of funding for procurement of ARV drugs for this organization/facility?

7. Does it cover all your ARV drug needs?
8. How long is financing for ARV drug procurement secured for?
### III. Drug Quality Assurance and Rational Drug Use

1. How is the quality of the ARV drugs received at the site ensured?

2. Are there any issues of drug quality at the site?

3. What mechanisms are in place to ensure rational drug prescribing?

4. Are there any issues in ensuring rational drug prescription at the site? (e.g. market availability, insufficient provider training, etc)

5. What do you think the role of the private pharmacist should be in ensuring rational drug use?

### IV. Logistics Records/Reports
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Are any logistics reports prepared for these commodities? (Get name and copy)</td>
</tr>
<tr>
<td>2.</td>
<td>What type of information is included?</td>
</tr>
<tr>
<td>3.</td>
<td>Who prepares logistics reports?</td>
</tr>
<tr>
<td>4.</td>
<td>Is the logistics information combined with service delivery information?</td>
</tr>
<tr>
<td>5.</td>
<td>Do suppliers of commodities receive the logistics information?</td>
</tr>
<tr>
<td>6.</td>
<td>What information is included?</td>
</tr>
<tr>
<td>7.</td>
<td>Where do you send them?</td>
</tr>
</tbody>
</table>
8. How often do you prepare logistics reports?

9. Is required stationary available for management of these supplies?

V. Ordering and Re-supply

1. Who determines your re-supply quantities?

2. Have you been told how often you’re supposed to order? (state frequency)

3. How often do you order?
4. How do you calculate how much you need? (methodology/data elements)

5. Are there financial issues that force you to limit the amount you want to order of each product?

6. Does anyone verify your order? Who?

7. Where does this facility submit its order?

8. How long does it take to receive what you ordered?

9. Do you usually get what you ordered?
### VI. Organizational Support for Logistics

1. Do you have a job aid/procedures manual or written guidance for how to store, order, dispense, any of these medicines/supplies?

2. How did you learn how to use the forms and how to calculate how much to order?

3. Who from this site supervises your job with logistics?
### 4. Who supervises the logistics at this site?

### Special Product Considerations

1. How do you package tablets and capsules you dispense to patients?
### VII. Storage Conditions Table

TO QUALIFY AS “YES,” ALL PRODUCTS AND CARTONS MUST MEET THE CRITERIA FOR EACH ITEM.

<table>
<thead>
<tr>
<th>No</th>
<th>A. Description</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Products that are ready for distribution are arranged so that identification labels and expiry dates and/or manufacturing dates are visible.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Products are stored and organized in a manner accessible for First-Expiry / First-Out (FEFO) counting and general management.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Cartons and products are in good condition, not crushed due to mishandling. If cartons are open, check if products are not wet or cracked due to heat/radiation (fluorescent lights in the case of condoms)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>The facility makes it a practice to separate damaged and/or expired products from good products and remove them from inventory.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5.</td>
<td>Products are protected from direct sunlight at all times of the day and during all seasons.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6.</td>
<td>Cartons and products are protected from water and humidity during all seasons.</td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>Storage area is visually free from harmful insects and rodents. (Check the storage area for traces of rodents (droppings) or insects).</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>Storage area is secured with a lock and key, but accessible during normal working hours, with access limited to authorized personnel.</td>
<td></td>
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<tr>
<td>9.</td>
<td>Products are stored at the appropriate temperature during all seasons according to product temperature specifications.</td>
<td></td>
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</tr>
<tr>
<td>10.</td>
<td>All hazardous waste (e.g., needles, toxic materials) is properly disposed of and non-accessible to non-medical personnel.</td>
<td></td>
<td></td>
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<tr>
<td>11.</td>
<td>Roof is maintained in good condition to avoid sunlight and water penetration at all times.</td>
<td></td>
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<tr>
<td>12.</td>
<td>Storeroom is maintained in good condition (e.g. clean, all trash removed, shelves are sturdy, boxes are organized).</td>
<td></td>
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<tr>
<td>13.</td>
<td>The current space and organization is sufficient for existing products and reasonable expansion (i.e., receipt of expected product deliveries for the foreseeable future).</td>
<td></td>
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</tr>
</tbody>
</table>
Additional guidelines for specific questions:

**Item 2**: In noting proper product arrangement, the shelf life of the different products should be considered.

**Item 3**: Cartons should be checked to determine whether they are smashed due to mishandling. The conditions of the products inside opened or damaged cartons should also be examined to see if they are wet, cracked open due to heat/radiation (e.g. because of fluorescent lights in the case of condoms) or crushed.

**Item 4**: The discarding of damaged or expired products should be conducted according to the facility’s procedures (which may differ from one facility to another). Please specify if procedures exist and note what they are.

**Item 7**: It is important to check the storage area for traces of rodents (droppings) or insects harmful to the products.

**Item 8**: This refers to either a warehouse secured with a lock or to a cabinet with a key in a clinic.

### VIII. SECURITY FOR HIGH VALUE/CONTROLLED SUBSTANCES (ARVs if Managed)

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Is there a separate, secure storage area for high/value products or controlled substances?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.</td>
<td>Is there a doubling-up of staff for picking, packing, dispensing and recording of issues for these commodities? (i.e. staff person prepares the order, supervisor verifies?)</td>
<td></td>
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<tr>
<td>3.</td>
<td>Do both the staff person and supervisor conduct physical inventory of remaining stock at the end of the day?</td>
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<tr>
<td>4.</td>
<td>Is there a doubling-up of staff for unpacking, verification, and recording of receipts for these commodities? (i.e. staff person and supervisor are both present during receipt process?)</td>
<td></td>
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<tr>
<td>5.</td>
<td>Are there unannounced audits or high value/ controlled substances performed? (Specify frequency and procedure in comments section)</td>
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<tr>
<td>6.</td>
<td>Describe the security mechanisms in place for dispensing high value/controlled substances to patients?</td>
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<tr>
<td>7.</td>
<td>Are theft/loss indicators being monitored for these commodities at this site?</td>
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<tr>
<td>8.</td>
<td>Is staff performance evaluation and compensation (rewards and penalties) tied to theft/loss indicators for these commodities?</td>
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</tbody>
</table>

**Additional Comments:**
CONTINUE WITH THE LABORATORY QUESTIONNAIRE IF THERE IS A LABORATORY IN THE SITE
## Laboratory Services Questionnaire

<table>
<thead>
<tr>
<th>Test performed on site</th>
<th>Specify test</th>
<th>Client cost per test</th>
<th>Staff trained in the last 2 years?</th>
<th>Equipment available today?</th>
<th>Equipment functional?</th>
<th>Reagents available today?</th>
<th>Is there a register for results to be recorded?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMTCT</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
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<tr>
<td>Minimum Package</td>
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<tr>
<td>I. Routine</td>
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<td>Hemoglobin</td>
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<tr>
<td>Rh D Blood Group</td>
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</tr>
<tr>
<td>II. VCT/HIV Diagnosis</td>
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<tr>
<td>Initial:</td>
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<tr>
<td>HIV rapid or long ELISA</td>
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<tr>
<td>III. Confirmatory:</td>
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<td>IV. HIV rapid or long ELISA</td>
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<tr>
<td>V. Syphilis Screening</td>
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<td>Initial:</td>
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<tr>
<td>RPR or VDRL</td>
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<tr>
<td>Confirmatory: TPHA or TPPA Determine</td>
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<tr>
<td>VI. Infant HIV Diagnosis</td>
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<tr>
<td>Polymerase chain reaction (PCR) or p24Ag ELISA</td>
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<tr>
<td>STI Diagnosis</td>
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<tr>
<td>Gram Stain</td>
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<tr>
<td>Culture &amp; Sensitivity</td>
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</tbody>
</table>

_Abt Associates Inc._

33
### Papua New Guinea Assessment

**June 2005**

<table>
<thead>
<tr>
<th><strong>OI Diagnosis</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>OI-related lab: PCP</td>
<td></td>
<td></td>
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<tr>
<td>Cryptococcal diagnosis</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TB Diagnosis</strong></th>
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</thead>
<tbody>
<tr>
<td>Acid Fast Bacillus (AFB)</td>
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</tbody>
</table>

### ART Minimum Package

**Routine Tests**

- Full Blood Count (FBC)
- Total lymphocyte count
- White blood cell count
- Hemoglobin
- HBs Ag (Hep B antigen)
- Hematocrit
- Liver function tests (enzymes)
- Urea
- Bilirubin
- Creatinine
- Electrolytes
- Cholesterol and lipids
- Fasting blood sugar
- Urinalysis
- Pregnancy Test
- Malaria Smear

### Additional ART

**Laboratory Services**

- Viral Load
- CD4+ Cell Count
### IX. Laboratory Services

1. Who is responsible for monitoring the quality of laboratory services?

2. What are the issues related to equipment maintenance and repair? What are current and future needs?

3. Where/who do you receive/order diagnostic agents and supplies from?

4. How are these laboratory diagnostic agents and supplies ordered and resupplied?

5. What is current consumption of laboratory supplies for testing at PMTCT sites? ART sites?

6. What are current stock levels of required laboratory supplies at PMTCT sites? ART sites?
7. What record keeping and laboratory supply monitoring systems are in place?

8. Is there an established laboratory inventory control system?

Interviewer obtain copies of any laboratory forms in use, if possible (if not, document data collected on laboratory registers)

9. What security issues, if any, exist for storage, distribution and use of PMTCT / ART laboratory testing equipment?

10. Are Universal Safety Precautions practiced at this facility?  □ Yes  □ No

11. Are there documented procedures for infection control and safe disposal of sharps and bio-hazardous waste available at the facility?  □ Yes  □ No

12. Are supplies and equipment available for infection control and safe disposal of sharps and bio-hazardous material at the facility?  □ Yes  □ No

**END OF INTERVIEW**
Appendix 5
ART Guidelines v2 PNG
GUIDELINES FOR HIV CARE AND TREATMENT IN PAPUA NEW GUINEA
FOREWORD

Close to two decades have passed since the HIV epidemic was first recognized in Papua New Guinea. During this period, the country has responded in several ways, including formulating and implementing a series of strategic plans. Many of the initial interventions were geared towards preventing further spread of HIV.

Despite the earlier efforts, the epidemic has grown and established itself into a generalized epidemic in both rural and urban communities. The epidemic has been more severe in certain vulnerable groups including sex workers, women, children, youth and migrant populations. As a result of this, more than 69,000 people are currently estimated to be living with HIV in the country. This calls for a broadening of our approach to the epidemic through the strengthening and expansion of the care and treatment component of our response.

The National scale up plan, which includes prevention, care and treatment, is a culmination of different initiatives including the Global Fund for AIDS, Tuberculosis and Malaria (GFATM). The GFATM is providing a framework for the establishment of a five-year program that will enrol about 7,000 patients on anti retroviral treatment. This program will result in the need to train more healthcare workers as well as the need to develop tools to guide the safe and effective implementation of care and treatment.

The National Guidelines for HIV Care and Treatment in PNG are one of the many tools that have been developed to provide healthcare workers guidance on various aspects of care and treatment. In this edition of the Guidelines, there is much wider coverage of such areas as; Adult and Paediatric HIV management including adherence issues; PMTCT; Treatment of opportunistic infections; PMTCT, and infant feeding options. The guidelines can also serve as reading and reference material for a wide range of healthcare professionals.

HIV and AIDS is a rapidly changing and growing field and therefore frequent revision of the material contained within these Guidelines will be required. I look forward to receiving feedback from the users of the document to assist in this process.

Dr Nicholas Mann, CMS
Secretary for Health
Acknowledgement

These guidelines were prepared for the Papua New Guinea National Department of Health (NDoH) The guidelines are designed to ensure that HIV Care and Treatment in Papua New Guinea is implemented in a way that will benefit both individuals and the country overall. In particular, the use of antiretroviral medications need to be regulated to ensure that the public benefit is not eroded by the development of viral resistance.

This document would not have been possible without the contribution and commitment of the many national healthcare workers who are at the forefront of this epidemic. In particular, acknowledgement is given to Dr Goa Tau, Chief Physician, Heduru Clinic, Port Moresby General Hospital. The National Department of Health also appreciates and acknowledges the valuable support given by various partners including WHO, NHASP, and UNICEF.
# Table of contents

<table>
<thead>
<tr>
<th>List of Abbreviations</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td><strong>CHAPTER ONE - THE USE OF ANTIRETROVIRAL DRUGS IN ADULTS AND ADOLESCENTS</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Purpose</td>
<td>10</td>
</tr>
<tr>
<td>1.2 Who Should Initiate Treatment</td>
<td>10</td>
</tr>
<tr>
<td>1.3 Who Should Monitor and Supply Treatment</td>
<td>10</td>
</tr>
<tr>
<td>1.4 When to Start Treatment</td>
<td>11</td>
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<tr>
<td>1.5 Baseline Tests</td>
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<td>1.6 What Drugs To Use – First and Second Line Therapy</td>
<td>13</td>
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<td>1.7 Prevention of Opportunistic Infections</td>
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<td>1.8 People with Tuberculosis and HIV Co-infection</td>
<td>16</td>
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<tr>
<td>1.9 Who May Initiate OI Prophylaxis</td>
<td>16</td>
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<tr>
<td>1.10 Adherence</td>
<td>17</td>
</tr>
<tr>
<td>1.11 Drug Interactions</td>
<td>17</td>
</tr>
<tr>
<td>1.12 Data Collection</td>
<td>17</td>
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<tr>
<td><strong>CHAPTER TWO – PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV (PMTCT)</strong></td>
<td></td>
</tr>
<tr>
<td>2.1 Prevention of Mother to Child Transmission</td>
<td>19</td>
</tr>
<tr>
<td>2.2 Guidelines For Use of ART Drugs for PMTCT</td>
<td>19</td>
</tr>
<tr>
<td>2.3 Basic Nevirapine ART Regimen for PMTCT</td>
<td>21</td>
</tr>
<tr>
<td>2.4 Guidelines on HIV and Infant Feeding</td>
<td>22</td>
</tr>
<tr>
<td><strong>CHAPTER THREE – THE USE OF ANTIRETROVIRAL DRUGS IN CHILDREN</strong></td>
<td></td>
</tr>
<tr>
<td>3.1 Background on ART in children</td>
<td>28</td>
</tr>
<tr>
<td>3.2 Criteria To Initiate ART in Children</td>
<td>29</td>
</tr>
<tr>
<td>3.3 Social Criteria for Initiation of ART in Children</td>
<td>30</td>
</tr>
<tr>
<td>3.4 Baseline Tests in Children</td>
<td>30</td>
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### ABBREVIATIONS

<table>
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<tr>
<td>3TC</td>
<td>Lamivudine</td>
</tr>
<tr>
<td>AFB</td>
<td>Acid fast bacteria (Mycobacteria)</td>
</tr>
<tr>
<td>ABC</td>
<td>Abacavir</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired immunodeficiency syndrome</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral therapy</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral</td>
</tr>
<tr>
<td>BBA</td>
<td>Birth Before Arrival</td>
</tr>
<tr>
<td>ZDV</td>
<td>Zidovudine</td>
</tr>
<tr>
<td>CD4</td>
<td>Cluster Differention 4 cells</td>
</tr>
<tr>
<td>CSF</td>
<td>Cerebral Spinal Fluid</td>
</tr>
<tr>
<td>CT</td>
<td>Computerised Tomography</td>
</tr>
<tr>
<td>CXR</td>
<td>Chest X-ray</td>
</tr>
<tr>
<td>d4T</td>
<td>Stavudine</td>
</tr>
<tr>
<td>ddI</td>
<td>Didanosine</td>
</tr>
<tr>
<td>ECG</td>
<td>Electrograph</td>
</tr>
<tr>
<td>EFZ</td>
<td>Efavirenz also known as EFV</td>
</tr>
<tr>
<td>ESR</td>
<td>Elythrocyt Sedimentation Rate</td>
</tr>
<tr>
<td>FBC</td>
<td>Full Blood Count</td>
</tr>
<tr>
<td>HAART</td>
<td>Highly active antiretroviral therapy</td>
</tr>
<tr>
<td>HCMV</td>
<td>Human Cytomegalo Virus</td>
</tr>
<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
</tr>
<tr>
<td>HSV</td>
<td>Herpes Simplex Virus</td>
</tr>
<tr>
<td>INH</td>
<td>Isiniazid</td>
</tr>
<tr>
<td>LFT</td>
<td>Liver Function Test</td>
</tr>
<tr>
<td>LPV</td>
<td>Lopinavir</td>
</tr>
<tr>
<td>MAC</td>
<td>Mycobacterium Avium Complex</td>
</tr>
<tr>
<td>MTCT</td>
<td>Mother to child transmission</td>
</tr>
<tr>
<td>NAC</td>
<td>National AIDS Council</td>
</tr>
<tr>
<td>NDoH</td>
<td>National Department of Health</td>
</tr>
<tr>
<td>NNRTI</td>
<td>Non-nucleoside reverse transcriptase inhibitor</td>
</tr>
<tr>
<td>NsRTI</td>
<td>Nucleoside analogue reverse transcriptase inhibitor</td>
</tr>
<tr>
<td>NVP</td>
<td>Nevirapine</td>
</tr>
<tr>
<td>OI</td>
<td>HIV-related opportunistic infection</td>
</tr>
<tr>
<td>ORT</td>
<td>Oral Rehydration Therapy</td>
</tr>
<tr>
<td>PCP</td>
<td>Pneumocystis carinii pneumonia</td>
</tr>
<tr>
<td>PI</td>
<td>Protease inhibitor</td>
</tr>
<tr>
<td>PEP</td>
<td>Post Exposure Prophraxis</td>
</tr>
<tr>
<td>PGL</td>
<td>Persistent Generalised Lympadenopathy</td>
</tr>
<tr>
<td>PJP</td>
<td>Pneumocystic Jiroveci Pnemonia</td>
</tr>
<tr>
<td>PNG</td>
<td>Papua New Guinea</td>
</tr>
<tr>
<td>PPE</td>
<td>Pruritic Pupura Eruption</td>
</tr>
<tr>
<td>r</td>
<td>Ritonavir boosted</td>
</tr>
<tr>
<td>ROM</td>
<td>Rupture of Membrane</td>
</tr>
<tr>
<td>sAg</td>
<td>Surface antigen</td>
</tr>
<tr>
<td>SQV</td>
<td>Saquinavir</td>
</tr>
<tr>
<td><strong>TB</strong></td>
<td>Tuberculosis</td>
</tr>
<tr>
<td><strong>TDF</strong></td>
<td>Tenofovir</td>
</tr>
<tr>
<td><strong>TLC</strong></td>
<td>Total lymphocyte count</td>
</tr>
<tr>
<td><strong>UPNG</strong></td>
<td>University of Papua New Guinea</td>
</tr>
<tr>
<td><strong>VCT</strong></td>
<td>Voluntary counselling and testing</td>
</tr>
<tr>
<td><strong>WHO</strong></td>
<td>World Health Organisation</td>
</tr>
<tr>
<td><strong>ZVD</strong></td>
<td>Zidovudine (Azidothymidine)</td>
</tr>
<tr>
<td><strong>VZV</strong></td>
<td>Varicella Zoster Virus</td>
</tr>
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CHAPTER ONE

THE USE OF ANTIRETROVIRAL DRUGS IN ADULTS AND ADOLESCENTS
1.1. PURPOSE

The following guidelines have been prepared to guide healthcare workers in their choice of antiretroviral treatment for HIV infected individuals. The guidelines should be read in conjunction with the WHO document “Scaling up antiretroviral therapy in resource-limited settings. Guidelines1 for a public health approach” which is available at the web address http://www.who.int. It is envisaged that public, private, will use these guidelines and NGO sectors and assist the various sectors in their planning for the use of ARV drugs within the country.

Knowledge about efficacy of various antiretroviral combinations and their adverse effects is rapidly evolving, as is the price structure for individual drugs and drug combinations. These guidelines will therefore be subject to regular review by a panel of experts nominated by the National Department of Health. The guidelines will be published online at http://www.nacs.org.pg/ and print versions will be distributed to healthcare workers and other partners involved in the HIV/AIDS National Response.

1.2. WHO SHOULD INITIATE TREATMENT

Initiation of antiretroviral therapy is a complex undertaking, and requires a complete understanding of the rationale, pharmacology and adverse effects of medication. In addition the healthcare worker needs to be knowledgeable about the treatment of coexisting conditions and the treatment of HIV in special patient groups. For this reason the initiation of antiretroviral medication will be restricted to registered healthcare workers who have completed training and demonstrated clinical competence through a training program approved by the National Department of Health (NDoH). A list of approved healthcare workers will be distributed from time to time by the NDoH to pharmacies dispensing Antiretroviral (ART) drugs. Recognition of courses attended elsewhere will be at the discretion of the Secretary (or delegate) of the NDoH. Applications for recognition must be made in writing to the Secretary.

1.3. WHO SHOULD MONITOR AND SUPPLY TREATMENT

Uncomplicated patients can be monitored by HEOs and Nursing Officers who have completed training and demonstrated clinical competence through a training program approved by the National Department of Health (NDoH). These healthcare workers may also re-supply ARTs to patients they are monitoring.

---

1 Document is in the process of being updated and will be published in 2006
1.4. WHEN TO START TREATMENT

1. The patient has written confirmation of HIV positive status.

2. They are medically eligible.

A patient is medically eligible for ART if they have
- WHO stage IV of HIV disease (clinical AIDS), regardless of the CD4 Count
- Advanced WHO stage III disease (Characterized by HIV wasting, chronic diarrhoea, prolonged fever, atypical pulmonary tuberculosis, recurrent invasive bacterial infections, or recurrent/persistent mucosal candidiasis), regardless of the TLC;
- WHO stages II or III of HIV disease with TLC equal or below 1200/mm³

<table>
<thead>
<tr>
<th>WHO Clinical Staging</th>
<th>CD4 Available</th>
<th>CD4 not Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Treat if &lt;200 (Consider treatment if below 350, particularly if closer to 200-350)</td>
<td>No treatment</td>
</tr>
<tr>
<td>II</td>
<td>Treat if &lt;200 (Consider treatment if below 350, particularly if closer to 200-350)</td>
<td>Treat if TLC &lt;1200</td>
</tr>
<tr>
<td>III</td>
<td>Treat but consider CD4 values for better management and decision making in some situations (eg. TB)</td>
<td>Treat irrespective of TLC</td>
</tr>
<tr>
<td>IV</td>
<td>Treat irrespective of CD4 count</td>
<td>Treat irrespective of TLC count</td>
</tr>
</tbody>
</table>

* WHO clinical staging is attached as appendix 1

3. The patient has a treatment supporter
4. Any opportunistic infection has been treated/stabilized
5. The patient has been prepared and is ready for ART therapy
6. There is a reliable drug supply
7. Favorable social criteria must be considered.
1.5. BASELINE TESTS

The absolute minimum laboratory tests before initiating antiretroviral therapy are:
- An HIV antibody test (in persons over 18 months of age); and,
- Haemoglobin or haematocrit measurement
- CD4 + lymphocyte counts (if available) or total lymphocyte count (TLC).
- Liver functions test, especially serum alanine (ALT) or aspartase aminotransferase (AST)

Additional basic testing should include:
- A baseline white blood cell count and differential cell count (to identify a decline in neutrophils and the possibility of the occurrence neutropenia during ART);
- Hepatitis B virus (HBV) surface antigen
- Serum creatinine and/or blood urea nitrogen to assess baseline renal function;
- Serum glucose;
- Pregnancy tests for women.
- Pap Smear (if available)
- Syphilis serology
- Sputum for AFB and/or CXR

As an example some routine tests to be performed during the course of the treatment

Table 1 Schedule of Essential Laboratory Monitoring of ART

<table>
<thead>
<tr>
<th>Laboratory test</th>
<th>Three months</th>
<th>Six months</th>
<th>Nine months</th>
<th>Every six months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb or Hct</td>
<td>No</td>
<td>√</td>
<td>No</td>
<td>√</td>
</tr>
<tr>
<td>WBC with diff</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>ALT</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

Hb = haemoglobin, Hct = haematocrit, WBC with diff = white blood cell count with differential count
1.6. WHAT DRUGS TO USE

The use of fixed drug combinations is recommended wherever possible to facilitate compliance and minimize the potential for the development of viral resistance.

**First line therapy**

<table>
<thead>
<tr>
<th>Zidovudine (ZDV)</th>
<th>Lamivudine (3TC)</th>
<th>Nevirapine (NVP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stavudine (d4T)</td>
<td></td>
<td>Efavirenz (EFV)</td>
</tr>
</tbody>
</table>

The combination of ZDV/3TC/NVP is generally preferred. d4T may be associated with more mitochondrial toxicity and more common appearance of lipodystrophy. ZDV, on the other hand, is associated with anaemia due to bone marrow toxicity in 5-10% of patients. If measurement of Haemoglobin is not routinely available, or if the Haemoglobin prior to initiation of therapy is less than or equal to 8 g/dL (without a correctable cause), the combination of d4T/3TC/NVP would be preferred. Both combinations have equivalent potency. The fixed dose combination of ZDV/3TC/NVP is slightly cheaper than d4T/3TC/NVP. Nevirapine is given as a single daily dose for the first 14 days to reduce possible side effects. This can be achieved using a Nevirapine containing triple combination tablet at night and a dual combination tablet without the Nevirapine in the morning, for the first 14 days.

