Training on Design and Costing
HIV Programs in Asia

Background Reading Materials
Session 1: Set the Goals for your National Strategic plans

What are the goals and objectives of your national strategic plan?

On the Epidemic
In 2007, about 5 million Asians were living with HIV, while approximately 440,000 people were newly-infected with the virus. During the year 300,000 people died of AIDS-related diseases.

Asia’s HIV pandemic is now entering a second growth phase, which could see HIV prevalence soar. By 2020, nearly 10 million Asians will be infected if prevention efforts are not expanded and fully implemented.

Both the doomsday scenarios of ever-expanding epidemics and the notion that Asia’s epidemics will automatically ‘run out of steam’ are misplaced.

Despite the declining trend of new HIV infections in a few countries, AIDS still accounts for more deaths annually among 15 to 44 year-olds than do tuberculosis and other diseases.

In spite of variations from country-to-country, HIV transmission in Asia is driven primarily by three high-risk behaviors: unprotected commercial sex, injecting drug user and unprotected sex between men.

The numbers of men who buy sex, and the turnover of clients visiting sex workers, are the main determinants of the speed and level of most Asian epidemics. On average, there are about ten male clients for every sex worker.

In many Asian countries, adult men who buy sex, and their female partners, constitute the largest group of people living with HIV.

Because relatively few women in Asia have sex concurrently with more than one partner, the chain of HIV infection often ends when the wives and girlfriends become infected.

Dynamic economic and social changes in Asia and their influence on sexual practices and on the evolution of the HIV epidemics need to be carefully studied.

Unlike in many African countries, no country in Asia has ‘generalized’ HIV epidemic, making it necessary to target the entire sexually active population with prevention efforts. A more focused effort in Asia will therefore yield results.

A committed and determined effort in prevention and treatment with the necessary commitment can avert over 5 million new HIV infections and over 2 million AIDS-related deaths during the next decade.

Supplementary reading:
Setting National Targets for Moving Towards Universal Access, UNAIDS (2005)
Scaling up towards Universal Access: Considerations for countries to set their own national targets for AIDS prevention, treatment, and care and support, UNAIDS (2006)
Session 2: Prioritization of Sub-populations

Why do we need to prioritize populations?

Policymakers and program planners must have the information required to understand who the priority populations for interventions are in order to implement effective national responses to the HIV epidemic in a country. Although this seems obvious, in many cases global and national HIV strategic planning is not led by this information. Why is prioritization of sub-populations for intervention so important? The main reason is that the interventions included in any global or national strategy should aim to have the maximum impact on the growth of the epidemic, i.e., they should halt or reverse the epidemic. This is only possible if the population source of most new infections is known, and their vulnerability to infection is diminished by prevention interventions.

The implication of not having the data-based evidence to prioritize populations for intervention is that policymakers and planners have to essentially work in the dark. This usually results in a response that is ad hoc, or efforts to address all the populations at risk through an indiscriminate mix of interventions. Often it is easier to establish non-specific interventions for the “general population”, than to address the needs of the specific populations at risk who tend to be marginalized and hard-to-reach, or whose activities are illegal or frowned upon.

For example, it is estimated in the recent 2008 UNAIDS Global Report that 45% of new infections worldwide are among young people aged 15-24 years (page 35, 2008 Global Report). But it must be understood that even among youth there needs to be prioritization of which young sub-populations need intervention. Analysis by the Commission on AIDS in Asia found that nearly 95% of preventable new infections occur among the most-at-risk groups of adolescents (Figure 1) such as young drug injecters, young men who have sex with men, and young women who sell sex and their young male clients (Report of the Commission on AIDS in Asia). However, in the budget allocation of the UNAIDS co-sponsors (Unified Budget and Work Plans, 2004-2005) the bulk of HIV resources (around 90% as shown by the bar on the right) were allocated to easy-to-reach but low-risk young people in school settings, or to life skills education that primarily addresses casual sex. This pattern of resource utilization results as shown in a minimal impact on new infections, with only about 5% of new HIV infections averted.

Figure 1: Percentage of new HIV infections in young people and allocation of resources for young people by UNICEF, UNFPA and UNESCO.

