

Scaling up Antiretroviral Treatment: Lessons Learnt from Thailand



Report of an
External Evaluation



**World Health
Organization**

Regional Office for South-East Asia



Ministry of Public Health
Thailand

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Acronyms

ALT	alanine aminotransferase
AIDS	acquired immunodeficiency syndrome
ANC	antenatal care
ART	antiretroviral treatment
ARV	antiretroviral (drug)
ATC	access to care
BATS	Bureau of AIDS, TB and STIs
CBO	community-based organization
CCC	comprehensive and continuous care centres
CD4	T-lymphocyte bearing CD4 receptor
CDC	Centre for Disease Control and Prevention, Atlanta
CSMBS	Civil Servant Medical Benefit Scheme
d4T	stavudine
DDC	Department of Disease Control and Prevention, Bangkok
ddl	didanosine
DRG	Diagnosis Related Group
EFV	efavirenz
EML	essential medicines list
FBC	full blood count
FDC	fixed-dose combination
GAP	Global AIDS Programme, Centre for Disease Control and Prevention, Atlanta
GFATM	Global Fund to Fight AIDS, TB and Malaria
GNP	gross national product
GPO	Government Pharmaceutical Organization, Bangkok
GPO-vir	fixed-dose combination containing stavudine, lamivudine and nevirapine produced by the Government Pharmaceutical Organization of Thailand
HIV-NAT	The HIV Netherlands, Australia and Thailand Research Collaboration
IATEC	International Antiviral Therapy Evaluation Centre, Amsterdam
IDU	injecting drug user
IDV/r	indinavir/low-dose ritonavir
IP	in-patient
MCH	Maternal and Child Health

MOPH	Ministry of Public Health, Thailand
NAA	National AIDS Accounts
NAPHA	National Access to Antiretroviral Programme for People with HIV and AIDS
NCHECR	National Centre in HIV Epidemiology and Clinical Research, Australia
NESDB	National Economic and Social Development Board
NGO	non-governmental organization
NNRTI	non-nucleoside reverse transcriptase inhibitors
NRTI	nucleoside reverse transcriptase inhibitors
NVP	nevirapine
OI	opportunistic infections
OP	out-patient
OPD	out-patient department
PCR	polymerase chain reaction
PI	proteinase inhibitor
PLHIV	people living with HIV
PMTCT	prevention of mother-to-child transmission
PP	private patient
ROW	rest of the world
RTG	Royal Thai Government
RTV	ritonavir
SQV	saquinavir
SQV/r	saquinavir/ low-dose ritonavir
SSS	Social Security Scheme
3TC	lamivudine
TRC-ARC	Thai Red Cross AIDS Research Centre
TNP+	Thai Network of PLHIV
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
UCS	Universal Coverage Scheme
VL	viral load
VMI	Vendor Management Inventory
WCF	Workmen's Compensation Fund
WHO	World Health Organization
WHO SEARO	World Health Organization South-East Asia Regional Office
ZDV	zidovudine

One US\$ equivalent to Thai Baht 40.11 (2000), 44.43 (2001), 42.96 (2002), 41.48 (2003) and 40.22 (2004).¹ For projections a US\$ equivalent to Thai Baht 40 is used.

¹ Tangcharoensathien V, Chokchaicharn H, Tisayaticom K, Teukul W, and Patcharanarumol W. Asia Pacific Regional Report (2006). Thailand national AIDS spending assessment 2000 – 2004.

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The review was planned and organized by the Ministry of Public Health, Thailand, the AIDS Cluster and the Centre for AIDS Prevention and Problem Alleviation Administration of the Bureau of AIDS, TB and sexually transmitted infections (STIs) and the World Health Organization (WHO) Regional Office for South-East Asia.

The Mission Team included experts from the WHO, United Nations Children's Fund (UNICEF) Regional Office for East Asia and the Pacific, the Joint United Nations Programme on HIV/AIDS (UNAIDS) Thailand, the World Bank, the Bill and Melinda Gates Foundation India Office, the Australian Federation of AIDS Organizations/ Asia Pacific Council of AIDS Service Organizations, Chiang Mai University and the Ministry of Public Health, Thailand.

The Mission Team members would like to express their gratitude to the staff of the AIDS Cluster and the Centre for AIDS Prevention and Problem Alleviation Administration of the Bureau of AIDS, TB and STI, for organizing the review and taking care of the logistics. The Team is also grateful to all the persons they met for making available their time and for sharing information.

Executive Summary

This is the report of the third joint antiretroviral treatment (ART) programme review for Thailand since the programme started in 1992. Based on the recommendations of the first review held in 1995, the Ministry of Public Health (MOPH), Thailand started a pilot programme for the prevention of mother-to-child transmission (PMTCT) of HIV in north-east and northern Thailand, along with the establishment of a HIV/AIDS clinical research network. This was followed, in 2000, by large-scale implementation of the national PMTCT programme in public hospitals. The second joint programme review, conducted in July 2000, recommended expansion of quality ART services to cover all government hospitals following the example of the national PMTCT programme.

This ART programme review was conducted from 12–19 October 2004 by a team of three national and 10 international experts, identified in consultation with the national authorities. The Team reviewed the national ART programme at the central level and visited two regions (*Region 3* in the central-eastern part and *Region 6* in the north-eastern part) and six health facilities at the regional/provincial and district levels, as well as community-based organizations. The Team interviewed policy makers, administrators, health staff, people living with HIV (PLHIV) and community members, reviewed records and reporting forms at all levels, collected and analyzed information on programme, policy and guidelines, staffing and managerial capacity, linkages between HIV prevention, care and treatment services, procurement supply management, capacity building, laboratory services, service delivery models, civil society and partnership, monitoring and evaluation and AIDS care financing.

The Team noted the exceptional progress made by the Royal Thai Government (RTG) in expanding access to, and coverage of, treatment in Thailand, achieving the national treatment target of delivering ART to more than 50% of those in need between 2001 and 2004. This led the RTG to declare, in July 2004, its commitment towards the ultimate goal of universal access to ART. Expanding ART coverage has been achieved rapidly through strong political commitment and harnessing the full potential of the strong public health system. Many other countries in the region can benefit from the lessons and success of the Thailand programme.

Key findings

Programme policy and strategies

At the time of the review only first-line therapy regimens for adults and children were fully subsidized by the RTG. Patients who have side effects or fail on one of the recommended first-line regimens are discontinued from ART, but still receive other supported government services such as opportunistic infection (OI) prophylaxis and treatment, care and support while waiting for second-line treatment antiretroviral drugs (ARVs) by other sources.

Staffing and managerial capacity

The rapid expansion of the programme during the past three years has not been accompanied by a proportional increase in staff at the central and peripheral levels, outstripping the managerial capacity required for high quality and proper programme monitoring. The human resource constraints were particularly acute during the initial rapid expansion phase and produced significant strains on many individuals. Of increasing concern is the additional workload related to the administration of the Universal Coverage Scheme (UCS).

Clinical management and ART guidelines

Metabolic side-effects of ART associated with stavudine (d4T) such as lipodystrophy were commonly reported at several sites.

Although the service delivery system provides some innovative approaches to ensuring treatment adherence, there is incomplete data collected on adherence among both children and adults. In the case of treatment failure, although, the current policy does not support second-line treatment regimens and salvage regimens, due to the high cost of drugs, there have been a number of cases receiving second-line treatment regimens through clinical research projects.

Linking HIV prevention to care and treatment services

In 2001, PMTCT was expanded to include a care programme, named the PMTCT-Care programme, which is linked to the national ART programme. There are indications of potential coordination, and management issues arising, between this programme and the National Access to Antiretroviral Programme for People with HIV and AIDS (NAPHA) programme.

As treatment is scaled up, several opportunities are opening up for accelerating prevention. These include concentrating on *prevention for positives* by specifically targeting condom promotion towards those on ART; linking the condom promotion programmes targeted towards sex workers and their clients to comprehensive counselling, care and treatment services; and the creation of an enabling environment for prevention, care and treatment services for marginalized populations, such as migrants and injecting drug users.

Procurement and supply management

The procurement and supply management component of the national ART scale-up strategy has been well planned. No significant drug shortages have occurred during the last three years. However, staff interviewed mentioned that the supply of the ARV safety stocks occasionally did not meet the needs generated by actual enrollment percentages per regimen and the increased numbers of patients treated.

The ARVs supported through different funding mechanisms, including NAPHA, the Global Fund to Fight AIDS, TB and Malaria (GFATM), the Social Security Scheme (SSS) and PMTCT-Care, are ordered directly by the facilities from regional offices. Each funding source has its own stock ordering and reporting system. PMTCT programme was managed separately from NAPHA, whereas PMTCT-Care programme was integrated in NAPHA. Thus, for the treatment purpose, there is harmonization on the stock ordering and reporting procedures for ARVs.

Capacity building

With the urgent need to rapidly strengthen capacity for the ART programme, approximately 8 000 health care professionals (medical doctors, nurses, counsellors, laboratory technicians and pharmacists) were trained during the years 2000 to 2004. In addition, capacity of staff at all levels are strengthened repeatedly every year through training courses which are conducted by regional offices. However, health care workers interviewed stated that the capacity of health care providers at the district level for the management of ART in adults and children is inadequate, and would require urgent attention whenever the programme has been able to cover a large number of patients. This is of particular concern in smaller district hospitals with limited health care staff and frequent staff turn-over.

Health infrastructure development for laboratory services

Thailand has developed a strong HIV laboratory network with validation and external quality assurance system (EQAS) for HIV testing. This network includes laboratories equipped with 46 dual and 28 single platform technology CD4 count machines, some of which participate in EQAS - 20 with viral load testing facilities and three with drug resistance testing facilities.

Service delivery model

The main service delivery model for HIV care and ART is through the public health care system. Expansion to all district hospitals and to private hospitals started only recently. The services are provided by teams consisting of health care workers, nongovernment organizations, community-based organizations and PLHIV, providing a continuum of care from home to health facility. The continuum of care offers comprehensive services ranging from health

education, medical and nursing care, self care, home care, vocational and financial support and counselling. Service delivery models depend on the geographical area and level of the hospital. The key is the full involvement of PLHIV groups and the commitment of health care workers.

Civil society involvement and partnership

In collaboration with the Government, and also independently, the Thai PLHIV movement and community sector have played a key role in scaling-up treatment access in Thailand. A nationwide programme to increase access to the means for the prevention and treatment of opportunistic infections (OIs) has provided a basis for treatment literacy and education for ARVs, and for the establishment of comprehensive and continuous care (CCC) centres operated by PLHIV volunteers, and supported by health care workers, in 114 district hospitals covering 10 000 clients on ART. As this programme is externally funded, however, its sustainability is not ensured.

Monitoring and evaluation

At the peripheral level, data on a number of variables has been collected and sent to the central office. At the national level only two indicators, cumulative monthly number on ART and number retained on ART, are reported regularly on a monthly basis. Data to illustrate quality of treatment such as changes in CD4 cell count, proportion of patients continuing on treatment after six months, can be accessed both at the hospital and the national level when required. Many hospitals recorded and analyzed disaggregated data by age, sex, clinical and immunologic response to different regimens, after different periods of treatment. However, a proper cohort analysis was not done in general since there is no enough staff to carry out the work-load and to analyze the data. Many facilities providing services under NAPHA also participate in the Social Security Scheme (SSS) and PMTCT-Care programmes, in which the protocol for data collection and monitoring of patients are the same.

AIDS care financing

There are four main health insurance schemes in Thailand, covering nearly 100% of the population: the SSS and Workmen's Compensation Fund (WCF) covering the formal private sector workers; the Civil Servant Medical Benefit Scheme (CSMBS) for government employees; and the "30-Baht" or UCS for the rest of the population. These schemes offer slightly different coverage and quality of care for PLHIV. The UCS covers preventive and curative care for PLHIV (treatment of all OIs), but does not cover ART nor associated testing/monitoring. Access to ART for PLHIV covered by the UCS is offered under NAPHA. Policymakers and politicians have declared that integrating ART into the UCS would start soon. Formerly SSS patients too received ART under NAPHA, but as of August 2004, all SSS patients (about 13 000) who were being treated under NAPHA were transferred to SSS, as ART began to be provided under SSS as well.

Role of Thailand in providing support to countries

Thailand has traditionally served as a long-time collaborator and training hub throughout Asia for capacity building and sharing of human resources, in particular in the area of HIV. With the successful expansion of the ART programme it has set the stage for many countries to share the experiences of the national expansion with regard to all the aforementioned key components. There is an immense opportunity for operational research in treatment scale-up, to provide relevant strategic information for AIDS programme planning and implementation. Although a large number of papers have been presented during meetings and conferences, and an abundance of reports have been written, only limited documentation of the national expansion is available in the public domain.

Key recommendations

Programme policy and strategies

- Continue expansion of the ART programme towards universal access as planned. Strict attention should be paid to regular adjustments of treatment and monitoring strategies, in particular, in the near future, with second line and salvage treatment regimens.

Staffing and managerial capacity

- The proportion of resources allocated to staff (e.g. short-term consultants, temporary staff) should be increased, in particular during the initial rapid expansion of the ART programme. Immediate arrangements should be made to strengthen the National AIDS Programme Care and Treatment Unit and create additional regular positions to appropriately staff the AIDS Cluster, commensurate with its current extensive responsibilities. The increase in AIDS Cluster staffing should be carried out with emphasis on strengthening specific units for supervision and monitoring, human resource development, and procurement and supply management.

Clinical management and ART guidelines

- The use of d4T as a first-line regimen should be reconsidered, in view of the large proportion of metabolic side-effects occurring with this regimen, to be replaced by zidovudine (ZDV) containing regimens.

Linking HIV prevention with care and treatment

- The coordination and management procedures between PMTCT and its affiliated programme, PMTCT-Care, and the NAPHA programmes should be streamlined at all levels. The model should be documented in order to benefit other countries.

- Consideration should be given to creating an enabling environment for targeted interventions that focus on high-risk groups such as sex workers, migrant workers and injecting drug users (IDUs), including harm reduction services and services within closed settings.

Procurement and supply management

- The MOPH should consider the harmonization of the supply of ARVs supported through different funding mechanisms, including GFATM, SSS, NAPHA funds and other orders placed directly by facilities to suppliers.
- Linkages between facilities, regional offices and the central office should be strengthened with a closer cooperation to ensure that there is sufficient information on stocks, expiry dates, etc., to facilitate stock allocation and rotation. Linking computerized clinical systems with the computerized stock management system, where the former exists, will greatly facilitate the process.

Capacity building

- The human resource development component of the ART programme, in particular at district and sub-district levels, should be further strengthened. This should be complemented by a mentoring system.

Health infrastructure development for laboratory services

- The MOPH should also further its partnership with the World Health Organization (WHO), the Centre for Disease Control Global AIDS Programme (CDC GAP), universities and research institutes to develop and implement the ARV drug resistance protocol.

Service delivery model

- The district level model to provide a continuum of care for PLHIV in the public health sector should be further expanded. The treatment packages supported by the different ART programmes such as NAPHA, SSS and PMTCT-Care should be harmonized.

Civil society involvement and partnership

- Mechanisms should be explored to allocate funds to expand and sustain the coverage of CCCs to all district hospitals through every possible financing scheme. The nongovernment organization (NGO) grant programme, and other means should be considered for this.

Monitoring and evaluation

- Grant MOPH jurisdiction to monitor the performance of all ART programmes (i.e. SSS, civil society, private sector, research studies) starting with a limited set of indicators and cohort analysis.
- Synchronize monitoring and reporting tools for all public sector ART programmes.

AIDS care financing

- The cost of the programme is highly dependent on the choice of the drug regimen that will be financed by the public sector. To ensure the financial sustainability of the UCS, it is recommended that the RTG clearly delineate the scope of the public sector's commitment in the provision of ART. An open-ended commitment to provide and finance all recommended ART regimens would increase the long-term cost of the programme beyond Thailand's financial means. Alternatively, the public sector's commitment could be a more limited one, to provide a first-line regimen plus second-line regimen without charge, and then palliative care when treatment fails.

Role of Thailand in providing support to countries

- Thailand's role as an international public health oriented training hub should be further strengthened.
- Expertise from Thailand should be made available, through facilitation by WHO and other partners, to support the initiation and expansion of HIV prevention, care and ART programmes across Asia.

Limitations

The third ART programme review underestimated the required scope of the mission. The time allocated for the preparation and conduct of the mission was considered to be too short. Some relevant institutions and key stakeholders from the HIV laboratory network, from services targeting sex workers, IDUs, men having sex with men and migrants, and the national tuberculosis (TB) programme could not be visited. Therefore, it is recommended that a more comprehensive schedule be planned for the fourth programme review.

Thailand is the fourth largest country in the South-East Asia Region with a population of 63.08 million people and a per capita gross national product (GNP) of US\$ 7 010 as of 2003. Based on the overall national health account data derived from National Economic and Social Development Board (NESDB), the national health account has been rising from 3.8% of GDP in 1980 to 6.1% in 2002; 34.1% in the public sector and 65.8% in the private sector. The public health system is organized into national, regional, provincial, district and health centre levels. The country is administratively divided into 12 regions, 75 provinces and 795 districts (Amphoe).

In 2002, there were 10 444 medical doctors and 57 804 professional nurses (ratio 1:5) working under the MOPH which covers 25 regional hospitals, 40 specialized regional hospitals, 70 provincial hospitals, 725 district hospitals and 9 765 subdistrict health centres.²

More than one million Thai people have been infected with HIV since the beginning of the epidemic, and 502 000 have died. Nearly 600 000 people are currently living with HIV and AIDS. A survey on overall causes of death conducted in the Bangkok Metropolitan area in 2000 showed that HIV and AIDS were the number one cause of mortality.

Thailand's national AIDS programme has been in operation since the early nineties. With the establishment of the National AIDS Committee under the Office of the Prime Minister, the national programme was expanded beyond the responsibility of the Ministry of Public Health. The national level staff in the AIDS Cluster focuses on the development of systems and policies. Regional offices implement guidelines and policies.