**Second line therapy**

*d4T/ddI/SQV/r (avoid this combination in pregnancy)*

Or ZDV/ddI/SQV/r

If ZDV was not used in 1st line

**For drug toxicity**

Substitution of single agents can be made if drug toxicity occurs and can be ascribed to a component of the triple therapy given as first line. For example, the ZDV containing regimen can be changed to D4T if significant anaemia occurs. Efavirenz may be substituted for Nevirapine if a patient develops a moderately florid rash, but should not be given if there is mucosal ulceration or systemic effects associated with the rash. Nevirapine can be changed to ABC, SQV/r or LPV/r if hepatotoxicity or severe rash occurs.
### Table 2 – Treatment Failure

<table>
<thead>
<tr>
<th>If treatment failure...</th>
<th>Then switch to ...</th>
<th>NOTES</th>
</tr>
</thead>
</table>
| ZDV or d4T
  +
  3TC
  +
  NVP or EFZ | TDF or ABC
  +
  ddI
  +
  LPV/r or SQV/r | As there is cross resistance between ZDV and D4T, second line regimes do not contain either. Individual mutations associated with resistance to ZDV/3TC can occasionally confer resistance to ABC. If this occurs, change to TDF. |

Patient on d4T/3TC/NVP change to TDF/ddI/LPV/r
Patient on ZDV/3TC/EFV change to ABC/ddI/SQV/r

If failure is due to non-adherence consider cessation of therapy (2nd line therapies are far more complex and likely to fail with poor adherence. Drug costs and pill burden are also considerably higher)

### Table 3: Drug toxicity and Substitution

<table>
<thead>
<tr>
<th>If toxicity...</th>
<th>Due to ...</th>
<th>Then switch to ...</th>
</tr>
</thead>
</table>
| d4T/3TC/NVP | d4T – neurological or pancreatitis
D4T – lipodystrophy
NVP – hepatotoxicity
NVP – Steven Johnson Syndrome | ZDV
ddI, TDF or ABC
EFZ (except in pregnancy)
LPV/r or SQV/r |
| ZDV/3TC/NVP | ZDV – Bone Marrow Suppression
NVP – see above | D4T |
| d4T/3TC/EFV | EFV – CNS toxicity
D4T – see above | NVP. |
For drug failure

Failure of a drug regimen is usually on the basis of viral resistance, and can only be confirmed by documentation of a rising viral load. In the absence of this measurement, a lack of clinical response (such as persistent diarrhoea, weight loss, appearance of a previous or new OI) after 6 months of treatment in a patient adherent to medication is likely to be due to viral resistance. If the treatment failure is due to non-adherence, consideration should be given to discontinuation of therapy. For viral resistance it is recommended that all 3 drugs be changed.

Table 4: Clinical and Immunological indications of Treatment Failure

<table>
<thead>
<tr>
<th>Clinical Signs of Treatment Failure</th>
<th>CD4 Cell Criteria for Treatment Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Occurrence of new opportunistic infection or malignancy signifying clinical disease progression. This must be differentiated from the immune reconstitution syndrome which can occur in the first three months following the initiation of ART(^1). The latter does not mean treatment failure and the opportunistic infection should be treated as usual, without changes in the antiretroviral regimen.</td>
<td>- Return of CD4 cell to pre-therapy baseline or below without other concomitant infection to explain transient CD4 cell decrease(^3)</td>
</tr>
<tr>
<td>- Reoccurrence of prior opportunistic infection(^2).</td>
<td>- &gt;50% fall from on therapy CD4 peak level without other concomitant infection to explain transient CD4 cell decrease(^3)</td>
</tr>
<tr>
<td>- Onset or reoccurrence of WHO stage III conditions (included but not restricted to HIV wasting, chronic diarrhoea of unknown aetiology, prolonged fever of unknown aetiology, recurrent invasive bacterial infections, or recurrent / persistent mucosal candidiasis)</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Immune reconstitution syndrome is characterized by the appearance of signs and symptoms of an opportunistic disease a few weeks after the start of potent antiretroviral therapy in the setting of advanced immuno-deficiency.
2. Recurrence of tuberculosis may not represent HIV disease progression as re-infection may occur. Clinical evaluation necessary.
3. If patient is asymptomatic and treatment failure is being defined by CD4 cell criteria alone, consideration should be given to performing a confirmatory CD4 cell count if resources permit.
1.7. PREVENTION OF OPPORTUNISTIC INFECTIONS

1. Cotrimoxazole PCP prophylaxis (two single strength tablets or one double strength tablet daily) should be given to all patients meeting the clinical criteria for WHO Clinical Stage II. Prophylaxis can be ceased after 6 months for patients who have had a sustained clinical response (CD4>200/mm³).

2. INH – 5mg/kg/day or maximum dose of 300mg daily for 6 months, then ceased for 6 months and recommenced thereafter at 6 monthly intervals after exclusion of active TB. Vitamin B6 or Pyridoxine 25mg daily should also be co-administered.

1.8. PEOPLE WITH TUBERCULOSIS AND HIV COINFECTION

It is recommended that people with TB/HIV Co infection complete TB therapy before beginning ART treatment unless there is a high risk of HIV disease progression and death during the period of TB treatment (i.e. if the CD4 count is below 200/mm³, if the TLC count is equal or below 1200, or if disseminated TB is present). If a person needs TB and HIV treatment concurrently, first-line treatment options include ZDV/3TC or d4T/3TC plus either a NNRTI or ABC. If a NNRTI regimen were used, EFZ would be the preferred drug, as its potential for aggravating the hepatotoxicity of TB treatment appears smaller than that of NVP. However, its dosage should be increased to 800 mg/day if Rifampicin is used to treat the TB. Except for SQV/r, protease inhibitors are not recommended during TB treatment with Rifampicin because of their interactions with this drug.

Table 5: HIV treatment in patients with Tuberculosis

<table>
<thead>
<tr>
<th>Clinical status of patient</th>
<th>Recommendations for ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncomplicated TB, patient otherwise well</td>
<td>Defer ART until TB treatment complete</td>
</tr>
<tr>
<td>Complicated or disseminated TB, patient moderately unwell</td>
<td>Defer ART for 2 months then, if patient not improving, start ZDV/3TC/EFZ</td>
</tr>
<tr>
<td>High likelihood of HIV disease progression or death during treatment of TB</td>
<td>Introduce ART once TB treatment established. Use ZDV/3TC/ABC, D4T/3TC/EFV, ZDV/3TC/EFV Note: EFV should be 800mg/day</td>
</tr>
</tbody>
</table>

1.9. WHO MAY INITIATE OI PROPHYLAXIS

Any healthcare worker who has completed training and demonstrated clinical competence through a training program approved by the National Department of Health (NDoH).
1.10. ADHERENCE

For patients on antiretroviral therapy (ART), medication adherence is critically important to treatment success. Patients for whom there is concern about adherence should not be commenced on ART. Near-perfect pill taking is required to achieve viral suppression and to avoid the emergence of viral resistance. When patients skip doses and do not take their ART medications regularly, viral resistance develops and the medicines can stop working. Missing doses is a common problem, and all patients need help to take 100 percent of their medicines as prescribed. The risks of non-adherence are so clear and so large that adherence assessment and support are integral parts of HIV care programs worldwide. Missing 3 pills of FDC per month can trigger drug resistance. Antiretroviral therapy should not be prescribed in the absence of adherence support, including a treatment supporter. Ongoing counseling about the importance of adherence, the role of a treatment supporter in assisting with adherence, and the measurement of adherence are an essential component of HIV Care and Treatment.

1.11. DRUG INTERACTIONS

All antiretroviral medications have the potential to interfere with other medications. Healthcare workers initiating ART’s need to be aware of this potential and avoid interacting combinations, or adjust dosages where appropriate. Particularly important drug interactions include the reduction in the efficacy of the oral contraceptive pill by Nevirapine and protease inhibitors. Rifampicin significantly lowers the levels of both NNRTI’s and PI’s.

1.12. DATA COLLECTION

It is very important that ART use is monitored within PNG to define how improvements can be made in the management of the HIV/AIDS conditions. It will be a requirement for healthcare workers to maintain a database of patients on treatment and forward specified data to NACS/NDOH when and as required.
CHAPTER TWO

PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV (PMTCT)
2.1. PREVENTION OF MOTHER TO CHILD TRANSMISSION

The best way to avoid mother to child transmission of HIV is to prevent women of reproductive age from becoming HIV–infected. However, for those women who are pregnant and are already infected, there is adequate evidence that use of short term ART prophylaxis can significantly reduce transmission of HIV from the mother to her child.

The selection and use of ARTs in PNG will depend on the availability of the drugs, the knowledge and experience of the trained healthcare workers at the health facility. Most health care facilities do not have healthcare workers trained in the prevention of mother to child transmission (PMTCT), and where they are available, their background knowledge about PMTCT (specifically the use of ARTs) will have an impact on the drug regime used.

Mothers in PNG usually book late for antenatal care. In 1996, 77% of pregnant women had one or more antenatal care visits during the pregnancy but less than 50% were delivered by trained personnel. Taking into consideration all of the above, single dose Nevirapine regime will be the most commonly used drug regime for PMTCT.

Triple therapy regimes are the most efficacious; however they are also more complex when it comes to the management of side effects. It is therefore advisable that when triple therapy is initiated during pregnancy, it should be done in consultation with a trained ART physician. As much as possible the mother must be advised to attend an adult ART program prior to delivery or after deliver so that care can be continued.

2.2. GUIDELINES FOR USE OF ART DRUGS FOR PMTCT

Single-dose Nevirapine (NVP) is the simplest regimen to use and may be the preferred regimen in settings with limited capacity for delivering health services. It is also an important option when HIV infection is identified late in pregnancy or during labour. However, where feasible, services should plan to introduce more complex and efficacious regimes to maximize protection for the baby and reduce the risk of NVP resistance.
### Table 6: PMTCT ART Guidelines

**ARV doses for pregnant women and infants**

<table>
<thead>
<tr>
<th>Antiretrovirals for the Prevention of Mother to Child Transmission (PMCT) of HIV</th>
<th>HAART not available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capacity to deliver only minimal range of ARVs (eg AZT not available)</td>
</tr>
<tr>
<td>Mother</td>
<td>HAART not yet indicated</td>
</tr>
<tr>
<td>Maternal HAART indicated</td>
<td>Maternal HAART Considered</td>
</tr>
<tr>
<td>Antepartum</td>
<td>HAART</td>
</tr>
<tr>
<td>Intrapartum</td>
<td>HAART</td>
</tr>
<tr>
<td>Postpartum</td>
<td>HAART</td>
</tr>
</tbody>
</table>

**Women presenting around delivery and having received no antiretroviral for the Prevention of Mother to Child Transmission (PMCT)**

<table>
<thead>
<tr>
<th>Women in labor, known to be HIV positive with no prior PMTCT experience</th>
<th>No maternal ARV PMCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity to deliver full range of ARVs</td>
<td>Capacity to deliver minimal ARVs</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 1</td>
<td>Option 2</td>
</tr>
<tr>
<td>Mother Intrapartum</td>
<td>Single dose nevirapine + AZT</td>
</tr>
<tr>
<td>Mother Postpartum</td>
<td>–</td>
</tr>
</tbody>
</table>

**Infant**

<table>
<thead>
<tr>
<th>Infant</th>
<th>Single dose nevirapine (2mg/kg)+ AZT 4mg/kg twice daily for 4 weeks</th>
<th>AZT 4 mg/kg twice a day + 3TC 2mg/kg twice a day for 7 days</th>
<th>Single dose nevirapine (2mg/kg)</th>
<th>Single dose nevirapine (2mg/kg)+ AZT 4mg/kg twice daily for 4 weeks</th>
</tr>
</thead>
</table>

**Limited capacity**

- Single-dose nevirapine for the mother at onset of labour
- Single-dose nevirapine for the infant within 72 hours of birth
2.3 BASIC NEvirapine ART REGIMEN FOR PMTCT

Nevirapine 1 tablet (200mg) to the mother at onset of established labour and Nevirapine syrup 2mg/kg to the baby within 72 hrs of delivery. Babies should be given the syrup soon after delivery, if given after 72 hours, it may not be effective.

In addition to the NVP syrup given after delivery, Zidovudine (ZDV) syrup (4mg/kg) twice a day for 7 days will also be given to the baby in the following situations:

1. BBA baby where the mother was not able to receive NVP tablet
2. Mother who delivered under supervision but for some reason was not given the NVP tablet during labour
3. Mother delivered within 2 hours of taking the NVP tablet
4. Mother was not able to swallow the NVP tablet or vomited out the tablet
5. ROM more than 4 hours at delivery
6. Baby delivered by vacuum or forceps delivery

The above clinical situations increase the risk of the baby acquiring the virus from the mother and therefore further treatment with ZDV is used as additional protection for the baby. In situations where the additional ZDV treatment is unable to be given, the single dose of NVP syrup will have to suffice.
### TABLE 7– ZIDOVUDINE/NEVIRAPINE REGIMEN FOR PMTCT

<table>
<thead>
<tr>
<th>Ante-partum</th>
<th>Intra-partum</th>
<th>Post-partum mother</th>
<th>Post-partum infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting at 32weeks</td>
<td>ZDV 300mg oral every 6 hours plus NVP 200mg oral stat</td>
<td>ZDV 300mg oral bid for one week (7 days)</td>
<td>NVP syrup 2mg/kg stat</td>
</tr>
</tbody>
</table>

### 2.4 GUIDELINES ON HIV AND INFANT FEEDING

Studies have shown that HIV can be transmitted from a mother to her baby through breastfeeding. By 1998, it was known that the use of antiretroviral drugs could substantially reduce the risk of mother-to-child transmission before and during delivery. It then became more urgent to find ways to reduce the risk of postnatal transmission through breastfeeding.

In recent years great efforts have been made to promote breastfeeding by all mothers. There are considerable risks associated with not breastfeeding, particularly in resource poor settings. This has resulted in both policy makers and health workers being reluctant to suggest that a woman feed her infant in any other way. Accordingly, it has been difficult for health workers to advise a HIV-positive woman how best to feed their infant. It is perhaps even more difficult for a mother and her family to decide what is best.

In 1997, WHO, UNICEF and UNAIDS issued a joint policy statement, indicating that HIV-positive women should be enabled to make a fully informed decision about feeding their infants, and supported in whatever method of feeding they choose. The following guidelines have been developed for the ‘Prevention of Mother-to-Child Transmission’ program in PNG. It sets out several feeding options available to Papua New Guinean mothers and hopes to protect, promote and support breastfeeding for those who are HIV-negative.

**General Principles**

1. All women attending antenatal clinic in a facility that is practicing prevention of mother-to-child transmission of HIV, should receive general antenatal education including information on HIV and breastfeeding.

2. For women who choose to know their HIV status, pretest counseling must be offered. This should be followed by HIV testing. The result would then be disclosed to individual women during a post-test counseling session.
3. Infant feeding counseling must not be offered during a post-test counseling session. A woman who is HIV positive may be overwhelmed at that time. First she has to think about herself and how she can cope with all the other aspects of her life.

4. Infant feeding counseling should be given and followed up in the subsequent antenatal visits. Information given in these sessions must be adequate enough to allow the woman to make a fully informed decision on which feeding option she chooses for her baby. She should be encouraged to make this decision well before delivery.

5. All women should be supported in whatever feeding option they choose. The option must be acceptable, feasible, affordable, sustainable and safe.

6. All HIV positive women should also receive additional information on nutrition, health and hygiene to support themselves, whilst living with HIV infection.

7. All HIV positive women must be offered family planning soon after birth especially if replacement feeding is chosen as the feeding option.

Feeding Options

Option 1: Exclusive and Continued Breastfeeding

- Exclusive Breastfeeding means that nothing other than breast milk is given to the baby. Exclusive breastfeeding minimizes the risk of HIV transmission associated with breastfeeding.

- Continued Breastfeeding means continuing to breastfeed after the introduction of other fluids and solid food.

- This option maximizes the advantages of breastfeeding. However continued breastfeeding is associated with HIV transmission.

- Women who choose this option must be taught proper breast attachment to reduce the risk of subsequent breast problems.

- Breast conditions including mastitis, breast abscess, engorgement etc must be treated accordingly.
Option 2: Exclusive Breastfeeding then Stop Breastfeeding Early

- This option attempts to keep the advantages of breastfeeding as well as minimizing the risk of transmission which is associated with continued breastfeeding.

- The most appropriate time to stop breastfeeding depends on the mother’s particular situation and may be any time between 3 and 6 months. According to WHO recommendations, infants should be exclusively breastfed for the first six (6) months of life to achieve optimal growth, development and health.

- The introduction of other fluids and solids increases the risk of HIV transmission for the child and hence it is best if breastfeeding can be stopped abruptly or if this is impossible, in as short a time as possible.

- If a woman chooses this option she will need counseling on replacement feeding. She needs to find a regular supply of another kind of milk and learn how to prepare it safely. Available replacement milk includes heat-treated breast milk, home made formula or commercial infant formula.

- Cereals, juices, sugar drinks and coconut milk are some feeds that are not adequate substitutes for breast milk. She needs to give the milk substitute in addition to soft, mashed food.

- All replacement milk must be fed by a non-spouted cup and spoon unless in special circumstances where other methods of feeding may be employed.

- Women who choose this option must be taught proper breast attachment to reduce the risk of subsequent breast problems.

- Breast conditions including mastitis, breast abscess, engorgement etc must be treated accordingly.

Option 3: Express and Heat-Treat Breast milk

- This option offers an ideal nutrition for the baby, has some protection against infections and has a low risk of HIV transmission.

- As with all replacement feeding time is needed to express and heat-treat the breast milk.
Option 4: Breastfeeding by Another Woman

- This method is also called ‘Wet Nursing’. The chosen woman who has agreed to wet nurse should be counseled, tested and shown to be HIV-negative.

- If the wet nurse is sexually active she will also require counseling on safe sex practices so that she does not acquire the virus during the breastfeeding period.

- The mother and the wet nurse must be informed about the small possible risk of transmission of the virus from the baby to the wet nurse if the baby is already infected with HIV.

- A wet nurse should have access to breastfeeding support and assistance to establish effective breastfeeding. This is to prevent and treat conditions such as nipple fissure and mastitis which may hinder breastfeeding.

Option 5: Replacement feeding from Birth

- Replacement feeding is the process of feeding a child who is not receiving any breast-milk with a diet that provides all the nutrients the child needs until the child is fully fed on family foods.

- A woman who chooses not to breastfeed must offer adequate replacement feeding throughout the time the child is at greatest risk of malnutrition; that is until the child is at least 2 years old.

- If an infant is not getting breast-milk, milk in some other form is needed for at least six (6) months. The supply of this milk must be reliable and uninterrupted. It is therefore important that the socio-economic status of the parents be discussed thoroughly before this option is finalized.

- All women who choose this option must receive information on what is constantly available on the market including their price, nutritional adequacy and the approximate cost of the milk for 6 months. They must be encouraged to be prepared prior to delivery including having a preparation lesson(s) on their chosen form of milk in the antenatal period.

- The preparation lessons must be repeated in the postnatal ward whilst the woman and her baby are still in hospital. This is to ensure correct preparation of the chosen form of milk.

- In order avoid the ‘spillover’ effect of feeding milk other than breast-milk, preparation lessons must be conducted in a room well away from other mothers.
• All replacement milk must be fed by a non-spouted cup and spoon unless in special circumstances where other methods of feeding may be employed.

**REMEMBER:** Whatever feeding option is chosen, it must be *acceptable, feasible, affordable, sustainable* and *safe.*
CHAPTER THREE

THE USE OF ANTIRETROVIRAL DRUGS IN CHILDREN
3.1. BACKGROUND OF ART IN CHILDREN

The underlying principles of ART in children are similar to those of adults. However there are specific physiological, clinical, practical and social issues to consider when treating HIV-infected children with ART.

The following are some of these specific issues.

a. Data on efficacy of ART agents in adults can be extrapolated to children but issues on pharmacokinetics, formulation and ease of administration require special consideration. Young children metabolize drugs differently from adults and there is a particular need for data on pharmacokinetics in children under 3 years.

b. There are laboratory limitations diagnosing HIV infection in children under 18 months old in resource limited settings. Detection of HIV DNA by PCR is the gold standard diagnostic test however it lacks sensitivity in the first week of life (as does plasma RNA) and is not available in PNG. Test sensitivity is close to 100 % at 2-3 months of age.

c. The natural history of the infection is different from adults.

d. Predictive values of surrogate markers to start and switch therapy is different from adults. Plasma HIV-1 RNA (VL) levels are very high in infected infants (several million copies/ml) and persist at high levels for much longer (years rather than months) than in infected adults following primary infection.

e. CD4 cell counts are higher and more variable in young children than in adults. They decline with age and reach adult values at 6-8 years. CD4 cell percentage is less variable although it also decreases with age. It is therefore preferable to use the CD4 cell percentage instead of the absolute cell count for decision-making on ART for infected children under 8 years.

f. Drug formulations for adults come in combinations that may not be suitable for use in smaller children (below 25kgs) and may require specific combinations if possible.
g. The absolute lymphocyte count is also higher and more variable in children than in adults. Age related but arbitrary levels can be used where CD4 counts are not available. Recommended levels are:

<table>
<thead>
<tr>
<th>Age</th>
<th>HIV status</th>
<th>WHO clinical staging</th>
<th>TLC</th>
<th>CD4 count</th>
<th>CD4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth – &lt;18 months</td>
<td>Positive</td>
<td>III</td>
<td>Not required</td>
<td>&lt;1500 cells/mm³</td>
<td>25%</td>
</tr>
<tr>
<td>18 months – 5 years</td>
<td>Positive</td>
<td>II</td>
<td>&lt;2500/mm³</td>
<td>&lt;1500 cells/mm³</td>
<td>25%</td>
</tr>
<tr>
<td>&gt;5 years</td>
<td>Positive</td>
<td>II</td>
<td>&lt;500 cells/mm³</td>
<td>&lt;15%</td>
<td></td>
</tr>
<tr>
<td>18 months–5 years</td>
<td>Positive</td>
<td>II</td>
<td>&lt;1500/mm³</td>
<td>&lt;500 cells/mm³</td>
<td>&lt;15%</td>
</tr>
<tr>
<td>&gt;5 years</td>
<td>Positive</td>
<td>II</td>
<td>&lt;1200/mm³</td>
<td>&lt;200 cells/mm³</td>
<td>&lt;10%</td>
</tr>
</tbody>
</table>

As a general principle, the ART regime that the parents or guardians are, or will be taking, should also be taken into consideration when deciding on the most appropriate regime for the child. In determining the initial choice of ART the availability of a suitable formulation and the simplicity of the dosage schedule are also important and should be taken into consideration.

### 3.2. CRITERIA TO INITIATE ART IN CHILDREN

Initiating antiretroviral therapy in itself is a complex undertaking. To prescribe ART to the children of PNG whose compliance with routine drug regimes is already a challenge will be a major task. Therefore in order to gain the benefits of being on ART and to minimize the risk of poor adherence and subsequent viral resistance, the use of both clinical and “social” selection criteria are recommended.