From a practical angle the reason to prioritize populations for intervention is that generally there are limited resources for HIV-related interventions. If there is no prioritization typically what we see is too many planned activities attempting to cover all aspects of HIV prevention and care. The consequence of this because of population growth is an ever-expanding need for resources over the years as shown in Figure 2. Also when a relatively small budget is assigned to prevention activities with those most at risk as in the figure, then the resources for treatment increase as more and more people get infected.
In contrast, if policymakers make decisions on how to allocate limited resources guided by what would have the most impact on the epidemic, the analysis of the Commission found that in the Asian context a few focused interventions targeted at specific populations at risk are the most cost effective, as shown on the left-hand side of Figure 3. Regionally it was estimated that more expensive interventions such as ensuring blood safety and safe injection prevent only about 1% of new HIV infections, while they can take up to 25% of the regional HIV budget, i.e., they are high cost but low impact. On the other hand, interventions focused on sex workers and their clients are low cost but high impact, because they can prevent 80% of new infections but only consume 15% of the estimated regional budget. This is because it is more likely that even if one reaches fewer of the people who have high risk behavior with interventions, several new infections can be averted, whereas in order to avert one new infection among the lower risk population at large one has to reach many more of them.
How do we prioritize?
In order to prioritize populations for intervention, what we really need to know is where new infections are predominantly coming from in the present, and how that pattern will play out in the future. Therefore, every national program must understand as a first step which populations in the country are most at risk of HIV infection due to their behaviors or occupations, and which group is dominating HIV transmission. Generally in Asia, these populations include injecting drug users (IDU), female (FSW), male (MSW) and transgender sex workers, male clients of FSW, and men who have sex with men (Report of the Commission on AIDS in Asia). Individual countries or regions within a country may have additional or other risk groups. For example, in several countries migrant workers, both internal migrants and those working abroad, are at significant risk due to the nature of their work or their circumstances of separation from family.

Each country also has different characteristic contexts surrounding the categorization of the main groups at risk. Thus, sex workers may contact clients by cell phone or at sex work establishments or on the streets or at other venues. Modes of sharing drugs may differ and drug injection may take place at shooting galleries or in small groups of friends. Men who have sex with men have different levels of acceptance in different countries in Asia, and may use various mechanisms to meet and network. These factors influence how interventions should be designed and how services are delivered to people at risk.

Figure 4: In Asia early HIV infections are strongly focused in behaviorally linked at-risk groups

The sizes of the populations vulnerable to HIV are also a key determinant of the path of HIV spread in a country. While FSW may typically comprise 0.2-0.8% of the adult female population in Asia, the size of the male client population is much larger, ranging anywhere from 6-20% of the adult male population in different countries in the region, so that together the participants in commercial sex highly influence the spread of HIV, and need to be a focus for intervention. The size of the IDU population often is a key factor in determining their influence on an HIV epidemic, since IDU are often clients of FSW and can trigger the spread of HIV into commercial sex networks. In many Asian countries MSM have been ignored by HIV prevention efforts although they typically comprise 1-4% of the adult male population - not an insignificant number - and unprotected anal sex leads to significant risk of HIV infection. They can also lead to exposure of otherwise low-risk women to HIV due to socio-cultural norms and pressures that result in their also having heterosexual sex. Therefore, the size of vulnerable groups, as well as the inter-linkages among different populations as shown diagrammatically in Figure 4 is important to estimate HIV spread in a country or region.
There are a number of methods widely used to estimate the sizes of populations at risk. Briefly, the main methods are:

- Census and enumeration
- Population surveys
- Multiplier methods
- Nomination methods
- Capture-Recapture
- Respondent-driven Sampling (RDS)


Generally the size ranges of the sub-populations most at risk in the Asian context are as given in Table 1 (REF: Brown, Reddy and Peerapatapanokin, may be in the tech annexe or a background doc for Commission, and all the other size reviews):

<table>
<thead>
<tr>
<th>Populations at Higher Risk</th>
<th>Asian Average Size (expressed as percent adult population aged 15-49 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male IDU</td>
<td>0.1 - 1% adult males</td>
</tr>
<tr>
<td>FSW</td>
<td>0.2 - 0.8% adult females</td>
</tr>
<tr>
<td>MSM &amp; MSW</td>
<td>2 - 5% adult males</td>
</tr>
<tr>
<td>Clients of FSW</td>
<td>5 - 20% adult males</td>
</tr>
</tbody>
</table>

Table 1. Size ranges of the sub-populations most at risk in the Asian context

Another factor that determines prioritization of populations when combined with size estimations is HIV prevalence in the different groups, i.e., the reservoir of infection in each group. For example, there may be high prevalence among MSW but their relative size may be quite small compared to that of the heterosexual commercial sex network of FSW and Clients. With limited resources this could lead to the decision to prioritize FSW and clients rather than MSW as their impact on new infections will be larger.