Thailand is among the few countries in Asia where public policy has been effective in preventing the spread of HIV/AIDS on a national scale, achieving the Millennium Development Goal 6—to halt and begin to reverse the spread of HIV/AIDS by 2015—well in advance of schedule. The estimated number of new HIV infections decreased from 143 000 in 1991 to 19 500 in 2004. This

² Thailand health profile: 2001-2004. Accessed on 19 September 2006 at <http://eng.moph.go.th/HealthSit/index.php>.

achievement must be seen in the context of the enormous impact of the epidemic. Thailand's success in responding to the HIV/AIDS epidemic was due to the firm political commitment, the active roles adopted by national and local political leaders, the sufficient allocation of national resources, the mobilization of multiple sectors and partners well beyond the health ministry and the active involvement of the civil society. The broad based response included a strong HIV prevention programme since the early nineties combined with close monitoring of the programme performance and impact. Another key to success is that the Thai Ministry of Health has been addressing HIV/AIDS care and treatment needs at the early stage of the epidemic.

Two reviews of the ART programme were conducted earlier. The current review of the ART programme, jointly organized by the Ministry of Public Health, Thailand and the World Health Organization was conducted from 12–19 October 2004.

Objectives and Expected Outcomes

2

The objectives of the Mission were to:

- review the current status of implementation of the Thai national ART programme;
- provide recommendations for further scale-up and sustaining of the national treatment programme, and
- discuss the future role of Thailand in supporting countries in the South-East Asia region and globally in scaling up HIV prevention, care and ART programmes.

At the end of the Mission, the following outcomes were expected:

- A concise summary, a comprehensive report and recommendations for the Bureau on AIDS, TB and STIs (BATS) to strengthen NAPHA within the National AIDS Programme.
- A plan to reinforce the capacity of the WHO Country Office and local, national and international partners to respond to the increased demand for support for ART expansion, in the context of a comprehensive response to HIV/AIDS.

3

Methods

The Mission Team included three national and 10 international experts from the Thai MOPH, Chiang Mai University, representatives from NGOs, WHO, UNICEF, the World Bank, UNAIDS, and other multilateral agencies, identified in consultation with the national authorities (**Annex 1**). The Mission programme (**Annex 2**) was planned by the national authorities in close consultation with the WHO Country and Regional Offices. The Team reviewed the national ART programme at the central Government level in Bangkok and visited two regions (Region 3 in the central-eastern part and Region 6 in the north-eastern part) and their respective regional, provincial and district health offices and six health facilities, as well as community-based organizations. (Region 3: Udonthani province and Nongsay district, Region 6: Chonburi province; Nongbualumphu province, Suwanakhuha, and Bangchang districts). The Mission Team conducted focus group discussions as well as interviews with key informants from the MOPH, regulatory authorities, Government Pharmaceutical Organizations (GPO), the Social Security Office, health services at all levels of the health care system, researchers, PLHIV as well as other civil society partners and development partners, including the United Nations Technical Working Group on HIV/AIDS. It collected and analyzed information on programme policy and guidelines, staffing and managerial capacity, linkages between HIV prevention, care and treatment services, procurement supply management, capacity building, laboratory services, service delivery models, civil society and partnership, monitoring and evaluation as well as AIDS care financing.

Evolution of the National Care and Treatment Programme

4

A policy to provide anonymous HIV testing and counselling and treatment of OIs in medical services was outlined in late 1991. Following a decision made by the National AIDS Committee, a national policy of provision of free ARV to low-income HIV-infected adults in government hospitals was announced in 1992.

Phase I – Expansion of HIV counselling and testing, care and support with limited-scale provision of ART (1992-1995)

In 1992 the MOPH started supplying ZDV monotherapy free of charge to low-income, HIV- infected adult patients in public hospitals. In 1995, ZDV+ddl (didanosine) and ZDV+ddC (zalcitabine) were introduced as first-line ARV regimens. At that time the cost for antiretroviral drugs was high and the efficacy of ARV mono and dual therapy was considered to be limited.

The World Bank, in collaboration with the WHO, conducted a joint evaluation of the cost-effectiveness of the ART programme in 1995 that demonstrated that the ART strategies were neither affordable nor cost-effective. In 1993 it was estimated that 1 300 patients received treatment of ZDV monotherapy, which was less than 5% of those needing treatment. The monitoring system basically did not exist. For example, in 1994 there was no follow up for about 70% of the patients who had received an initial monthly supply of ZDV. Of the 11% who recorded any follow up, it was for an average of 3.2 months. Based on the (i) low cost of drugs for OIs treatment and high cost of ARVs as well as (ii) the reported 68% reduction of HIV transmission when administering ZDV for prevention of mother-to-child transmission, the review recommended (i) provision of treatment of OI for all AIDS patients, and (ii) the provision of ARVs plus formula milk to reduce vertical transmission.

Phase II: HIV clinical research network and pilot PMTCT projects (1996-2000)

The MOPH instituted the HIV clinical research network and the PMTCT programme during this phase.

The HIV CRN was coordinated by the AIDS Cluster. The AIDS Cluster established a number of technical advisory groups for the management of OIs for adults and children, ART for adults and children and for HIV laboratory services. A countrywide network of hospitals and clinical research institutions was created to improve the overall HIV/AIDS treatment service delivery system, increase the effectiveness of ART and strengthen clinical research capacity. Activities included development of ART protocols by the AIDS Cluster, universities, public hospitals and research institutions such as **The HIV Netherlands, Australia and Thailand Research Collaboration (HIV-NAT)**, Bangkok (This is a partnership between the Thai Red Cross AIDS Research Centre [TRC-ARC], the National Centre in HIV Epidemiology and Clinical Research [NCHECR] in Sydney, Australia and the International Antiviral Therapy Evaluation Centre [IATEC] in Amsterdam, Netherlands). The protocols were reviewed by a technical advisory group, and once approved the executing institutions would receive free ARVs for the study.

The laboratory group of the CRN developed an efficient national HIV laboratory network for the improvement of diagnostic tools, standard operating procedures, development of “in-house” CD4 and viral load reagents, and new techniques related to the evaluation of HIV vaccines in humans.³

The technical advisory groups updated HIV clinical management guidelines and standard operating procedures for HIV related laboratory tests.

A joint evaluation by the MOPH and WHO in 2000 found that the CRN was a well intended and ambitious programme. The review, however, showed that the capacity of the AIDS Cluster to coordinate HIV clinical research was limited. Nevertheless, the CRN had laid a solid foundation for a public health oriented care and treatment programme.

Based on the data from the PMTCT pilot programmes in 1997–1999 in two regions of Thailand, the national PMTCT programme started in 2000. The major components were voluntary counselling and testing during antenatal care visits, as well as ZDV and formula milk for HIV-positive women and their babies. The Department of Health integrated the programme into the Department’s existing maternal–child health programme (MCH).

The evaluation team recommended that the government subsidized programme should aim at making available prevention means and treatment

³ Evaluation of the HIV/AIDS Clinical Research Network (CRN) Coordinated by the Ministry of Public Health (MOPH), Thailand (2000) Bangkok, Ministry of Public Health Thailand, WHO.

of OIs, and that access to ARVs be expanded in the public sector, taking into consideration equity and sustainability, along with adequate training of health care providers, specific laboratory support, quality counselling, enhanced staff motivation, mechanisms to improve treatment compliance, monitoring and supervision and data analysis.

Phase III: Expansion of ART and PMTCT programme (2001)

The third phase focused on the expansion of the national ART and PMTCT programmes in the public sector.

In 2001, nearly 4 000 patients were on different ART regimens started during phases I and II of the ART programme. The Government supported 1 710 patients in the new ART programme and an estimated 2 000 were continuing ART.

Role of the civil society

From the beginning of the national response to HIV and AIDS, the civil society, in particular PLHIV groups, have played a key role. PLHIV groups were first established in the early 1990s as a means of providing mutual support. About 600 are functioning, mostly hospital-based with a nurse supervisor, and receiving funds from the MOPH or the local government. In 1994, mechanisms were created in every province to mobilize NGOs and communities to work as equal partners with the government sector, with the Government funding NGO and PLHIV initiatives. In northern Thailand for example “day care centres” were established within district hospitals providing space for PLHIV groups to meet regularly and where the main components of HIV/AIDS care, support and treatment, under the supervision of a nurse, are provided. Day care centres play a key role in providing education and information on HIV/AIDS, in supporting income generation schemes and in arranging home visits. Some financial support was also provided from the Social Welfare Office.

In 1998 a coalition of local and international NGOs and PLHIV groups began to challenge the high prices and monopolistic situation of ARVs, and started to lobby for universal access to prevention of OIs and ART. In 1999, an NGO consortium on AIDS was formed to empower civil society and the community.

In 2000 the Thai network for people living with HIV/AIDS (TNP plus), Médecins Sans Frontières (MSF) and the AIDS Access Foundation (AAF) launched a campaign aimed at increasing access to cotrimoxazole prophylaxis while continuously lobbying for access to ART.

This full involvement of communities has established a solid basis for the expansion of ART in Thailand.

5.1 National antiretroviral treatment targets and programme performance

The programme goal is to provide universal access to ARVs for all people living with HIV.

With the adoption of the policy of expanding the national ART programme the MOPH set the ambitious target of providing free ARVs (at least triple combination therapy) for 50 000 people by the end of 2004. This target includes all adults and pediatrics AIDS cases who received ART. During the 15th International AIDS Conference 2004 held in Bangkok between 11 to 16 July 2004, the Prime Minister of Thailand, His Excellency, Mr Thaksin Shinawatra declared the target of providing universal access to ART for PLHIV. The universal coverage target aims to put 80 000 PLHIV on treatment by the end of 2005.

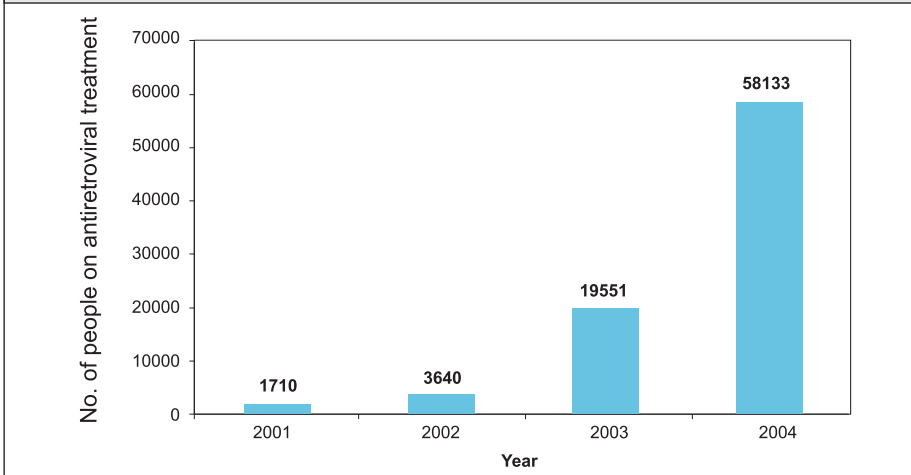
The calculations of the treatment targets were based on the Projections for HIV/AIDS in Thailand: 2000–2010, which estimated the number of PLHIVs and projected the number of new HIV and AIDS cases and deaths per year.⁴

There has been an extraordinary expansion of the Thai ART programme in the past three years, from providing ART to 1 710 in 2001 to 58 133 at the time of this review (**Figure 1**). The national ART programme in 2004 covered more than 50% of the people in need of ART in all districts (795) of the country.

The number of hospitals participating in the programme increased from 119 in 2001 to 491 in early 2003 and 914 in August 2004 (**Figure 2**).

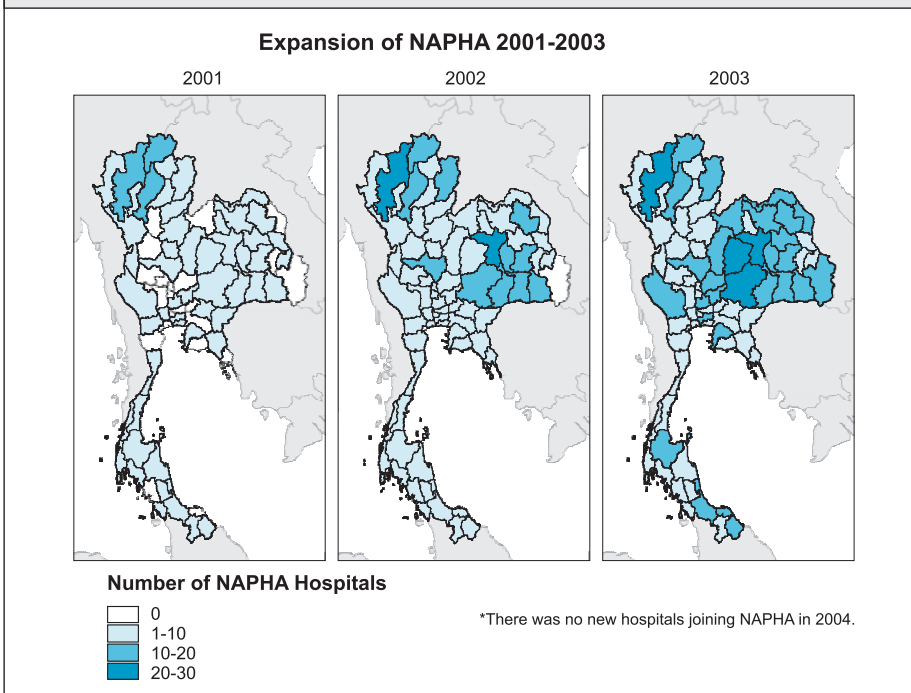
⁴ Thai Working Group on HIV/AIDS Projection. Projections for HIV/AIDS in Thailand: 2000-2020 (2001). Bangkok, AIDS Division, Department of Communicable Disease Control, Ministry of Public Health.

Figure 1: Expansion of the national ART programme 2001-October 2004.



Source: Ministry of Public Health, Thailand

Figure 2: Expansion of NAPHA programme sites, 2001-2003 (Courtesy of Ministry of Public Health, World Bank)



Source: Ministry of Public Health, Thailand

5.2. Review of current status and recommendations

Framework for implementing NAPHA

A number of important steps were taken towards reaching the treatment target. The eleven key activities which are required for implementing ART as a public health programme and which were undertaken are as follows:

1. developing national programme policy and guidelines
2. increasing staffing and managerial capacity
3. developing simplified ART guidelines for adults and children
4. linking prevention to care and treatment
5. strengthening procurement and supply management
6. building capacity of health care workers
7. strengthening health laboratory infrastructure
8. optimizing service delivery models
9. increasing civil society involvement and building partnerships
10. regular monitoring and evaluation
11. sustained AIDS care financing

5.2.1. Programme policy and strategies

A number of national and regional consultations involving policy makers, programme managers, HIV physicians, scientists, NGOs and PLHIV were held under the auspices of the AIDS Cluster to plan the ART programme policy and strategies. As the programme would cover only a limited number of PLHIV during the first year, a number of strategic options were discussed (**Table 1**).

At the time of the review, only first-line regimens were subsidized by the RTG. However there have been a number of cases receiving second-line treatment regimens through clinical research projects supported by RTG. Patients who do not tolerate or fail on one of the recommended first-line regimens are discontinued from the ART, but still receive other supported government programmes such as OI prophylaxis and treatment, care and support services.

The guiding principle of the Thailand ART implementation plan was that it would allow flexibility and regional variation as well as revision with increasing experience gained.

A number of research collaborations in Thailand have significantly contributed to the design of the national treatment programme by providing

Table 1: Strategic options of the national Access to Treatment Programme -1 (ATC -1)

Strategies	Options
Define target groups	Children and adults presenting to government hospitals Mothers who participated in the national PMTCT programme
Define enrollment criteria	<p><i>Treatment history</i></p> <ul style="list-style-type: none"> ● Antiretroviral treatment naive <p><i>Clinical and laboratory</i></p> <ul style="list-style-type: none"> ● Confirmed positive HIV test result ● Clinically symptomatic HIV and AIDS ● CD4 less than 250 cells/uL <p><i>Social</i></p> <ul style="list-style-type: none"> ● Contact address ● Literate (self or family member) ● Thai national ● Disclosed HIV status
Enrollment process	Community advisory board including hospital staff (medical doctor, nurse, counsellor, community and PLHIV representative)
Determine treatment regimens and subsidized package	Free first-line treatment regimens (See Annex 4) and CD4 monitoring every 6 months Prevention and treatment of OIs through out-of-pocket expenditure; subsidized for low-income groups from other sources
Expansion plan	First year quota: 1 500 patients in 112 government hospitals <ul style="list-style-type: none"> ● 54 district / provincial and district hospitals in six high prevalence provinces in northern Thailand (Region 10 quota 800 patients) ● 58 regional / provincial hospitals in the remaining regions (quota 700 patients) Expansion to district hospitals in all regions during second year
Capacity building plan	Two day core curriculum for health care teams (medical doctors, nurses, counsellors, laboratory technicians, pharmacist) Training in 4 regions of Thailand with facilitators, devised by the AIDS Cluster in consultation with Technical Advisory Groups
Monitoring plan	Paper-based recording and reporting forms Data flow from hospitals to regional offices determined <ul style="list-style-type: none"> ● Data collection at regional offices ● Data analysis at central level

very specific answers to policy makers and programme managers on strategic and programme planning/implementation questions. For example, the work of the HIV-NAT and other institutions such as the Thai-US Collaboration (TUC), Perinatal HIV Prevention Programme (PHPT) and other research institutions have made important contributions to the development and implementation of a number of treatment-related policies and programmes in Thailand as well as in the region. The HIV-NAT played an important role in designing therapeutic strategies and development of treatment guidelines, conducting pharmacokinetic studies, developing laboratory assays and capacity building, such as graduate and post-graduate training.

Recommendations

- The Thailand model for national ART programme planning and implementation should be documented and made available in the public domain;
- Expansion of the ART programme towards universal access should be continued as planned. Strict attention should be paid to regular adjustments of treatment and monitoring strategies, particularly if second-line and salvage treatment regimens are included in the near future.