Table 8: Clinical Criteria for Initiation of ART in children

<table>
<thead>
<tr>
<th>Age</th>
<th>HIV status</th>
<th>WHO clinical staging</th>
<th>TLC</th>
<th>CD4 count</th>
<th>CD4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children&lt;18 months</td>
<td>Positive</td>
<td>III</td>
<td>Not required</td>
<td>&lt;1500 cells/mm³</td>
<td>25%</td>
</tr>
<tr>
<td>Positive</td>
<td>II</td>
<td>&lt;2500/mm³</td>
<td></td>
<td>&lt;1500 cells/mm³</td>
<td>25%</td>
</tr>
<tr>
<td>Children&gt;18 months</td>
<td>Positive</td>
<td>III</td>
<td>Not required</td>
<td>&lt;500 cells/mm³</td>
<td>&lt;15%</td>
</tr>
<tr>
<td>18 months–5 years</td>
<td>Positive</td>
<td>II</td>
<td>&lt;1500/mm³</td>
<td>&lt;500 cells/mm³</td>
<td>&lt;15%</td>
</tr>
<tr>
<td>&gt;5 years</td>
<td>Positive</td>
<td>II</td>
<td>&lt;1200/mm³</td>
<td>&lt;200 cells/mm³</td>
<td>&lt;10%</td>
</tr>
</tbody>
</table>

**REMEMBER**

- ART is not recommended in asymptomatic HIV infected infant in the absence of CD4 cell assays.
- Associated clinical conditions need to be treated before ART initiation.
3.3. Social Criteria for Initiation of ART in children

i. Children considered for treatment should live within 2 hours walking distance from the ART distributing health facility.

ii. In the situation in which the child’s parents were detected in the antenatal period, they should have had adequate (ideally >3 visits) counseling in the antenatal period followed by more than three sessions of follow-up counseling after birth. Information given should include details of ART.

iii. Children born to parents detected in the antenatal period must have had regular monthly follow-up after birth.

iv. Parents (not on ART) of children whose diagnosis is made during an illness should also have a minimum of three counseling sessions before a decision of ART is made.

v. Parents are required to nominate a treatment support person who should also attend their counseling sessions. This is to ensure continuation of treatment in the event that the parents become ill.

vi. The family should be referred to a community-based organisation within the area in which they live. The organisation must be credible and acceptable to the family and be able to provide continued support outside of the hospital.

vii. Four out of the six (4/7) criteria need to fulfilled prior to initiating ART

3.4. BASELINE TESTS IN CHILDREN

- Full blood count (HB, TLC, WBC and Differential)
- Electrolytes, Hepatic transaminases
- Gastric aspirates/Sputum for AFB and/or CXR
- Hepatitis B surface antigen

3.5. WHAT DRUGS TO USE IN CHILDREN

Table 9: First-line antiretroviral regimes for children

<table>
<thead>
<tr>
<th>Paediatric First Line ART Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 possible regimes for first line</td>
</tr>
<tr>
<td>➢ ZDV+3TC+NVP</td>
</tr>
<tr>
<td>➢ ZDV+3TC+EFV</td>
</tr>
<tr>
<td>➢ d4T+ 3TC+NVP</td>
</tr>
<tr>
<td>➢ d4T+3TC+EFV</td>
</tr>
</tbody>
</table>

NB: If <3 years or <10kg, NVP is preferred and EFV should not be used
If ≥3 years or ≥10kg, NVP or EFV
ZDV/3TC plus ABC is preferred if concomitant anti-tuberculosis therapy is being received.

In general children metabolize NNRTI and PI drugs faster than adults and require weight for kilogram higher doses than adults to achieve appropriate drug levels. Abacavir cause a potentially fatal hypersensitivity reaction in 5% of patients. This usually occurs in the first six weeks of treatment. Treatment should not be restarted if hypersensitivity has occurred.

Nevirapine can be used for children of all ages while Efavirenz should only be used in children over 3 years because of the lack of pharmacokinetic data for younger children. Nevirapine should be given as single dose for the first 14 days to reduce toxicity.

ZDV is associated with anaemia due to bone marrow toxicity in 5-10% of patients. If haemoglobin prior to initiation is less than 8g/dl (without a correctable cause) combination with d4T should be used.

**3.6. SECOND-LINE ANTIRETROVIRAL REGIMES FOR CHILDREN**

Substitution of single agents can be made if drug toxicity occurs and can be ascribed to a component of the triple therapy given as first line.

<table>
<thead>
<tr>
<th>For failure First line regimen</th>
<th>NRTI</th>
<th>PI Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZDV+3TC+NVP or EFZ</td>
<td>ddI +ABC</td>
<td>LPV/r or SQV/r or NFV</td>
</tr>
<tr>
<td>ABC+3TC+NVP or EFV</td>
<td>ddI +ZDV</td>
<td></td>
</tr>
<tr>
<td>ZDV or d4T +3TC +ABC</td>
<td>ddI+ EFV or NVP</td>
<td></td>
</tr>
</tbody>
</table>

**3.7. DRUG FAILURE IN CHILDREN**

Definitive diagnosis of failure of a drug regime is the same as in adults.

**Clinical failure:** a lack of growth response to treatment or a decline in growth among those who show initial response to therapy, a loss of neuro-developmental milestones or the development of encephalopathy and the recurrence of infections, such as oral candidiasis that is refractory to treatment.
**Immunological Failure:** Continued decline of the CD4 cell count/CD4 % despite assured drug adherence.

**Virological failure:** It is made on the basis of viral resistance and can only be confirmed by documentation of a rising viral load. In the absence of this measurement the important clinical signs of antiretroviral drug failure in an adherent patient include a lack of clinical response (such as persistent diarrhea, weight loss, appearance or a previous or new OI). If treatment failure is due to non-adherence, considerations should be given to discontinuation of therapy.

**NB:** For the viral resistance it is recommended that all 3 drugs be changed.

**Table 11: Drug substitution for Treatment Failure**

<table>
<thead>
<tr>
<th>First-line regimen</th>
<th>Second-line regime</th>
<th>Alternative second-line</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZDV/3TC/NNRTI</td>
<td>d4T/ddI/LPV/r or d4T/ddI/NFV</td>
<td></td>
</tr>
<tr>
<td>ZDV/3TC/ABC</td>
<td>d4T/ddI/LPV/r or d4T/ddI/NVP or EFV plus</td>
<td>d4T/ddI/NVP or EFV d4T/ddI/NVP or EFV</td>
</tr>
</tbody>
</table>

**3.8. MONITORING AND WHEN TO CHANGE**

The important clinical signs of response to therapy include improvement in growth for those failing to thrive, improvement in neurological symptoms, development in those with delayed developmental milestones and decrease in the frequency of opportunistic infections.

Clinical monitoring should include weight and height growth, developmental milestones and neurological symptoms. In the absence of CD4 cell assays charted height and weight growth may be the most important indicator of response to therapy.

**NB:** It is recommended that all children on ART have their WEIGHT and HEIGHT measured on each visit to the clinic.

**3.9. PREVENTION OF OPPORTUNISTIC INFECTIONS**

**Cotrimoxazole Prophylaxis**

Cotrimoxazole prophylaxis should be given to all babies with the following conditions
• All HIV exposed infants from 6 weeks to 18 months of age (or earlier if HIV status is confirmed negative) to prevent PCP and other bacterial infections when born to an HIV infected mother (irrespective of whether the woman received ART prophylaxis during pregnancy).
• All children who have had an episode of PCP or another AIDS defining illness
• Symptomatic HIV disease or Clinical stage III or IV
• A CD4 cell percentage <15% (if >18 months old) or 20% if<18 months old

Table 12: Dosage of cotrimoxazole in children

<table>
<thead>
<tr>
<th>Age</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Less than 1 year</td>
<td>120mg tablet or syrup</td>
</tr>
<tr>
<td>2 1-5 years</td>
<td>240 mg</td>
</tr>
<tr>
<td>3 &gt;5 years</td>
<td>480 mg</td>
</tr>
</tbody>
</table>

• INH prophylaxis (5-10mg/kg orally once daily for 6 months) should be given to children whose mothers have TB.

It is important that all children whether HIV infected or not should receive immunizations must be given according to the normal schedule except **BCG which is not given for stage III cases**

3.10. CHILDREN WITH TUBERCULOSIS AND HIV COINFECTION

It is recommended that children with TB/HIV co-infection complete TB treatment before ART as in adults.

If a child needs treatment of both infections concurrently then use the regimen for children with co-infection with ZDV/3TC/ABC. If the child is more than 3 years and heavier than 10 kg then ZDV/3TC/EFV may be used as an alternative regime.
CHAPTER FOUR

PROTECTIVE MEASURES AGAINST HIV TRANSMISSION IN HEALTH CARE SETTINGS AND POST EXPOSURE PROPHYLAXIS
4.1. INTRODUCTION

HIV and other blood borne diseases such as Hepatitis B may be transmitted in health care settings from a patient to a health care worker, patient to patient or from health care worker to patient. HIV is likely to be present in body fluids from infected person. The occupational risk of becoming HIV infected from patients in health care settings although minimal, is mostly associated with needle stick injuries from a patient infected with HIV. Patient to patient transmission usually results from contaminated equipment, which has been incorrectly or inadequately disinfected.

Most patient care settings should not pose any significant risk of HIV transmission. At the same time, minimal infection control measures such as washing hands with soap and water can prevent transmission during care. Nevertheless, all healthcare workers must adopt appropriate infection risk assessment and apply accident prevention procedures. The context and environment in which health care is provided must offer safety to the health care provider.

Prevention of the transmission of HIV through applying Standard Precautions (previously known as Universal Precautions) is very important. Standard Precautions are simple standards of infection control practices to be used in the care of all patients, at all times, to reduce the risk of transmission of infections. These include:

- Hands should be washed with soap and water;
- Before and after contact with each patient.
- Before and after each procedure
- Before wearing and after removal of gloves
- When hands are visibly soiled
- Before preparing, handling, serving or eating food and before feeding a patient
- Before leaving the area of work

Adequate supply of disposable towels (paper towels) is encouraged in order to avoid reusable towels. (If disposable towels are not available, reusable towels should only be used once then washed and dried in the sun.)

4.2. USE OF PROTECTIVE BARRIERS

Gloves should be worn in all procedures involving contact with blood or other body fluids. Gloves must be discarded after each patient (Hazardous waste management Guidelines). Gloves are not required for routine care activities in which contact is limited to a patient’s intact skin.

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Clean non-sterile gloves will be worn:

- For invasive examination and non surgical procedures;
- Contact with blood, body fluids, secretions, excretions, mucous membranes, draining wounds, or non-intact skin; and
- For handling items visibly soiled with blood, body fluids or, secretions.

Protective clothing such as waterproof gowns, aprons, eye protection and or masks should be worn where there is likelihood of exposure to large amounts of blood or body fluids such as in theatre, labour room or in the laboratory.

### 4.3 CAREFUL HANDLING AND DISPOSAL OF SHARP INSTRUMENTS

- All sharps should be handled extremely carefully to avoid needle stick or other sharp injuries.
- Needles should not be recapped, bent, broken or removed from syringes. If they must be removed from syringes, then use forceps.
- Remove vacutainers with forceps.
- Holders must be used for all blades.

All needles and other sharp instruments should be deposited in puncture resistant sharps containers that must be placed near the working place. The containers (safety boxes) should be clearly labelled, easily accessible and incinerated when three quarters full.

### 4.4 SAFE DISPOSAL OF WASTE CONTAMINATED WITH BODY FLUIDS

Soiled waste that is contaminated with blood, body fluids, laboratory specimen or other tissues, should be placed in leak proof containers with special labels and incinerated, or buried in a 7 feet deep pit at least 30 feet away from any water source or in a pit latrine. Liquid waste such as blood or body fluids should be poured down a drain connected to a septic tank or an adequately treated sewer or pit latrine.

### 4.5 DISINFECTION OF CONTAMINATED EQUIPMENT

All material including linen used repeatedly must be properly disinfected and or sterilized. Disinfections should be by immersing in 0.5% hypochlorite solutions, using bleach powered or liquid bleach as described in the PNG Infection Control Guidelines. Thorough cleaning with soap and hot water removes a high proportion of micro-organisms. All equipment should be dismantled before cleaning. Gloves must be worn during cleaning of equipment and if splashing with body fluids is likely, additional protective clothing such as waterproof aprons, gowns, boots, protective eye wear or masks should be worn. The method of decontamination can be decided based on the following table.
Table 13: Criteria for selecting decontamination method

<table>
<thead>
<tr>
<th>Level of risk</th>
<th>Items</th>
<th>Decontamination method</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk</td>
<td>Instruments which penetrate the skin/body</td>
<td>Single use of disposables and sterilization of re-usable equipment</td>
</tr>
<tr>
<td>Moderate risk</td>
<td>Instruments which come in contact with non-intact skin or mucous membrane</td>
<td>Sterilization, boiling or chemical disinfection</td>
</tr>
<tr>
<td>Low risk</td>
<td>Equipment which comes in contact with intact skin</td>
<td>Thorough washing with soap and water</td>
</tr>
</tbody>
</table>

4.6 PROPER HANDLING OF SOILED LINEN

Soiled linen should be touched as little as possible, they should be collected in bags and not rinsed or sorted out at the patient care area. If possible linen with large amounts of blood should be transported in leak proof containers, and if not available they should be folded with the soiled parts inside, and handled carefully with gloves. Soiled linen should be soaked in 0.5% bleach solutions as per PNG guidelines for not less than thirty (30) minutes, then washed separately in hot soapy water and then air dried in direct sun light.

4.7 STERILIZATION AND DISINFECTION

The Human Immunodeficiency Virus does not survive well outside the human body. Nevertheless, it is mandatory that healthcare workers and other care providers caring for HIV infected persons take precautions in order to prevent accidental spread of the virus.

All forms of sterilization will destroy HIV. Recommended methods of sterilization include steam under pressure e.g. autoclave or pressure cooker, or dry heat such as oven. Disinfection will usually inactivate HIV. Recommended disinfectants are Bleach (corresponding to a 0.5% sodium hypochlorite solution) and 1% Lysol. Commonly methods used are boiling and chemical disinfection with hypochlorite solution. If there is a need for boiling equipment, then the equipment must be cleaned and then boiled for at least 20 minutes at sea level and longer at higher altitudes.

4.8 SPILLAGE MANAGEMENT

Detergents and hot water are adequate for routine cleaning of floors, beds and toilets. In case of spillage of blood or body fluids, the area should be cleaned with chlorine based disinfectant which is left for 20 minutes and followed by thorough cleaning with soap and hot water. Alternatively, pour hypochlorite solution 0.5% on the site and leave it for 20 minutes. Then clean with a mop or disposable rag. Then pour hypochlorite solution again and clean. CIDEX can also be used. All
healthcare workers and other care givers must be made conversant with Standard Precautions

4.9 POST EXPOSURE PROPHYLAXIS (PEP)

The most common mode of exposure to occupationally acquired HIV is in health care and first aid settings where health care providers are at increased risk of HIV infection through exposure to infectious body fluids through accidents or when safety precautions are not followed. However the other most common method of exposure is through sexual assault.

Occupational exposure

Exposure prevention remains the primary strategy for reducing occupational HIV transmission. In the event that an occupational exposure occurs, the following should be done.

Treatment of an Exposure Site

Wounds and skin sites that have been in contact with blood or body fluids should be washed with soap and water; mucous membranes should be flushed with tap water. Little evidence exists that using antiseptics for wound care or expressing fluid by squeezing the wound further reduces the risk of blood borne pathogen transmission; however, the use of antiseptics is not contraindicated. The application of disinfectant agents (e.g. bleach) or the injection of antiseptics or disinfectants into the wound is not recommended.

Exposure Report

If an occupational exposure occurs, the circumstances and post exposure management should be recorded in the exposed person’s confidential form for easy follow up and care. The exposure should also be documented in accordance with any institutional requirements and the appropriate authorities notified.

Evaluation of the Exposed Health Care Worker (EHCW)

Healthcare workers exposed to HIV should ideally be evaluated as soon as possible after their exposure in order to allow early initiation of PEP. At the latest, this must occur within 24 – 72 hours of the exposure. The exposed healthcare worker should be counseled and tested for HIV before PEP is given (i.e., to establish infection status at the time of exposure). In case of refusal to test, PEP should not be started.

For purposes of considering HIV PEP, the evaluation also should include the following information that might influence drug selection:

- Medications that the exposed person might be taking
- Any current or underlying medical conditions or circumstances (i.e., pregnancy, breast feeding, or renal or hepatic disease).

Hepatitis B vaccination should also be considered.

### 4.10 PEP DRUG REGIMES

For most HIV exposures, a combination of ZDV and 3TC should be used. For exposures that pose an increased risk for transmission:

- **Zidovudine** 300 mg orally 12 hourly
  - **Plus**
  - **Lamivudine** 150 mg orally 12 hourly
  - **Plus**
  - **Efavirenz** 600 mg once daily OR **Indinavir** 800 mg 8 hourly
  - **Or**
  - **Nelfinavir** 1250 mg orally 12 hourly

**NOTE**

Nevirapine should not be used for post exposure prophylaxis.

Stavudine 40 mg 12 hourly if (> 60 kg) or 30 mg orally 12 hourly (< 60 kg.)

If ritonavir is available, use indinavir 800mg BID plus ritonavir 100mg BID.

**Dual drug therapy should only be considered in the absence of other alternatives.**

### 4.11 TIMING OF POST EXPOSURE PROPHYLAXIS (PEP)

PEP should be initiated within 12 hours but up to 72 hours maximum.

### 4.12 DURATION OF POST EXPOSURE PROPHYLAXIS (PEP)

The optimal duration of PEP is 28 days. This is based on evidence from occupational and animal studies where AZT, administered for 4 weeks if tolerated, appeared protective.

### 4.13 FOLLOW-UP OF HEALTH CARE WORKER EXPOSED TO HIV

Healthcare workers with occupational exposure should be tested at baseline, 4 weeks, 12 weeks and 6 months post exposure to HIV.

### 4.14 MONITORING AND MANAGEMENT OF PEP TOXICITY

If PEP is used, Health care provider should be monitored for drug toxicity. The scope of testing should be based on medical conditions in the exposed person and the toxicity of drugs included in the PEP regimen. Minimally, laboratory monitoring for toxicity should include a complete blood count and renal and hepatic function tests.
4.15 PEP FOR VICTIMS OF SEXUAL ASSAULT

Counselling

All persons presenting to a health facility after allegedly being raped should be counseled by the examining healthcare worker about the potential risks of HIV transmission post rape. Children below 12 years of age need to be managed at Hospitals.

When to start PEP

All persons presenting to a health facility within 72 hours of being allegedly raped should be offered PEP if it is available. Before starting PEP and following counseling and the obtaining of informed consent, blood must be taken for HIV status. Persons who previously are known or found to be HIV positive should be referred to an appropriate health care clinic for long-term management of their HIV infection.

It is important that this be enforced to prevent the potential for resistant virus developing should the individual be HIV positive and therefore the virus be exposed to ARTs just for the PEP period. In addition, PEP for such individuals would not be effective in preventing primary infection since they are already infected. Only those who are found to be HIV negative should receive PEP.

Drug Regimen

The recommended treatment regimen is Triple therapy (first line regimen) daily for 4 weeks. The noted contraindications for each of these drugs should be considered as detailed in these guidelines.

Patient monitoring

Routine testing with a full blood count and liver enzymes for patients on ZDV and 3TC is not recommended for such a short duration of therapy. Blood tests should be performed according to patient’s condition. Three (3) months after the PEP period, the individual should return for a confirmatory set of HIV tests to determine that the treatment was effective. If it was not effective and they have sero-converted, they should be enrolled in a HIV Care and Treatment program and monitored appropriately as all HIV positive individuals.
Table 14: Recommended Algorithm for assessment before PEP initiation

Perform medical examination and key tests (STI, Pregnancy, HIV)
Determine time when the event occurred

Less than 72 hours
Counsel and recommend HIV test for the individual
Consent Denied, NO test done
No PEP

Consent Provided, Test is done
HIV negative
Give PEP
Do follow up HIV test after 3 months
HIV negative- Counsel to stay negative

More than 72 hours
Counselling No PEP

HIV/AIDS Care and Treatment program
HIV Positive
CHAPTER FIVE

OPPORTUNISTIC INFECTIONS
(OIs)
5.1. INTRODUCTION

Currently there is no cure for HIV infection. There is however prophylaxis and treatment for some opportunistic infections resulting from HIV induced immune deterioration. It should always be recognized that we only treat and cure the associated diseases and symptoms and not HIV itself. Patients don’t die from HIV-infection, but succumb to the complications that the HIV induced immune deterioration cannot handle. With this approach the length and quality of life of the HIV infected patient can be substantially improved.

The purpose of the investigations recommended below is to identify and manage treatable causes of morbidity in HIV infected individuals. Treatment is available for most of the opportunistic infections, and all efforts should be made to deal with all treatable conditions in people with HIV and AIDS. Cancer conditions in HIV positive patients should be managed as in sero-negative individuals.

5.2. CLINICAL FEATURES

FEVER

Fever may be due to a variety of causes and clinical features may suggest diagnosis. If no pointing features to a diagnosis are present, as a minimum the following should be done:

- Blood slide for malaria parasites,
- Blood and urine cultures if clinically indicated.
- Chest X-ray
- Blood for culture
- Urinalysis
- Full blood Count and ESR
- Sputum for AFB if indicated

COUGH AND DYSPNOEA

Persistent cough and or dyspnoea can usually be attributed to one of the following:

- Bacterial pneumonia
- Viral pneumonia
- Pulmonary TB
- Cardiac failure
- Allergic bronchitis
- Chronic bronchitis
- Bronchial asthma
It may not be possible to determine the underlying cause of cough and dyspnoea on clinical history and physical examination alone and hence laboratory tests may be of critical value.

**Investigations:**

- Full Blood Count
- Sputum for AFB x 3 (can be done at all levels)
- Sputum for pyogenic culture and sensitivity
- Chest x-ray
- FBC
- ECG (where available)

**OROPHARYNGEAL AND OESOPHAGEAL CANDIDIASIS**

Patients with oropharyngeal and oesophageal candidiasis may complain of pain and/or difficulty in swallowing. Examination shows white “curd like” lesions in the oral cavity. Where available, a barium swallow X-ray can be performed.

For treatment any of the following may be used:

- Fluconazole orally
- Miconazole,
- Nystatin oral suspension,
- Ketoconazole

**VAGINAL CANDIDIASIS**

This is one of common illnesses presenting with itchy curd-like discharge. It can be managed with:

- Clotrimazole pessaries
- Fluconazole taken orally (in case of immuno-compromised patients)
- Nystatin Pessaries

**WEIGHT LOSS**

Weight loss in persons with HIV disease including AIDS may be due to:

- Reduced food intake
- Difficulty/painful swallowing
- Diminished gastrointestinal uptake (malabsorption, diarrhoea),
- TB (a frequent cause of rapid weight loss)
- Intestinal worms
- Other debilitating diseases e.g cancer
- Intractable vomiting
**Treatment of weight loss**

- Treat underlying cause
- High calorie and protein food intake

**DIARRHEOA**

Diarrhoea in persons with HIV disease including AIDS can be due to a number of causes including:

- Common pathogens such as: Amoebiasis, Salmonella or Shigella
- Chronic malabsorption
- Cryptosporidiosis
- Mycobacterium avium complex (MAC) infection
- Isosporidiosis.
- Clostridium difficile infection

**Investigations**

Examine stools for treatable causes

**Management**

- Rehydration, Oral Rehydration Therapy (ORT)
- Treat underlying cause
- Nutritional therapy
- In persistent diarrhoea among adults with no obvious treatable causes give anti diarrhoeal drugs such as Loperamide

**NB: Due to resistant of Shigella and Clostridium to cotrimoxazole, Ciprofloxacin is the drug of choice**

**PERSISTENT GENERALIZED LYMPHADENOPATHY (PGL)**

Lymphadenopathy may be due to a number of causes including those listed below:

- HIV itself. (It is however not a bad prognostic sign.)
- Mycobacterium tuberculosis infection.
- Kaposis’ Sarcoma, or lymphomas.
- Other causes e.g. pyogenic bacterial infection

**Investigations**

- Aspirate the node with a 21G needle and stain the aspirate for acid-fast bacilli (AFB).
- Lymph node biopsy for histological diagnosis.
- Chest X-ray
- FBC and ESR
SKIN RASHES, SORES AND GENERALIZED PRURITIS.

Causes include:

- Generalized pruritic papular eruption (PPE).
- External parasites e.g. scabies
- Generalized fungal skin infections.
- Herpes zoster
- Herpes simplex
- Kaposi sarcoma
- Generalized bacterial skin infection e.g., Impetigo
- Drug reaction

Investigations

- Exclude scabies, bacterial and fungal infections for which treatment are available.
- Skin scraping for fungal element
- Pus swab for culture and sensitivity

Management

- Treat the underlying cause
- Treatment for PPE is generally unsatisfactory, but could be helped by use of antihistamine and in case of secondary infection appropriate antibiotics e.g. cloxacillin or erythromycin.

ALTERED MENTAL STATUS AND PERSISTENT SEVERE HEADACHE

Amongst the numerous causes of altered mental status and severe headache are:

- Malaria
- Typhoid
- Severe dehydration
- Hypoglycemia
- Bacterial and/or fungal meningitis
- Toxoplasma encephalitis
- HIV-dementia
- Depression
- Psychotic conditions

NB: In altered consciousness, cerebral malaria must always be excluded since this is a common and curable infection.
Investigations

- Blood slide for malarial parasites
- Lumbar puncture for CSF examination including Indian ink stain for cryptococcal meningitis
- Blood cultures and sensitivity studies.
- CT Scan (where available)

5.3. PROPHYLAXIS

Many opportunistic infections can be prevented by the use of Co-trimoxazole prophylaxis. The diseases include; Bacterial pneumonias, Pneumocystis Jiroveci Pneumonia, and Toxoplasmosis.

Prophylactic treatment using Cotrimoxazole

Indications:

- In HIV and AIDS patients, starting with WHO Stage 2
- All adult persons with symptomatic HIV disease including all symptomatic pregnant women after the first trimester and before 37 weeks of pregnancy.
- Asymptomatic HIV infected individuals with CD4+ counts <200 cells/ml.*

NB: Baseline Liver Function Tests (LFT) and Renal Function Tests (RFT) are recommended before long term administration of Cotrimoxazole.
* For children, see appropriate section of the guidelines.