Besides knowing the identity, size, HIV prevalence and inter-connections among the populations at risk, planners also need to understand the drivers of the HIV epidemic in the country, i.e., the structural and social factors that increase people’s vulnerability to HIV infection, such as poverty, gender inequality and human rights violations. Understanding these factors places HIV in a broader developmental context. The implication for HIV national strategic planning is that this provides opportunities to link with other government departments, and their budgets, for planning intervention activities.
**What do we need to know to prioritize?**

Where can policymakers and program planners get the information described above that they need to strategically prioritize populations for intervention? The information needed can come out of a detailed data synthesis and triangulation process done in-country, and pinpointed most effectively through a couple of available tools and normative regimens.

**Passive Case Reporting Distribution**

Determining the populations most at risk in a particular country is generally initially evaluated based on which groups are represented among the case reports of HIV infection and AIDS cases. But this data needs to be interpreted with caution as reported cases often represent mainly those individuals who are most easily captured by the reporting systems, for example in many countries work migrants fall into this category. Therefore, case reporting data need to be interpreted in combination with more detailed surveys among groups likely to be at risk (sex workers and their clients, drug injectors and MSM), rapid situation assessments in different geographical areas, information from NGOs and CBOs working in the field, and through focus groups meetings and other information gathering mechanisms.

**Normative Methods**

1. The UNAIDS “Practical Guidelines for Intensifying HIV Prevention” lays down some methods to assess populations that are at risk based on the stage of the epidemic in the country, as shown in Annex 1. It is recommended that even low-level HIV countries should initiate and maintain second generation surveillance systems, i.e., national monitoring and evaluation systems that include surveys of HIV transmission-related behaviors in sub-populations likely to be at risk, as well as surveillance of biological markers such as STI and HIV.

2. The Commission on AIDS in Asia has also prescribed guidelines for prioritizing populations for intervention based on a proposed categorization of the epidemic in a country or region as being one of Latent, Expanding, Mature or Declining (Report of the Commission on AIDS in Asia). Based on measured levels of HIV prevalence and behavioral information on the most-at-risk populations, countries can assess into which category their national epidemic fits (or regional sub-epidemics as the case may be), and accordingly prioritize for intervention the sex work, drug-injecting, and/or male-male sex epidemics and the corresponding populations involved as shown in Annex 2.
**Spreadsheet Estimation**

To more precisely prioritize populations for interventions in a country or region what one really needs to know is in which groups most of the new HIV infections are arising in the present. To anticipate changing needs for prevention and care and treatment it is also necessary to understand the linkages among sub-populations at risk of infection, and assess among whom new infections will arise in the future.

In low level or concentrated epidemics the UNAIDS Workbook method can be used to estimate among which groups there are the most infections in the present. This simple estimation workbook in Excel multiplies the number of people being considered in each sub-population by the prevalence measured in that group to estimate the number of people in the group living with HIV. The workbook allows the whole country to be divided into geographical regions for the estimations, and populations at higher risk such as IDU, sex workers and their clients, and MSM, can be evaluated, as well as populations at lower risk, such as the sexual partners of populations at higher risk. The regional estimations are all added together in a summary worksheet to give a national estimate. Figure 5 shows a snapshot of the UNAIDS workbook national summary worksheet.

### National Summary Worksheet

<table>
<thead>
<tr>
<th>Population Size Estimate</th>
<th>HIV Prevalence Estimate (%)</th>
<th>Estimated number of adults living with HIV/AIDS</th>
<th>Female Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total PLR</td>
<td>3,439,087</td>
<td>5,014,827</td>
<td></td>
</tr>
</tbody>
</table>

### Sub-total PHR

<table>
<thead>
<tr>
<th>Population Size Estimate</th>
<th>HIV Prevalence Estimate (%)</th>
<th>Estimated number of adults living with HIV/AIDS</th>
<th>Female Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total PHR</td>
<td>3,849,087</td>
<td>5,014,827</td>
<td></td>
</tr>
</tbody>
</table>

### Sub-total PLR

<table>
<thead>
<tr>
<th>Population Size Estimate</th>
<th>HIV Prevalence Estimate (%)</th>
<th>Estimated number of adults living with HIV/AIDS</th>
<th>Female Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total PLR</td>
<td>3,849,087</td>
<td>5,014,827</td>
<td></td>
</tr>
</tbody>
</table>

**MODEL OUTPUTS:**

<table>
<thead>
<tr>
<th>Estimated number of adults living with HIV</th>
<th>Female Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of adults living with HIV</td>
<td>Number of women living with HIV</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>National Total</td>
<td>6,058</td>
</tr>
</tbody>
</table>

**CONSISTENCY CHECK:**

- **Higher risk population size estimates:**
  - % estimated to be female: 22.3%
  - % estimated to be men: 77.7%
  - % of total HIV that are women: 14.8%

- **Higher risk HIV prevalence estimates:**
  - MSM: 5.0%
  - Female sex workers: 0.72%
  - Male clients of female sex workers: 0.05%
  - IDU: 0.43%

- **Good quality was selected on the set-up page!”