5.2.2. Staffing and managerial capacity

The rapid expansion during the past three years has not been accompanied by a proportional increase in staff at the central and peripheral levels, outstripping the managerial capacity required for ensuring high quality expansion and programme monitoring. Despite the 30-fold expansion in programme coverage only a few additional staff have been allocated to the programme at the central and peripheral levels.

Central level

An ART team of three medical doctors, three nurses, one pharmacist, one laboratory technician, one statistician, two epidemiologists, two data programmers and one data manager is situated within the AIDS Cluster for coordinating training and supervision, technical support, commodities, logistics and supplies, monitoring and evaluation. Ad-hoc working groups consisting of technical staff from the AIDS Cluster, the Bureau of Health Promotion and implementing partners were established to support the ARV team in specific tasks upon request.

Regional/provincial level

The implementation capacity of the Ministry at the regional and provincial levels to coordinate, implement and monitor the programme was strengthened but considered inadequate. Provincial AIDS Coordinators were assigned in

75 provinces. However, they were responsible for a number of other tasks as well. The regional AIDS Coordinators guide supervision teams (existing staff) with respect to the provincial and district level ART programme.

Without an increase in central and regional level staffing, field supervision and monitoring from the central and regional levels cannot be adequate. Lack of optimal staffing at the central level is reflected in the lack of detailed analysis and documentation of the analysis results. At the regional and provincial levels more documentation of analyzed data is available. Monitoring and supervision visits have been conducted hierarchically from central level to regional level to provincial level to hospitals, however, more supervision activities are still needed. In Region 3 where 63 hospitals are in the programme, only 50% of the planned biannual supervision visits could be carried out. The regional/provincial level ART Coordinators mentioned that there were constraints in the coordination between hospitals and between district and provincial hospitals, and that there was no time for regular team meetings.

Insufficient staffing and a high workload were of particular concern in large provincial/ regional hospitals. The ART programme expansion in Region 3, which includes seven regional/provincial hospitals, has exceeded the number of patients forecast, leading to staff burn out.

For example, in Chonburi Provincial Hospital only two medical doctors and two nurses/counsellors are working in the HIV clinic, out of the 159 physicians and 517 nurses servicing the entire 823-bed hospital. Due to the high case load, with more than 1 000 patients registered in the ART clinic, a Sunday clinic was established without compensating staff for overtime. The laboratory capacity for CD4 enumeration and other diagnostic tests is also overstretched.

Similarly at the district level the high workload was a major issue. Only a few doctors (hospital director and “junior house officer”) are looking after all types of disease specialties including HIV, serving both in-patient wards and the out-patient department. Of particular concern were the high turnover of junior physicians, lack of knowledge in management of ARV related adverse effects, paediatric treatment, laboratory capacity and pharmacy services.

The use of PLHIV volunteers, recruited and trained through the CCC project funded by GFATM, was found to have relieved the workload in all sites visited. The trained PLHIV volunteers, who helped physicians by retrieving records, assessing patient needs and filling out forms, were perceived as being of great help, in addition to providing treatment support.

Recommendations

- The proportion of resources allocated to staff (e.g. short-term consultants, temporary staff) should be increased, in particular during the initial rapid expansion of the ART programme. Immediate arrangements should be made to strengthen the AIDS Cluster's ART Unit and create additional regular positions to appropriately staff the Cluster commensurate with its current extensive responsibilities. The increase in the AIDS Cluster's staffing should be carried out with emphasis on strengthening supervision and monitoring, human resource development, and procurement and supply management.
- Provision for full-time ART coordinators at regional and provincial level should be made so that coordination of activities, regular team meetings at regional and provincial levels, monitoring and regular supervisory visits to all health facilities can be carried out as planned. This should include strengthening of the managerial capacity of the regional/ provincial level ART coordinators.
- Quarterly Regional Advisory Board meetings should be conducted for regular analysis and interpretation of data to improve programme performance and service delivery. Regular progress reports should be sent to the central level and sites.
- The recruitment of trained PLHIV volunteers under the GFATM-supported comprehensive care project should be sustained by the provision of central or local level funds.

5.2.3. Clinical management and antiretroviral treatment guidelines

The AIDS Cluster has developed the following ART guidelines:

- HIV/AIDS clinical management for children and adults, revised and reprinted in 2000 and 2004;
- Three treatment protocols named Access-to-Care 1, 2 and 3 (ATC-1, ATC-2 and ATC-3). ATC-3 was later named NAPHA.
- Implementation guidelines for the NAPHA programme, the first edition, being printed in 2004.

With increasing programme experience and the availability of new and cheaper fixed- dose combinations (FDCs), treatment regimens were adjusted in 2002 and 2003 based on the cost of drugs (locally produced drugs and availability of FDCs). The first treatment protocol (ATC-1) in 2000 recommended the use of eight first-line treatment regimens for adults and 12 regimens for children. The protocol was adjusted in 2002 (ATC-2) to three first-line treatment

regimens for adults and six for children. The first-line regimen in this protocol included a FDC containing d4T/3TC/NVP (GPO-VIR) (**Annex 4**). The recommended paediatric regimens included dual combinations consisting of d4T+3TC and ZDV+3TC as first-line regimens. The 2003 (ATC-3) adjustment (**Table 2**) allowed patients who started on ATC-1 and 2 to be transferred to the NAPHA programme under certain conditions. In addition there were adjustments for enrollment criteria and treatment history. The third adjustment for NAPHA allowed both treatment naïve and ART experienced individuals to be enrolled in the programme (**Table 3**). Also asymptomatic HIV-infected persons with CD4 count <200/uL were included.

NAPHA devised diagnostic tests for adults subsidized by the centrally sponsored scheme (**Table 4**).

It was noted during site visits that adults were on more than 10 different treatment combinations due to a shift in regimens from phases I and II of the ART programme to ATC-1, ATC-2 and finally NAPHA. The revision of enrollment to the latest protocol reflects the effort to harmonize the treatment regimens used with the most recent recommendations.

The Mission Team noted some misconceptions among health facilities on how the three regimens in the Thai programme relate to the proposed WHO first-line and second-line regimens. For example, if the protease inhibitors (PIs) IDV/r containing regimen was called second-line regimen, or even sometimes salvage regimen. In fact, the dual nucleotide backbone and PI containing regimen is regarded as a choice in first-line regimen. The understanding to this point should be included in further training for health care worker.

Side-effects

Metabolic side-effects of ARVs are of major concern. The reported side-effects from ARVs varied from site to site. Side-effects associated with d4T, such as lipodystrophy, were reported in up to 90% of patients on d4T-containing regimens at some sites, requiring switching to ZDV.

Diagnosis and treatment for children

The majority of HIV-infected children are identified through the national PMTCT programme. Of all clients enrolled under NAPHA every month around 8% are children (**Figure 3**).

A number of problem areas were reported as follows:

- late diagnosis of HIV infection in infants born to HIV-infected mothers, and
- limited availability of paediatric formulations.

Table 2: First-line treatment regimens in the National Access to Treatment Programme for People living with HIV/AIDS (NAPHA) in 2004

Adults	Cost (in US\$)	Forecasting needs (%)
d4T/3TC/NVP (Fixed-dose combination)	30	80
d4T+3TC+EFV	65	15
ZDV/3TC + NVP (Fixed-dose combination plus)	60	marginal
ZDV/3TC + EFV (Fixed-dose combination plus)	80	marginal
d4T+3TC + IDV/r	117	5
ZDV/3TC + IDV/r (Fixed-dose combination plus)	133	marginal

Table 3: Enrollment criteria for NAPHA

Adults	Children
ARV naive	ARV naive
<ol style="list-style-type: none"> Clinical AIDS Advanced HIV infection with CD4 count < 250 cells/μL or Asymptomatic HIV infection with CD4 count < 200 cells/μL 	<ol style="list-style-type: none"> WHO Clinical Stage B or C or CD4 count < 20% or
ARV experienced	ARV experienced
<ol style="list-style-type: none"> Rollover of those on GPO-vir from ATC-1 & 2 with good clinical response to NAPHA Dual NRTI and VL < 50 copies/ml or Triple therapy and VL < 50 copies/ml 	<ol style="list-style-type: none"> Rollover of those on GPO-vir with good clinical response from ATC-1 & 2 to NAPHA Dual NRTI and VL < 50 copies/ml or Triple therapy and VL < 50 copies/ml

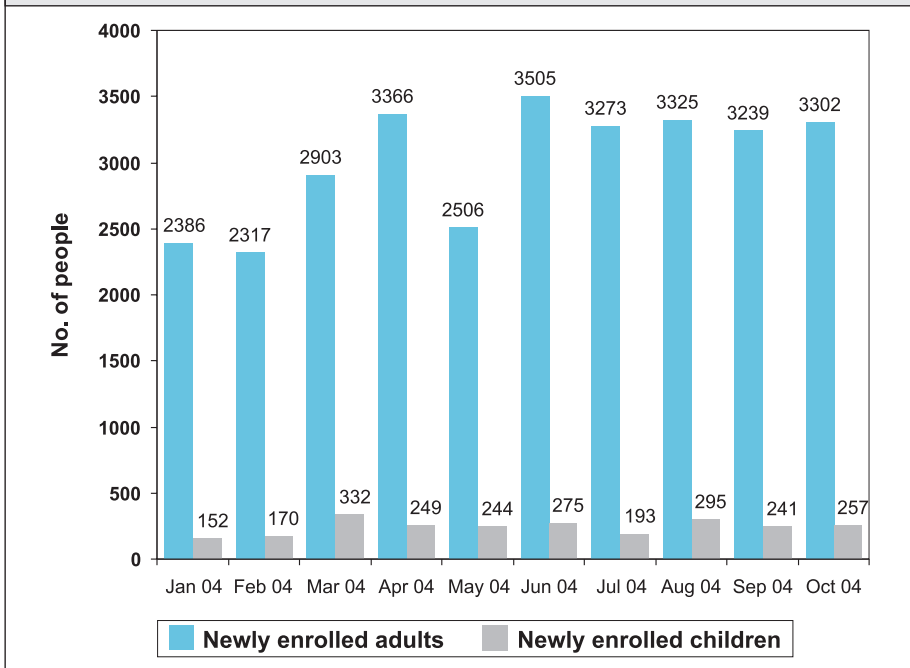
μ L: microliters, VL: viral load

Table 4: Diagnostic tests recommended by NAPHA for adults

Subsidized
CD4 monitoring every 6 months after baseline
FBC
Chest-X-ray
ALT
Optional (out-of-pocket payment)
Blood sugar, lipid profile, liver function tests

FBC: full blood cell count; ALT: alanine aminotransferase

Figure 3: Number of newly enrolled adults and children in the national ART programme January-October 2004



Source: Ministry of Public Health, Thailand 2004

The diagnosis of HIV infection in children born to HIV-infected women follows WHO recommendations. The diagnosis has to be based on the HIV-antibody test which delays the time of diagnosis. However PCR for early diagnosis is only available at selected tertiary level hospitals and the costs are not yet covered by the MOPH. Therefore the diagnosis of HIV infection at 4-6 weeks after birth is rarely done.

Currently, there is an attempt and plan to expand PCR services to the regional offices of the Medical Science Department to provide early diagnosis for children born to HIV-infected women. This has implications for the prevention of opportunistic infection in infants born to HIV-infected mothers. As the likelihood of HIV in infants is low, due to the high coverage and efficacy of the current PMTCT regimens, there is no policy to provide cotrimoxazole. As mentioned by the HIV paediatricians interviewed, there is no consensus among them about providing cotrimoxazole prophylaxis to infants. Only some sites, particularly those attached to universities and clinical trials have made individual decisions to prescribe cotrimoxazole to all infants born to HIV-infected mothers.

It was also noted that in some sites up to 23 different paediatric treatment combinations were in use. Some children are still on mono therapy such as ddl or dual therapy. In some sites such treatment is maintained as long as children are clinically and immunologically stable.

Available formulations used for paediatric treatment:

- ZDV (syrup), 3TC (syrup), d4T (tablet), NVP (30 and 40 mg tablet), NVP (syrup)[†], EFV (200 mg capsule)[§], LPV/r syrup[‡]
- GPO-vir (older children).⁷

Treatment failure with the above combinations was reported in 5% of cases. There is no government policy and thus no standardized approach to second-line and salvage treatment for children.

Paediatricians interviewed stated that 20–30 tertiary level hospitals are providing paediatric care, and capacity was not a problem at the tertiary level. However, there is a lack of capacity to treat children at the district level.

Two children's hospitals in Bangkok reported having approximately 200 children on treatment. They run paediatric HIV clinics once or twice a week (50–80 patients on average).

The interviewed paediatricians felt that the paediatric clinical management guidelines need to be updated, particularly in view of the PMTCT programme administering ZDV/NVP preventive therapy to the mother and child. A partnership was established with the Department of Medical Services for regularly updating treatment guidelines, but this was not considered adequate by the interviewed paediatricians.

There is concern from paediatricians that current PMTCT guidelines may be suboptimal, given Thailand's wide use of NVP-containing first-line treatment regimens for children and adults. Since the current practice does not allow for pregnant women in need of treatment to start ART during pregnancy, there is major concern about emerging drug resistance with the use of a single dose of NVP-containing regimens for PMTCT.

Due to lack of low-cost formulations paediatricians and pharmacies crush tablets and dilute the contents of capsules meant for adult treatment. For example the minimum weight for EFV is 10 kg using a dosage of 200 mg. 50 mg capsules are sometimes available to facilitate use of weight-adjusted dosage for 10–30 kg. With no paediatric formulation available the contents of EFV capsules is diluted and portioned out for paediatric treatments. With no liquid formulation being available, tablets are divided into 1/8 for children up to 5 kg.

* Opened bottles can be stored in the fridge for a certain period of time resulting in wastage problem.

§ The content of the EFV capsule is diluted and the solution is portioned out with a syringe.

‡ For children under 10 kg this means that a tablet has to be cut into four. A hospital pharmacist trains the care-givers how to do so.

Successful treatment of children will soon generate a cohort of adolescents on ART with special needs for psychosocial support.

Recommendations

- The use of d4T as the preferred drug in first-line treatment regimens should be reconsidered in view of high proportion of lipodystrophy observed.
- A major effort should be made to harmonize treatment regimens for adults and children with those recommended in the NAPHA programme.
- There should be provision for those who fail first-line therapy to receive second-line therapy in the government supported programme.
- There is a need to regularly revise and update adult and pediatric treatment guidelines, including the recommendation for second-line treatment. The use of dual NRTIs as first-line treatment regimens for children should be abolished. The use of a PI should be reserved for second-line treatment regimens.
- Efforts should be made to make available pediatric formulations and lower dose capsules and tablets.
- Given the success of the PMTCT programme and the resulting reduced HIV incidence in children, treatment can and should be improved for the few infected.

5.2.4. Linking HIV prevention to care and treatment services

PMTCT and Care

The prevalence of HIV infection among the 800 000 women who become pregnant each year is 1%–2% and an estimated 12 000 children are born at risk for mother–child HIV transmission annually. Without intervention, 3 600 children would become infected every year, accounting for about one-seventh of all new HIV infections. Since 2000, Thailand has been implementing a national PMTCT programme in all MOPH hospitals (Box 1). The Department of Health, which is responsible for maternal and child health services and health promotion, oversees the administration and budget of the PMTCT programme.

Box 1: The national PMTCT programme offers:

- HIV testing and counselling for all pregnant women;
- ARV for the prevention of MTCT (adjusted in December 2003):
 - ZDV for HIV-positive pregnant women from 28 weeks;
 - NVP single dose intrapartum and to newborn infant; and
 - ZDV for all children born to HIV-positive women (1 week if mother's treatment started on or before 34 weeks and 6 weeks if mother's ZDV treatment was less than 4 weeks)
- Infant formula for 12 months; and
- Care for mothers and children.

The programme provides support to HIV-positive pregnant women to inform their partners about their HIV status, and also offers HIV counselling and testing to the partners. Only about 50% of HIV-positive pregnant women inform their partners or other relatives about their HIV status.

In 2001, PMTCT was expanded to include a care programme, called the PMTCT-Care programme, which links the PMTCT programme to the national ART programme. At the central and regional levels there seems to be a lack of coordination between the PMTCT-Care and the NAPHA ART programmes, particularly with regard to the budgeting, procurement and supply of ARVs and in monitoring the performance of those receiving ART in the two programmes. The Mission Team was unable to study the model for PMTCT-Care and ART service delivery at health facility level.

PMTCT-Care was piloted in four provinces (Box 2) in 2001-2002 and expanded to all regional, provincial, and community hospitals in 2003. As part of this programme, HIV-infected mothers, their partners and children receive care, support and ART. The goal of this programme is to keep the children as healthy for as long as possible without ARVs, and to decrease the number of orphaned children.

As part of PMTCT-Care, CD4 count is offered to the mother before 8 weeks post-partum. If the CD4 test result warrants treatment, the mother will receive ART according to the NAPHA protocol. If no treatment is required yet, the mother is offered a free CD4 count every 6 months thereafter. Her partner also has the opportunity to be enrolled in the programme. However, few men have been tested so far (**Box 2**).

Box 2: PMTCT-Care pilot programme**HIV-infected mothers (n=1158)**

Women received CD4 screening	612 (52.8%)
CD4 count < 200 or symptomatic	189 (31%)
— On ART	170 (90%)
Partners received CD4 screening	164 (14%)
CD4 count < 200 or symptomatic	68 (41.5%)
— On ART	55 (80.8%)

HIV-infected children (n=32)

CD4 count < 200 or symptomatic	24 (75%)
— On ART	18 (75%)

Source MOPH

An expert committee of the Ministry of Health will review the present guidelines on PMTCT in light of possible NVP resistance and the new WHO guidelines on PMTCT.

Recommendations

- CD4 count during pregnancy should be encouraged to identify pregnant women who require first-line ART. In this case, ART should be provided through the antenatal clinic or the women should be referred to NAPHA.
- The PMTCT-Care programme should be streamlined at the programme and service delivery levels between ANC, post-partum care and NAPHA, in particular with regard to budgeting, procurement and monitoring of care, treatment and follow up for HIV in pregnant women, their partners and children.
- Strengthen ongoing efforts on counselling and support to HIV-positive pregnant women to disclose their HIV status to their partners and encourage their partners to access HIV counselling and testing services. This will increase access to the care and treatment programmes of PMTCT-Care and NAPHA.