Dose

Adults – One double strength tablet (160/800 mg) or two single strength tablets once a day on a daily basis.

Duration

- Prophylaxis is for life for both adults and children who are not on ARTs. For those on ART’s, cotrimoxazole prophylaxis can be stopped if CD4+ is 200 for 6 months
- Children who are born to HIV infected women can stop prophylaxis when HIV infection has been ruled out and the risk of exposure has ceased.
- Children older than 18 months can continue with the prophylaxis only if the diagnosis of HIV infection has been confirmed by serology
Criteria for stopping

- Occurrence of severe side effects such as cutaneous reactions, or fixed drug reactions.
- If ART is initiated and CD4+ count is above 200 cells/ml in adults or above 15% in children for a period of 6 months
- Renal and/or hepatic insufficiency or severe haematological toxicity

Follow up

Regular follow up initially every month for the first three months, then every three months if the medication is well tolerated. It is mandatory to monitor for side effects and adherence. It is recommended that monitoring includes assessment of skin reactions, measurements of haemoglobin, and white blood counts every six months and when clinically indicated.

Preventive therapy against TB in PLHA

The dramatic spread of the HIV epidemic throughout PNG has been accompanied by up to a fivefold increase in the number of TB cases registered.

There is thus a need for strong collaboration between HIV and AIDS and TB programs. Therefore strategies to control HIV must also include interventions to control TB. TB preventive therapy is the use of one or more anti-tuberculosis drugs given to individuals with latent infection with *M. tuberculosis* in order to prevent progression to active TB disease. Trials have shown that maximum benefits from TB preventive therapy are achieved in HIV infected patients with evidence of tuberculosis infection. Development of clinical Tuberculosis is reduced by about 60% and survival is also prolonged. However, some benefit is also shown in HIV positive groups in general, regardless of the tuberculin test result.

TB preventive therapy is an intervention that should be part of the package of care for people living with HIV. However it should only be offered in the following situations (prerequisites):

- Effective screening for active TB before initiating TB preventive therapy
- Capacity for follow up and monitoring of patients to encourage adherence to preventive therapy in order to address eventual side effects and exclude active TB disease

INH will be provided to eligible clients through collaboration between HIV/AIDS and TB Control Programs
It is essential to exclude active tuberculosis in every patient prior to starting preventive therapy. This is critical in order to avoid drug resistance when drugs are given to patients with TB disease who require the full regimen.

Symptoms and signs to be noted

Patients for TB preventive therapy should be specifically asked about signs and symptoms of tuberculosis:

- Cough > 2 weeks
- Fever > 2 weeks
- Night sweats
- Weight loss of > 1.5 kg in the past 4 weeks. Weight should be measured at each clinic visit to allow documented evidence of weight loss. A weight loss of >1.5 kg should be considered a positive screen indicator.
- Pleuritic chest pains and haemoptysis
- Other symptoms suggesting extrapulmonary TB

Investigations to be done

All patients with 1 or more signs and symptoms must be investigated further for TB and are not immediately eligible for TB preventive therapy. Sputum specimens must be collected for AFB. Chest x-ray is also recommended in the screening for TB Preventive therapy, and has an important role in those who are TB suspects with negative sputum smears as per the national TB guidelines.

Eligibility for TB Preventive Therapy

All HIV positive people who have no signs and symptoms suggestive of active TB are eligible for TB preventive therapy. For patients with history of TB treatment:

- Patients who had active tuberculosis in the past 2 years should not be considered for preventive therapy.
- Patients who were treated for tuberculosis more than 2 years earlier may be considered because they may have already been re-infected with TB.

Patients who receive TB preventive therapy and who are required to start antiretroviral therapy can complete their TB preventive therapy even if the ART is started as there is no interaction between isoniazid and the current ART regimen used. Whenever INH is used, pyrodoxine (B6), 25mg daily is recommended to be given concurrently with the INH.
Recommended Regimen

The standard regimen for TB preventive therapy is Isoniazid (INH) daily 5 mg/kg/day (maximum 300 mg per day) and Vitamin B6 (Pyridoxine) 25mg daily. The recommended duration is 6 months.

5.4 TREATMENT OF OPPORTUNISTIC INFECTIONS:

In the following section, the guidelines recommend how to identify and manage treatable causes of morbidity in HIV infected individuals. All efforts should be made to deal with all treatable conditions in people with HIV and AIDS. These conditions will be managed at various levels of care from aid post to national level health care facilities, and as such, will require early detection, treatment and referral accordingly.

Viral infections

Viruses that are commonly associated with HIV and AIDS include:

- Herpes simplex virus
- Varicella zoster virus
- Human papilloma virus
- Cytomegalo Virus

HERPES SIMPLEX VIRUS INFECTION (HSV)

Clinical features:

Classical presentation of primary HSV infection includes:

- Fever
- Lymph node enlargement
- Small painful vesicles
- Painful ulcers on the mucosa and skin
- Pain along gluteal and upper thigh muscles (Sacral radiculomyelitis) may occur with genital/rectal HSV

Lesions usually resolve within 10-21 days after primary infection. The HSV then becomes latent in trigeminal and sacral nuclei and may reactivate. Clinical features common in those with HIV and AIDS include persistent/erosive genital/peri-rectal ulcerations. These are mainly associated with HSV-2 and more recurrent herpetic lesions.
**Diagnosis**

The diagnosis is usually based on clinical history and physical findings. Laboratory tests include serology, culture, immunofluorescence or immunoassay. Neither immunofluorescence or immunoassay are available in the public health system in PNG.

**Treatment**

For mild and moderate cases of HSV, give Acyclovir 400mg orally three times daily for 7 days and for severe and recurrent HSV give Acyclovir 800mg orally, five times daily for 5 days or GV for drying 2%. Acyclovir is currently only available in PNG in some private pharmacies.

**VARICELLA-ZOSTER VIRUS (HERPES ZOSTER OR SHINGLES)**

Early symptoms include pain (often severe and radicular) and fever followed 2-4 days later by vesicular rash over involved dermatomes. Primary varicella-zoster virus (VZV) infection usually results in chicken pox.

However primary VZV infection in immuno-compromised persons may be associated with the following:

- Numerous lesions
- Disseminated disease associated with pneumonitis, hepatitis and hemorrhagic skin lesions.
- CNS manifestations including encephalitis and cerebellar ataxia
- Prolonged healing time
- Bacterial super-infection
- Herpes zoster in HIV infected individuals may be more severe, with more recurrences and may involve more than one dermatome

**Diagnosis**

Diagnosis of herpes zoster is usually based on findings of characteristic painful skin lesions at different stages of evolution (erythema, papule, vesicles, crusts).

**Treatment**

- Strong analgesics are indicated (Codeine with paracetamol or Codeine phosphate). The pain may be refractory even to potent analgesics.
- Acyclovir 800mg 5 times per day for 7 days.
- With disseminated VZV or ophthalmic nerve involvement give IV/Oral Acyclovir 10 mg/kg/day 8hourly, for 7 days
- Erythromycin or Cloxacillin 500mg 6 hourly times daily for 7 days for bacterial super-infection.
Patients on NVP should not be provided with cabamezapine, however, Amytriptine may be used for post-herpetic neuralgia. The usual dose is 25mg orally nocte. The dose may be increased every 2 to 3 days but care should be taken to avoid excessive drowsiness. Most adults require less than 100mg daily.

Use of steroids (prednisolone) in herpes zoster is not recommended in this situation.

HUMAN CYTOMEGALOVIRUS (HCMV)

Clinical features

HCMV is a common human pathogen, infecting approximately 50% of adult populations in developed countries. HCMV infections are typically sub-clinical but can become life threatening in immuno-compromised individuals. HCMV infection itself causes immunosuppression and has been linked with the progressive immunosuppression in persons infected with HIV. The most common manifestation is retinitis but colitis and pneumonitis are also frequently seen. HCMV may also present as encephalitis, hepatitis, adrenalitis, pancreatitis and/or epididymitis.

Diagnosis

The definitive diagnosis relies on laboratory findings:

- Microscopic finding of cytomegalic cell containing large central basophilic intranuclear inclusion (Papanicolaou or hematoxylin eosin stain).
- HCMV Antigen detection (monoclonal antibodies) of tissue, blood or bronchoalveolar lavage specimens
- Culture – requires fastidious conditions and may require 4 – 6 weeks (quicker by culture amplification). Interpretation of results is said to be difficult.
- Serology – seroconversion is a good marker for primary HCMV infection.

Treatment

- Ganciclovir – Either IV infusion over 1 hour at 5mg/kg given twice a day during initial induction (2 – 3 weeks) and maintenance therapy consists of 5mg/kg once daily. (Decrease dose in renal impairment).
- Orally – currently advised at 3 grams daily (higher doses may be more effective). It should be noted that oral Ganciclovir is not recommended for induction therapy of acute HCMV disease. In acute HCMV disease, IV Ganciclovir must be used for induction therapy.
HUMAN PAPILLOMA VIRUS (HPV)

Clinical features

The virus may be present for years before symptoms develop. Genital warts develop following infection with some sub-types of HPV and usually progress rapidly whenever there is a decline in immune status (such as in pregnancy or in HIV infection). The warts are soft and fleshy and are easily traumatised during sexual activity. In pregnancy or in immuno-compromised individuals the warts may develop so greatly as to completely cover the vulva and occlude the introitus and urethral meatus.

Women who have anogenital HPV infection (ano-genital warts) have an increased risk of developing cancer of the cervix and both men and women who have anal warts have an increased risk of later developing anal cancer.

Diagnosis

The diagnosis in PNG is based on clinical history and physical findings.

Treatment

The options in PNG are limited:

- Podophyllin resin 10% to 25% solution in ethanol or tinc benz co – applied to warts by health worker once to twice a week (for up to 6 weeks) and washed off 1 to 4 hours after application. This is not to be used in pregnancy. Extended use may lead to bone marrow depression so it is not appropriate to use for large masses of warts. Podophyllin is no longer available through the public health system in PNG.
- Trichloroacetic acid in 80% to 90% solution may be used to treat small moist warts. It should be applied by the clinician to each wart (being careful not to burn surrounding tissue) weekly for up to 6 weeks. This is only appropriate for small numbers of discrete warts.
- Imiquimod 5% cream is applied to warts (with the fingers) 3 times a week (alternate nights) for up to 16 weeks. This medication stimulates the production of interferon and other cytokines. It is not available in the public health system but can be obtained by prescription from some private pharmacies. Safety in pregnancy has not yet been established.
- Electrocautery is probably the only real option available in PNG to treat the large mass genital warts that are becoming increasingly seen. Female patients are usually referred to the Gynaecology Clinic and males to the Surgical Clinic for booking. Cautery will usually need to be done under general (ketamine) anaesthesia.
BACTERIAL INFECTIONS

Bacterial infections that occur with increased frequency HIV and AIDS include:

- Respiratory infections: Streptococcal pneumoniae, Haemophilus influenzae
- Septicemia: Non typhoid salmonella, Pseudomonas aeruginosa
- Cutaneous infections: Staphylococcus aureus

Treatment is the same as in non- HIV infected individuals.

Fungal infections

Fungal infections commonly found in association with HIV and AIDS include Cryptococcus neoformans, Pneumocystis pneumonia, Candida species, Histoplasma capsulatum and several others.

CRYPTOCOCCUS NEOFORMANS

A major cause of meningitis in HIV infected persons and disseminated disease. Contrary to bacterial meningitis, fever may be absent in these cases. Diagnosis depends on demonstration of positive CSF Indian Ink preparation.

Treatment

The preferred regimen is Amphotericin B 0.7mg/kg/day IV and 5 Fluorocytosine 100mg/kg/day orally for 14 days (induction phase) then:

- Fluconazole IV 400mg/day for 3 days (consolidation phase) then
- Fluconozole 400mg per day orally for 10 weeks (maintenance phase) then
- Fluconazole 150mg daily as secondary prophylaxis for life (with drug holidays after 6 months).
- Child: 6-12mg/kg daily (every 72 hours in neonate up to 2 weeks old, every 48 hours in neonate 2-4 weeks old); maximum, 400mg daily.

CANDIDIASIS

Is the most common fungal infection in HIV and AIDS. Clinical manifestations depend on the site of disease, which can include mouth, pharynx, esophagus, and vagina.

NB. Candidiasis in the esophagus, trachea, bronchi or lungs is diagnostic of WHO Clinical Stage IV.
Diagnosis

The diagnosis is mainly based on clinical findings.

Treatment

The following drugs are recommended:

- Nystatin oral suspension
- Fluconazole 150mg/day or 200mg/day for 2-3 weeks (for oropharyngeal candidiasis and others).

Once oropharyngeal candidiasis is treated with Fluconazole, the dose should be reduced to 50 – 100 mg daily and then continued indefinitely or until immune recovery occurs on HAART.

PNEUMOCYSTIS JIROVECI PNEUMONIA (PJP)

Quite common in HIV infected individuals.

Clinical presentation:

- Non-productive cough, fever, chest tightness and shortness of breath that has evolved over 2-4 weeks.
- Chest signs may be minimal despite severe shortness of breath
- CXR may show diffuse and symmetrical increased interstitial markings to diffuse alveolar pattern with infiltrations characterized by asymmetry, nodularity or cavitations. Chest radiograph may appear normal in 10-30% of patients.

Diagnosis

In our circumstances diagnosis is based on clinical presentation and exclusion of other common causes of severe dyspnoea.

Treatment of PJP\(^3\)

The management of PJP depends on the severity of the disease.

Severe Disease (Dyspnoea without exertion and severe hypoxia)

- Trimethoprim 12-15 mg/kg/day + Sulphamethoxazole 75 mg/kg/day - IV for 21 days in 3 divided daily doses.

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\(^3\) ASHM (2003) HIV Management in Australia: A Guide for Clinical Care, Sydney, Australia
Mild and Moderate Disease (PJP is normally considered moderate if there is dyspnoea on minimal exertion)

- Cotrimoxazole 1920 mg 3 times /day for 21 days (4tabs 8 hourly for 7 days, Then 4 Tablets 12 hourly for 7 days, then 4 Tablets daily for 7 days). With patients with moderate disease, consideration should be given to commencing initial therapy IV, particularly where treatment compliance may be an issue.

For those allergic to Sulphur

Trimethoprim 12-15mg/kg/day + Dapsone 100mg/day for 21 days

Prophylaxis therapy for PCP

Give Trimethoprim-sulphamethoxazole (TMP-SMX) as shown above.

TOXOPLASMA ENCEPHALITIS

Clinical features

- Focal paralysis or motor weakness depending on area affected
- Neuro-psychiatric manifestation corresponding to the affected area in the brain
- Altered mental status (forgetfulness etc.)

Diagnosis

Predominantly based on clinical findings after exclusion of other common causes of neurological deficit. If available, a CT scan is very useful for confirmation.

Treatment

Acute infection:

Tabs Sulphadiazine 1 gm 6hourly + Tabs Pyrimethamine 100mg loading dose then 50mg /day + Tabs Folinic acid 25mg /day for 6 weeks. After six weeks of treatment move to prophylaxis regime
Secondary Prophylaxis Regime

- Tabs Sulphadiazine 500mg 6hourly + Tabs Pyrimethamine 25-50mg /day + Tabs Folinic acid 25mg /day.
- For those allergic to sulphur:
  - Replace Tab Sulphadiazine with capsule Clindamycin 450mg 6 hourly.
  - Discontinue maintenance therapy when CD4 count>200 cells/ml for 6 months

Intestinal protozoa

For intestinal protozoa which is a common cause of diarrhoea and difficult to diagnose, the recommended treatment: Tabs Albendazole 800mg BD for one week. Other alternatives are Flagyl Tabs or Thiabendazole
APPENDIX 1

LIST OF RECOMMENDED DRUGS FOR ADULTS AND ADOLESCENTS

<table>
<thead>
<tr>
<th>Drug class/drug</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nucleoside RTIs</td>
</tr>
<tr>
<td></td>
<td>Zidovudine (ZDV) 300 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>Stavudine (d4T) 40 mg twice daily if &gt;60 kg</td>
</tr>
<tr>
<td></td>
<td>(30 mg twice daily if &lt;60 kg)</td>
</tr>
<tr>
<td></td>
<td>Lamivudine (3TC) 150 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>Didanosine (ddl) 400 mg once daily if &gt;60 kg</td>
</tr>
<tr>
<td></td>
<td>(250 mg once daily if &lt;60 kg)</td>
</tr>
<tr>
<td></td>
<td>Abacavir (ABC) 300 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>Non-nucleoside RTIs</td>
</tr>
<tr>
<td></td>
<td>Efavirenz (EFZ) 600 mg once daily/800 mg</td>
</tr>
<tr>
<td></td>
<td>in intensive TB treatment phase.</td>
</tr>
<tr>
<td></td>
<td>Nevirapine (NVP) 200 mg once daily for 14 days,</td>
</tr>
<tr>
<td></td>
<td>then 200 mg twice daily</td>
</tr>
<tr>
<td></td>
<td>Protease inhibitors</td>
</tr>
<tr>
<td></td>
<td>Saquinavir/ritonavir (SQV/r) 1000 mg/100 mg</td>
</tr>
<tr>
<td></td>
<td>twice daily</td>
</tr>
<tr>
<td></td>
<td>Lopinavir/ritonavir (LPV/r) (Kaletra) 3300/300</td>
</tr>
<tr>
<td></td>
<td>mg once daily</td>
</tr>
</tbody>
</table>

ZDV/3TC/NVP (300mg/150 mg /200 mg), combination tablets
D4T/3TC/NVP (30 mg /150 mg /200 mg and 40 mg /150 mg /200 mg),
combination tablets
ZDV/3TC (300 mg /150 mg), combination tablets
D4T/3TC (30 mg /150 mg and 40 mg /150 mg), combination tablets
NVP syrup (50mg/5ml)
ABC (300 mg)
ZDV (300 mg)
D4T (30 mg and 40 mg)
DDI (EC 250 mg and EC 400 mg)
EFZ (200 mg and 600 mg)
SQV (200 mg)
RTV (100 mg)
IDV (400 mg)
FLUCONAZOLE (150 mg and 200 mg)
## APPENDIX 2: DRUGS FORMULATIONS AND DOSES FOR CHILDREN

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose and method of Administration</th>
<th>Absorption and meal</th>
</tr>
</thead>
</table>
| **ZDV**  
(Syrup 10mg/ml)  
(Capsule:100mg & 300mg)  
Oral: 160mg/m²  
8 hourly | Can be administered with food |
| **d4T**  
(Solution 1mg/ml)  
Capsules: 15, 20, 30 and 40mg  
1mg/kg 12 hourly  
(up to 30kgs)  
>30kgs see adult dose | Can be administered with food |
| **ddl (powder)**  
10mg/ml)  
Chewable tablets  
With buffers 25, 50, 100 & 150mg  
90 – 100mg/m² | Administer on an (solution empty stomach |
| **3TC**  
(Solution 10mg/ml)  
Capsule 100mg  
4mg/kg twice a day | Can be administered with food |
| **EFV**  
Capsule 50, 100, And 200mg  
10-14kg 200mg  
15-19kg 250mg  
20-24kg 300mg  
25-32.5kg 350mg  
32.5-40kg 400mg  
>40kg 600mg  
Not before 3 years of age | Not with high fat meal |
| **NVP**  
once  
(50mg/ml)  
Tab 200mg  
200mg/m² twice a day  
During first two week a day | |
| **ABC**  
20mg/ml  
Tab. 300mg  
8mg/kg/dose twice a day Use in children >3/12 | |
### APPENDIX 3. WHO HIV/AIDS CLINICAL STAGING FOR ADULTS AND ADOLESCENTS

<table>
<thead>
<tr>
<th>Clinical stage I</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Asymptomatic</td>
</tr>
<tr>
<td>2. Persistent generalized lymphadenopathy</td>
</tr>
</tbody>
</table>

Performance scale 1: asymptomatic, normal activity

<table>
<thead>
<tr>
<th>Clinical stage II</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Weight loss, &lt;10% of body weight</td>
</tr>
<tr>
<td>4. Minor mucocutaneous manifestations (seborrheic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, angular cheilitis)</td>
</tr>
<tr>
<td>5. Herpes zoster within the last five years</td>
</tr>
<tr>
<td>6. Recurrent upper respiratory tract infections (i.e. bacterial sinusitis)</td>
</tr>
</tbody>
</table>

And/or performance scale 2: symptomatic, normal activity

<table>
<thead>
<tr>
<th>Clinical stage III</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Weight loss, &gt;10% of body weight</td>
</tr>
<tr>
<td>8. Unexplained chronic diarrhoea, &gt;1 month</td>
</tr>
<tr>
<td>9. Unexplained prolonged fever (intermittent or constant), &gt;1 month</td>
</tr>
<tr>
<td>10. Oral candidiasis (thrush)</td>
</tr>
<tr>
<td>11. Oral hairy leukoplakia</td>
</tr>
<tr>
<td>12. Pulmonary tuberculosis within the past year</td>
</tr>
<tr>
<td>13. Severe bacterial infections (i.e. pneumonia, pyomyositis)</td>
</tr>
</tbody>
</table>

And/or performance scale 3: bedridden <50% of the day during the last month

<table>
<thead>
<tr>
<th>Clinical stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. HIV wasting syndrome</td>
</tr>
<tr>
<td>15. Pneumocystis carinii pneumonia</td>
</tr>
<tr>
<td>16. Toxoplasmosis of the brain</td>
</tr>
<tr>
<td>17. Cryptosporidiosis with diarrhoea &gt;1 month</td>
</tr>
<tr>
<td>18. Cryptococcosis, extrapulmonary</td>
</tr>
<tr>
<td>19. Cytomegalovirus disease of an organ other than liver, spleen or lymph nodes</td>
</tr>
<tr>
<td>20. Herpes simplex virus infection, mucocutaneous &gt;1 month, or visceral any duration</td>
</tr>
<tr>
<td>21. Progressive multifocal leukoencephalopathy</td>
</tr>
<tr>
<td>22. Any disseminated endemic mycosis (i.e. histoplasmosis, coccidioidomycosis)</td>
</tr>
<tr>
<td>23. Candidiasis of the oesophagus, trachea, bronchi or lungs</td>
</tr>
<tr>
<td>24. Atypical mycobacteriosis, disseminated</td>
</tr>
<tr>
<td>25. Non-typhoid Salmonella septicaemia</td>
</tr>
<tr>
<td>26. Extrapulmonary tuberculosis</td>
</tr>
<tr>
<td>27. Lymphoma</td>
</tr>
<tr>
<td>28. Kaposi’s sarcoma</td>
</tr>
<tr>
<td>29. HIV encephalopathy, as defined by the Centers for Disease Control and Prevention</td>
</tr>
</tbody>
</table>

And/or performance scale 4: bedridden >50% of the day during the last month
Note: both definitive and presumptive diagnoses are acceptable.

a HIV wasting syndrome: weight loss of >10% of body weight, plus either unexplained chronic diarrhoea (>1 month) or chronic weakness and unexplained prolonged fever (>1 month).

b HIV encephalopathy: clinical findings of disabling cognitive and/or motor dysfunction interfering with activities of daily living, progressing over weeks to months, in the absence of a concurrent illness or condition other than HIV infection which could explain the findings.
APPENDIX 4: WHO HIV/AIDS CLINICAL STAGING FOR CHILDREN

<table>
<thead>
<tr>
<th>Clinical stage I</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Asymptomatic</td>
</tr>
<tr>
<td>2. Persistent generalized lymphadenopathy</td>
</tr>
<tr>
<td>3. Enlarged liver or enlarged spleen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical stage II</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Enlarged parotid.</td>
</tr>
<tr>
<td>5. Chronic dermatitis, Molluscum Contagiosum or verruca planus</td>
</tr>
<tr>
<td>6. Chronic/recurrent sinusitis</td>
</tr>
<tr>
<td>7. Chronic/recurrent otitis media (ear infection)</td>
</tr>
<tr>
<td>8. Herpes zoster in more than 1 dermatone or 2 distinct episodes</td>
</tr>
<tr>
<td>9. Recurrent Herpes simplex infection</td>
</tr>
<tr>
<td>10. Thrombocytopenia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical stage III</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Very low weight for age, low height for age or low weight for height</td>
</tr>
<tr>
<td>12. Persistent diarrhoea, &gt;14 days</td>
</tr>
<tr>
<td>13. Recurrent sever bacterial pneumonia</td>
</tr>
<tr>
<td>14. Pulmonary TB/TB adenitis</td>
</tr>
<tr>
<td>15. Oral thrush (outside the neonatal period)</td>
</tr>
<tr>
<td>16. Symptomatic LIP or extrapulmonary TB</td>
</tr>
<tr>
<td>17. Systemic varicella or non-responsive Herpes simplex</td>
</tr>
<tr>
<td>18. Nephropathy/Cardiomyopathy/Refractory anaemia</td>
</tr>
<tr>
<td>19. Rectovaginal fistula</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Sever refractory wasting/sever malnutrition</td>
</tr>
<tr>
<td>22. Severe or refractory oesophageal or oro-pharyngeal thrust</td>
</tr>
<tr>
<td>23. Severe multiple or recurrent severe bacterial infections (not including pneumonia)</td>
</tr>
<tr>
<td>24. Persistent or non-responsive zoster infection</td>
</tr>
<tr>
<td>25. Pneumocystis Jiroveci pneumonia (Severe or very severe pneumonia in &lt;12 months of age)</td>
</tr>
<tr>
<td>26. CMV retinitis (+/- colitis)/other CMV disease</td>
</tr>
<tr>
<td>27. Herpes simplex virus (persistent or encephalopathy)</td>
</tr>
<tr>
<td>28. Karposi's sarcoma or other HIV-related malignancies</td>
</tr>
<tr>
<td>29. TB of bones, joints, meningitis, abdominal cavit, urinary tract or other organs (excluding TB adenitis)</td>
</tr>
<tr>
<td>30. Herpes simplex virus infection, mucocutaneous &gt;1 month, or visceral any duration</td>
</tr>
<tr>
<td>31. Toxoplasmosis/Disseminated fungal infection</td>
</tr>
<tr>
<td>32. Cryptococcal meningitis/Mycobacteria</td>
</tr>
</tbody>
</table>
Note: both definitive and presumptive diagnoses are acceptable.