Populations most at risk and vulnerable to HIV

There are no specific data available about enrollment in prevention programmes related to NAPHA by populations most at risk and vulnerable to HIV, such as IDUs, sex workers, and migrants.

Injecting drug users

The proportion of IDUs who are HIV infected remains high and the prevalence of HIV infection among them has been rising in the past few years, reaching 42.5% in the sentinel surveillance round in June 2004. The MOPH acknowledges the high prevalence of HIV among IDUs but is unable to fully support harm reduction approaches and provide care and treatment programmes addressing the particular concerns of this population.

Thailand's "War on Drugs" policy, which was launched by the Government in February 2003 to eliminate narcotic drugs and drug trafficking, aims to separate drug users from drug traffickers and to ensure that drug users and addicts have access to treatment and rehabilitation, while traffickers are duly punished by stringent law enforcement measures. Drug users are encouraged to voluntarily enter treatment and rehabilitation programmes but those who do not are actively sought out by the police and local community authorities and brought into compulsory treatment.

Needle-and-syringe programmes are generally not acceptable in Thailand, instead methadone substitution therapy is preferred.

Thailand has had methadone clinics since 1989. However, few clinics have been established outside of Bangkok. As recommended under NAPHA and as reported to the Mission Team by several physicians and NGOs, with a few exceptions, the current practice is not to include active drug users in the NAPHA programme.

Bangkok has 20 methadone clinics with 16 clinics operating under the Department of Health, two under the Thaksin hospital and two clinics under the Drug Abuse Prevention and Treatment Division.

The good public health infrastructure, the availability of some drug substitution treatment, particularly in Bangkok, and the provision of ART provide an immense opportunity to offer a more comprehensive prevention, care and treatment package to IDUs.

The current political and legal environment makes the implementation of prevention, care and treatment targeting IDUs difficult. The number of IDUs on substitution treatment in Bangkok has declined steadily. Treating drug users with ARV medicines is complex and requires special aspects to be taken into consideration. There are the interactions between pharmacotherapy and ART *in vivo*, increased concerns of hepatotoxicity and other medical complications when dealing with HIV/hepatitis co-infection, which is common in this population. The adherence to ART for active drug users is also a problem.

Sex workers

The MOPH supports the distribution of condoms for sex workers and also in health facilities for distribution at counselling services and antenatal clinics. However many hospitals visited by the Mission Team reported that the number of free condoms provided was inadequate.

Condoms are widely available in all drug stores and convenience shops at Thai Baht 10-20 (US\$ 0.25-0.5) per condom. Although condoms were found to be cheap in all the rural sites visited, the Review Team was told that the majority of HIV-infected persons were below the poverty line and could not afford to buy them.

According to health care workers, sex workers are enrolled in NAPHA without any discrimination. However, there were issues concerning sex workers, many of whom come from the north and north-east to work in Bangkok and other areas. Transferring health registration from one district to another was made easier last year, thus making it easier for sex workers, who are mostly migrants, to access health care. However, most sex workers do not live in registered households but in short term rental accommodation or in their workplaces. Also, many of them are non-Thai. These factors may mitigate against their registering for health care, and hence being eligible for ART programmes.

Migrant workers

Migrant workers and other non-Thai citizens, possibly numbering up to two million people are often particularly vulnerable to HIV infection. Hill tribes living in Thailand for many generations are often not registered. A special survey in northern Thailand reported HIV prevalence among migrants around 3%-7%. Registered migrants are covered for health care up to the amount of Thai Baht 1 500 (US\$ 37.3)

HIV-positive migrants find it difficult to enroll in HIV prevention, care and ART programmes because of language issues, mobility and lack of legal status in the country. Some efforts have been made to develop communication materials for migrants for HIV prevention by the MOPH. It is reported that several international and national NGOs are willing to provide ART to migrant workers; the barrier to this being the regulation against hiring or paying stipends to non-local assistant health care workers who can speak the language of migrant workers. Those who are not registered with the national health system also include the poor in urban centres and indigenous hill tribe peoples, which may make them vulnerable to HIV infection. It remains unclear how many have access to NAPHA.

Recommendations

- The MOPH should strengthen the current prevention programmes to accompany treatment scale-up. This includes the provision of free and easily accessible condoms at the community level for all PLHIV, youth and at-risk communities, and not only as part of the 100% Condom Use Programme.
- The Government should ensure an enabling environment for preventing HIV infection and providing care and treatment to drug users. This would require stronger collaboration between the MOPH and the Narcotic Control Board as well as the police forces.
- Increased capacity among health care providers and police to provide comprehensive HIV/AIDS prevention, care, support and treatment including outreach to IDUs is required. Methadone maintenance and outreach contribute to increasing adherence of active IDUs to ART. It is necessary to expand the ongoing methadone maintenance services to prevent HIV transmission among IDUs and to include ART. Centres offering methadone and ART could be made into model sites for providing comprehensive HIV/AIDS prevention, care, support and ART to IDUs.
- The MOPH should explore means to ensure that PLHIV below poverty line are provided with free condoms and sustain condom use in every sexual act.
- The Thai NGO sector and PLHIV groups would be of help for enrolling marginalized groups including drug users, sex workers, and mobile populations. It is recommended that consultations be organized with relevant groups to identify criteria and methods for access to continuous care and ART for these populations.
- The MOPH should advocate for an enabling environment for international and national NGOs, willing to provide ART to non-Thai migrant workers and for hiring or paying stipends to assistant health care workers who can speak the language of migrant workers to work in HIV prevention, care and ART programmes. It may be helpful to conduct cross-sectional surveys in health care settings to study the proportion of migrant workers and unregistered populations in need of HIV care and treatment.

5.2.5. Procurement and supply management of low cost antiretrovirals and diagnostics

The fiscal year in Thailand runs from October to September. Under NAPHA, the procurement of selected ARVs and CD4 reagents is centralized following a structured protocol. A procurement plan is developed and submitted to the Director General of the Department of Disease Control for approval. This plan is scheduled into four quarters for procurement purposes.

A drug stock management working group was established to coordinate procurement and stock management of HIV drugs including ARVs from national generic manufacturers and originator companies.

Health facilities estimate and order stock using monthly consumption reports (which include procurement and programme information) that are collated and reviewed at the regional level. The procurement information includes stock levels, stock on hand, the month of issue, expiry dates and batch numbers. As a general rule, both the facility and the regional office keep a maximum stock of three months' supply. Programme information reflects the numbers of patients enrolled in different treatment regimens. After screening the requirements of the health facility, the regional office submits the reports on a monthly basis to the national coordinators at NAPHA, who in turn generate orders with suppliers. In most cases, suppliers deliver directly to the regional office.

Public health facilities are obliged by law to use the Government budget to procure medicines from the GPO. As the GPO produces a wide range of generic medicines, over 80% of hospital medicines are bought from it. If products are available from the GPO, no other suppliers are considered. Outside of ARVs, every hospital has a budget from the Ministry with which it can directly purchase OI drugs, tests and reagents.

The procurement cycle has shortened since July 2004 due to a direct delivery system for ARVs, called Vendor Management Inventory (VMI) system that allows health facilities to order directly from the GPO.

ARVs

Presently, the estimated ARV requirement is planned centrally by the regions and provinces. The initial forecasting of ARV needs was done according to a standard ratio between the three NAPHA regimens, i.e. 80% of patients on regimen 1, 15% of patients on regimen 2 and 5% of patients on regimen 3. Whilst this strategy greatly facilitated initial roll-out, maintenance of the system will require adjustment according to the actual enrollment in the different regimens.

Shipments to regions or facilities occur on instruction from NAPHA. ARVs ordered from the GPO are moved into an on-site transit warehouse as soon as payment is received. ARVs are distributed to the participating hospitals through the regional offices of Disease Control and Prevention. Facilities then confirm receipt of delivery to NAPHA. No problems with distribution have been reported.

ARVs that are not manufactured by the GPO are purchased from other suppliers and distributed by the AIDS cluster as per the traditional system of

delivery. These include EFV (for which there is currently, June 2004, a supply shortage and it is being rationed), saquinavir, lopinavir/ritonavir and indinavir. The MOPH has been able to successfully negotiate with the pharmaceutical companies to reduce lead times for delivery once purchase orders are issued. Procurement cycles for ARVs have come down to two to three months for GPO and six months for each for Merck, Roche and Abbott from the previous time of eight to ten months.

The PSM component of the national ART scale-up strategy has been very well planned. The staff involved was well prepared and equipped with appropriate tools to assist them. The effectiveness of this preparation became apparent, particularly during the months of August to October 2004, when GPO supplies were delayed. All facilities visited by the Mission Team reported shortages in the supply of key products. At all levels the supply team came up with innovative ideas to overcome this problem. Solutions included smaller and more frequent deliveries from regional stores to hospitals, redistribution between facilities, and even borrowing medicines from patients through their community networks. This coordination prevented treatment interruptions occurring without affecting the rapid increase in the number of people on ART.

Orders for ARVs supported through different funding mechanisms, including GFATM and Social Insurance, are placed directly by facilities to suppliers. The stock ordering and reporting systems are separated. The ARVs needed for PMTCT are not part of the centralized procurement mechanism of NAPHA. The Department of Health, the responsible agency in pursuing PMTCT set up its own system to procure ARV in PMTCT. The prevention activities are clustered under the PMTCT programme which has its own centralized procurement and distribution mechanism. For PMTCT-Care programme, ARV procurement, though operated by the Department of Health, is similar to NAPHA procurement system. The management of stocks from different funding mechanisms and programmes has significantly increased the workload of hospital staff.

There is a liquid formulation of NVP, 200 ml bottle of NVP syrup for PMTCT. However, since the dosages are small and the syrup has a short shelf-life once the bottle is opened there is wastage in smaller ART centres where the patient load for PMTCT is small. Because of this, for paediatric treatment, smaller ART centres use either crushed tablets or prepare a liquid formulation from tablets.

Reagents for CD4

CD4 reagents are procured centrally by NAPHA and distributed through the traditional replenishment system to the testing centres based on forecasts for CD4 enumeration. Financial subsidies to the testing centres as incentives,

and part-time remuneration for staff were also provided. The increase in subsidy has increased access to CD4 testing, as the cost per test charged to patients with CD4 counts above 200 cells/uL was reduced from Baht 500 (US\$ 12.4) to Baht 200 (US\$ 5.0).

The Team was unable to assess the availability of, and access to, CD4 testing in general. It was noted that smaller facilities send CD4 samples for testing to a central facility.

The AIDS Cluster and the Department of Medical Sciences planned for expansion of facilities for biomedical monitoring of ART which will include CD4 testing, viral load and ARV drug resistance testing during the planning phase. The Team did not assess access to viral load measurement and relevant supplies.

Drugs for prevention and management of OIs and sexually transmitted infections (STIs)

The supplies needed for the prevention and management of OIs and/or STIs are not sourced through NAPHA but according to the standard procurement procedures for pharmaceuticals, i.e. direct procurement by health facilities from suppliers using facility budgets according to the Essential Drugs List (EDL). This means that under the 30-Baht scheme there should be universal access to these products (See **section 5.2.11.**)

While basic pharmaceutical items such as cotrimoxazole are not a problem, treatments for some OIs are not always available. Barriers include extremely high prices (e.g. gancyclovir, rifabutin and clarithromycin), lack of global supply (e.g. dapsone and pyrimethamine) and production interruption (e.g. fluconazole).

Some of the facilities visited identified the cost of OI medicines as a major contributing factor to the predicted over-expenditure beyond their allocated budget. This is a key concern as hospitals may end up in increased debt to their suppliers, which in turn may lead to interruption of supplies.

HIV test kits

Health facilities procure HIV tests kits directly from suppliers. The HIV testing algorithm includes screening with Serodia®, confirmation with Determine® and Enzygnost® as the gold standard.

The cost to the patient is Baht 120 (US\$ 3) regardless of the number of tests required to confirm the diagnosis. The real costs per test are Baht 60 (US\$ 1.49), Baht 120 (US\$ 3.0) and Baht 40 (US\$ 1.0) respectively.

The paediatric HIV testing strategy requires infants to be tested for antibodies at the age of 12 months and to be retested at 18 months if the results are positive.

It was reported that some provinces pool their procurement.

Essential medicines list (EML)

The EML was last revised in 2002 when ARVs were not included. As ARVs are now part of the country's universal access strategy, they were included as an addendum earlier this year. The complete list will be revised within the next two years.

The inclusion criteria for the EML are not clear. For instance, EFV 200 mg is included while the 50 mg and 600 mg formulations are not. This decision has various implications with regard to cost, adherence and ease of administration. According to the NAPHA formula, adults require 600 mg EFV daily, which if taken as one capsule is both cheaper than taking multiple capsules (Baht 1 722.70 (US\$ 42.8) versus Baht 2 140.00 (US\$ 53.2) per month) and reduces the pill burden. In children, dosage titration in increments of 50 mg, is required for body weights of 15–32 kg.

If a drug is not on the national EML, it would not be available free of charge. Additions to the GPO product line include the launch of paediatric formulations in December 2005. Its stavudine syrup, which is part of the FDC, has just six months of shelf-life and consequently, reliable information on its demand and usage is needed.

Financing and pricing of core commodities

For 2005, the budget submitted was intended to cover 80 000 people on ART. However, the Bureau of Finance had only approved a budget for 50 000.

During the last four years the GPO prices have stayed the same despite local competition from generic producers who provide drugs at a cheaper price. The FDC, GPO-vir is still maintained at the equivalent of US\$ 30 a month while manufacturers from India are able to provide this at a price below US\$ 200 a year.

Recommendations

- The AIDS Cluster should review the three and/or four months buffer stock levels at all facilities to relieve the immediate pressure on the supply of ARVs and ensure that the safety stocks are adjusted to reflect the actual enrollment percentages per regimen, and the increased numbers of patients to be treated. It may be necessary to identify items for which the safety stock margins have to be increased. The AIDS Cluster should maintain the regional supply buffer, which has been useful in the scale-up phase, until the consumption of ARVs stabilizes.
- It is recommended that a review of procurement and supply management systems of diagnostics, ARVs and OI medicines,

should be conducted and experiences shared during the rapid scale-up phase. Policies to be reviewed on:

- stock reporting versus ordering
- order intervals
- use of regional or provincial stores versus direct delivery to hospitals
- centralized procurement at national or regional levels (or price negotiation) of, non-GPO ARVs, OI items and diagnostics
- maximum and minimum (safety) stocks at various levels in the system
- redistribution during stock-outs or low consumption

It is recommended that during rapid scale-up of ART there be a procedure to systematically document the procurement and supply management system (policy, flow of goods and information, training provided, forms used, staff required, etc.) and establish the resulting supply security requirements. Once documented, the Thailand model may be useful as a starting point for other national procurement and supply management systems in the region planning to increase access to ART. It is also proposed to organize an intercountry workshop for procurement and supply managers to review the Thai model for possible applicability to other countries.

- Consider rationalization of the supply of ARVs supported through different funding mechanisms, including GFATM, Social Insurance, NAPHA funds, and other orders placed directly by facilities to suppliers. For example, if funding is designated to one budget per facility, NAPHA can consolidate reports on the types of patients and total quantities procured. A rationalized supply system will reduce the workload at facility level, and the combined purchasing power can be extremely useful for centralized price negotiations.
- The AIDS Cluster should review options for, and possible advantages of, centralized price negotiations for ARVs, OI drugs and diagnostics.
- The MOPH should computerize stock management and reporting systems for NAPHA at all levels. It should create links between facilities, regional offices and NAPHA, to ensure that there is sufficient information on stocks, expiry dates, etc., to facilitate stock allocation and rotation. It would be useful to link computerized clinical systems with the computerized stock management system.
- The pharmaceutical companies should approach institutions such as HIV-NAT to discuss its capacity to perform bioequivalence studies for the industry or regulatory (confirmation/validation) studies for ARVs as required for WHO prequalification.

- If available, formulations for paediatric treatment should be included in the EDL.
- It is recommended that Boehringer syringes are used for drawing NVP syrup from the 200 ml bottles for PMTCT programmes to prevent wastage.
- The MOPH should avoid single sourcing of ARVs to allow generic competition for further price reductions.

5.2.6. Capacity building of health workers

Before the year 2000, HIV medicine was not part of the regular graduate and post-graduate training for health professionals. With the launch of the nationally supported programme, there was an urgent need to provide a large scale public health oriented training for all health cadres, in order to implement the government subsidized ART programme.

A national training programme for ART management was developed centrally and the training of direct providers was organized by the regional offices, which identified faculty for the different topics among national experts. The training aimed at rapidly enlarging the pool of health personnel providing HIV care and ART services, including ensuring of treatment adherence.

The two-day short course national training programme was developed with the support of WHO, taking the help of experts from universities, programme managers from various levels, physicians, NGOs and PLHIV. The curriculum was based on technical HIV/AIDS clinical management and operational programme implementation guidelines (**Table 5**).

The training workshops started as a training of trainers in four geographical regions of Thailand. Each year periodic training with updated courses were

Table 5: Training curriculum outline of NAPHA

Component 1 for health care teams	Component 2 for specific health cadres
Introduction to NAPHA management	Pharmacist—Supply chain
Prevention and treatment of OI chain management for HIV reagents, and samples	Laboratory technicians—supply infections related laboratory collection, storage transportation of
First-and second-line ART regimens and management (When to start, when to substitute, when to switch, when to stop)	Medical doctors, nurses and counsellors—treatment adherence counselling

provided by both the AIDS cluster and the Regional Offices of Disease Prevention and Control. From 2000 to 2004 approximately 8 000 health care professionals (medical doctors, nurses, counsellors, laboratory technicians and pharmacists) were trained.

During the Mission Team's visits it was noted that in many district level health facilities with limited exposure to ART, physicians felt that they lacked expertise to provide ART, to manage side-effects, and to deal with treatment failure. Also there was a lack of capacity for providing paediatric treatment at district level. Therefore, a high proportion of PLHIV seek ART in provincial hospitals. The strengthened capacity of ART teams along with a good mentoring system should lead to more PLHIV seeking care in these district settings.

Since 2004, BATS has been transferring the budget for training programmes to the following organizations:

- Regional Offices of the Department of Disease Control - for regional level training workshops
- Department of Medical Services - for training workshops for physicians.
- Department of Mental Health - for training counsellors on HIV pre- and post-test counselling and treatment adherence counselling
- Thai AIDS Society - for post-graduate training of medical doctors and organization of national AIDS conferences

Recommendation

- The capacity of district level health care workers for HIV care and ART delivery should be strengthened through frequent and regular retraining of the HIV teams. The hospital administration should ensure that particularly those medical doctors who will remain in the district hospital only for a limited duration are offered training. Enhancing quality of care services at district level would ultimately relieve the burden in provincial hospitals.
- Technical support/mentoring should be provided for district level health care teams. This would also enable transfer of PLHIV on ART from overstretched services at tertiary hospitals to district hospitals.
- One of the greatest needs identified by both health care workers and community partners was for increased capacity in treatment adherence counselling. The AIDS Cluster should strengthen the treatment adherence counselling component of the training and involve peers to actively support treatment adherence.

5.2.7. Health infrastructure for laboratory diagnostic services

The HIV laboratory network coordinated by the AIDS Cluster was established during phase II of the national ART scale-up.

HIV testing

All hospitals, whether government or private, have health laboratories providing HIV-testing services. HIV-test kits are fully subsidized for specific programmes such as the PMTCT programme. Self-referred clients have to cover the cost out of their pocket.

A national regulatory authority designated by the Thai Food and Drug Administration (FDA) validates all HIV-test kits for sensitivity and specificity before their release in the Thai market. There are 30 HIV-test kits registered in Thailand.

CD4 enumeration

At the start of ATC-1 in 2001, CD4 count commodities were available in 19 regional centres/universities and provincial hospitals. With the expansion of NAPHA there are currently 46 dual and 28 single platform technology CD4 count machines under the laboratory network coordinated by the AIDS Cluster.

The distribution plan for CD4 count machines to health facilities is based on the burden of AIDS cases by geographical region, estimated population coverage, and readiness of the laboratory facilities to conduct CD4 enumeration. Blood samples in cool packages are sent from peripheral hospitals to CD4 facilities. Standard operating procedures for transportation and storage of samples and CD4 enumeration in the laboratory have been developed. Support to CD4 enumeration in the private sector is planned.

CD4 count reagents, and its accessories are procured centrally and distributed through the traditional replenishment system to the laboratories, based on number of cases serviced and the status of the stock. Financial subsidies to the laboratories are provided by the MOPH.

A national flow cytometry conference is held annually to update knowledge of the CD4 count services network.

Routine laboratory investigations

Routine laboratory investigations for clinical assessment are performed at regional, provincial and district hospitals. These include complete blood count, chest X-ray, and alanine aminotransferase (ALT) assessment.

Lipid profile and other liver function tests, blood sugar and viral load are optional tests. The Team noted that there was adequate capacity for laboratory diagnosis of OI at MOPH hospitals.

Recent developments

Viral load testing is available in 20 health facilities; 10 are located in the public sector and participate in the HIV laboratory service network, the other 10 are located in the private sector and the universities.

Emergence of HIV drug resistance

The emergence of drug resistance is of major concern to many physicians interviewed. According to the AIDS Cluster, plans are underway to develop HIV drug resistance (HIVDR) protocols for evaluating HIVDR transmission using WHO/CDC threshold survey methodology, in sites most likely to have HIVDR being transmitted, and tracking the emergence of HIVDR in populations treated with national standard ART regimens. Some research laboratories have initiated HIVDR measurement in small cohorts of patients treated with national standard ART regimens.

As mentioned earlier, viral load is not recommended as a standard test under NAPHA. Four in-house viral load technologies are under development. Cost per test varies between US\$ 50 and to US\$ 100.

Three university laboratories are performing HIVDR testing. These laboratories are part of the Department of Disease Prevention and Control laboratory network. HIVDR resistance testing is not recommended as a standard test under the NAPHA programme. The cost for HIVDR testing of NNRTI and PI components costs approximately US\$ 250. Five in-house technologies are under development. The AIDS cluster, in collaboration with the CDC GAP programme, is planning to develop a national protocol for HIVDR resistance surveillance (threshold survey and acquired HIVDR resistance).

The Mission Team was unable to further assess plans made and meet with the partners involved.

It was noted that there was no national validation of CD4 reagents and external quality assurance schemes for CD4 count, viral load, and HIVDR resistance testing. However, individual laboratories have established partnerships for external quality control with foreign quality assurance schemes.

Diagnosis of HIV infection in children

The use of PCR test kits for diagnosis of HIV infection in infants at 4-6 weeks post-delivery has not been considered feasible and too expensive for support by the Government. However, the use of PCR using dried blood spots on filter paper is currently being explored in research and pilot projects. This technology allows specimens to be collected from district hospitals and sent to the reference laboratory for diagnosis. Results from these studies should be shared with the AIDS Cluster to determine the feasibility of this test in early diagnosis of HIV infection in infants.

Recommendations

- The Thai National Institute of Health should introduce the validation of CD4 reagents and expand the external quality assurance system to include CD4 enumeration.
- The AIDS Cluster should explore the feasibility and cost of using viral load tests (dry blood spot) for diagnosis of HIV infection at six weeks in infants born to HIV-positive mothers.
- Pursue further the partnerships with WHO, CDC GAP and national organizations such as the Thai Red Cross AIDS Research Centre, Siriraj Hospital and other university laboratories, to develop and implement the HIVDR protocol, as HIVDR drug resistance is likely to emerge with the national ART programme.

5.2.8. Service delivery models

The continuum of care

During the early nineties the MOPH recommended that public hospitals establish day care centres to provide comprehensive and continuous care for PLHIV. Northern Thailand, which is known for a strong local response to HIV by local policy makers, administrators, health care providers, communities and PLHIV, has since promoted the establishment of health-facility based Day Care Centres (DCCs).

The DCC objectives were to:

1. provide comprehensive and continuous care and support to PLHIV, the family and community
2. increase PLHIV's capacity for self care
3. support and strengthen PLHIV groups
4. coordinate collaborative HIV activities

These DCC are places where people regularly meet and are offered a wide range of services supported and facilitated by health workers. Services include health education, including prevention education, medical and nursing care, home care, psychological, social and financial support. These services also offer counselling for nutrition, self-care, meditation, physical exercises, and traditional medicine. PLHIV, family members and members of the community are integral to the everyday running of the Centres. In many DCCs meals are offered, sometimes jointly prepared, and vocational and community activities take place. Treatment and prophylaxis for OIs and ARV have also recently been offered at DCCs. For those who cannot come to the DCC, home visits are being made. Where appropriate, trained PLHIVs conduct home visits, while for complex cases health workers conduct the home visits. The

PLHIV network development and empowerment and peer support are considered the core of the programme. One key activity of DCCs is the organization of regular monthly meetings of PLHIV groups. Capacity building of PLHIV and family members on HIV prevention and care is another important activity. As such, the DCC is a “one-stop” service offering a comprehensive package of HIV prevention, care and support services.

Based on the results of a WHO supported evaluation of the comprehensive and continuum of care project, conducted by the MOPH during 1997-2001, the MOPH encouraged all hospitals participating in the national ART programme to establish centres of Comprehensive and Continuous Care (CCC).

The AIDS Cluster started a process to design mechanisms to integrate ART into the existing health services. NGOs, including community-based organizations (CBO), faith-based organizations (FBO), and PLHIV groups were involved in the planning process from the very beginning to ensure, in particular, equitable access to care.

Two service delivery models were initiated during the first phase of the ART programme roll out. The tertiary level model (provincial/regional) in low HIV prevalence regions, and the district level model in a higher HIV prevalence setting in northern Thailand, both integrating ART into the continuum of care for PLHIV. The tertiary level hospitals offer specialized services such as medicine, surgery, paediatrics, ophthalmology and neurology among many other specialties, whereas district hospitals usually focus on basic HIV clinical management, ART and provision of comprehensive services in day care centres. The health centres focus on health education/promotion, counselling and symptomatic care.

Service delivery is through the public health care system, with the highest number of PLHIV treated at tertiary level hospitals. Expansion to the district level in all regions started only recently.

The tertiary and district level care models have some common features as follows:

- HIV/AIDS care team established
- Meeting facilities for PLHIV groups
- HIV clinic/ART clinic, or services integrated into out-patient department (OPD)
- Maternal and child health services (antenatal care, delivery room, well baby clinic)
- TB clinic
- Health laboratory
- Pharmacy

At present, patients on ART are transferred to other facilities only on the recommendation of the health-care providers (e.g. referral up to a tertiary facility or referral back when complications are resolved). A system allowing patients to initiate a transfer to other health care facilities to pursue migratory work, or for other reasons, has not been developed.

Patient flow

VCT services are commonly integrated into hospital services. HIV-positive persons are identified through different counselling and testing strategies.

- Strategy one addresses people who would like to know their HIV status because of the perceived risk or other reasons. They can visit counselling services in health facilities. Some hospitals have anonymous clinics. These facilities conduct pre-and post-test counselling and offer HIV testing.
- Strategy two is for clinically sick patients who are referred for HIV testing. These patients receive a short pre-test counselling, are tested and receive post-test counselling.
- In the third strategy HIV testing is routinely offered as part of the PMTCT programme.

Paediatric AIDS

The main service delivery model for paediatric care is through the public health care system, with regular follow up at specialist services (clinical and laboratory) at the provincial and regional level. Data from private sector providing ART to children is not available.

Paediatricians are not usually part of the district hospital team and thus care of the child on ART inevitably involves regular visits to the provincial hospital. Since the number of children in any one district will be small, a successful PMTCT programme will rapidly reduce the burden of paediatric HIV. Laboratory diagnosis and monitoring for children may also require equipment only available at the provincial level.

Recommendations

- Thailand has started the roll out of the ART programme to district level. Tertiary hospitals should play a major role in providing specialized services for complicated cases and for those living in the catchment area of the tertiary hospital, whereas the provision of ongoing HIV/AIDS care, support and ART should be further strengthened at district level.

- Paediatric care and treatment seems complex. District hospitals have the advantage of being closer to the families and communities where the children live. Tertiary level hospitals are already overburdened. The visit to a specialized paediatrician should be limited to complicated cases.
- Developing comprehensive HIV/AIDS care and treatment across the continuum requires formal coordination. NAPHA and PMTCT-Care provide a similar package of services but they are differing from SSS. The recommendation is to harmonize packages as well as enrollment and treatment monitoring between the programmes. The responsible Departments should establish a formal coordination mechanism for streamlining care packages, financial and administrative procedures as well as monitoring and supervision.

5.2.9. Civil society involvement and partnership

Representatives from CBOs, NGOs, and PLHIV were involved in the development of the ATC implementation plan at the central, regional and provincial levels. Since treatment was restricted to a limited number of people, discussions included criteria for enrollment of PLHIVs. For example, in northern Thailand, the Office of Disease Control and Prevention encouraged all districts to establish community advisory boards to oversee the enrollment of PLHIV for ART as there were limited quotas for ARV. A total of 55 community advisory boards (each consisting of four health care providers and four community members) were formed for overseeing the enrollment of 800 PLHIV during the first year, for treatment in 55 out of 71 hospitals in six northern provinces. Other provinces enrolled clients on a first-come/first-served basis. However, with the increasing availability of ARV these community advisory boards were soon abolished.

In July 2002 the Thai Network for People Living with HIV/AIDS (TNP plus), Médecins Sans Frontières (MSF), and AIDS Access Foundation (AAF) decided to utilize the experience of the “cotrimoxazole campaign” to strengthen the role of PLHIV as partners, and promoted the establishment of centres for comprehensive and continuous care (CCCs).⁵ A plan was developed to train core PLHIV members on (i) management of OIs and ART, (ii) counselling and (iii) the concept of continuum of care. The selection criteria for PLHIV groups’ involvement in CCC centres were:

- At least two core members committed to working on a regular basis.
- PLHIV group and hospital willing to develop a joint work plan which should be approved by the hospital director. There had to be a forum for case discussion, the sharing of information and problem solving.
- A budget had to be available for project activities, along with financial management and reporting systems.

5 Involvement of people living with HIV/AIDS in treatment preparedness in Thailand. Case Study. WHO Geneva 2004.

The project included the training of expert PLHIV trainers who trained PLHIV as volunteers. The PLHIV volunteers are providing education on treatment literacy and peer counselling, including for treatment adherence. They are also providing logistic support to health care workers and patients such as filling in forms, transporting files, assistance in problem solving, conducting inpatient visits, provision of home care and support and tracing of defaulters.

These trained PLHIV volunteers have established PLHIV groups within hospitals where they did not previously exist. PLHIV disclose their HIV status upon entering the group. At the district level this implies disclosure of the HIV status to the family and community. These groups allow PLHIV to address factors that may affect their adherence to ARVs, such as side-effects, lack of family and emotional support, lack of treatment information and advice on taking pills regularly and on time. PLHIV groups and NGOs also reach out to PLHIV whom they know and encourage enrollment to NAPHA.

The Review Team visited four different locations having PLHIV groups that successfully play a role in counselling, adherence and peer support. The NGO and PLHIV representatives interviewed stated that the involvement of PLHIV in the CCCs had an immensely beneficial effect on quality of care, support and treatment services. The consortium of NGOs received support from the GFATM in 2003 to strengthen PLHIV involvement in the CCC centres. The plan was to establish 100 centres during the first year of funding and an additional 50 by the end of the second year. After one year, in October 2004, the programme had expanded to 114 hospitals and one women's prison covering nearly 1 000 PLHIV on ART. The number of PLHIV followed in each CCC centre ranged from 6 to 350. The total budget for 114 centres amounts to Baht 21 million (US\$ 522 128) with around Baht 150 000 (US\$ 3 730) required for sustaining one CCC for a year. This includes salaries for volunteers, training, and transportation of clients. The Thai Network for PLHIV (TNP+) intends to expand this programme to 50 more hospitals in 2005. Other PLHIV groups have applied for grants to the MOPH for funding this type work.

In one facility visited the Team was informed that patients unwilling to disclose their HIV status and participate in PLHIV group activities were not eligible for NAPHA. However, complete national coverage of ART will require treatment of those who are not willing to disclose their HIV status.

Although many NGOs and CBOs are applying for funds from the Ministry, the original funding for NGO activities was reduced from the total amount of Baht 120 million (around US\$ 3 million) to Baht 70 million (US\$ 1.74) since the time of the economic crisis. In spite of the success of the programme providing support to NGOs, its sustainability is questionable. The current system allows NGOs and PLHIV groups to apply for funds for two years. It was mentioned to the Mission Team that many PLHIV networks do not want to be funded through hospitals but would rather receive funds directly, so as to be acknowledged as partners rather than hospital employees. NGOs and PLHIV networks can be empowered through

allocation of additional resources for their work towards treatment access, HIV prevention and addressing stigma and discrimination. This could benefit many aspects of the ART programmes including enrollment and adherence.

The success of the NAPHA means that PLHIV are now dealing with issues beyond immediate health concerns and survival, including financial issues such as returning to work, addressing poverty and income generation, and psychosocial issues such as returning to family life and dealing with ongoing stigma and discrimination.

HIV-infected children

An area of concern was the stigma and discrimination directed towards children infected or affected by HIV and AIDS, resulting in the exclusion of children with HIV from mainstream schooling. It was unclear how widespread this problem is. It was recognized as a potential issue by all the groups who were met by the Review Team and some groups were actively reaching out to build partnerships with schools and teachers.

The current need for regular monitoring at provincial hospitals is creating out-of-pocket expenses for households with infected children. Most households affected by HIV are poor and they include those of grandparents who have taken in children who lost their parents. In addition to trying to reduce the frequency of scheduled out-of-district visits, and better ways to support poor households may be needed.

Recommendations

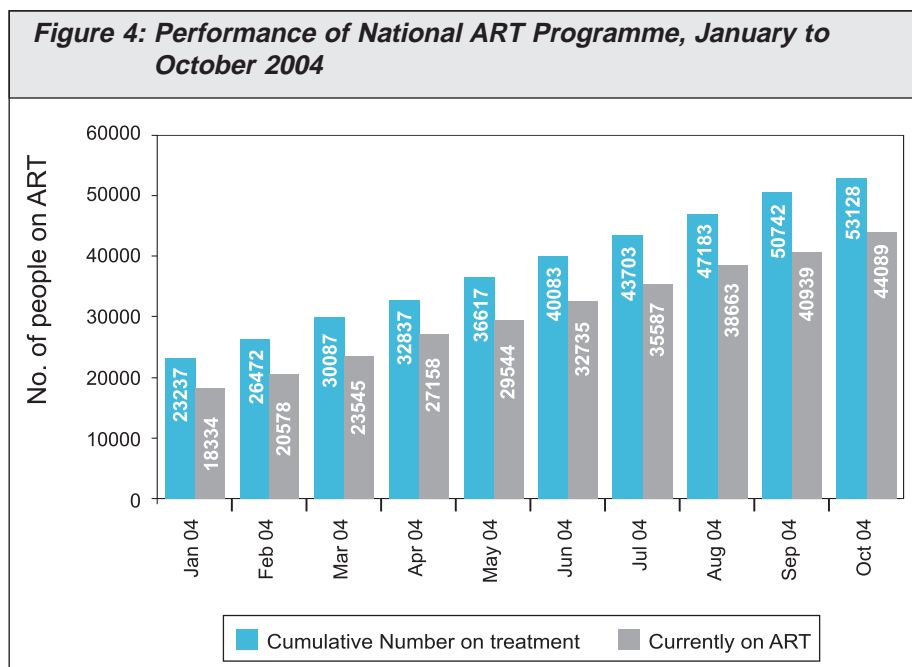
- Multidisciplinary HIV working groups should be strengthened in all districts involving health care workers, CBOs, NGOs and PLHIV groups. These working groups should provide ongoing support/technical assistance to the wide range of activities that have been planned for the very rapidly expanding programme. Focus areas should include advocacy, programme communication, community mobilization, reaching into local communities and hard-to-reach populations such as migrants and drug users, media relations, partnership building, programme monitoring and evaluation. The working groups should also promote the establishment of DCCs/CCCs.
- MOPH should support the expansion of DCCs/CCCs to all district hospitals and identify sustainable funding to PLHIV groups who contribute to ART programmes in hospitals. Funding through social security funds, the NGO grant programme, and other means could be considered.
- The MOPH should continue to support capacity building of NGOs and PLHIV groups for basic competencies on HIV education, prevention, care, support and treatment.