**APPENDIX 5: ART ADHERENCE PREPARATION, SUPPORT AND MONITORING**

| Assess | Person’s goals for today’s visit  
Understanding of ART therapy  
Interest in receiving therapy |
|---|---|
| Advise | HIV illness, expected progression  
ART therapy  
o Benefits-lifesaving drugs. Your life depends on taking them every day at the right time  
o Very strong medicines  
o The pills do not cure HIV  
o The pills do not prevent HIV transmission to others – you must still use condoms and practice safer sex  
Need for complete adherence to daily treatment (more than other drugs you may be familiar with – essential to maintain drugs levels in the blood for ART therapy to work).  
Must be taken twice daily without interruption  
If you forget a dose, do not take a double dose  
Must be taken at right time, every 12 hours (adjust this if on different regime)  
If you stop, you will become ill (not immediately – after weeks, months or years)  
Possibility of side effects and drug interactions  
Importance of disclosure of HIV+ status (partner, family etc)  
Importance of testing partner and children  
Drugs must not be shared with family or friends |
| Agree | Establish that the person is willing and motivated and agrees to treatment, before initiating ART therapy  
o Has the person demonstrated ability to keep appointments, to adhere to other medications?  
o Has the person disclosed his or her HIV status? If not, encourage him / her to do so. Disclosure to at least one person who can be the supporter is important  
o Does the person want treatment and understand what treatment is?  
o Is the person willing to come for the required clinic follow-up? |
| Assist | Help the person develop the resources / support / arrangements needed for adherence:  
o Ability to come for required schedule of follow-up. Discuss how the person will do this  
o Home and work situation that permits taking medications every 12 hours without stigma  
o Regular supply of free or affordable medication  
o Supportive family or friends  
o ART adherence support group  
o Treatment supported |
| Arrange | When the person is ready for ART therapy, discuss at the clinical team meeting then make a plan |
**APPENDIX 6: Guide for Supporting ART initiation**

| **Assess** | Person’s goals for today’s visit  
Check understanding of the information given before – make sure the person understands the illness, treatment and possible side effects |
| **Advise** | Reinforce the information given before  
Advise on the details of first line regimen  
 o Explain the purpose of and how to take each pill. Provide and explain card summarising treatment (with drawing of each pill and common side effects)  
Make sure person understands the importance of adherence  
Advise on diet  
Explain limits on alcohol and drug use. These are important for adherence.  
 **Explain side effects**  
o Prepare person and treatment supporter to handle common side effects. Most side effects can be treated symptomatically.  
o Explain which side effects are likely to be transitory (related to the initiation of treatment) and their likely duration.  
o Explain which are more serious and require return to clinic.  
Explain that person can still transmit HIV infection when on ART therapy.  
It is very important to still practice safer sex and other practices to prevent transmission. |
| **Agree** | Make sure the person agrees to the regimen and is a true partner in the treatment plan  
Make sure the person understands that his / her life depends on taking the medicine every day  
Agree on plan for support by treatment buddy and support groups. |
| **Assist** | Develop (then reinforce on each visit) a concrete plan for the specific ART regimen  
o When to take / times for every 12 hour dosing / how to make it a habit  
o Explain escalating dose of niverapine  
o How to remember – provide and explain written schedule, pillbox, pill chart, other aids  
Prepare person and treatment supporter for adherence, possible common side effects, what to do if they occur, and when to seek care.  
Provide psychosocial support.  
Encourage person to join ART adherence support group.  
Arrange home visit. |
| **Arrange** | Next follow-up in clinic, home visit.  
Agree on best way to access help between visits.  
Make sure the person understands where / when s/he will see health worker. |
### APPENDIX 7:
Guide for Monitoring and supporting adherence

| **Assess** | Do clinical review and respond to any problems or changes in status. To assess adherence:
|---|---|
|  | Review the medications with the person and their treatment supporter. Determine whether there is an adherence problem.
|  | Ask questions in a respectful and non-judgmental way:
|  | o “Many people have trouble taking their medications, what troubles are you having?”
|  | o “Can you tell me when and how you take each pill?”
|  | o “When is it most difficult for you to take the pills?”
|  | Ask about the common and locally important factors that may interfere with adherence.
|  | Ask about stigma related to taking the pills.
|  | Count pills.
|  | How many pills forgotten yesterday, last 3 days, last month?
|  | **If poor adherence: Determine what the problem is:**
|  | Side effect? Simply forgot?; Ran out of pills?; Which dose missed morning or evening? Why?; Cost?; Reminds you of HIV?; Misunderstood?; Changed work situation?; Not comfortable taking medications around others?; Stigma?; Different timing when away from home or holiday, travel, weekend?; Seldom at home and disorganised?; Problems with diet?; Another medical problem?; Screen for excess alcohol use and depression and treat, if present. **Advise**
| **Advise** | Reinforce the information given before
|  | Give additional information that may help with adherence problem
|  | Advice on any suggested changes in the regimen.
| **Agree** | Agree on any changes in Treatment Plan and solutions to adherence problems (if present).
|  | Discuss the agreements you have reached and check for their commitment.
| **Assist** | Provide adherence support
|  | Reinforce interventions which match the person’s needs and adherence problems, if present.
|  | Make sure that the person has:
|  | o Plan to link taking medications with daily events such as meals
|  | o Any device or skills that he or she needs (e.g. how to use a diary)
|  | Make sure person has the support he or she needs
|  | o Get help from supporter, other family and friends or peers
|  | o Help person and supporter to find solutions
|  | If adherence problem:
|  | o Get help – call for advice
|  | o Link with home based care or home visits
| **Arrange** | Record adherence estimate on persons card.
|  | Arrange for refills
|  | Arrange for next follow-up visits:
|  | o In clinic
|  | o Home visits
|  | Make sure that the person and supporter understand the follow-up plan and how to contact the clinic team if there is a problem.
Appendix 6
Model Clinical Pathway HIV Care and ART in PNG
THE CLINICAL PATHWAY
for
RETROVIRAL INFECTION
August 2000

multi-sectoral approach

Microsoft Illustration

DRAFT Report on Site Visits PNG ART Rollout Jan 2005
THE RETROVIRAL INFECTION TASK FORCE

Lae, Morobe Province
Papua New Guinea

August 2000

THE CLINICAL PATHWAY

HIV/AIDS

Management Protocol
The Angau Memorial General Hospital in conjunction with NGOs and concerned groups of the City of Lae, Papua New Guinea in the fight against HIV/AIDS - A Multi-sectoral Approach.

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<td>Paediatric</td>
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<td>Others</td>
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<tr>
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<td>Legally Removed/Deprived of any freedom of Expression</td>
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<td>HIV Positive Health Care Provider or Giver</td>
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<td>Status Unknown to Self and Others</td>
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<td>Status Known to Self but not Others</td>
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<td></td>
<td>Status Known to Others but not Self</td>
</tr>
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<td>Laboratory Assistance</td>
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<td>To the Cohorts of HIV positive individuals</td>
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<td>To the Community</td>
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<td>To the Doctor /Care provider</td>
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<td>Tests For HIV Detection</td>
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<tr>
<td></td>
<td>Serodia</td>
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<td>Specific Tests for HIV Detection</td>
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<td>Enzyme Linked Immunosorbent Assay (ELISA)</td>
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<td>Western Blot (WB)</td>
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<td>Polymerase Chain Reaction (PCR)</td>
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<td>Others:</td>
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<td>Rapid Test</td>
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<td>Ideal Test</td>
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<td>CP/FC 6 Laboratory component of the HIV/AIDS clinical pathway</td>
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**Preface**

*DRAFT Report on Site Visits PNG ART Rollout Jan 2005*
The clinical pathway for human immune deficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) patients eventuated after tireless efforts put in by various response groups here in Lae (1). These response groups realize the need for proper collaboration battling this deadly disease of the millenium. It originated after poor coordination of HIV/AIDS patients in the city of Lae where code of ethics, patients’ care and confidentiality compromises, while the disease is escalating and becomes epidemic. The group formed the Retroviral Infection Task Force (RVITF) in August 1999 which is then tasked to draw up suitable clinical pathway to counter-act and or put in place a proper mechanisms where HIV/AIDS patients and clients can be properly managed and channeled in this city.

The RVITF considered at length the issue of confidentiality and patient care, the importance of pre and post test counseling and dwell on the Four C’s: Client Counseled Consented Confidentiality.

In this clinical pathway, the RVITF develops a network of mutually workable pathway to cater for various groups dealing with HIV/AIDS patient in Lae and Morobe Province.

The National AIDS Council (NAC) set guidelines and objectives for Provincial Aids Committee (PAC) and District Aids committee (DAC). After the PAC is well established and running, the DAC would be given an equal opportunity for direct participation in the fight against HIV/AIDS. The multi-sectoral approach (MSA) initiated in the Medium Term Plan (MTP) is an ideal mechanism for control of HIV which is now well known to be at epidemic proportion (1).

Dr John Tonar
Dr Paison Dakulala
Professor P. S. Patil

Acknowledgement
The HIV/AIDS burden is virtually here to stay and continue to thrive on Papua New Guinea’s very existence, a message truly realized by members of the RVITF worth mentioning. The group met tirelessly on numerous mid week afternoons for four consecutive months, meeting and working out ways to provide possible MSA and answers to this epidemic. It is more appropriate to acknowledge the following organization and members:

STD clinic: Lucy Dally, OIC, Joseph Lupi, E. Morangi, J. Guli,
IMR Lae: Wilfred Peter, Norman Bisai, Ghang Oyang, Jennifer Krimbu, Bonney Blu,
ADRA: Rita Maruha, Takeso Totaya, Benson McRubins,
PHO: Terry Daniel, Jack Aita
SEEDS: Sam Solomon Sommi,
SALVOS: Cpt. Zania Kohe, Cpt. Davera Kohe,
Police: Insp. Joe Samara, Insp. Sam Sodeng, Ausaid Advisor Denver Marchant,
Sexual Health Project: Dr Greg Law, Dr Susan Crockett
Catholic Church: Casper Poilele,
Red Cross: rep.
PNGDF: rep.
AMGH:
ADMIN: Dr M. Sau, DMS, Sr Kavanamur, Sr B. Titus,
AOPD / A&E: Brown Sep (HEO) Sr T. Gadebo,
PATH: Prof. P.S. Patil, Ms S. Agebo,
INT. MED: Drs. P. Dakulala, B. Feling, H. Zhao, (Physicians), J. Tonar (Med.Regs), S. Viyufa, L.J. Opa (residents) Srs. M. Mamyobina (SIC), J. Vit,
COPD / PAED: Dr J. Tanume, (Paediatrician)
STAFF: Srs. D. Samai, (Inf.Control), J. Norman, A. Misirait, (LW), M. Nadu (Counselor), Z. Alinke (ICU), L. Joel (IOPD), B. Sam, S. Kalapa, (Blood Bank),
Others: Mr. T. Emuke, Mr. M. Moya

Members of Lae transport industries, and those, who more or less involved and participated in various activities carried out by RVITF for the pathway, you are still vital to the RVITF clinical pathway. The AMGH administration for acknowledging the stages of various meetings and resource (staff and facilities) availability to the draft of the clinical pathway. Least to commend are Prof. P. S. Patil and Dr P. Dakulala for spear heading this project together with Mr. W. Peter, L. Dally and R. Maruha. Specialist MOs, Dr B. Feling (Physician) and Dr J. Tanume (Paediatrician), for guidance towards Dr J. Tonar for final edition and completion of this HIV/AIDS clinical pathway.

It is with great hope that this HIV/AIDS clinical pathway developed here by, and for the people of Lae, would set as a beginning and a standard for the multi-sectoral approach towards HIV/AIDS epidemic in our beautiful country, Papua New Guinea in accordance with the MTP. Again, together, we shall not fall but control and minimize the epidemic.

Introduction
Retroviral infection and its effects on mankind today is one of the most researched and well understood disease of the century and into the new millenium compared to any other diseases known so far. The new millenium looks dull and gloomy for both victims and service providers of the disease (1).

Mr Bill Skate, then Prime Minister of our nation expressed fear in his forward address on the launching of the HIV/AIDS Medium Term Plan (MTP)1998-2002. In that, he highlighted the disease being very serious, having both social and economic implications and threatens to undermine the achievements Papua New Guinea (PNG) has made so far (1). The then government was very serious, hence establishment of the National Aids Council (NAC) which extend to the Provincial Aids Committee (PAC) to monitor and address the issue of the HIV/AIDS epidemic.

To most very experienced personals in the field and the Department of Health’s Sexual Health Project, the Australian Agency for International Development (Ausaid), HIV-AIDS is just the “Tip of and Iceberg”. The trend is very much similar to the African countries now burdened and the mark left behind today by HIV/AIDS (2).

Information from NAC Secretariat further threatens the nation when it was outlined that HIV/AIDS is the disease that “thrives on our people’s very existence” and digging deeper into the fabric of our young nation (4).

Since the disease was first clinically documented in 1987 here in PNG, 6 years after it was known in 1981, it has now firmly established itself here and definitely bound for more destruction to lives. It is already climbing an exponential growth curve (infective rate). The number of HIV cases detected drastically increased from only one in 1987 to 1741 as of 31st March 1999. The number of reported AIDS cases reached 618 while the death reached 145(5). Again, these were quantified figures only from those hospital settings where efforts were made to at least carry out HIV screening tests. The magnitude and rate at which HIV is transmitting keeps everyone guessing and one can only predict.

Sexual behaviours of Papua New Guineans from the behavioural studies point of view released by the Institute of Medical Research (IMR) on reproductive knowledge and behaviour in PNG, in its conclusion chapter (Chp.11), is basically pointed out a high risk behaviour pattern. Some of these risks are attributed to by health care services itself (6). Other statistics and data from most PNG hospitals reveals very high prevalence of sexually transmitted infections (STI) than other diseases (7/1000 population) (1,17).

Human beings have rights to life and freedom of expression. They also have the rights to know and freedom of association (8, 3). Confidentiality is one area of major concern for HIV/AIDS patient’s management. These pose a difficult threat to the way the disease is spreading and one can draw an analogy a population sitting on a time bomb.
Meanwhile, the disease caught health and society unprepared in this part of the world where ethnicity, law, religion, culture and geophysical barriers are very difficult to compromise. Where major health indicators for the country; maternal mortality rate (MMR) is as high as 930/100,000 deliveries and an infant mortality rate (IMR) of 77 per 1000 live births are amongst the highest in the world. A very low literacy rate (LR) of 34 %, mostly among female cohort. These compounded with other social problems; excessive rural to urban drifts, rascalisms, high cost of living and a depressed national economy. The picture here is very gloomy as the facts unfold to this vulnerable population.

These are reasons why the Lae city’s RVITF is established to at least have a coordinated role to play since none is in place that one can safely and confidentially follow in managing HIV/AIDS patient. The government’s initiative of the MSA is simultaneously a welcome approach and it is to the belief of the RVITF goals and objectives, a step in the right direction. The RVITF of Lae is a multisectorial concern group advocates of HIV/AIDS control. It comprises professionals, semi-professionals, researchers, counselors, laymen and theatre groups both in government organisations and non-government organization (NGO) armed with skills to provide physical, emotional, spiritual support for HIV/AIDS patients and clients to the grave.

As the clinical pathway for HIV/AIDS unfolds, various concern groups (multisectorially) add their bits in the management here in the city of Lae to improve the control of the disease to some extent. Some groups who are not included may slot into one of the pathways and exercise the care process; keeping in mind confidentially is kept at all cost.

This clinical pathway protocol is for the citizen of Lae and PNG in combating HIV/AIDS.

**Issues**
A number of issues are brought to light in the management of HIV/AIDS patients. Simply because of the facts that it touches and dwells on someone’s personal life and on areas of extreme sensitivity. It involves emotion and negative aspiration at the highest level and physical and moral degradation at the lowest level.

1. The Disease: HIV/AIDS
   The disease is here dwelling on our own very existence and is exponentially surging. This along needs attention. It becomes an issue in an event of a blinder.

2. The Patient: HIV/AIDS
   The patient comes to the service provider for attention like any other patients. He or she deserves to be handled the way any one is handled including us. There is no discrimination of any kind, may it be racial, regional, nation, creed, employment, etc. The patient also need to be treated as a whole if not may seemed perpetuated to care provider as negligent.

3. The Law: HIV/AIDS
   HIV/AIDS patient is indeed a privileged patient and legally bound for attention and deserved treatment. This is one area of major concern. In recent times and in due course, one would be faced with issues of human right abuse, negligence, compensation claims, breach of confidentiality.

   Needless to mention the issue of confidentiality. This is applied to all patients whether HIV/AIDS patient or any other patient for that matter. HIV/AIDS patient is seen as a “classified” person by the RVIT F. They must remain classified to the grave. A confidential MSA is a matter of practice to perfection issue.

5. The Society: HIV/AIDS
   HIV/AIDS patient or client eventually belongs to a society and needs to go back after discharge or death. The care, a community or society gives to its patient is an area of uncertainty. Hence, RVITF and family support is what patients need at those end times.

6. The Treatment: HIV/AIDS
   There is no definite treatment for HIV. Symptomatic treatment is available for AIDS but certainly not lasting. Retroviral suppressive drugs (AZT- Zidovudine, didanosine, zalcitabine) are effective but not curative and very expensive. These drugs can be obtained through private or locally approved health establishment. Advice could also be obtained from hospital physicians or the NAC or PAC in an effort to suppress progression of the retroviral multiplication.

7. The Control: HIV/AIDS
Various control methods exist. The most definite is not to have sex at all apart from other risky behaviours. This is often not possible. Then stick to a single trusted sexual partner. The least one can do is to use condom. The notorious thing if at all, to do is to have unprotected sexual intercourse with an unknown partner. If the MSA fails, then the next approach is unforeseen.

**The Present: HIV/AIDS**
The disease is in-cultured into the fabric of our society and its people. The current political, social and economic status further make live harder for the unfortunate and this alone is the driving factor towards prostitution, illness, STIs and HIV/AIDS. The disease is deeply rooted here and therefore everyone is called to be cautious.

**The Future: HIV/AIDS**
The future of our nation, PNG with regard to social, economic, and political situation is volatile and difficult to predict but one can confidently predict the trend of HIV/AIDS. The disease is having an exponential effect and will affect mostly the younger generation of this nation where in them our future lies. PNG follows the African trend but at an early controllable stage if efforts are made in all sectors of our communities.

10. **Finally: HIV/AIDS:**
MSA to HIV/AIDS is the best method and it is more than a recommendation.

---

**Aim**

To develop a clinical pathway for HIV/AIDS clients/patients in Lae city.

**Objectives**
1. Develop counseling and services network
2. Maintain confidentiality
3. Working mechanism for MSA towards HIV/AIDS patients

The RVITF Team

Groups and Organisation

1. The Angau Memorial General Hospital (AMGH)
   - Wards (Medical, Surgical, Paediatrics, Obstetrics and Gynaecology, Psychiatric)
   - Clinics, Special Clinics and Consults (Medical, MCH/FHC, Well Women’s, Gynaecology, DOTS, STD, Referrals)
   - Outpatient Departments
   - Accidents and Emergency Department
   - Pathology Department and Pharmacy
   - Hospital Counselors/ Social Works
   - Blood Bank and Infection Control
   - Department of Dentistry
   - Operating Theatre
   - The Hospital Administration
2. The Institute of Medical Research - IMR and Peer Educators of Lae
3. Adventist Development and Relief Agency ADRA, Lae
4. The Salvation Army- Red Shield Counseling Division, Lae
5. The SEEDS Theatre Arts Performing Group, Lae
6. Catholic Agency
7. Lae Metropolitan Police Force
8. PNG Defence Force, Igam Barracks, Lae
9. The Private Hospitals and Clinics in Lae City
10. Corporate Bodies
11. Maritime Workers/ Wharfies, Lae
12. The National AIDS Council (NAC)
13. The Provincial Aids Committee (PAC)
14. The District AIDS Committee (DAC)
15. Red Cross
16. Other Concern Groups (Open)

The Retroviral Clinical Pathway
Angau Memorial General Hospital (AMGH)

AMGH is the second biggest and referral hospital in PNG and has bed of more than 300 in-patients and a good referral acceptance system of approximately more than 100 patients per day. Other clinical discipline ranging from general medicine to specific areas like Ophthalmology, Dentistry, Cancer and Orthoprosthetic (Artificial Limbs).

Tuberculosis (TB) direct observed therapy, short course chemotherapy (DOTS) program is one recent successful inclusion in the hospital continuous “strive for better” attitude for clients by the current management. HIV/AIDS has been a difficult area in a sense that it came in at a time when the hospital is not adequately prepared to meet the current increasing case detection rate to an epidemic proportion.

The medical-legal implications with regard to HIV/AIDS clients/patients care and management by the hospital is a concern to medical experts on behalf of the hospital. The medical directorate and the hospital physicians could foresee what lies ahead and took the issue on-board. Initially as an advocacy and awareness approach, then into clinical pathway design for hospital protocol for the collective management of HIV/AIDS clients/patients at AMGH which is a thumbs up effort.

Patients portal of entry at AMGH:
1. With a referral letter from the center of origin: urban health centers and clinics, district health centers, provincial and base hospitals, private hospitals and clinics etc. through adult out patient department (AOPD).
2. Direct consultation (voluntary patients, private etc) (clinics)
3. Emergency case through accident and emergency (A&E)

The main recipients are:
- The General Adult Out Patient Department (AOPD)
- Children Out Patient Department (COPD)
- The Accident and Emergency (A&E)
- The Labour Ward (LW)

Other recipients include clinics:
- MCH/ Family Health and Counseling clinics
- Dental, STD, Consultation and Acupuncture clinics
- Blood Bank
- Others (cancer, limbs etc) are very rare ports for HIV/AIDS client’s entry.

The clinical pathway for the hospital below is designed as a collective approach to accommodate and serve HIV/AIDS clients/patients enter and exit through any of above ports to AMGH. As such, wards and clinics as well as various service outlets within the hospital come into the general clinical pathway picture where appropriate. Note also that the rarely utilized service; counseling becomes the major service provider in the fight against HIV/AIDS in AMGH.
CP/FC 1. General clinical pathway for HIV/AIDS clients/patients into AMGH.

**ANGAU MEMORIAL GENERAL HOSPITAL IN THE RVI TASK FORCE HIV/AIDS CLINICAL PATHWAY**

- **A&E & AOPD / COPD**
- **SPECIALIST CLINICS**
- **REFERRALS**
- **MCH**
- **LABOUR WARD**
- **MAIN WARDS**
- **LABORATORY**
- **HOSPITAL COUNSELOR/CONSENT**
- **STD CLINIC CODE CENTER**
- **NON REACTIVE**
- **SYM. Rx & R/V**
- **NGO**
- **COMMUNITY**
- **GRAVE**
- **CONFIRMATION**
- **COUNSELOR**
- **REACTIVE**
- **ADVICE AND FURTHER MANAGEMENT**

**Key** Links by which HIV/AIDS patient manager/service provider follows (CP/FC 1). There is flow of communication between two concerned units.

**Procedure**
Generally, any client / patient suspected of HIV/AIDS enter any of the hospital ports is required to go and follow through this clinical pathway. The medical officer or clinician who first examined or called to see patient is the officer who triggers the pathway or keep the ball rolling for client in the clinical pathway.

**GENERAL STEPS IN HIV/AIDS CLINICAL PATHWAY**

**Step One**
1.1 The client is seen at A&E, AOPD or clinic by responsible nursing officer and or medical officer.
1.2 The examining medical officer (EMO) clinically assesses the client.
1.3 The client’s signs and symptoms falls into a category according to WHO/CDC criteria on HIV/AIDS revised, accepted and adopted by the Medical Expert Advisory Committee (MEAC) of NAC (Annex 5 and 6). A risk factor assessment is made parallel to clinical signs and symptoms, and categorized as: High (H), Low (L) or No risk (N) and proceed to next step.