- Many of the above recommendations require an increase in financial resources to PLHIV groups and NGOs. However, the budget for NGO support has decreased since the financial crisis in 1997 to Baht 70 million (around US\$ 1.7 million). The benefits from any increases in funding should be used to strengthen local competence to deal with HIV and AIDS in the communities. Most of all, with the requirements of treatment scale-up and the support needed by the national health care system, the community sector should be actively used as a resource.

5.2.10. Monitoring and evaluation

National indicators for ART programme

Although at the peripheral level, data on a number of variables has been collected and sent to the central office. However, at the national level, the MOPH has only adopted two indicators (i) the cumulative monthly number of people on ART and (ii) number of people retained on ART. (**Figure 4**). The current monthly formats do not include indicators measuring treatment programme performance and outcomes. A preliminary list of indicators that was thought to be useful at the patient, hospital and provincial/region-level was developed, and is being used to design the new electronic patient information system, Version 2.0.



Source: Ministry of Public Health, Thailand 2004

Routine monitoring systems for NAPHA

Data and information systems for patient and programme monitoring of ART included development of appropriate tools, determining data flow, data analysis and feedback to participating facilities. Data managers and equipment (computer and telecommunication) are in place at all provincial health offices.

A number of consultations took place with health care providers and programme management staff to identify the critical data elements necessary to monitor programmes and minimize the work load for data management.

The national level staff focuses on the development of monitoring systems, data analysis and generation of reports. National paper-based clinical encounter forms for monitoring patients on ART under the MOPH jurisdiction have been in place since the ATC-1 programme in 2001. The clinical encounter forms include most of the essential data elements recommended by WHO interim guidelines on ART programme monitoring. (See **Annex 5** for detailed analysis) Some areas not currently covered by the clinical encounter forms include the pre-enrollment screening of patients for ART eligibility; linkages to records of other family members on treatment; contact information for adherence support persons; details on cotrimoxazole prophylaxis; and assessment of adherence to ART.

The current monthly reporting formats focus on coverage targets. However, indicators measuring changes in CD4 cell count and cohort analysis on people continuing on treatment and alive after 6, 12 and 24 months of treatment and others, can be accessed both at the hospital and the national level when required. Some hospitals have recorded and analyzed data disaggregating by age, sex, clinical and immunologic response to different regimens, after different periods of time on treatment.

Despite the necessity of generating reports by manual counts, the Department of Disease Control, and Disease Control and Prevention Office Region 6 reported receiving all monthly reports within the grace period for reporting. Staff at all levels is charged with the responsibility of ensuring data quality before submitting data to higher levels of management. In some of the areas visited by the Mission it was seen that data entry clerks and provincial health officers spend considerable time ensuring accurate data entry. Because of the manual data entry system, the central Monitoring and Evaluation Unit receives the monthly report after a 30-day time lag.

Many facilities providing services under NAPHA also participate in the SSS though the protocols for data collection and monitoring of patients are not yet finalized. Because many patients are being transferred from NAPHA to SSS, some facilities continue to use the NAPHA paper-based forms for the SSS. Discussions between the Monitoring and Evaluation Unit of the AIDS Cluster and the Social Security Office will take place regarding the use of the same electronic information system for clinical encounter data. Additional reporting systems are being established for the UCS and others which will, however, generate additional workload for the hospital staff.

Use of multiple patient ID numbers for different forms was observed (e.g. national ID number, hospital number, NAPHA number, PMTCT-Care programme number, and UCS number) with different programmes not attempting to link systems by recording common ID numbers. The consistently used national ID number makes tracking of patients over time within a facility possible, and is often the method by which patient records are retrieved. The use of patient ID numbers instead of names on all report forms, except in the programme registers, could help to protect the confidentiality of patients within the facilities.

A system for allowing patients to initiate a transfer to other health care facilities will require clear procedures for tracking patients and transferring relevant medical history data between facilities. The ID numbers assigned by the NAPHA programme would accommodate transfers between facilities (i.e. no more than one patient can have a NAPHA number) because it incorporates a facility code of enrollment.

Electronic data monitoring system

An electronic data monitoring system, based on the current paper forms, was rolled out for all facilities participating in the NAPHA programme in June 2004.

Staff at the Monitoring and Evaluation Unit of the AIDS Cluster provided training to regional office staff, who then trained provincial and hospital staff in using the system.

Retrospective electronic data entry and transmission is in progress, and all facilities are expected to complete retrospective data entry for previous records of patients currently in NAPHA by the end of the year. The current version of the electronic information system, 1.0, is limited to data entry, export functions, and the generation of the standard monthly report. These monthly reports generate cumulative figures and can, therefore, only be generated when data entry of retrospective patient records is completed. Conducting aggregate data analysis at the central or regional level is also limited by this method. The limitation of the current computer-based monitoring system is that it does not allow local analysis of data. Local analysis was mainly done based on paper-based records or use of Excel spreadsheets.

The Monitoring and Evaluation Unit is piloting Version 2.0 in three hospitals and two provincial health offices and expects full deployment of the system by June 2005. Version 2.0 will provide more extensive automated reports. These standard reports will be produced at multiple levels, including graphical representations of individual patient data over time. There will also be the ability to conduct aggregate data analysis at the hospital, provincial, and regional levels.

Supervisory structure/quality monitoring

Overall monitoring and supervision are limited to public sector providers. Responsibilities for on-site supervision are under the purview of provincial health offices. The provincial health offices collate data from the health facilities and report to the regional offices which then report to the AIDS Cluster.

In Region 6, supervision of ART facilities is the responsibility of the AIDS Coordinator and the HIV staff of the concerned provincial health offices. Each ART facility receives two half-day supervisory visits per year as per the national recommendation, during which a standard list of programme operations, such as clinical management, stock management, staffing, data management, and community participation/linkages are reviewed. On these supervisory visits the provincial health office staff attempt to solve problems faced by the hospital staff and raise unresolved issues to higher levels of management. Supervisory reports are filed with the regional office. (See **Annex 6** for summary of roles and responsibilities for various levels of programme management).

In addition to the MOPH staff performing monitoring and evaluation, both regional and central advisory boards have been established to oversee monitoring and evaluation activities. Members of these boards represent different facets of civil society and the medical community, including community leaders, hospital officials, PLHIV, and other representatives of this multi-sectoral effort. These boards conduct site visits and serve as external evaluators of the programme.

Monitoring/supervisory staffing

At the national level, a statistician, two epidemiologists, two data programmers and one data manager work in the Monitoring and Evaluation Unit. Their roles are largely confined to designing the electronic information system, providing training and technical support to the regional offices for using the system, aggregating regional data into national reports, and overseeing the evaluation of the programme. As complete programme data become available through the electronic information system, the staff will likely spend more time conducting more sophisticated analysis of the ART programme data.

Staffing for monitoring and evaluation in the regional offices varied among regions. In Region 6, one person worked primarily on data management activities, but with support of the data managers from provincial health offices.

At the hospital level, nurses are involved in both, the recording of data in patient ARV registers and NAPHA data forms, and data entry into the system. Some large hospitals, such as Udonthani Provincial Hospital, had a data entry clerk in addition to a nurse preparing electronic and paper based reports. At Bamrasnaradura Institute and Udonthani Provincial Hospital the staff presented descriptive data on patients enrolled in NAPHA plus some treatment response and retention data, demonstrating capacity for analysis at the hospital level.

Operational research

The data collected through the routine electronic reporting system create great opportunities for operational research to inform programme planning and resource allocation. Capacity for conducting this type of analysis exists at both the hospital level, particularly in universities, and large tertiary care sites, as well as at the central level within the Monitoring and Evaluation Unit.

Recommendations

- The AIDS Cluster should receive more resources in order to be able to adopt a set of national ART programme indicators to measure the programme's ability to deliver high quality and sustained treatment for AIDS patients and to assess equity of access to treatment, particularly for marginalized populations (e.g. the poor, sex workers, MSM, etc.). (See **Annex 5** for analysis comparing NAPHA data elements and WHO interim recommended indicators for ART programmes.)
- Collaborating with other ministries, universities, research institutions and professional associations should aim at granting MOPH jurisdiction to monitor the performance of all ART programmes (i.e. SSS, civil society, private sector, research studies) starting with a limited set of indicators. These indicators could be as follows: new and current numbers of ART patients; selection criteria/prioritization of patients; proportion died; and proportion lost to follow up.
- The AIDS Cluster should aim at synchronizing the monitoring and reporting tools for all public and private sector ART programmes, such as the use of uniform patient ID numbers, clinical encounter forms, cohort analysis, monthly report forms.
- For better management of the programme, methods should be developed to share data between the separate systems, i.e. clinical encounter data, stock management data, and administrative data, maintained by the same health care facility (See **Annex 7** for schematic of data collection areas and data use functions at various levels of management). Efforts should be made to link administrative (e.g. Universal Care and/or pharmaceutical management system) and clinical management electronic data systems to avoid duplication of data entry at the facility level.
- Provide short-term human resources to reduce the backlog of data entry and enable automated monthly reports using interim HIV/AIDS Care Programme, Version 1.0 software. Use LQAS or other methods to reduce workload for data quality checks at the facility and provincial level (See **Annex 8**). Immediate arrangements should be made to recruit additional administrative staff to meet the requirements of reporting for the UCS to relieve the burden on health care workers, particularly in health facilities.

- Assign responsibility and allocate government resources for conducting operational research using monitoring data to indicate the areas of need for ART programme policy and treatment guidelines (e.g. develop an operational research agenda and budget). This should include the development of a simple protocol for measuring patient satisfaction at each site. With rapid expansion of the ART programme, ongoing research on the effectiveness or coverage of NGO and PLHIV programmes, including documentation of the benefits of PLHIV involvement in areas such as continuum of care and treatment, adherence and policy-making, would be useful for increasing their credibility. Also the inter-facility transfer of ART patients, such as for mobile populations, should be explored (e.g. through pilot projects between selected facilities).

5.2.II. AIDS care financing

There are four main health insurance schemes in Thailand, covering nearly 100% of the population: the SSS and WCF covering the formal private sector workers; the CSMBS for government employees; and the “30-Baht” or UCS for the rest of the population. The characteristics and scope of each programme are described in **Table 6**. The different health insurance schemes are managed completely independently, with different reimbursement mechanisms and separate reporting requirements for providers.

The UCS covers preventive and curative care for PLHIVs (treatment of all OIs), but does not cover ART nor associated testing/monitoring. Access to ART for PLHIVs is offered under NAPHA. ART is available for all PLHIVs who meet the eligibility criteria and present for treatment at their registered hospital. The patient must pay for the first CD4 test (about 200 Baht (USD 5)); but all monitoring and testing once the patients enrolled is covered by NAPHA, as well as the cost of the drugs. In practice, however, hospitals exercise some discretion in asking patients to co-pay, depending on an assessment of their means.

There has been a long ongoing discussion among policymakers and politicians about the desirability of integrating ART into the UCS. The political commitment to include ART in the UCS was made explicit at the July 2004 Bangkok International AIDS conference, by the Prime Minister himself. ART is expected to be included under the UCS as of January, 2005.

Until August 2004, NAPHA also covered access to ART for PLHIVs under the SSS. As of August 2004, all SSS patients being treated under NAPHA were transferred to SSS (about 13 000). Guidelines for treatment (including the choice of drug regimen for first- line treatment) are purported to be similar to NAPHA. The CSMBS covers all PLHIV care including ART, and associated monitoring.

Table 6: Health Insurance Schemes in Thailand

Characteristics	SSS & WCF	CSMBS	UCS ("30-Baht")
1. Model of scheme	Public contracted reimbursement	Public contracted	Public
2. Population covered	Formal private sector employees but NOT their dependents (establishments > 10 workers) 8 million	Government employees and their dependents 4.5 million	People not covered by SSS or CSMBS 47 million
3. Benefit package			
- Ambulatory services	Public and private	Public only	Registered public and private
- Inpatient services	Public and private	Public and private	Registered public and private
- Choice of provider	Contracted hospital or its network, registration required	Free choice	Registration required
- Types of benefits	Non-work related illnesses, injuries (work related covered under WCF)	Comprehensive package	Comprehensive package
4. Financing			
- Source of funds	Contributions from employees, employers and government amounting to 4.5% of insurable earnings payroll	General tax revenues	General tax revenues
- Financing body	Social Security Office	Ministry of Finance	National Health Security Office
- Payment mechanism	Capitation	Fee for service	2 options: (i) Inclusive capitation for OP, IP and PP; (ii) Capitation for OP and PP; DRG with global budget for IP
- Co-payment	Maternity, emergency services if above ceiling	Yes if IP at private hospital	Yes, 30 Baht per visit. No co-payment for IP
- Expenditures per capita	1 558 Baht (1999)	2 106 Baht (1999)	1 202 Baht (2003)

Source: Pongpisut Jongudomsuk. Effect of capitation payment on resource allocation and financing of public hospital in Thailand. Conference papare. Asia Healthcare & Insurance. 2003(6):26-27.

The Mission Team visited Bamrasnaradura Hospital which reported a cumulative number of 2 208 patients receiving ART, of whom 1 733 were treatment experienced from phases I and II of the ART programme and 475 were newly enrolled to NAPHA during February-September 2004. Each month 30-90 new patients are enrolled. The SSS ART delivery started in August 2004 with 200 people, of whom 130 rolled over from NAPHA and 70 were newly enrolled. The SSS follows, in general, treatment recommendations of NAPHA but also covers the cost for patients who require second-line treatment regimens.

In NAPHA, the follow up visit has been scheduled every month. SSS has also set the same schedule. NAPHA only supports three first-line treatment regimens with the largest proportion receiving GPO-vir. The SSS provides ART for up to 5 000 Baht (US\$ 124.3) per month and allows transfer to second-line treatment up to the aforementioned amount if the patient fails first-line treatment. A subsidy of 1 000 Baht (US\$ 24.9) per year for the CD4 count and a subsidy of 2 500 Baht (US\$ 62.1) per year for viral load or resistance testing are supported under SSS. The key concern is that there are several different HIV clinical management and ART delivery packages including the PMTCT-Care (See **Table 7**).

The largest of these health care schemes, the 30-Baht or UCS was introduced on a national scale in April 2002 with the aim of guaranteeing access to health care for every Thai citizen, regardless of income and means. The UCS replaced all previously existing schemes targeted at the poor and uninsured. Evidence from its operation during 2002-2004 suggests that it has succeeded in increasing health care coverage from about 70% of the population before its introduction to nearly 100% thus significantly increasing health care utilization, particularly of out-patient services, while reducing out-of-pocket expenditures by households for the bottom two quintiles of the income distribution, suggesting that UCS is significantly pro-poor.

Despite these accomplishments, the system is under-funded. Over time, and especially as cost-containment efforts in CSMBS take effect, the financial squeeze on health care facilities providing care under the UCS is expected to tighten, which could lead to deteriorating quality. Current programming and budgeting practices for the UCS—with capitation rates set on an annual basis, based on available budget resources—make its funding highly vulnerable to cyclical downturns and swings in tax revenues. Over the long-term such practices may undermine the financial sustainability of the UCS.

In addition to financial constraints, scarcity of human resources due to low pay, especially of physicians, may present a problem to the sustainability of the UCS system in its present form. The rapid scale-up of ART will add substantially to these pressures.

Table 7: Most common HIV care and treatment schemes			
Activity	ATC 1,2, NAPHA Package	Social Security	PMTCT Care
Year started	• 2000	• 2004	• 2001
First-line treatment regimen	• NAPHA treatment recommendations	• follow NAPHA treatment recommendations	• follow NAPHA treatment recommendations
Second-line treatment regimen	None	• Upto the amount of Baht 5 000/month	None
CD4	• CD4 at baseline • CD4 every 6 months for patients on ART	• CD4 at baseline • CD4 every 6 months for patients on ART up to 1 000 Baht/year	• CD4 at baseline • CD4 every 6 months for patients on ART • CD4 every 6 months for patients not on ART
Viral load	None	Viral load for ARV drug resistance testing up to 2 500 Baht/year	None
Monitoring forms	NAPHA recording and reporting forms	Being developed	NAPHA recording and reporting forms

Trends in AIDS expenditure and financing sources

National AIDS Accounts (NAA)

According to the NAA, total health expenditure on HIV/AIDS increased from 2 623.27 million Baht in 2000 (US\$ 65.4 million) to 4 943.32 million Baht in 2004 (US\$ 122.90 million).¹ The largest increases in spending during this period came from the ART programme (which quadrupled in spending) (**Table 8, Annex 9**). In response to this, the share of total AIDS expenditure going to care and treatment increased from 64.3% in 2000 to 84.6% in 2004. Jointly, ART and OI account for 72% of total AIDS spending in 2004. The share of spending for prevention activities has declined, from 18.4% in 2000 to 13% in 2004.

Financial sources

The bulk of expenditure on HIV/AIDS is financed from public budgetary sources, which accounted for 70%-90% of total AIDS expenditure during 2000-2004 (**Figure 5**). The share of financing from the two main health insurance schemes, SSS and CSMBS, has remained stable at around 2.5% and 3%, respectively for the same period. However, the share of spending by SSS is expected to increase as the scheme has recently started to cover ART and around 13,000 patients are expected to shift from NAPHA programme to SSS to avail of the new policy.