**Step Two**
2.1 The hospital counselor is called by the EMO via a consult or phone call.
2.2 The counselor carries out pre test counseling in the language best understood by the client or legal guardian.
2.3 The client signs an appropriate consent form for retroviral screening. (two types of forms prepared: Annex 8)
2.4 The EMO is then informed of the outcome of counseling. If the Pre test offer is rejected; the officer advises universal precaution (UP) as is the universal practices in all hospital. If the offer is accepted, the EMO follows on to next step.

**Step Three**
3.1 The EMO gets a code number from the central code station, STD clinic (ext. 108). The code number consists of the port initial and a serial number slash date. (Annex 9)
3.2 Specimen is collected and labeled with the same code, sent to pathology laboratory with a signature and an initial of the EMO on the laboratory form.

**Step Four**
4.1 The client is either admitted; hence UP taken or deferred for outpatient follow up or review.
4.2 The EMO then advises the patient’s destination ward doctors or responsible sister on the category of the patient admitted.
4.3 Follow up with the EMO, referred or further counseling.
Step Five 5.1 The laboratory screening result is conveyed by the technician who performed the test to:
   a) STD clinic for confidentiality and documentation.
   b) Concerned EMO
      STD clinic inform the EMO for further action, either a fresh specimen or send serum to central public health laboratory (CPHL), Port Moresby (POM) to confirm.

Step Six 6.1 The EMO advises hospital counselor to either do a pre-confirmatory counseling.
6.2 or if adequately pre-counselled may asked to be reviewed at the STD clinic, normally takes 3-4 weeks for results to be back.

Step Seven 7.1 A) If CPHL confirms status, HIV positive, then:

   1) Post test counseling is offered by hospital counselor and referred to STD clinic for follow up, advice and symptomatic syndromic treatment which is routinely offered to client, refer to NGOs.
   2) STD clinic and staff links up with appropriate NGOs and churches, consented family members as well as hospital physicians for further follow up at known locality or clinic.
   3) STD clinic and staff with NGOs may establish contact tracing and offer family counseling and assistance.
   4) STD clinic and staff with NGOs (churches) may offer spiritual counseling to the spouse, siblings and relatives of AIDS victim and offer assistance at funeral services and burial.

   B) If CPHL not confirm status, HIV Negative, then:

   1) Client is counseled to repeat test in three and six months time.
   2) Advised to refrain from risky behaviour, strictly stick to one trusted sexual partner for the first 3 months period pending repeat test and appropriate advice there after.
   3) Symptomatic/ Syndromic treatment is given.

Throughout the pathway, service provider consistency is required. Four very important core components in the pathway for the care of HIV/AIDS clients/patients include:
   1. Counseling
   2. Consent
   3. Confidentiality
   4. Universal Precaution

must go in line with the hospital’s approach towards patient management and care to strive towards providing better services to clients or users at AMGH.

The signed consent form is sent to central code station, STD clinic for documentation (data entry, record and for surveillance)

Adult Outpatient and Accident & Emergency Department
AOPD and A&E are main departments in the hospital where HIV/AIDS clients/patients anchored. The clinical pathway begins here and ends in the grave or becomes a breather for the clients. The EMO is task to follow the general clinical pathway steps for any patient with suspicious history accompanied by major or minor signs and symptoms as in Annex 2 and 3.

Special cases worth special attention

Occasionally, the departments have special cases arrive. The following highlight some of these and the approach in the HIV/AIDS clinical pathway:

1. **Minors:** The presentation may warrant EMO to seek approval from the legal guardian or parents and relatives. If so, EMO can go straight to **Step 2.1 and Step 4.3.** Best approach would be to admit to the unit concerned. Further investigations apart from HIV screen would give clues, time and approach of the guardian may change and the clinician has the advantage for second attempt if not improved. The EMO make a point to review at a later date depends on the examination for a chance. Investigate for TB and a mandatory chest x-ray.

2. **The Incest:** This is a very serious family issue and the child psychology is of paramount importance at this stage. Something which is rarely seen in the clinics and or in the general hospital. Often, a legal matter and patients are brought to the hospital at a later stage. It is tantamount to child abuse and one parent is absent on initial examination. In this case, the EMO can follow **Step 2.1** and the legal guardian or police signs the appropriate consent form. Post-test counseling is offered to the same. Known suspect is liable for legal prosecution.

3. **The Abused Child:** This is a very serious family issue and the child psychology is of paramount importance at this stage. Something which is commonly seen in the clinics and or in the general hospital. Often the parents brought the victim to the hospital and culprits are often “uncles” and relatives. In this case, the EMO can follow **Step 2.1** and the legal guardian, parents or police signs the consent. Post test counseling is offered to the same. Known suspect is liable for legal prosecution.

4. **The Unsound:** Refers to psychotic, semiconscious and comatose or severely ill patients who are not in their best mental state to comprehend well. They may or may not fall into of psychiatric discipline of internal medicine. In the absence of the patient legal guardian or parents, the EMO or physician may sign the consent form (CF2; Annex 8) and follow **Step 2.1.**
5. The Mute, Deaf and Dumb: This special category of patients may pose some difficulties with physical communicating aspect but may mentally sound. An interpreter may be called for assistance where necessary. Though rare, the legal guardian will be the most appropriate person for the HIV/AIDS clinical pathway. **Step 2.1** is followed.

6. The Rape Victim: Rape victims are most often females. Sexually transmitted infections are frequent. Usually more than one male involvement is noted in many cases of rapes presented. The EMO at AOPD or A&E assess and treat as per general medical examination. The following categories are designed for females however, if there is an incident of a male presented, a very much similar approach is anticipated.

The patient or victim comes under the following categories: (Female)

<table>
<thead>
<tr>
<th>6.1. Adult</th>
<th>a) Single</th>
<th><strong>Step 2.1</strong> and follow normal emergency examination and treatment.</th>
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<tr>
<td>b) Married</td>
<td><strong>Step 2.1</strong> and both partners counseled, sex abstinence for a period of three months, repeat screen for victim is advised.</td>
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<td>c) Student</td>
<td><strong>Step 2.1</strong> and some times the Headmaster or the principal is called for consent (CF.2, Annex 8).</td>
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<tr>
<td>d) Unsound</td>
<td><strong>Step 2.3</strong> where a legal guardian or parent is allowed to sign the consenting form (CF.2; Annex 8), victim is wholly treated.</td>
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<tr>
<td>e) Orphan</td>
<td><strong>Step 2.3</strong> and the legal guardian or adopting parent consents as in (d).</td>
<td></td>
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<tr>
<td>f) HIV Positive</td>
<td><strong>Step 7.1</strong> and treat particularly for pregnancy and as normal rape case at AOPD/A&amp;E.</td>
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6.2 Paediatric | a) Often a female child, **Step 2.1** and legal guardian / parents consent and counseled. |
| b) Student | **Step 2.1** and legal guardian / parents or headmaster concerned if incident occurred at school. |
| c) Orphan | **Step 2.3** and legal guardian or adopting parent consents. |

6.3 Others | Depends |
7. **Prisoners:** The client right to freedom is definitely out but the right to health and to life is intact. As such, the correctional services medical officer or staff is not a legal guardian if the client is conscious. This includes life-imprisoned clients. As long as the client is conscious and above the legal age of 18 years, his right to health and life stays intact. *Step 2.1* is then followed.

8. **Legally removed from exercising any freedom of expression:**
   This is an extreme case and as such goes against the code of ethics of the medical profession and is debatable.

9. **Duplicates:** This refers to those clients who have their status screened elsewhere (other provinces or laboratories) and may or may not know their status entering this clinical pathway. Regardless of the province of origin and test done, it should be taken in as a new case and follow the normal pathway. Upon confirmation, follow-up is initiated with CPHL depending on the outcome of test done and adjustment can be made unless the client uses a new identity.

10. **Others:**

    1. **The young and the unmarried**
       
       **Status: Positive**  
       Counselled  
       *Offer permanent sterility*  
       *Support and Care-NGO*  
       Occupational therapy  
       *Educational Awareness*

    2. **The old and the weary**
       
       **Status: Positive**  
       Counselled, especially relatives  
       if consented by client  
       Symptomatic treatment  
       NGO visit  

       **Status: Negative**  
       Symptomatic and palliative approach  
       If necessary re – screen 3rd and 6th month.

    3. **Expatriate and Volunteers**
       
       Follow normal screening process in general clinical pathway steps.

    4. **Others**  
       Depends.
Medical Ward 5C/D

CODE: M5C/D: 000/99 (now in 2000, new CODE is: M5C/D: 000/00)

The medical ward is basically the end point for all AIDS patients before proceeding back to the community where they belong or to the grave. The HIV positive clients with symptomatic admissible illness are treated and channeled. The role it plays in HIV/AIDS clinical pathway falls into following categories of patients:

a. **Pre-counseled and pre-tested clients/patients**  (Step 4.2)

b. **Admitted patients clinically not improving on medications**  (Step 2.1)

c. **Chronically ill patients**  (Step 2.1)

d. **Classical AIDS defining illness** (Annex 1 and 2) either unnoticed at AOPD/A&E or suddenly developed in wards and noticed by physicians.  (Step 2.1)

e. **“Question mark” HIV patient with general illness:**
   - HIV status unknown to patient:  (Step 2.1)
   - HIV status unknown to staff /MO/Physician:  (Universal Precaution; Step 2.1)

**HIV status known to patient but unknown to staff/MO/Physician:**
(Ini. Precaution; Step 2.1 or 4.3)

- HIV status known to staff/MO/Physician but unknown to patient:  
  (Uni. Precaution; Step 2.1 or 4.3)
- HIV status known to patient and staff:  (Confidentiality; Step 7.1)
- HIV status is negative, but patient insist it is positive:  (Step 3.1; Repeat same three months later)
- HIV status negative; still insist on above i.e. positive:  (Step 4.3 and Referred preferably a Psychiatrists)
- HIV status is negative known to both the patient and the staff:  (Symptomatic treatment, discharge and review 3 months time.)
- HIV status known by patient and sought HIV palliative medication:  
  (Refer to the hospital or STD clinic)
f. Others  *depends*

For all above categories of patients; their portal of entry into the clinical pathway is medical ward as such, the client’s entry occurs at a specific point on the **General Steps**. Hence the step number in *Italic* indicates where client enters and what service provider is expected to do here at AMGH.

**General Wards and Clinics**

With HIV/AIDS clinical pathway in place, the following wards Medical, Surgical, Paediatrics, Obstetrics and Gynaecology, Psychiatric and the hospital’s consultation clinics and other areas can easily identify its clients and channeled in to the pathway. The central code station is STD clinic, which EMOs had to obtain code in every case for HIV testing including those for voluntary testing.

**CP/FC. 3  GENERAL WARDS**

![Diagram](diagram.png)

*Note;* that HIV / AIDS diagnosis, care and treatment is a multi-decipline approach and not tied up with internal medicine department, physicians nor the STD clinic. The only time the patient is referred to the medical clinic or a physician is if clients or patients have medical symptomatic conditions. Hence patients seen in other wards for other illness are treated there and then. This is the clinical pathway for a holistic approach to patient management here at AMGH.
Children’s ward and clinic; children out patient department (COPD) and well baby clinic are another major port of entries. Children are windows to their families’ health status. HIV/AIDS can easily be detected, treated and referred. Often difficult to initiate counseling to parents on HIV matters at first visit and most could prove fatal outcome if efforts are not made.

The following factors would pose dilemmas:

1. Any illness at all may bring the child’s immune status down.
2. Malnutrition (Infection – Malnutrition – Infection Cycle)
3. Immunization status
4. Family history
5. Socio-Economic status
6. Neglected, abandoned and orphaned
7. Birth defects and Congenital abnormality
8. Maternal Factors
9. Others

The clinical pathway can be best utilized in a much similar fashion to TB score chart in the paediatric Blue book. In any case, a senior paediatric registrar must involve from the beginning with close contact with the consultant. Special nursing and medical education on HIV/AIDS and awareness is necessary at COPD and wards level. Hospital counselor is then involved on the recommendation of the medical officer, preferably the consultant after above factors are satisfied. The client enters clinical pathway at step 2.1.

Special care nursery (SCN) and failure to treive babies as well as infant of HIV positive parents can be counseled to utilize the clinical pathway.
Breast-feeding is encouraged for all HIV positive mothers. Maternal to fetal transmission (trans-placental) of HIV is 25 % at current rate and transmission of HIV from breast to infant is well documented, breast milk is more beneficial and prolongs life better than any other means noted.
Obstetric and Gynaecology Wards: 3A, B and 4D

CODE: L3A, B, 4D/000:00/0000

Obstetric

Obstetric patients attending antenatal clinics undergo usual risk factors assessment and verifications. VDRL positive clients and other STI detected clients and or those who falls in to high risk categories for instance, multiple sexual partners in the last three to five years must be pre-counseled for retroviral status verification. The EMO follows on to delivery especially the pre-tested clients even after delivery. Upon status verifications, the client is then channeled appropriately in the clinical pathway. Tubal ligation (TL) is offered to well counseled HIV positive mother and is encouraged to breast feed. The infant is screened at birth, third month, sixth month and ninth month. The client is then followed up at COPD by the EMO or entrusted care provider there after. A written consult clearly marked code number may made to the paediatrician for follow up and review where necessary.

Labour and delivery is carried out as normal routine procedure with UP upheld. The infant may or may not be admitted to the special care nursery for observation depends on the status.

Prophylactic anti-retroviral drug therapy for mother and infant can be soughted from the STD clinic or the hospital physician for those who can afford it and appropriate arrangement can be made and taken as long as possible.

Gynaecology

Patients with gynaecological problems especially pelvic inflammatory infections (chronic or recurrent), genital discharges, ulcers and ectopic pregnancies would have to be offered counseling as this is significant. Pelvic inflammatory disease (PID) is STD (24) especially among female cohort in PNG and as such warrants HIV status verification. The EMO upon a high degree of suspicion may slot the patient / client in to step 2.1 of the general clinical pathway.
Special Wards and Clinics

CODE: (Refer to Annex 9)

This include Intermediate patients /clients, SCN, Well Women’s clinic, Consultants Clinic, DOTS, STD, Eye, ENT, Cancer and Limbs, Referrals from private hospitals, urban and district health centers and clinics. Suspected clients in the Operating theatre would also utilize this clinical pathway. Though clinics and referrals are numerous compared to number of full-time hospital counselors and technically difficult, the following means may help overcome some of the problems. (In all cases, a consent form is signed and documented).

1. Officiate full time hospital counselors for easy access for the referred with a consult written and addressed to the counselor.
2. Train all wards sister in-charges (SIC) or ward managers and deputy ward managers the skills of counseling.
3. All medical officers should perform counseling.
4. Others: in the absence of hospital counselors, church and NGOs as well as families and relatives of the client.

CP/FC.4 SPECIAL CLINICS AND REFERRALS
Blood Bank and Blood Transfusion Services

**CODE: BB/000:00/0000**

Blood transfusion services at AMGH collects blood from sound or normal haemoglobin (Hb 11.5-16.0 g %) donors from all walks of life. The screen is done here at the AMGH pathology laboratory. The laboratory screens hepatitis B virus, (HbsAg) and retrovirus. Only the screened blood is made available to patients. Own relatives of the recipient is very much encouraged to donate as to ease social tension and is deemed a good practice and the fear of sero-conversion period of three months. The RVITF in the clinical pathway consider the difficulties it posed in this area. It is not always possible to donate one’s own or relative’s blood and keep for 29 days and receive own stored blood within this given time. Nobody foretells accidents.

Hence, the blood bank (Blood Bank Committee) will device criteria in the form of a simple questionnaire for donors to identify risk factors prior to use (even it is screened negative). It is also possible to do up planned program for institution of proposed visit so that a sample of donor at that institution can be pre screened for HIV and HbsAg, and + - VDRL. The visit is made three months later for pre screen donators/donors and this is the only sure method at least for the time being provided that the donor or partner do not indulged in risky sexual behaviour within the three months period of initial sample screened. For those who volunteer or relatives of the needy patients in the ward areas may also be screened for haemoglobin levels and HIV status before donation. Expatriate donors have no restrictions and as such encouraged to donate, however, the pathway must be implemented.

A more highly sensitive method such as polymerase chain reaction (PCR) for HIV screening would be ideal for screening donated or donor’s blood. This will greatly reduce the level of doubt currently exist with regard to window period of up to three months for sero-conversion. This method will detect even the smallest particle possible of the viral gene.
BLOOD BANK

INSTITUTION OF PROPOSED VISIT

PROBABLE DONOR

INITIAL SCREEN/COUNSEL and ADVICE

DONOR AFTER 3 MONTHS

CODE STATION STD CLINIC

PATHOLOGY

NEGATIVE

BLOOD BANK

FOLLOW UP and ISSUE OF YELLOW CARD

COUNSELOR

REPEAT SERUM

PATHOLOGY

STD CLINIC

NGO REVIEW

Blood Bank Personal can follow up if serum sent is positive and confirmed HIV positive

Follow up for donation

A call ticket to visit the counselor
### Code Numbers and Designations

The following code numbers will be issued on request from the STD clinic. This code identifies the patient or client, port of entry (location initial) and a serial number of 3 digits including month and year code.

#### Sample

<table>
<thead>
<tr>
<th>Port of Entry</th>
<th>Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE:</td>
<td>AOPD/000: 00/2000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CODE</th>
<th>LOCATION/PORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOPD/000:00/0000</td>
<td>Adult General Outpatient Departments</td>
</tr>
<tr>
<td>A&amp;E/000:00/0000</td>
<td>Accidents and Emergency Department</td>
</tr>
<tr>
<td>COPD/000:00/0000</td>
<td>Children Out Patient Department</td>
</tr>
<tr>
<td>WBC/000:00/0000</td>
<td>Well Baby Clinic</td>
</tr>
<tr>
<td>M5A,B,C&amp;D/000:00/0000</td>
<td>Medical Ward 5A,B,C and D</td>
</tr>
<tr>
<td>ICU/000:00/0000</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>S1B/000:00/0000</td>
<td>Surgical Full Nursing Care Ward</td>
</tr>
<tr>
<td>S2A,B,6B/000:00/0000</td>
<td>Surgical Wards 2A,B 6B</td>
</tr>
<tr>
<td>INT/000:00/0000</td>
<td>Intermediate Ward 6A</td>
</tr>
<tr>
<td>G4D/000:00/0000</td>
<td>Gynaecology ward 4D</td>
</tr>
<tr>
<td>L3A,B/000:00/0000</td>
<td>Labour and Post Natal Wards</td>
</tr>
<tr>
<td>SCN/000:00/0000</td>
<td>Special Care Nursery</td>
</tr>
<tr>
<td>P4B,C/000:00/0000</td>
<td>PaediatricWards 4B and C</td>
</tr>
<tr>
<td>CAN/000:00/0000</td>
<td>Cancer wards</td>
</tr>
<tr>
<td>MCL/000:00/0000</td>
<td>Medical Clinic</td>
</tr>
<tr>
<td>SCL/000:00/0000</td>
<td>Surgical Clinic</td>
</tr>
<tr>
<td>GCL/000:00/0000</td>
<td>Gynaecology Clinic</td>
</tr>
<tr>
<td>WWC/000:00/0000</td>
<td>Well Women’s Clinic</td>
</tr>
<tr>
<td>STD/000:00/0000</td>
<td>STD Clinic</td>
</tr>
<tr>
<td>DEN/000:00/0000</td>
<td>Dental Clinic</td>
</tr>
<tr>
<td>BB/000:00/0000</td>
<td>Blood Bank</td>
</tr>
<tr>
<td>FHC/000:00/0000</td>
<td>Family Health Clinic</td>
</tr>
</tbody>
</table>
Other Support and Technical areas of hospital

Services areas of the hospital include, Pathology, Infection Control, Operating Theatre and Pharmacy where rarely clients anchor as port of entry and therefore no code number is assigned to them. The Lae based IMR is the only exception for the hospital. The IMR extensively (Annex 11) researched and identified sex workers and peer educators among the mariners or dock side workers, truckers and sex workers. IMR had already an established network in place here in Lae run by researchers and professional team as such are given separate code. IMR Trans sex project is a big is a big bonus and boosts the RVITF and its clinical pathway. Other suspected cases are referred to appropriate ports.

NGO’s and other extended counseling services members of RVITF have also not given a code. They fall into referral ports and counsel clients to STD clinic. They play an important role in the primary HIV/AIDS health care and promotive aspects of the services and meaningful fulfill the MSA defined by MTP;1998-2002 and vital ingredient to the RVITF of Lae.

1. AMGH Hospital Counselors/ Social Works
   Infection Control
   Operating Theatre
   The Hospital Administration
2. The Medical Research Institute- IMR, Lae
3. Adventist Development and Relief Agency ADRA, Lae
4. The Salvation Army- Red Shield Counseling Division, Lae
5. The SEEDS Theatre Arts Performing Group, Lae
6. Catholic Agency
7. Lae Metropolitan Police Force
8. PNG Defence Force, Igam Barracks, Lae
9. The Private Hospitals and Clinics in Lae City
10. Corporate Bodies
11. Maritime Workers/ Wharfies, Lae
12. The National AIDS Council
13. The Provincial Aids Committee
14. The District AIDS Committee
15. Other Concern Groups (Open)

Legal Issues

The legal branch of national AIDS advisory council (LAC) issues and highlighted most legal issues with regard to HIV/AIDS. The revised document stipulated and incorporated into the existing laws in Papua New Guinea in Law, Ethics and HIV/AIDS (3, 8). Purposely for
HIV/AIDS clinical pathway, the following rights of clients should be stressed for both good of patients or clients and service providers that they are observed and maintained.

The Basic Human Rights

1. The Rights of Life and Personal Integrity.
2. The Right to Liberty and Security of a Person.
3. The Right to freedom of Expression, Association and Subjection to Cruel, Inhuman or Degrading Treatment.
5. The Right not to subject to arbitrary interference with one’s Privacy.
11. The Right to Freedom of Information and Education.

Other Rights Worth Consideration

13. The Right to Know one’s own Illness or Condition.
14. The Right to Inform Person of Choice of one’s own Illness or Condition.
15. The Right to Remain Silent.
16. The Right to take Legal action on Service Providers for any abuse of Rights.
17. The Right to Death.

In any service and care providers for this very sensitive area, above fundamental rights on any clients or patients are observed along with care provision. All patient come into our portals of entry are treated according to his/her presentation equally across the board, regardless of age, sex, color, creed, religion, church denomination, ethical and regional backgrounds; what have you in this clinical pathway. The least one can afford to in this pathway are:

1. Breech of confidentiality
2. Mistreatment
3. False/Misleading statement or information
4. Other excuses

Neglecting above may coined to general abuse of client and may have adverse effect on the care provider establishment and the credibility of HIV/AIDS clinical pathway itself.
Confidentiality

Confidentiality is the most important aspect of HIV/AIDS clinical pathway. At least it is not breached within and amongst service care facility or providers. That does not mean any one has that liberty to breach outside of the parameters of the service establishment. From port of entry to the community and grave, the best any one can do is to maintain confidentiality. Any breach by any one in the pathway leads to distrust of the pathway and entire process will slide down in use. Person breaching this is liable for legal proceedings and as such it is needless to over emphasized the importance of confidentiality.

Universal Precaution (UP)

The universal precautionary measures taken amongst health care workers in general and HIV/AIDS care givers is of paramount importance. Any client or patient through any portal of entry is regarded highly infectious until proven otherwise. And as such, ranging from general care to specific care and handling of specimen, tissues, body fluids and general wound and secretions contact is treated with great caution. As long as universal precautionary measures are taken, there is no need to panic over HIV/AIDS patient care. The infection control office here at AMGH has guidelines for HIV/AIDS which is in fact the replica of the standards thought at medical and nursing schools but in detail for HIV/AIDS where one can refresh and follow (12).

There should be no excuses unless disposable gloves, bins, needle disposal boxes/tins, protective attire, water, etc are absent or an untidy procedure room. The laundry and waste disposal is one associated support which must exist at all times. Face-mask and delivery aprons as well as resuscitation equipment should be in medically acceptable and operable condition. Operating theatre and anaesthetic procedures including surgery should all operate under the banner of UP.

The pathology lab will not accept spilled nor poorly labeled specimens neither the initial and signature of the medical officer requesting test. This is part and partial universal precautionary measures.

Service Provider: Needle Stick Injury & Accidental Exposure

The HIV/AIDS clinical pathway implementation requires extreme care and sense of humor from start to finish. People involve in the provision of service like other services are not immune although statistics of occupational risk for acquiring HIV infection amongst health care givers is low. However accidents do occur. The HIV/AIDS imminent exposure demands care at the highest level in handling patients and specimen. In the event of an exposure, the following should be followed as best considered by the infection control unit and the RVI TF
acupuncture must have guidelines for needle stick injuries. This is the guideline for HIV/AIDS clinical pathway at AMGH.