National budget allocations for AIDS prevention and treatment

As illustrated by the NAA, the main source of financing for AIDS expenditure comes from public budgetary sources. **Figure 6** shows the evolution of the

¹ Tangcharoensathien V, Chokchaicharn H, Tisavaticom K, Teekul W, and Patcharanarumol W. Asia Pacific Regional Report (2008). Thailand national AIDS spending assessment 2000-2004.

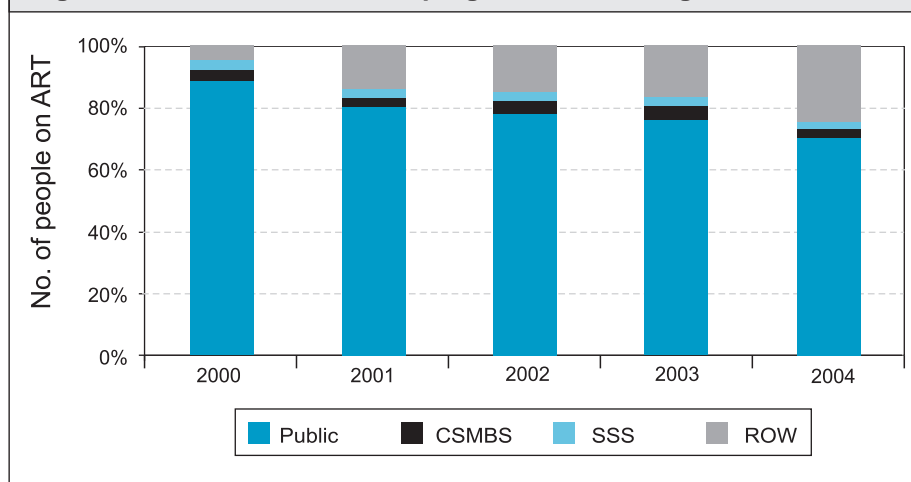
Table 8: National AIDS expenditure by function, 200-2004

Functions	2000 million Baht (%)	2001 million Baht (%)	2002 million Baht (%)	2003 million Baht (%)	2004 million Baht (%)
Prevention	483.13 (18.4)	562.40 (22.9)	778.33 (25.5)	522.33 (14.7)	640.41 (13)
Treatment and care	1 686.71 (64.3)	1 529.04 (59.5)	2 123.55 (66.9)	2 634.15 (74.2)	4 184.11 (84.6)
Orphan and vulnerable children	84.90 (3.2)	84.59 (3.3)	83.94 (2.6)	80.66 (2.3)	40.68 (0.8)
AIDS programme management	368.53 (14)	395.72 (15.4)	188.41 (5.9)	312.25 (8.8)	28.12 (1.6)
Grand Total, million Baht	2 623.27	2571.75	3 174.24	3549.39	4 943.32
Grand Total, million US\$	65.40	57.88	73.89	85.56	122.90

Source: Tangcharoensathien V et al., Thailand National AIDS Accounts, 2005.

* Expenditures for training and parts of research and development were probably shifted to other line items.

Figure 5: Sources of HIV/AIDS programme financing 2000-2004



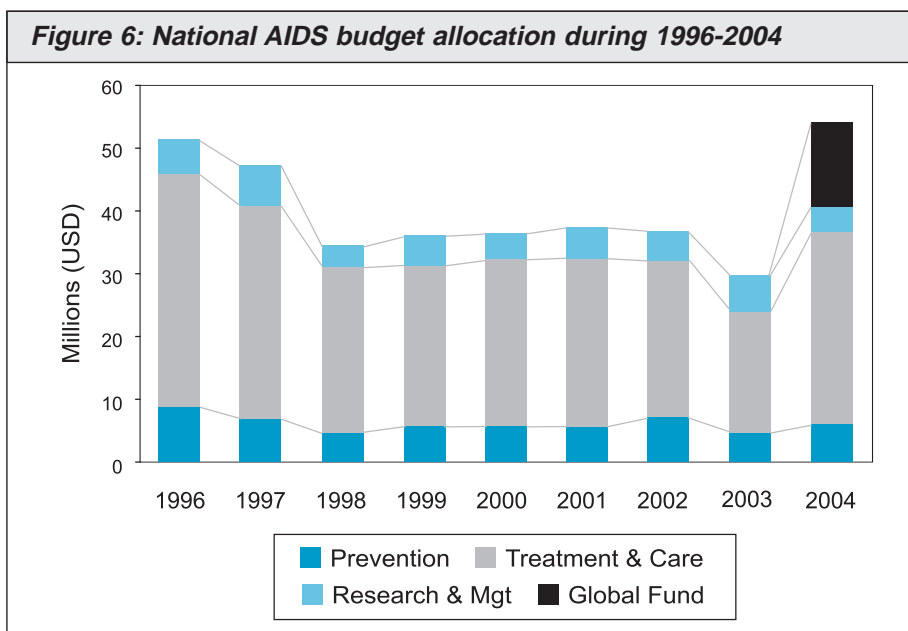
Source: Tangcharoensathien V, Chokchaicharn H, Tisayaticom K, Teukul W, and Patcharanarumol W. Asia Pacific Regional Report (2006). Thailand national AIDS spending assessment 2000 - 2004.

National AIDS Budget between 1996 and 2004. The patterns within the budget allocation parallel those reflected in the NAA, namely with a high share of allocation for treatment and care; and low share of allocation for prevention.

Costing the scale-up of ART

The public sector in Thailand already bears a large share of AIDS-related expenditure. The continued scale-up of access to ART under NAPHA will add to that burden. As of August 2004, 40 939 PLHIVs were receiving ART under NAPHA, twice as many as in 2003. Based on existing projections for HIV and AIDS in Thailand (prepared by the Thai Working Group in 2001 and currently under revision), an estimated 48 000 PLHIVs would develop AIDS every year, and be in need of ART⁽²⁾. Even if we assume that 30% of PLHIVs on ART will drop out each year (as a combination of loss to follow up, treatment interruption, and treatment failure), the projected number of PLHIVs on public sector ART will triple within a few years, and could reach 140 000 by 2010.

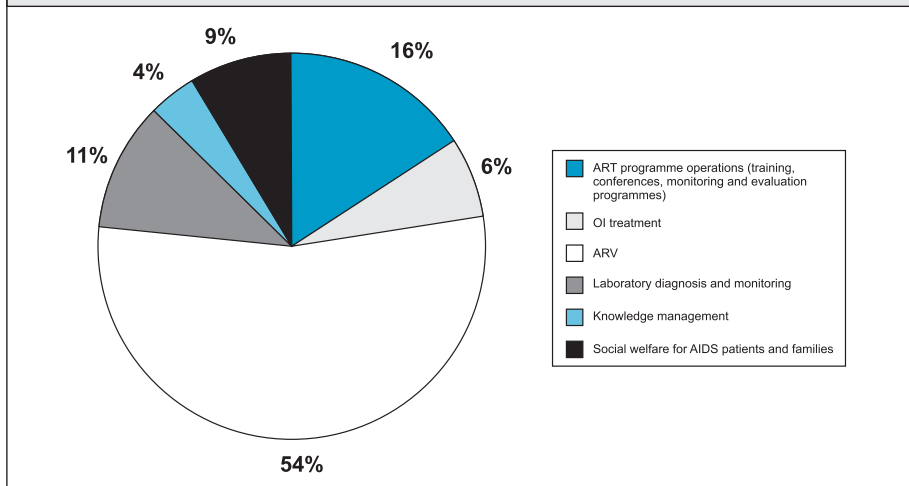
The cost of the ART programme alone is projected to reach US\$ 74 million in 2010 (**Table 9, line 4**). These projected ART costs are based on the costs of current ART drug regimens⁽¹⁾ that are available under the MOPH guidelines in 2004. It is important to note that the share of ART drug costs accounts for more than 50% of the total cost of the care and ART programme (**Figure 7**). Therefore, any changes in drug prices of these regimens, and/or changes in available regimens (such as inclusion of more expensive PI drugs) would significantly alter the projected figures.



Source: World Bank, based on figures from the Bureau of AIDS, TB and STIs, Ministry of Public Health.

Moreover, these projected costs do not take into account any additional costs incurred at the provider level for ART (time of physicians, nurses and pharmacists, counsellors etc.), which are funded out of the regular health

Figure 7: National AIDS budget allocation for care and treatment during 2004



Source: World Bank, based on figures from the Bureau of AIDS, TB and STIs, Ministry of Public Health.

care programmes. A recent evaluation of medical resource utilization for ART carried out jointly by WHO-Thailand and the Centre for Health Economics at Chulalongkorn University⁶ estimated the total cost of ART per year per PLHIV to be higher than the ARV plus laboratory costs alone. Taking these additional costs into account, the estimated total cost of the ART programme increases significantly to about US\$ 114.8 million in 2010 (**Table 9, line 5**).

The projected costs reported in **Table 9** exclude the costs of any treatment of OIs before start of ART. According to several Thai physicians interviewed, patients reporting to the hospitals with low CD4 counts often have to be treated for OIs before being started on ART. They also exclude any savings on treatment for OIs for those patients who are on ART and who would have otherwise become sick.

The numbers presented in the above table show that the resources needed to finance the expansion of ART— *under the assumption that only three drug regimens are available as per current MOPH guidelines*— are quite significant, but not necessarily beyond Thailand's means. The total cost of the expanded ART programme in 2005 represents only US\$ 1.06 per capita, or 6.1% of the 2004 National Health Budget.

By 2010, the ART programme would absorb resources equivalent to 10.2% of the 2004 National Health Budget, or US\$ 1.6 per capita at the current population growth rate. Hence, financing the ART programme with public

⁶ Supakankunti S, Promjak P, Phetnoi W. An evaluation of the economic impacts of the national access to antiretroviral programs for PLWHA for HIV/AIDS in patients in Thailand (2006), Bangkok, Centre for Health Economics, Faculty of Economics, Chulalongkorn University, WHO.

Table 9: Projected Cost of Scaling-up ART

	2003	2004	2005	2006	2007	2008	2009	2010
Estimated no. of PLHIV on public ART								
1. New AIDS cases in year ⁽¹⁾	50,415	49,452	48,932	48,692	48,416	47,681	46,184	43,593
2. No. of people on public ART ^(e)	18,136	40,939	77,589	103,005	120,519	132,044	138,615	140,624
Estimated resource need for ART								
3. Cost of ART drugs ^(b)	9.1	20.6	39.1	51.9	60.7	66.5	69.9	70.9
4. Cost of ART drugs + laboratory tests ^(c)	9.6	21.7	41.0	54.5	63.8	69.8	73.3	74.4
5. Total cost of ART programme (includes hospital costs) ^(d)	24.6	41.5	68.8	87.7	100.8	109.2	113.8	114.8
Estimated financial impact of ART								
6. Total cost as % of HIV/AIDS budget in 2004 ⁽²⁾	60.4%	101.8%	168.8%	215.3%	247.4%	268.1%	279.4%	281.7%
7. Total cost as % of National Health Budget in 2004 ⁽³⁾	0	3.7%	6.1%	7.8%	8.9%	9.7%	10.1%	10.2%

Source: (1) Thai Working Group on HIV/AIDS Projection, 2001

(2) Bureau of AIDS, TB, and STI, MOPH, 2004

(3) Bureau of the Budget, 2004

Notes:

- a. 2003-2004 figures are from Bureau of AIDS, TB, and STI, MOPH (2004). After the year 2005, no. of people on public ART is projected with an assumption of 70% adherence rate each year.
- b. ART drug costs are based on weighted average of 3 regimens under the MOPH guideline (weights are distributed by 80%, 15%, and 5% for 1st, 2nd, and 3rd line regimens respectively).
- c. Cost of laboratory tests include: CD4 count tests twice a year for monitoring (Note: laboratory tests do not include initial CD4 screening tests and viral load tests).
Cost of ART including medical resource utilization estimates, from Supakankunti and Tsunekawa (2004).

resources would require a sustained gradual increase in the total health budget, but not an unmanageable one.

However, a number of critical issues need to be addressed to limit the potential public financial liability for the ART programme.

Recommendations

- **The cost of the programme is highly dependent on the choice of the drug regimen to be financed by the public sector.** To ensure the financial sustainability of the scheme, it is imperative that the RTG make explicit the scope of the public sector's commitment in the provision of ART. An open-ended commitment to provide and finance whatever ART regimen become available, including much more expensive second and third-line regimens, would greatly increase the long-term cost of the programme until it is beyond Thailand's financial means (depending on what happens to drug prices). Alternatively, the public sector's commitment could be a more limited one: to provide a first-line regimen plus second-line regimen without charge, and then palliative care when treatment fails. Related questions that could be addressed in this context are the following: whether ensuring universal access to ART means free provision of ART for all? Or is there societal consensus that those who can afford to co-pay a certain amount, should do so, to allow the RTG to provide free ART to those who cannot afford to pay at all? Should the rules be different for AIDS patients than for those suffering from cancer, end-stage renal disease and other fatal adult illnesses?
- **The decision to integrate ART into the UCS needs to be made carefully to avoid aggravating the financial and human resource pressures already felt by the public health system even prior to the scale-up of ART.** One possibility under discussion is to integrate ART into the UCS scheme, but as a separate vertical programme, which would maintain many of the current features of NAPHA. These features would include central procurement of supplies, strong management and oversight, as well as a monitoring and evaluation role for MOPH-DDC. Financing of the programme would also be kept separate, and not as part of the capitation rates. One strong argument for not including ART into the capitation rates under the UCS is the highly variable geographical distribution of the AIDS burden. However, there are also arguments for integrating the financing of ART into the capitation rates. Doing so would better reflect the opportunity cost of the medical resources employed for ART. Currently, the costs of medical resources used for ART are

covered by the capitation rate, but this is not taken into account when these rates are set. Integrating ART into the payment mechanisms for the UCS would require very large increases in capitation rates, which would probably be difficult to finance, but on the other hand, it would provide a mechanism for provinces with low numbers of AIDS cases to subsidize provinces with higher numbers.

- **Addressing the financial sustainability of the UCS is critical to the scale-up of ART.** The public health system will remain the main vehicle for delivering ART to PLHIV. Current budgeting for the UCS, on an annual basis, is highly dependent on budget cycles and swings in revenues. Alternatives for more sustainable, multi-year financing and programming need to be explored to ensure the long-term sustainability of the UCS, and hence of the public sector's ability to deliver ART. One option under consideration is the earmarking for this purpose of excise taxes on tobacco, spirits and beer. Other options that are considered could include greater diversity of co-payment options and capitalizing a UCS fund via privatization proceeds.
- **Addressing existing human resource constraints for ART delivery in the public sector is also crucial to the programme's success.** It would be desirable to explore alternative modes of delivery, including using private providers with public oversight and financing; or developing low-cost alternatives to delivering ART via greater engagement of NGOs, PLHIV groups and other community-based organizations. The existing DDCs and CCCs could be utilized for this purpose.

Thailand has traditionally served as a collaborator and training hub throughout Asia for capacity building and sharing of expertise, particularly in the area of HIV prevention, continuum of care, and clinical management. With the

Role of Thailand in Providing Support to Countries

6

Thailand has traditionally served as a collaborator and training hub throughout Asia for capacity building and sharing of expertise, particularly in the area of HIV prevention, continuum of care, and clinical management. With the successful expansion of the ART programme it has set the stage for many countries to learn from the experiences of the national expansion with regard to all the aforementioned key components.

The WHO Collaborating Centre for Training and Research on HIV and AIDS Clinical Management and Counselling at Bamrasnaradura Institute was established in 1997. It forms part of a collaborative national and international network conducting activities in health care workers' training, development of training material in HIV/AIDS clinical care, and dissemination of information and training in research methodology. Annual intercountry training workshops on Clinical management of HIV and AIDS have been conducted by this centre since 1999. International experts and WHO have contributed to the regular revision of the training curriculum. As of 2004, 11 international courses have taken place: seven on clinical management and four on laboratory diagnosis of OIs and so far, 220 participants from 16 countries in Asia have attended the courses.

Thailand has led the way in the region on scaling-up HIV prevention, care and treatment programmes. For example, the successful experience with the 100% Condom Programme, as part of the overall comprehensive response, has served as an effective model for use in other countries seeking to address HIV transmission associated with establishment-based sex work. The Asian experience with designing and implementing the 100% Condom Programme has grown substantially in the last two years to include Cambodia, China, Lao People's Democratic Republic, Mongolia, Myanmar, the Philippines and Viet Nam. This intervention was implemented along with the expansion of HIV counselling, prevention of mother-to-child transmission and care and treatment programme. The Thai HIV care and treatment programme with all its eleven key elements could serve as a "hands on model": for countries to learn how to start and expand comprehensive HIV, care and treatment programmes.

The annual “Bangkok Symposium” organized by HIV-NAT in Thailand provides a forum for scientists in the region to learn from local and international research related to HIV.

There is an immense opportunity for operational research in treatment scale-up to provide relevant strategic information for AIDS programme planning and implementation. Although a large number of papers have been presented during meetings and conferences and an abundance of reports generated, only limited documentation of the national expansion is available in the public domain.

Exceptional progress was made by the RTG in scaling-up access to treatment in Thailand, achieving the national treatment target of delivering ART to more than 50% of those in need between 2001 and 2004. This led the RTG to declare, in July 2004, its commitment towards the ultimate goal of universal access to ART. Expanding ART coverage has been achieved rapidly through

strong political commitment and harnessing the full potential of the strong public health system. Many other countries in the region can benefit from the lessons and success of the Thailand programme.