**Accidental Exposure & Needle Stick Injury: Steps to Follow**

**Step 1.** The immediate in-charge sister or Doctor is notified.

**Step 2.** The Head of the Department is notified.

**Step 3.** An Incident Report Form is filled with the Director of Medical Services (Medical, Technical Staff) or the Director of Nursing Services (Nursing Staff)

**Step 4.** The Staff Doctor (MO) or Physician is reported for assessment. May or may not require counseling for series of test the victim may undergo.

Staff Doctor or Physician does the following steps. *(Step 2.2).*

1. Counsel
2. Base line Serum test for HbsAg, HIV
3. Symptomatic treatment advised
4. Review with result at his clinic.

5. **5.1 If Positive:** A second sample is sent. If still positive, the physician or EMO may seek advice from Medical Expert Advisory Committee (MEAC) of National AIDS Council of Health Department and compile a confidential report.

5.2 **If Negative:** The health worker is followed up after three months. A fresh specimen is collected and sent for repeat screening and follows on to 5.2.1.

If positive: 5.2.1 A fresh specimen sent for confirmation. Upon confirmation, the concerned directors are notified and a Medical Report is made by the Physician, the director and the Chief Executive Officer (CEO) of the service establishment and submitted to the Workers Compensation Office, Insurance firm and or legal advice soughed.

If negative: 5.2.2 Patient is advised and counseled appropriately. A repeat sample is sent after 6th and 9th month by the advice and direction from hospital physician or by MEAC and follow suit.
Hepatitis B Positive

In cases of hepatitis B infection, the same is done except repeat test is done locally. It (specimen) may or may not be sent for viral studies depending on local physician’s advice. If the HIV client’s sample was HbsAg positive and the health worker is also positive, then again, advice is to be taken by the hospital physician and a report may be compiled and is confidential.

HIV Positive Health Care Personal

These service (providers) personals come under the following categories:

1. **Status unknown by self and others:**
The health care giver’s HIV status is usually unknown. The department of health do not have a work place policy in place on this issue yet. In the mean time, one can continue to provide services for the hospital until such policy is in place. UP is essential. Ethically, any qualified health care personal can provide service as long as UP is observed.

2. **Status known to self:**
Again, there is no policy guideline in place and as such should follow step one above. However, the conscious mind imposes a guilty unsettling mind to live with for many. In this case, one should visit the hospital counselor for counseling. After adequate counseling, a confidential report may or may not be submitted to authorities of the establishment and options are given by unit superiors and or examining doctor for the following opportunities to:

   a) Remain and act on current role with strict UP observed and followed.
   b) Move to a location and serve in less contagious area, eg. laundry or morgue, cleaning duties or clerking role.
   c) Voluntary change of profession e.g. doctor to administrator or leave at own consent.
   d) Leave and house minding.
   e) Discharged from duty if policy is in place.
   f) Await advice from MEAC.
   g) Others

3. **Status known to others but not self:**
This is a very difficult situation. Confidentiality had already been breached and legal proceedings are eminent if rumors reaches the client. The origin of status verification is very important. Known person may confidentially, inform the STD Clinic OIC or the counselor for follow up and clarification on the hospital’s behalf. A contact trace is necessary and the superiors should advice strict universal precaution, and the client’s best friends and counselor have a much bigger role to play in this scenario to bring to realization the client’s status. The least but the best confident approach one can necessitate is to encourage the client for a HIV
screen. The service provider still has the courtesy to seek help from the MEAC and the legal branch of the NAC for clarification. At the moment, the approach is debatable.

Laboratory Assistance
The AMGH pathology laboratory has been very supportive with regard to HIV/AIDS clinical pathway. As the disease progresses to epidemic proportions, laboratory assistance for initial serology screen and further confirmation in conjunction with STD clinic is the hallmark of diagnosis and treatment. The current HIV infection rate of 3% amongst sex workers in Lae, revealed by IMR through Trans sex project and a HIV prevalence ratio of 1:5 sex workers in the nation's capital, POM is a worry for mandatory laboratory backed surveillance and diagnosis. The governments MTP and MSA for early detection and cure/care (15) is one area where laboratory assistance is valued most.

The dramatic rise in the prevalence of sexually transmitted infections and other infectious diseases has challenged the medical community’s ability to treat and control the spread of the diseases. Rapid and accurate screening tests are necessary in the battle to control the diseases. The need for laboratory confirmation and confidential means of transmitting results becomes very important in the management of HIV/AIDS clients/patient (11).
Benefits of Early HIV Diagnosis

To the patients

- Prolongation of asymptomatic period
- Delayed disease progression
- Prevention of opportunistic infections
- Optimal maintenance of health through patient education and counseling
- Cures are only likely with early intervention

To the cohorts of HIV positive individuals

- Monitoring of advances in treatment
- Increased participation in research and clinical trials
- Development of new social services to meet changing needs of patient

To the community

- Documentation of changes in epidemiology
- Reduce high-risk activities
- Contact tracing
- Control of HIV transmission

To the Doctor/Care Provider

- Time to influence the course of disease
- Time to know and adequately counsel the patient
Tests for HIV detection

General Tests
Most common tests applied in various major laboratories measure the presence in the serum and body fluids for antibody to one or more specific proteins corresponding to antigens of the viral structure. Usually the gag (core) proteins of virus (p17, p24, p55) pol intermediate components (enzymes: p31, p64) or env (envelope proteins) gp41, gp120, gp160). Screening is first done using serodia and or capilus test than follows on to quite elaborate sophisticated standard tests for HIV-1 & 2 with enzyme linked immunosorbent assay (ELISA) or Western Blot (WB). Serodiagnostic tests were introduced in 1984 a year after HIV was first discovered in 1983 and since then, there was considerable debate about HIV testing and its effect; false positivity and anti viral drugs together with its discriminatory stigma. It is now overwhelmingly accepted that early detection is the way to go for a prolonged live with HIV/AIDS (9).

Seroia and Capilus
The serodia test currently used is one example of rapid test. Upon initial reaction, serum is sent to the CPHL for confirmation, which may take at least two weeks to a month. Capillus which is done to recheck initial reactors is also very sensitive (about 95 %) and in increased used in various provincial centers and blood bank through out PNG.

Specific Tests for HIV detection

Enzyme-linked immunosorbent assay (ELISA)
ELISA is the solid phase, which employs the ability of various plastics to absorb single molecular layers of protein (antigens) to their surface. When serum containing antibodies to these antigens is added, the antigens and antibodies react to form a complex (an analogy quite similar to blood typing/grouping). If anti-immunoglobins or anti-antibodies are added, then they will adhere to the antigen/antibody complex. If these anti-antibodies have been labeled with a specific enzyme (e.g. peroxidase), once they link up with the antigen/antibody complex, a distinctive colour will appear upon the addition of a final substrate solution. Thus the term ELISA. It is time consuming, expensive and needs high tech capability but it is highly refined and dependable as such only done at central public health laboratory (CPHL) which is the only PNG National reference laboratory in Port Moresby for confirmatory purpose.

Western Blot (WB)
There are other much similar tests, which include Western Blot (WB) where antigen or mixture of antigens of the HIV are separated out into a gel and blotted onto nitrocellulose sheets to which the antigen binds strongly. Serum from an individual is added to the nitrocellulose sheet and if any antibody is present to one or more of the antigens, then binding occurs. This test is also high tech and may take up to weeks and is expensive but is generally used as a confirmatory test.
Polymerase Chain Reaction (PCR)

PCR is the new technology which amplifies the presence of even a small amount of nuclear (actually genetic) material of the virus. This is highlighted here as is very sensitive and very useful in a situation where antibody may not even present yet. It is very expensive and more appropriate for research purpose and is left for future option.

Rapid Tests
Viral antigens produced whether genetically engineered using recombinant genetic (DNA) technology or natural can be cloned and used to react with viral antigen. Rapid tests involve various combinations of antigens and produced by different means and as such may detect certain proteins only and may not detect others.

Ideal Test
Numerous rapid assays now exist to test for HIV antibodies. The ideal assay should be rapid, inexpensive, highly sensitive and specific, easy to perform and interpret and require no additional equipment.

CP/FC. 6

The Laboratory component of the HIV/AIDS Clinical Pathway

Note: The laboratory does not give results to anyone apart from the EMO, who is also responsible for collection of results.
Other Sexually Transmitted Infection (STI) Specimen

This is routine for pathology department to stain, culture, screen all blood donors and sero-surveillance from STD clinic and coded specimens from any port of entry. The laboratory quantify and report results to concerned wards or health centers/hospital may it be biochemistry, haematology, serology, histopathology or tissue diagnosis, cross match referred results. It has been a very good habit to inform concerned doctors and officers grossly abnormal and urgent results other than HIV status. The confirmatory wait may take at least a month from STD clinic.

Treatment and Pharmaceutical Assistance

The RVTF clinical pathway originates simply because of the fact that there is no cure available as far as chemotherapy (drugs) is concerned in PNG or throughout the whole world. The Papua New Guinea national HIV-AIDS MTP, 1998-2002 (10) stressed the Primary Care component of HIV/AIDS management because of the same reason; No Cure. And as such any advice or information with regard to drug at this stage is palliative. According to MEAC, though the HIV/AIDS supplement made available (22), the cost and maintenance of drugs is a major draw back and went on to point out that anti retroviral drugs where appropriate should be given to maintain the client’s immune status. If and when patients can afford, full anti retroviral treatment can be given or advised. However these drugs use; duration, doses, combinations or regimes must be approved by WHO, NDOH and or NAC in consultation with the local specialist. It applies to all categories of patients, adults, pregnant mothers, children and AIDS patients. More information can be obtained from MEAC in the health headquarters.

The AMGH pharmacy is very basic and supportive towards symptomatic treatment. It is not one of the entry port and as such no code is dispatched to the establishment. STD clinic at AMGH is dispensing treatment free of charge for other STI infection apart from HIV. The pharmaceutical support again is not prepared for the alarming increase of HIV epidemic who will eventually become AIDS which is a grave concern. Poor economic status and high cost of anti retroviral suppressive chemotherapy is a big problem.

Any retroviral chemotherapeutic agent brought in to the country may it be for private or public patients’ use ideally be cleared by the NAC if HIV control nation wide is to be achieved.

For monitoring progress of users and evaluation as well as statistical purpose, a central HIV/AIDS drug agency may be established for control and proper dissemination as it is costly and much longer duration of use. It is a multiple drug therapy combination of either a protease inhibitor (PI) or a non-nucleoside reverse transcriptase inhibitors (NNRTI) with nucleoside reverse transcriptase inhibitor (NRTIs) where one needs to monitor the CD-4 cell count bi annually or yearly. Laboratory support facilities in terms of CD-4 count and viral load is done abroad. Initiating treatment with a combination of three drugs (including 2 NRTIs with either a PI or NNRTI is recommended particularly in patients with high plasma viral load (2 NRTI without another antiretroviral agent only on exceptional circumstances (12). The drugs currently available in developed countries, which show promising results again, is a combination of PIs and NNRTIs. Although randomized trial of addition of lamivudine or lamivudine plus loviride to Zidovudine significantly slowed the progression of HIV diseases and improved survival. However it is unlikely that this combination alone would be sufficient long-term suppression of viral replication in all patients (10).
If NAC is putting together proposals and guidelines for use of anti-retroviral agents in HIV-infected clients in PNG, would have to consider a number of cumbersome points. A wide spectrum of population groups (paediatric to geriatric cohorts) and at this stage such is neither prepared nor wise. If and when becomes available, adults and adolescents or active and productive age group according to current statistics would be considered over the extreme cohorts mentioned.

This is beyond the scope of the clinical pathway and information regarding above can be sought through the NAC; MEAC. The MTP is the most effective approach for HIV/AIDS control in PNG and the pacific.

**HIV/AIDS Advice**

HIV/AIDS advice is sought from local health worker levels up to MEAC. NGOs and churches apart from government agency provide awareness and advice appropriately in healthy living and free of HIV. The AMGH medical officers and physicians, STD clinic and staff, hospital counselor and EMOs can provide appropriate advice at the hospital level. The PAC, which becomes operational in April – May 2000 would provide much needed support and advice to the districts and establishment of district aids committee (DAC).

The MEAC of NAC is the last body where related matters can be addressed in terms of policy planning and decision making. Private medical advises remain a private entity and is not elaborated at this stage but HIV/AIDS related matters and be shared appropriately with PAC or the hospital physician as well as MEAC as shown in NAC flow chart (Annex 5).

**Further Treatment and Referrals**

A category of clients who would be referred and may seek further advises for treatment abroad for specialist care etc. Again, advises are sought as above and referral on drugs and palliative medication are best given by the hospital physician, the PAC or the MEAC. The referral protocol developed by the NAC can be utilized for referrals (Annex 5).

**Awareness and Advocacy**

**The RVITF Advocacy Team**

Dr Dakulala; Physician AMGH, Ms Lucy Dally; OIC STD clinic, Ms Rita Maruha; ADRA, Lae and Mr Wilfred Peters; IMR, Lae are providing this special task. The job of advocates then to provide awareness and events notifications in schools and institutions as well as corporate bodies with the aim of disseminating knowledge of HIV/AIDS in the city of Lae. The ambassadors opened doors to many areas of information and identified needs of that
particular area for the RVITF team to work on. The 1st December 1999 World Aids Day was one of the many successes of the advocacy component of the team.

**Research and Development**

There is a need in PNG and particularly Morobe province for more research and understanding into HIV/AIDS epidemic already knocking at our doors. A provincial based data-base with regard to HIV/AIDS becomes a need. The IMR (Lae) and clinicians at the AMGH have a need to do more both quantitative as well as qualitative research to give more insight to the problem. This would help further understand the different cultural background of about 700 and their approach to the disease.

While it may be comparable and follow the African pattern of exponential curve, it may not be so geographically and culturally here in PNG. It may also provide newer and better ways of managing HIV/AIDS patient. It is also useful to identify and assess our progress and limitations researched based. The issue of efficient and effective means of contact tracing and partner notification require careful assessment as this is within the legal frame work (3). The social-psychological effect of HIV cases reported on the daily papers so far needs a closer look as to why this group of people are rejected from their own kind.

HIV/AIDS clinical pathway which is the first MSA in the country devised here can be tested and improved for easy implementation here and else where. The AMGH will build on a foundation for effective research based decision on scientific and administrative issues facing the institution.

**Death and Burial**

HIV contaminated body fluids and tissues are potentially dangerous and contagious. Post mortuem and attendance to death and related issues are areas of concern to the RVITF. Literature in this area is scarce and as such morgue attendants, relatives of AIDS victims, medical officers (pathologist) and NGOs attending to the death and burial is to be cautious. Care as well as considerate in the delivery of the body from morgue, coffin and to the graveyard.

**ANNEXES**

**Annex One**

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**THE HUMAN RETROVIRUS**

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**Human Immunodeficiency Virus**
(HIV), virus of the retrovirus family, the agent that causes Acquired Immune Deficiency Syndrome (AIDS). A person infected with HIV gradually loses immune function and becomes vulnerable to numerous infections that can lead to AIDS. The retrovirus HIV was discovered in association with AIDS by three separate teams of researchers: first in 1983 by Luc Montagnier and scientists at the Pasteur Institute in Paris, and then in 1984 by Robert Gallo and his colleagues at the National Cancer Institute, one of the National Institutes of Health in Bethesda, Maryland, and by Jay Levy and his colleagues at the University of California at San Francisco.

Retroviruses undergo a long incubation period before disease onset, they infect blood cells and the nervous system, and they suppress the immune system. In order to replicate, retroviruses must convert their genomic RNA into DNA (see Nucleic Acids). This process, known as reverse transcription, is accomplished using the enzyme reverse transcriptase, which is carried by the retroviruses.

The outer surface of HIV is a lipid envelope derived from cellular membrane. Protruding from the surface of the envelope are the viral transmembrane glycoprotein, (gp41), and the envelope glycoprotein, (gp120)—two proteins that allow HIV to bind and fuse with a target cell. Within the envelope, the viral core protein, p17, forms the matrix of the virus particle, and the core protein, p24, forms an inner, cylindrically shaped nucleoid (the area in which the genetic material is contained). The nucleoid contains two strands of viral genomic RNA (the genetic material of HIV) and the associated reverse transcriptase enzyme.

HIV infects cells that bear the CD4 molecule on their outer membranes, such as CD4 T-lymphocytes (a type of white blood cell). CD4 is a normal immune protein that HIV uses as the receptor to which it attaches. The viral gp120 specifically recognizes and binds to CD4, causing the virus to fuse with the cell membrane. Fusion permits the viral nucleoid to enter the cell. Reverse transcription then occurs, whereby the viral genomic RNA is converted into double-stranded DNA. The viral DNA is transported to the cell nucleus and is inserted into the normal cellular chromosomal DNA. Using the replication machinery of the host cell, the integrated viral DNA is transcribed to make messenger RNA (mRNA) and new strands of viral genomic RNA. The viral mRNA is then translated into new viral proteins, and new virus particles are assembled within the cell. The new HIV particles are released by budding from the cell surface, taking a piece of the cell membrane as their envelope.

HIV replication can kill CD4 T-lymphocytes. The loss of these cells paralyzes the immune system and is one mechanism by which HIV infection causes AIDS.
THE HUMAN RETROVIRUS

Structure of HIV

The human immunodeficiency virus (HIV) consists of a nucleoid core and the surrounding protein matrix, both enclosed in a lipid envelope. The nucleoid core contains the viral genetic material and the reverse transcriptase enzyme, which are used in viral replication. The transmembrane glycoprotein gp41 and the envelope glycoprotein gp120 are attached to the envelope; these proteins enable HIV to bind and fuse with a target host cell.

Figure 1. The Structure of HIV
THE HUMAN RETROVIRUS

Life Cycle of HIV

The human immunodeficiency virus attaches to a CD4 protein on the surface of a T-lymphocyte, and the viral envelope fuses with the cell membrane. This fusion releases the viral nucleoid into the cell, where the reverse transcriptase enzyme converts the virion RNA into double-stranded DNA. The viral DNA enters the nucleus of the cell and is integrated into the cellular DNA. Normal cellular processes transcribe the integrated DNA into new virion RNA and viral messenger RNA, and translate the viral messenger RNA into new viral proteins. The proteins and the virion RNA are assembled into a new viral nucleoid, which buds off from the T-lymphocyte, taking a piece of the host cell’s membrane for its envelope.

Figure 2. The life cycle of HIV
The infective stage at cellular level.

(Electron Microphotograph and text courtesy of Thomas Murill Folks and Salvatore Thomas Butera, Pasteur Institute (CNRI))

Figure 3. Infected T-Lymphocyte

**T-Lymphocyte infected with HIV**

Human immunodeficiency virus (HIV) is the cause of acquired immune deficiency syndrome (AIDS). By infecting CD4 T-lymphocytes, a type of white blood cell, HIV weakens the immune system and leaves the infected individual open to deadly infections. The viruses gain access to a T-lymphocyte by attaching to CD4 proteins on the outer surface of the cell membrane.
CDC/WHO Criteria for Diagnosis of AIDS

- Criteria for Diagnosis of AIDS in Papua New Guinea (NAC information supplement January 2000): A diagnosis of AIDS will only be made using the 1987 revised “CDC/WHO case definition of AIDS”.

OPPORTUNISTIC INFECTIONS
- Candidiasis of bronchi, trachea or lungs
- Oesophageal candidiasis
- Coccidioidomycosis, disseminated or extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis, chronic intestinal (> 1 month’s duration)
- Cytomegalovirus disease (other than liver, spleen or nodes)
- Cytomegalovirus retinitis (with loss of vision)
- Herpes simplex; chronic ulcer(s) (> 1 month’s duration)
- Or bronchitis, pneumonia, or oesophagitis
- Histoplasmosis, disseminated or extrapulmonary
- Isosporiasis, chronic intestinal (> 1 month’s duration)
- Mycobacterium avium complex or M. Kanasi, disseminated or extrapulmonary
- Mycobacterium, other species or unidentified species, desieminated or extrapulmonary
- *Pneumocystitis carinii* pneumonia
- Pneumonia, recurrent
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia, recurrent
- Toxoplasmosis of the brain

MALIGNANCY
- Kaposi’s sarcoma
- Lymphoma, Burkitt’s (or equivalant term)
- Lymphoma, immunoblastic (or equivalant term)
- Lymphoma, primary of the brain
- Cervical cancer, invasive

OTHERS
- Encephalopathy, HIV-related
- Wasting syndrome or Slim’s disease due to HIV
- Advanced immune deficiency (CD4 cell count <200/uL or viral load estimation
In PNG, a number of conditions need consideration before a definite criteria is used. For the purpose of HIV/AIDS in PNG, a distinction between AIDS cases and HIV carriers are less important. The CDC version is then modified by MEAC of NAC and is to be adopted by hospitals in PNG.

**MAJOR SIGNS / SYMPTOMS (WHO/CDC Suggestive of AIDS):**

| a) | Persistent fever for more than a month despite appropriate treatment |
| b) | Persistent diarrhoea for more than a month despite appropriate treatment |
| c) | Unexplained weight loss of more than 10% of total body weight |
| d) | Unexplained chronic headache of behavioral change |

**MINOR SIGNS AND SYMPTOMS (special consideration in PNG context):**

| a) | Oral and oesophageal candidiasis |
| b) | Persistent coughing for more than 1 month especially in children |
| c) | Cryptococcal meningitis |
| d) | Multiple bacterial bacterial infections |
| e) | Recurrent generalized pruritic skin lesions or rashes |
| f) | Long standing persistent pelvic inflammatory diseases (chronic or acute on recurrent PID) despite appropriate anti PID regime / treatment |
| g) | Recurrent or multidermatomal herpes zoster infection |
| h) | Alopacia (sudden-progressive loss of hair) |
| i) | Generalized lymphadenopathy |
| j) | Disseminated mycobacterium avium complex (MAC) |
| k) | Typhoid fever especially if repeated infection is noted |
| l) | History of risky behaviour |
| m) | Chronic persistent herpes simplex |
| n) | Visual loss |

**OTHER CONDITIONS:**

| a) | Skin lesions suggestive of Kaopsi’s sarcoma, alopecia (hair loss) |
| b) | Unusually aggressive tuberculosis infection, especially extrapulmonary |
| c) | Neurological disorders; dementia not in elderly, unexplained cognitive or mood disorder |
| d) | Pneumonia or meningitis (unresponsive to conventional treatment) |
| e) | Cancers: Lymphomas Leukaemias |

**Annex Four**
AIDS/HIV EPIDEMIC: STATISTICS AS OF DECEMBER 1st 1999

“The Overall View of the HIV Epidemic and Statistics (Global & National)”

Introduction:
- HIV first diagnosed in 1983
- Spread by:
  - Unprotected Sexual Intercourse
  - Needles/Blood
  - Mother/Child
- Slow progressive immune system collapse over 5 – 10 years asymptotic
  persons infected with HIV develop AIDS – Acquired Immune Deficiency
  Syndrome
  - Develops within 5 – 10 years
  - Death within 2 years after AIDS
- HIV/AIDS spread silently, most transmission occurs before people are aware.
- No vaccine
- Death an inevitable outcome

Global Context:
- Up to 1998: 33.4 million with HIV worldwide (WHO)
- Estimated that 11 man, women and children infected every minute, 15,840 /day, =
  5,781,600
  (6 million people infected / year)
- 8,500 new HIV/day
- Majority under 25 years
- 1/10 new HIV : < 15 years
- 1.2 million children now alive with HIV
- Altogether since epidemic 2 decades ago: 47 million HIV
  - Deaths: 14 million Adults/Children
  - 2.5 million of deaths in 1998 (more than ever before)
- Majority HIV = heterosexual contact
- Adult HIV: 42% = women (1997)
  - Proportion due to Biological and social economic reasons
  - Now 43% HIV over age 15 years.
- By year 2000: 95 % new HIV in developing countries
- Impact of epidemic greatest in Sub-Saharan Africa = 11 million HIV since mid 1995
- In South East Asia now most alarming increase occurring: By 1996 5.2 million HIV
  reported.
- In Pacific the first HIV case seen in 1984.
- There has been a steady increase with half of all cases from Papua New Guinea

Papua New Guinea Situation
- In Papua New HIV/AIDS affects young sexually active and economically productive
  ages group of 15 – 45 years.
- AIDS is now leading cause of death in PMGH.
- Next 12 months situation worsens.
- Estimate of 10,000 – 20,000 HIV/AIDS in community
Many Papua New Guinean’s are infected and do no know it.