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Department of Disease Control

11 Oct 2004

17.00 – 20.00

Briefing of Mission Team

12 Oct 2004

09.30 – 10.00

Courtesy Call, Director General of Department of Disease Control, MOPH

10.00 – 12.00

Bureau of AIDS TB, STIs

13.30 – 16.30

Health Systems Research Institute

13 Oct 2004

09.30 – 12.00

HIV-NAT, Bangkok

13.00 – 16.30

Bamrasnaradura Institute, Bangkok

14 Oct 2004

09.00- 12.00

Office of Disease Control & Prevention Region 3

Chonburi Provincial Health Office

Chonburi Provincial Hospital

13.30 – 16.30

Provincial Health Office, Rayong province

Ban-Shang Hospital, Rayong province

15 Oct 2004

09.00 12.00

Office of Disease Control & Prevention Region 6

Provincial Health Office, Udonthani province

Udonthani Provincial Hospital

13.00 – 16.30

Suwankooha, Nong –Bualumpoo District Hospital

18 Oct 2004

9.30 – 12.00

Government Pharmaceutical Organization

13.30 – 14.30

Division of Medical Coordination and Rehabilitation, Social Security Office

UN Themegroup on HIV/AIDS, NGOs

14.45 – 16.30

Medical and Social Service Development Section

19 Oct 2004

09.00 – 12.00

Debriefing of Director General Disease Control & Prevention

Discussion of draft recommendations with Bureau of AIDS, TB & STIs

Institutions Visited and People Met

Annex 3

Ministry of Public Health

Somchit Lerknimit
Bureau of AIDS, TB and STIs
Department of Disease Control
Ministry of Public Health

The list of persons met is not exhaustive and limited to the main speakers during the visits conducted in the institutions. The Review Team members would like to thank all the persons who participated and who are not quoted in this list.

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Dr Achara Chaovavanich, Director
Dr Siriwan Sirikwin, Deputy Director, Research
and Development in AIDS
Mr Prasong Wongtavatchai, Deputy Director
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Dr Somsit Tansuphaswadikul, Deputy Director
of International Relations
Ms Yaowarat Inthong, Deputy Director of
Nursing Section
Mr Sirichai Leangaksorn, Deputy Director of
Administrative Section
Dr Viroth Mankatitham, Chief of Medicine
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Dr Jiurai Wongsawat, Pediatrician

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Dr Piyarat Suntarattiwong, Department of
Paediatrics, Infectious diseases specialist

Siriraj Hospital, Bangkok

Dr. Kulkanya Choekphaibulkit, Asst. Prof. of
Paediatrics, Dept. of Paediatrics, Infectious
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The HIV Netherlands, Australia and Thailand Research Collaboration (HIV-NAT), Bangkok

Dr. Chris Duncombe, Senior Physician

GPO

Dr Thongchai Thavichachart
Mr Sirisak Vipavaphanich
Ms Lucksamee Janthai
Ms Jittaporn Wattanaseree

World Bank

Ms Nantaporn Leumwananonthachai

UN Themegroup on AIDS Thailand: members
not listed.

Central level NGO: members not listed.

Regional Office for Disease Prevention and Control – Region 3

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Ms Nopmanee Sanguanpong
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Dr Kasem Songjitrat

NGO/self-help group network - Chonburi

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Mr Nawapon Mitipat
Mr Jirapan Rattaprasert

Chonburi Provincial Hospital

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Dr. Yirachai Waiwarawut
Ms Lamai Amarin
Ms Wanrada Prucksachalatarn
Mr Chaiwat Theerathummakorn
Mr Prakit Yothipitak
Mr Suchat Hongsirivan

Nongsay Hospital

Dr. Narongsak Ratchapabdee
Ms Apinya
Mr Chalermpong Saritchasombat
Ms Porntip Hangchiyapoon
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Ms Nittaya Prangam
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Ms Wasana Phamgam
Ms Jittima Kamruangri
Mr Pimon Sriphutorn
Mr Sayumporn Promasareet
Mr Kamol Thankham

Camillion Social Centre – Rayong, Region 3

Father Giovanni Contarin,
President of the TNP+ Eastern Network

Regional Office for Disease Prevention and Control – Region 6

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Ms Kingkarn Jongjaihan
Ms Supathra Simmathan
Ms Atchara Koonruang
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Ms Tongsook Kamla
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Ms Orawan Eamlao
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Ms Pamornrat Asavasena
Ms Wilai Aurchit
Ms Kulladda Palakul
Ms Yutarat Krisriwatana
Ms Yaowaree Prommasakha
Ms Paraprai Wongkotsuwan
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Ya-Jai NGO/PHA Network (Udonthani Provincial Hospital)

Ms Kanla Kappako
Ms Wilaiwan Saithongsook
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Ms Runothai Kulawong
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Ya-Jai Self-help group network

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Ms Tongyeam Boon-ard

Security Service Office (SSO)

Ms Thamaporn Methawikul
Ms Kachada Samyam
Ms Chanika Kovapradit

Antiretroviral Treatment Regimens Used in ATC1, ATC2 and NAPHA

Annex 4

Table Annex 4: ARV regimens

ATC1 (2000)		ATC2 (2002)		NAPHA (2004)	
Adult regimens	Children regimens	Adult regimens	Children regimens	Adult regimens	Children regimens
ZDV+3TC+NVP	ZDV+ddI+EFV	d4T+3TC+NVP (GPO-vir)	d4T+3TC+NVP	d4T+3TC+NVP (GPO-vir)	d4T+3TC+NVP
ZDV+ddI+NVP	ZDV+3TC+EFV	d4T+3TC+EFV	ZDV+3TC+NVP	ZDV+3TC+NVP	ZDV+3TC+NVP
ZDV+3TC+EFV	d4T+ddI+EFV	d4T+3TC+IDV/RIV	d4T+3TC+EFV	d4T+3TC+EFV	d4T+3TC+EFV
d4T+ddI+EFV	d4T+3TC+EFV		ZDV+3TC+EFV	ZDV+3TC+EFV	ZDV+3TC+EFV
ZDV+3TC+SQV/r	ZDV+ddI+IDV		d4T+3TC	d4T+3TC+IDV/r	d4T+3TC+IDV/r
d4T+ddI+SQV/r	d4T+ddI+IDV		ZDV+3TC	ZDV+3TC+IDV/r	ZDV+3TC+IDV/r
ZDV+3TC+IDV/r	ZDV+ddI+RIV				d4T+3TC
d4T+ddI+IDV/r	d4T+ddI+RIV				ZDV+3TC
	ZDV+ddI				
	ZDV+3TC				
	d4T+ddI				
	d4T+3TC				

A. Programme monitoring

Selecting indicators -

The interim WHO program monitoring indicators for ART programmes fall into three categories:

- Coverage;
- Treatment outcome, and
- Early warnings for HIV drug resistance

These indicators assist managers at multiple levels in identifying problems in the execution of the ART treatment programme. A national set of indicators, adapted for the national programme should apply to all providers of ART in the country. Where possible, adopting indicators which are consistent with international recommendations can assist in cross-country comparisons and sharing of best practices.

A majority of the WHO recommended indicators require data elements which are already included in the current AIDS Patient Care Programme data forms and electronic data base.

A number of indicators recommended by WHO would require additional information to be collected on patient clinical encounter forms or through patient registers.

The highest priority indicators from this list would include: 1-6, 10, and 12 and 13 (**Table Annex 5**).

The reports/indicators that will be available in Version 2.0 of the HIV AIDS Patient Care Programme software overlap with the WHO recommendations, but include some additional or modified versions indicators.

Table Annex 5: ART programme monitoring indicators

	Indicator	Denominator (if applicable)
1.	*Number started on ART during the reporting period	
2.	*Cumulative number ever started on ART	
3.	*Proportion of people with advanced HIV receiving ART	Number of people with advanced HIV estimated from surveillance data
4.	*Proportion of people who start on a standard 1 st line regimen	All patients starting ART during the reporting period
5.	*Proportion of people alive and on treatment 6, 12, and 24 months after initiating treatment.*	
6.	*Proportion of people continuing on 1 st line regimen 12 months after initiation of treatment.*	All people currently on ART who started with a 1 st line regimen
7.	Proportion of people on original 1 st line regimen	All people currently on ART who started with a 1 st line regimen
8.	Proportion of people on substitute alternative 1 st line regimen	All people currently on ART who started with a 1 st line regimen
9.	Proportion who have switched to 2 nd line regimen or higher	All people currently on ART
10.	Median change from baseline of CD4+ cell count after 6 and 12 months of ART.*	
11.	Proportion of patients who started ART 6, 12, or 24 months ago who picked up all medication refills on time.*	

*calculated for people who have or would have reached these treatment milestones during the reporting period.

Table Annex 5: (continued...)		
	Indicator	Denominator (if applicable)
12.	Number of PLHIV enrolled in HIV care	Service utilization by HIV patients receiving any type of care
13.	*Number of persons who are eligible for ART but are not receiving treatment (i.e. those on a waiting list)	Formal record keeping of people on a waiting list for ART
14.	Proportion of those eligible at a facility who started on ART	Same as above
15.	Proportion of people with good adherence	Formal assessment and record keeping on adherence, as defined in a standardized way by NAPHA. (In the interim, this could be defined by the proportion of patients who keep their regular appointments.)
16.	Proportion of people on ART whose functional status at 6, 12, 24 months is that of "working"	Collection of working status at baseline and at subsequent visits. Appropriate definitions of work may be adopted for different contexts (e.g. for women taking care of households, PLHA who volunteer or perform paid work service).

**calculated for people who have or would have reached these treatment milestones during the reporting period.*

Analytical issues

Patients who began ART prior to the implementation of ATC and NAPHA should be analyzed separately since their regimens and outcomes are likely to be different from those patients who are treatment naïve at the time of enrolling in NAPHA. Similarly, the analysis should be stratified by adult and paediatric cases, due to the programme management implications of the indicators for these groups. The calculation of many of the indicators assessing patient outcomes over time are complex and require careful attention to defining the numerators and denominators with respect to the way data elements are collected in the electronic data base. Technical support for implementing these indicators can be made available from WHO as needed.

Table Annex 6: Indicators Version 2.0 of the HIV AIDS Patient Care Programme software

Planned report/indicator	Overlap/Modified/New	Comments
Number and % of HIV infected patients who received ART	Overlap	What is the source of the denominator?
Number and % of HIV infected patients who received OI prophylaxis	New	Not clear where the data are recorded or entered into the system. What is the source of the denominator?
Number and % of HIV infected patients who receive ART by regimen	Modified	What is the source of the denominator? See indicators 6,7,8,9 in Table 10.
Number and % of patients who terminated from project	Modified	See indicator 5 in Table 10.
Number and % CD4 count level on HIV infected patients at 0, 6, 12 months	Modified	See indicator 10 in Table 10.

B. Patient monitoring

Some additional data may be useful in clinical management of individual patients and could be added to the current clinical encounter forms or registry books.

- Marital status
- Date, location, and confirmation of HIV test result (may already be documented in OPD card)
- Entry point into ART care (PMTCT, OPD, STI, TB, In-patient, IDU outreach, sex worker outreach, VCT, other)
- Primary clinician/team
- Family members also in care (name, age, id#)
- Persons to whom patient has disclosed HIV status
- Name and contact information of treatment supporter
- Date determined medically eligible to start ART
- WHO stage at start of treatment

- Clinical and non-clinical eligibility criteria met by patient
- Received appropriate preparation and education for ART
- Date ART started at original clinic (if patient is experienced)
- Functional status prior to starting ART (e.g. working)
- Date of death
- Visit type (e.g. scheduled or unscheduled)
- Pregnancy status of female patients
- Cotrimoxazole prophylaxis start and stop date, adherence to cotrimoxazole, reason for discontinuation of prophylaxis.
- Assessment of adherence, reason for non-adherence to ART
- Results of other laboratory tests (e.g. FBC, white blood cell count, liver enzyme, etc.)

Roles and Responsibilities for Programme Monitoring and Data Management for Antiretroviral Treatment Programmes

Annex 6

Central level

- Coordinate selection of indicators and data collection forms
- Design reporting software for hospitals/provinces/regions
- Provide technical support for using electronic reporting system
- Review monthly reports at the regional and provincial levels
- Produce national monthly and annual reports
- Provide feedback to the regions and provinces on programme performance
- Use data to identify common issues and model programmes
- Use data to do programme planning (e.g. stock management, price negotiation, allocation of human and technical support resources)
- Commission external evaluation of overall programme
- Coordinate and conduct ad hoc analysis for purposes of operational research
- Coordinate non-MOPH managed ART programmes on reporting systems and programme monitoring standards
- Develop guidelines and tools for programme monitoring at hospital, provincial, and regional levels
- Coordinate training for using programme monitoring data at hospital, provincial, and regional level
- Monitor allocation of ART slots by region/province and vulnerable groups (children, IDU, sex workers).
- Conduct site visits to assess programme management, review programme data with regional and provincial officers, and hospital managers

Regional level

- Ensure timely reporting by provinces
- Review provincial monthly reports, identify problem areas
- Compile regional monthly reports and submit to central office
- Provide feedback to provincial level based on monthly reports
- Review stock reports and assess adequacy of distribution of drug supply and patient enrollment.
- Conduct site visits to assess programme management, review programme data with provincial officers and hospital managers

Provincial level

- Ensure timely reporting by hospitals
- Review hospital monthly reports, identify problem areas
- Compile provincial monthly reports and submit to regional office
- Conduct site visits to assess programme management, review programme data with hospital managers

Hospital level

- Data entry of clinical encounter forms
- Data quality check of entered data
- Generation of hospital-level monthly report
- Review monthly statistics and review progress of hospital with ART staff
- Analysis of patient data

Proposed Clinical, Stock, and Administrative Data Flow at Multiple Management Levels for NAPHA

Table Annex 7: Proposed clinical, stock and administrative data flow

Clinical Data	Stock Management Data	Administrative Data
<p><u>System</u>: HIV AIDS Care Programme Software Version 2.0; Paper-based supervisory reports</p>	<p><u>System</u>: Paper-based stock management forms</p>	<p><u>System</u>: U.C. Electronic data system</p>
<p>Hospital Level</p> <p><u>Data collected</u>: Patient status, treatment response, regimen <u>Functional needs</u>: Monitor patient outcomes, assess hospital performance, track capacity to increase numbers of patients on ART, generate monthly hospital report; ad hoc data analysis (operational research). <u>Cycle</u>: daily (data entry); monthly (transmission)</p>	<p><u>Data collected</u>: Inventory (opening, consumed, closing) <u>Functional needs</u>: Manage supply of hospital stock, advise on the number of new patients system can support. <u>Cycle</u>: Daily (accounting); as needed (re-order)</p>	<p><u>Data collected</u>: Visits, procedures, diagnostic codes for all patients under U.C. <u>Functional needs</u>: Processing reimbursements <u>Cycle</u>: Weekly (data entry and transmission)</p>
<p>Provincial Level</p> <p><u>Data collected</u>: Facility performance (supervisory site visit) <u>Functional needs</u>: Monitor hospital performance; provide feedback on hospital performance and joint problem-solving, assess data quality, track capacity to increase numbers of patients on ART, generate monthly provincial report. <u>Cycle</u>: Monthly</p>	<p><u>Data collected</u>: (May assist hospital in preparation of stock re-order) <u>Functional needs</u>: None</p>	
<p>Regional Level</p> <p><u>Functional needs</u>: Monitor and provide feedback on province performance; track capacity to increase numbers of patients on ART, identify capacity building needs (e.g. training); generate monthly regional report;</p>	<p><u>Functional needs</u>: Distribute regional stock; submit orders to NAPHA or manufacturers; assist in emergency redistribution of stock within the province</p>	
<p>National/Central Level</p> <p>(AIDS Cluster, MOEH) <u>Functional needs</u>: Monitor national programme performance against set targets; use data to adjust programme strategies and resource allocation; generate monthly national report; ad hoc analysis (operational research)</p>	<p>(AIDS Cluster, MOEH) <u>Functional needs</u>: Place orders with product manufacturers; release funds for NAPHA supported products</p>	<p>(National Health Security Board) <u>Functional needs</u>: Review claims and release funds; adjust scheme and resources according to utilization data</p>

Use of Lot Quality Assurance Sampling Methods for Assessing Quality of Data Entry

Background:

Quality assurance for data management of the NAPHA programme is work intensive, requiring managers to compare hard copy data forms to electronic records. Assessment of data quality may not be required each time data transmission occurs at all facilities. Due to the number of facilities participating in NAPHA program, an efficient use of supervisory resources requires a method for identifying facilities with problems with data entry. The lot quality assurance sampling (LQAS) method of selecting records to review is suggested to decrease the work load associated with assuring data quality for patient information entered into the HIV AIDS Care Programme database. This method allows general level of quality to be assessed through the review of a limited number of observations (e.g. review of 19 patient records). Facilities that fail to meet the quality standard may receive more attention from management with respect to ensuring data quality, while facilities that meet the quality standard may have data quality checks conducted on a less frequent basis. There are multiple public health applications for this method including allocation of supervision resources over large numbers of units/supervision areas.

Implementing LQAS Steps:

Define quality standard:

- (1) Identify critical data elements that must be entered accurately (e.g. weight, CD4 count, regimen, current status).
- (2) Determine tolerance for data entry errors (e.g. 90% of records without errors for any critical elements; 75% of records without errors for any critical elements; etc.), review random sample of records (N=19).
- (3) Divide the total number of patients on ART by 20 (refer to this number as x, e.g. $x=500/20=25$).
- (4) Pick a random value between 1 and 100 (refer to this number as y, e.g. 6).

- (5) Create a list of patient records to review by starting at the patient with NAPHA number=y (e.g.y=6) and take every x patient until the total number of patients is 19, (e.g. patients 6, 31, 56, 81, 106, etc.).
- (6) Collect the record books for the patients on the list.
- (7) For visits made during the reporting period (e.g. month), compare the hard-copy to the electronic record for the critical data elements identified.
- (8) Tally the number of records for which the data quality failed to meet the standard set for data entry errors.

Determine whether further investigation into data entry quality is required.
- (9) If the number of records with unacceptable data entry errors exceeds the tolerance level, further investigation into data quality is warranted. If the number of records with unacceptable data entry errors is less than the tolerance level, data can be transmitted to central database.

This report summarizes the key findings of the third joint review of the antiretroviral treatment programme in Thailand since it started in 1992. Expanding antiretroviral treatment coverage has been achieved rapidly through strong political commitment and harnessing the full potential of the strong public health system. The challenge is to maintain the synergistic relationship between preventing HIV transmission, comprehensive HIV care and support as well as antiretroviral treatment and within the latter ensuring access to second-line treatment regimens.