**Historical Perspective of HIV/AIDS: PNG**

- **1987:** 1<sup>st</sup> HIV/AIDS ever then 6 HIV with 2 AIDS/deaths recorded
- Within 10 years there has been exponential rise
  - 1994  73% rise
  - 1995  80% rise
  - 1987 – 1994 30% annual arise
  - 1997  351 new HIV (129 AIDS) with cumulative total of 914 HIV and 341 AIDS

- **1999: July**
  - Cumulative HIV total 1952
  - AIDS total 618 with 45% female and 50% male while 5% unknown
  - Age on average is 26 years for females and 32 for male
  - New HIV cases for 1999: 209 in 2<sup>nd</sup> quarter and 41 new AIDS cases
  - mode of transmission in 1999; 95% unprotected heterosexual contact 3.2% perinatal

- **Provinces**
  - Over past 18 months several provinces showed sharp rise in new cases especially Simbu, Western and Manus Province
  - NCD; highest number of HIV/AIDS with 1379, followed by Western Highlands with 143 cases.
  - Morobe Province, third highest with 78. This figure has doubled since 1998.
  - Cases by province of origin shows an even distribution throughout provinces.
  - Note: the majority of cases detected in late stages of disease and therefore gross under estimation
    - Total cumulate death is 144
    - IMR studies show in POM 1:5 sex workers with HIV and in Lae 3% among sex worker

**Statistics Source**

- 3 main sources:
  - Clinical testing
  - Sero-surveillance
  - Blood donor screening

- In the last 5 years blood testing has increased
- 1997: HIV National Reference Laboratory (CPHL) tested 44,682 samples.
  - 23,478: blood donors (5 positive: 0.021%)
  - 10,495 clinical test 318 positive (3.029%)
  - 10,709 sero-surveillance 28 positive (0.261%)

**HIV/Age:**

- On cumulative total: 387 unknown age recorded, majority in ages 20-29 followed by 30-39 years.
• Interestingly, 13-19 year old groups increase significantly with female to male ratio of 3:1 (as is the pattern seen in developing countries) and showing the vulnerable cohorts (girls and young women)

Source of probable exposures
• Unknown in majority of cases
• Data available shows
  • Heterosexual intercourse, multiple partners with very high STD rates and poor services
  • Perinatal: mother to infant transmission
  • Bisexual/homosexual: 8 reported cases of HIV/6 AIDS but lack of behaviour surveillance, therefore underestimated.

Is it Urban or Rural Problem?
• Majority of HIV/AIDS cases in NCD due to accessibility to test sites and services.
• But it is not Urban Problem; HIV/AIDS recognizes no geographical boundaries
• PNG, a mobile population with strong urban links
• Also province of origin data shows a relatively even distribution of cases.
• True extent of HIV in population is underestimated
• For very HIV case, there is 100 unreported cases.

What is the Epidemic Situation?
• Papua New Guinea is in potentially devastating epidemic with social, economic and demographic implications
• Epimodel program by WHO/projections suggest that by year 2000: HIV cases could be in the low of 11,000 – and a high of 27,000
• If aggressive and effective intention is in place by 2006: there will be only 62,000 HIV cases and 13,500 AIDS.
• Total death would be 12,000

Tuberculosis and HIV: (cousins)
• TB is major heath problems in PNG and is uncontrolled
  • HIV is influencing tuberculosis increase
  • Co-infection with TB renders TB infection more resistant to treatment and therefore stronger drug treatment is required.

STD and HIV/AIDS:
• PNG has seriously high STD rate in both urban and rural areas with 7/1000 population
• High STD rate presents major public health problem with direct implication to HIV transmission parameters include:
  • Genital ulceration
• High prevalence of risky sexual practices
• Unprotected sex
• Multiple partners
• Transactional and cultural sex
• High level of STD is also a result of lack of access to services, hygiene and sanitation facilities.
• Studies showed poor understanding of STD and failed treatment associate with more complication.
• Perception of personal risk is low despite very high STDs
• Barriers exist also because of asymptotic nature

Knowledge of HIV/AIDS/Perception of Risk: Community – based behavioural studies showed;
• Lack of accurate information on Sex/Reproduction and human anatomy
• Studies indicate general awareness of HIV/AIDS but there is considerable misinformation, misunderstanding about modes of transmission and means of prevention.
• 1996, PNG Demographic Health Survey (DHS) Questionnaire format to females 15-49 years with total of 4,917 surveyed revealed:
  • Knowledge of HIV/AIDS; 76 % urban women and 62 % rural
  • Source of information mainly from Health Workers, friends/relatives and radio.
  • Education related to AIDS awareness; most knowledgeable amongst Gr. 7 or above educational level and least knowledgeable amongst 0 education.
  • DHS: awareness of AIDS and perceived risk does not necessary influence sexual behaviour
  • 3177 women had some knowledge with 73 % saying there was no perceived risk of HIV
  • 55 % knew AIDS kills but felt at small risk and not change behaviour.
  • 48 % restricted to one partner and only 13 % use condoms.

Prevention:
• Efforts to promote importance of practices with, abstinence, faithfulness and use of condoms strongly advocated.
• Condoms use is an important means of protection from STD and HIV but still low use in PNG due to low level of awareness and negative perception.
• Condom use/behaviour studies show people associate it with promiscuity/commercial sex and distribution and supply and access still a problem

1996 DHS showed
• Only 19 % respondents who had some awareness of AIDS identified condom as a means of protection.
• 45 % knew condom as contraceptive method
• 39 % knew source of obtaining condoms
• of the 22 % females of reproductive age regarding contraception, only 2 % used it
• Study shows an increase education, promotion and improve access results in increase acceptance
• Female condoms are now available and studies by IMR suggest increasing acceptance

**Conclusion:**
• We are in the *Epidemic*
• The most effective means to control spread is a change of attitude and behaviour through increased knowledge and awareness and improved access to supportive resources and services.
• The role of leaders and decision-makers in supporting HIV/AIDS policies and programs is key to enabling change and slow down progress of HIV/AIDS.
• In his key message today(1st Dec.1999), Hon. Prime Minister of Papua New Guinea and Minister for Health said “I call on all Provincial Governors and Administrators to give all the support you can to facilitate this multi-sectoral national responses. Support from all levels of our political structure is recorded in acknowledging the threat to HIV/AIDS and taking the necessary action to address it. In a complex setting like ours, political leaders and civil servants in authority must be responsible in taking the first step in making decisions that will improve overall well being of people throughout the country.”

<table>
<thead>
<tr>
<th>“Morobe and Papua New Guinea – lets do it.”</th>
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<tbody>
<tr>
<td><em>(Dr Paison DAKULALA SMO Physician; AMGH)</em></td>
</tr>
</tbody>
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<th>“The current HIV/AIDS Epidemic or Trend as an analogy to that of a lit matches to the dry grassland of Markham. The heat and the fire is unstoppable until all dry grasses are engulfed by the fire and no grasses no more”.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Dr B. Feling, Physician AMGH; World Aids Day -1</em>st December 1999, Eriku Lae. Edited By Dr*</td>
</tr>
<tr>
<td><em>John Tonar</em></td>
</tr>
</tbody>
</table>

Annex Five

**National AIDS Council (NAC)**

*Functional Structure*
Structure:

- MINISTER FOR HEALTH
- CHAIRMAN OF NAC
- DIRECTOR NACS
- DEPUTY DIRECTOR NACS
- KBO
- Admin. Officer
- ADVISORS
  - LEGAL ADVISOR
    - LAC
  - MEDICAL ADVISOR
    - MEAC
  - ICE ADVISOR
    - IEAC
  - CCC ADVISOR
    - CCCAC

Function:

National Aids Council is the highest decision making body that advises the government of all policy matters in PNG. It has a secretariat in Medical, Legal, Information and Counseling divisions and advisories.

The view NAC has, is to promote, coordinate, oversee and monitor national response or feedback. It is made up of persons and professionals of different key government departments and private organizations, churches and volunteers as well as response groups for the above role. The director and the secretariat’s offices will facilitate and strengthen institutional capacity for implementation of programs in the MTP 1998-2002 and will link strongly with the PAC to clearly defined sectoral roles and responsibilities to fight against HIV epidemic. NAC will also link with regional and international organizations in the HIV awareness, prevention and treatment programs.

With regard to difficult cases, definitive diagnosis, treatment advises and other information, the flow chart below can be utilized (adopted from the NAC physician’s information sheet)
Flow Chart for Definitive Diagnosis of HIV/AIDS

HIV +ve → Discuss with NAC Physicians → CDC/WHO → NAC Chairman

Defined + ve


HIV –ve → Retest & Discuss with NAC Physicians

May advice treatment and referral were necessary

Annex Six

Provincial AIDS Committee (PAC)

Functional Structure

Structure:

MINISTER FOR HEALTH

NAC

PAC

Chairman PAC

PAC Secretariat

Treasurer

Secretary

KBO

PAC Subcommittees

- Information and Education
- Promotion and Awareness
- Research and Coordination
- Clinics and Medical Attention/Treatment/Admission
**District AIDS Committee and Set-up**

**Function:** The PAC functions as a sub-committee to NAC and is responsible for the supervision and monitoring of MTP at provincial and district levels. PAC also provides valuable feedbacks and advises to NAC in areas of policy development, program planning and resource allocation. There is open and continuous communication between PAC and NAC for effective implementation of the MTP and updates on different levels of management. NAC provides PAC with ongoing support in areas of need. PAC have an important role in facilitating an integrated, MSA to HIV/AIDS programs at provincial and district levels and to ensure community participation. Among these, PAC and its secretariat would continue to prioritize education and information, promotion and awareness, research and co-ordination, with the RVITF in place, clinics, medical attention, syndromic treatment and admission, medical advice, social services (counseling) and referral are all part and partial of PAC in Lae and Morobe Province. The HIV/AIDS clinical pathway would be utilized by PAC and the hospital in combating the deadly disease.

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**Annex Seven**

**The Role of Angau Memorial General Hospital**

Because it is the second biggest and the nation’s industrial city which caters for a population of about 80,000 people, AMGH has a big role to play in the fight against HIV. It would be anticipated here then a scenario quite similar to a suffering nation of the starved and underfed Ethiopia last millenium if correct steps are not promoted. Hospital throughout PNG must also have a basic management plan in the management of the epidemic.

**The hospital’s (AMGH) roles identified include:**

1. Up hold the concept of universal precaution and promote a high health standards
2. Adequately train professional counselors and health educators
3. Continue laboratory testing and presence of reagents and kits at all times
4. Establish a clinical data base for the hospital and PAC/NAC
5. Create and design a clear clinical pathway for ‘the client’ with HIV burden
6. Up hold confidentiality at all cost
7. Be responsive to issues of vital importance as and when arises
8. Encourage the concept of multi-sectoral approach
9. Research and Development.
Annex Eight

Consent and Consenting Forms

CF.1: Consent Form 1.

DEPARTMENT OF HEALTH
ANGAU MEMORIAL GENERAL HOSPITAL

Consent Form

I ………………………………… of ………………………………… hereby consent to have my retroviral status screened and verified.

The circumstances, implications and importance of the test have been explained to me. It may also involve contact tracing, documentation and follow up of myself at the time and location verified to me.

I also understand that, any information I offer and any results forth with shall be treated as strictly confidential with ready access to a doctor and treatment when need arises.

Signed: ……………………… Witness: 1) ………………………
               : 2) ………………………
Date: ………………………

CF.2 : Consented / Consenting Form 2.
DEPARTMENT OF HEALTH
ANGAU MEMORIAL GENERAL HOSPITAL

Consented / Consenting Form

I ……………………………………… of …………………………………

Who is the (specify relation) ……………………………………………of Mr/Ms/Mrs (client’s name) ……………………………………Age/Sex………

hereby consenting above client to have his /her retroviral status screened and verified.

The circumstances, implications and importance of the test have been explained to me. It may also involve contact tracing, documentation and follow up of the client at the time and location verified to me.

I also understand that, any information offered and any results forthwith shall be treated as strictly confidential with ready access to a doctor and treatment when need arises.

Signed: ……………………………… Witness: 1) ………………………………

: 2) ………………………………

Date: ……………………………
Annex Nine

Code Numbers and Designation

The following code numbers will be issued on request from the code station, the STD clinic. This code identifies the patient or client Port of Entry (Location Initial) and a Serial Number of 3 digits including month and year code.

Sample

<table>
<thead>
<tr>
<th>Port of Entry</th>
<th>Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE:</td>
<td>AOPD/000: 00/2000</td>
</tr>
</tbody>
</table>

CODE LOCATION/PORT

AOPD/000:00/0000   Adult General Outpatient Departments  
A&E/000:00/0000    Accidents and Emergency Department  
COPD/000:00/0000   Children Out Patient Department  
WBC/000:00/0000    Well Baby Clinic  
M5A,C&D/000:00/0000 Medical Ward 5C and D  
M5B/000:00/0000    Medical Psychiatric Ward  
ICU/000:00/0000    Intensive Care Unit  
S1B/000:00/0000    Surgical Full Nursing Care Ward  
S2A,B/000:00/0000  Surgical Wards  
S6B/000:00/0000    Surgical Ward 6B  
INT/000:00/0000    Intermediate Ward 6A  
G4D/000:00/0000    Gynaecology ward 4D  
L3A,B/000:00/0000  Labour and Post Natal Wards  
SCN/000:00/0000    Special Care Nursery  
P4B,C/000:00/0000  PaediatricWards 4B and C  
CAN/000:00/0000    Cancer wards  
MCL/000:00/0000    Medical Clinic  
SCL/000:00/0000    Surgical Clinic  
GCL/000:00/0000    Gynaecology Clinic  
WWC/000:00/0000    Well Women’s Clinic  
STD/000:00/0000    STD Clinic  
DEN/000:00/0000    Dental Clinic  
BB/000:00/0000    Blood Bank  
FHC/000:00/0000    Family Health Clinic  
IMR/000:00/0000    Medical Research Institute, Lae  
REF/000:00/0000    Referrals from other centers to the STD Clinic
A brief overview of the RVI Task Force of Lae

Contact Addresses, Role and Composition

1. **Angau Memorial General Hospital**, P.O.Box 457; Lae, Morobe Province
   Phone: 4732100 Fax: 4723015
   Counselors/ Social Works
   **Role**: Crucial. Basically all components of the pathway is utilized within the hospital. It is resource based and an integral component of the HIV/AIDS clinical pathway.

2. **The Medical Research Institute- MRI**, P.O.Box 2807 Lae, Morobe Province, Papua New Guinea
   Phone/Fax: 4725266
   **Role**: Research, Peer Education, Counseling, Outreaches and Follow ups, contact tracing + - , Sero surveillance, home care, gender issues, literacy and studies, dramas.
   A research based integrated network or program bank, which is also an integral part of the RVITF of Lae. Adequate number of peer educators trained 400 is a huge bonus.

3. **Adventist Development and Relief Agency; ADRA**, Geso Gedec Cr, P.O. Box 3206 Lae, Morobe Province, Papua New Guinea.
   Phone: 472 7088 Fax:
   **Role**: General Awareness: Primary health care, culture and religion, sexuality, STD/HIV issues, home visits, individual and family counseling and care & support, community awareness and counseling services. Good referrals and rapport with STD clinic and AMGH. Family preparation for the acceptance of the death and involve in burial services.
   A much needed NGO church based whose role is full filling, a strength to RVI Task Force. Capable of mass media production.

4. **The Salvation Army; Red Shield Counseling Division**, P.O.Box 637, Lae Morobe Province, Papua New Guinea
   Phone: 472 0604 Fax: 472 7487
   **Role**: Education, Prevention and Care, Counseling and home visits especially in the communities and peri-urban areas; settlements and compounds. Interested and willing to work with other NGOs and Government which
RVITF have already started. After clients are identified the organization is more than willing to carry out above. The army have network of churches, women groups, youth groups, family contact, health centres, hostels and guest houses, markets where above roles can be utilized.

5. **The SEEDS Theatre Arts Performing Group, Lae.**

   **Role:** Well versed youths had long association with the IMR and a willing theatre group performing theatre arts on important occasions. Awareness through theatrical performances dramatizing risky sexual behaviour targeting the vulnerable members of the public and communities. It is no doubt the RVITF/PAC tool for awareness and information dissemination. The clinical pathway on the primary outset and advocacy role is enhanced by the SEEDS Theatre Arts group established in 1997 on HIV/AIDS, supported and trained by PNGIMR-Lae. It has established network with YWCA, ADRA, VDT, COMM Theatres, Morobe LGC, Butibam H/C, Settlements in Lae, catholic Youth, PNGIMR-Lae, Health Division, MP, Cultural centres and Sexual Health Project.

6. **Catholic Agency for Youth and Development,** 3 Mile, P. O. Box 236, Lae Morobe Province, Papua New Guinea.
   Phone: 472 2557       Fax:
   **Role:** Youth development, education and care, A number of schools, churches locale and network program which include counseling. Became a member of the RVITF as a response group and advocate in the fight against HIV/AIDS.

7. **Department of Police, Lae City & Metropolitan,** P. O. Box 313, Lae Morobe Province, Papua New Guinea
   Phone: 472 2222       Fax: 472 6522
   **Role:** A much bigger and difficult role than used to be. The approach has changed. Personals advocate education and understanding more than harassing and arresting. Training and awareness on HIV/AIDS begau in in-services and general sessions. To maintain very close contact with the AMGH and the RVITF in the clinical pathway for HIV/AIDS.

8. **PNG Defence Force, Igam Barracks, Lae,** Papua New Guinea
   Phone: 475 7477       Fax: 475 7543
   **Role:** Awareness in the defence force is continuing. PNGDF are more aware than other departments and has a good understanding in regard to HIV/AIDS in a multi-decipline and sectoral approach. A support and vital drama group in the fight against HIV/AIDS.
9. **The CIS: Buimo Goal, P.O. Box 2558, Lae.** Morobe Province, Papua New Guinea.
   Phone: 475 7495    Fax: 475 7359
   **Role:** More inmates both females and males are seen at the clinic due to sexually transmitted infections. Awareness is being done on HIV/AIDS and in good rapport with STD clinic and AMGH. Correcting inmates on punishable offence especially rape and griveous bodily harm involving contact with body fluids is not only imprisonable but fatal with HIV/AIDS. The response has been very good and would continue with the MSA put together by the RVITF of Lae.

10. **The Private Hospitals and Clinics in Lae City.**
    Many in the city of Lae, managing HIV clients who would find the RVITF clinical pathway very useful though may have counseled and appropriately advised on an individual basis.

11. **Corporate Bodies**
    Various corporate and business entities, soft drink giant- coca cola, trucking business-Transwest, stevending firms and dock siders, (name a few) at least the approached showed great interest and advocate HIV/AIDS awareness amongst employees. At least primary component of prevention to some extent is achieved and hoe that more would be made aware of and join the RVITF for the fight against HIV/AIDS in the city of Lae in the new millenium, hand in hand with business.

12. **Maritime Workers/ Wharfies, Lae**
    Peer Education carried out in this groups with the IMR-Lae continue good result. In that, the educated and counseled are now educating and counseling others. A network has been established both on land Harbours and on board vessels and ports other than Lae.

13. **The National AIDS Council (NAC)**
    The above parliament enacted body’s role is clearly outlined both structurally and functionally in annex (6)

14. **The Provincial Aids Committee (PAC)**
    As above in Annex (6)

15. **The District AIDS Committee (DAC)**
    This committee is yet to be formed. PAC approach would be to well establish it self first then progress to the rural settings as stipulated in the MTP. It is within range as soon as PAC out lines its plans most probably mid July-August 2000.
16. **The Red Cross**

A charity organization advocates awareness and information dissemination. Blood bank and donations etc has a big role in propagating HIV transmission. This fear come about as a result of the inability to detect HIV antibodies in the serum from the donor up to three months window period of possible inoculation/transmission/propagation.

17. **Other concern groups (Open)**

\[\text{All available statistics from Angau Memorial General Hospital, the STD Clinic and IMR - Lae were summarized and delivered in speech, by Dr Paison Dakulala SMO Physician, on the World Aids Day on December the 1st 1999 (ref. Annex 4} \]

- **On AIDS** -

“It is a modern plaque: the first great pandemic of the second half of the 20th century... Does this terrible tale have a moral? Yes. In the past two decades, one of the fondest boasts of medical science has been the conquest of infectious disease, at least in the wealthy countries of the industrial world. The advent of retrovirus with the capacity to cause extraordinarily complex and devastating disease has exploded the claim for what it was: hubris (arrogant pride). Nature is never truly conquered. The human retrovirus and their intricate interrelation with human cells are but one example of that fact. Indeed, perhaps conquest is the wrong metaphor to describe our relation to nature, which not only surrounds but in the deepest sense also constitute our being” Robert Gallo; 1987 (19, 20).
Annex Eleven

**IMR Trained HIV/AIDS Peer Educators of Lae, Morobe Province.**

The IMR trained peer educators list who provide much needed follow up, awareness as well as consolatory efforts amongst the HIV/AIDS victims in various communities in Lae urban and peri-urban areas. The database reveals a list of real-time-person where one can easily refer to in times of needs (26). This satisfy meaningfully the theme *Multi-Sectoral Approach* handed down by the NAC.

Table 11.1  Number of Peer Educators trained by IMR, Lae for HIV/AIDS course.

<table>
<thead>
<tr>
<th>No.</th>
<th>HIV/AIDS Peer Educators of Lae Categories</th>
<th>Numbers Educated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sex workers peer educators</td>
<td>510</td>
</tr>
<tr>
<td>2</td>
<td>Sailors peer educators</td>
<td>62</td>
</tr>
<tr>
<td>3</td>
<td>Truckers peer educators</td>
<td>36</td>
</tr>
<tr>
<td>4</td>
<td>Dockside peer educators</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>Support peer educators</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>716</strong></td>
</tr>
</tbody>
</table>

Attached at end of page (pages 60-74), a detail list of peer educators in Lae who are collaborating with RVITF providing much needed support on HIV and AIDS patients at the community level. These IMR trained peer educators educate and console. The major issue of confidentiality is best achieved by the trained at that level.
### Appendix 1

#### Abbreviations & Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;E</td>
<td>Accident and Emergency</td>
</tr>
<tr>
<td>ADRA</td>
<td>Adventist Development and Rehabilitation Agency</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency syndrome</td>
</tr>
<tr>
<td>ANC</td>
<td>Antenatal Clinic</td>
</tr>
<tr>
<td>AMGH</td>
<td>Angau Memorial General Hospital</td>
</tr>
<tr>
<td>AOPD</td>
<td>Adult Out-Patient Department</td>
</tr>
<tr>
<td>AusAID</td>
<td>Australian Agency for International Development</td>
</tr>
<tr>
<td>AZT</td>
<td>Azidothymidine (zidovudine)</td>
</tr>
<tr>
<td>CCCAC</td>
<td>Counseling, Community Care and Support Advisory committee</td>
</tr>
<tr>
<td>CDC</td>
<td>Center for Disease Control</td>
</tr>
<tr>
<td>CD4T</td>
<td>T helper/ Inducer cell-membrane receptor on T lymphocyte for HIV</td>
</tr>
<tr>
<td>CP/FC</td>
<td>Clinical Pathway Flow Chart</td>
</tr>
<tr>
<td>CPHL</td>
<td>Central Public Health Laboratory</td>
</tr>
<tr>
<td>COPD</td>
<td>Children Out-Patient Department</td>
</tr>
<tr>
<td>DAC</td>
<td>District Aids committee</td>
</tr>
<tr>
<td>DNA</td>
<td>Deoxyribonucleic Acid</td>
</tr>
<tr>
<td>DOTS</td>
<td>Direct Observed Therapy; Short Course Chemotherapy</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme Linked Immunosorbent Assay</td>
</tr>
<tr>
<td>EMO</td>
<td>Examining Medical Officer</td>
</tr>
<tr>
<td>HbsAg</td>
<td>Hepatitis B Surface Antigen</td>
</tr>
<tr>
<td>HEO</td>
<td>Health Extension Officer</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>IEAC</td>
<td>Information and Education Advisory Committee District</td>
</tr>
<tr>
<td>IMR</td>
<td>Institute of Medical Research</td>
</tr>
<tr>
<td>Int. Med</td>
<td>Internal Medicine</td>
</tr>
<tr>
<td>KBO</td>
<td>Key Board Operator</td>
</tr>
<tr>
<td>Lab</td>
<td>Laboratory</td>
</tr>
<tr>
<td>LAC</td>
<td>Legal Advisory Committee</td>
</tr>
<tr>
<td>LR</td>
<td>Literacy Rate</td>
</tr>
<tr>
<td>LW</td>
<td>Labour ward</td>
</tr>
<tr>
<td>MAC</td>
<td>Mycobacterium avium Complex</td>
</tr>
<tr>
<td>MEAC</td>
<td>Medical Expert Advisory Committee</td>
</tr>
<tr>
<td>MCH</td>
<td>Maternal Child Health</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Rate</td>
</tr>
<tr>
<td>MO</td>
<td>Medical Officer</td>
</tr>
<tr>
<td>MRNA</td>
<td>Messanger Ribonucleic Acid</td>
</tr>
<tr>
<td>MSA</td>
<td>Multi Sectoral Approach</td>
</tr>
<tr>
<td>MTP</td>
<td>Medium Term Plan</td>
</tr>
<tr>
<td>NAC</td>
<td>National Aids Council</td>
</tr>
<tr>
<td>NCD</td>
<td>National Capital District</td>
</tr>
</tbody>
</table>
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