### Model B: ANC data applied to low risk

<table>
<thead>
<tr>
<th>Population Size Estimate</th>
<th>HIV Prevalence Estimate (%)</th>
<th>Estimated number of adults living with HIV/AIDS</th>
<th>Female Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total PHR</td>
<td>3,849,087</td>
<td>5,014,827</td>
<td></td>
</tr>
</tbody>
</table>

### Model C: ANI data applied to high risk

<table>
<thead>
<tr>
<th>Population Size Estimate</th>
<th>HIV Prevalence Estimate (%)</th>
<th>Estimated number of adults living with HIV/AIDS</th>
<th>Female Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total PHR</td>
<td>3,849,087</td>
<td>5,014,827</td>
<td></td>
</tr>
</tbody>
</table>
**Modeling Methods**

The estimation of new infections in the future is only possible by using modeling tools that can make projections of the future spread of HIV in the country or region based on the current populations vulnerable to HIV due to their sexual or injecting behavior, their size, and the linkages among them. Curve-fitting models such as EPP used in conjunction with Spectrum will only give the total number of new infections to be expected. This overall measure is not useful for prioritization for intervention among the different sub-populations at risk.

The only tool that can estimate the number of new infections in the different sub-populations most often at risk in Asia, both in the present as well as into the future is the Asian Epidemic Model (AEM). The AEM is a deterministic process model developed specifically to replicate the dominant patterns of HIV transmission in Asian countries, where the primary driving forces of HIV epidemics are sex work and sharing of needles by injection drug users. The AEM has been used successfully in Thailand and Cambodia to make accurate projections of the course of those HIV epidemics.

In the model HIV is introduced into the key at-risk populations, and the numbers of infected and uninfected people in each that result from the frequency of unprotected sexual or needle-sharing acts are calculated, using standard epidemiological equations for transmission of HIV, given the prevalence in the different groups. The major groups included in AEM are as follows:

- **Male groups**
  - Clients
  - Non-clients (lower risk males)
  - Injecting drug users in high risk networks
  - Injecting drug users in low risk networks
  - Men who have sex with men
  - Male sex workers

- **Female groups**
  - Direct female sex workers (with higher frequency of sexual contacts)
  - Indirect female sex workers (with lower frequency of sexual contacts)
  - Injecting direct female sex workers
  - Injecting indirect female sex workers
  - Lower risk females

- **Children with HIV** (calculated as an output)

The population classes considered in other process models vary according to the model: iwgAIDS divided the population into high- and low-risk males and females, and Anderson et al. consider 4 risk-activity classes in their model. Only AEM classifies the country or region into the key populations now considered as important for HIV transmission in Asian epidemics according to the Commission on AIDS in Asia.
What data is needed to prioritize?
For all the methods suggested the basic data needs are good size estimates of populations
vulnerable to and most-at-risk of HIV infection and prevalence measures from surveillance or
ad hoc surveys in each group. This is necessary information for the normative methods, for the
UNAIDS workbook, and for AEM.

The AEM has more data needs than the other methods. In addition to the size and prevalence
among at-risk populations, the AEM requires information on their behaviors over time and the
HIV transmission probabilities for male-female sex, male-male sex, and for transmission by
injection.

The AEM inputs are entered in an Excel worksheet user interface and can be varied on a yearly
basis starting from 1980, and mainly include three types of data on each key population:
- Population sizes and demographic details
- Epidemiological and biological information, including STI prevalence
- Risk behavior indicators such as condom use, needle sharing, etc., and also the
duration and frequency of risk behaviors.

Figure 6 shows an example of the AEM Excel worksheet and Table 2 outlines all the data
needs.

Factors that increase or decrease HIV infection such as sexually transmitted infections and
male circumcision are entered separately as cofactors. The AEM is a semi-empirical model. A
projection is made of the number of HIV-infections in each at-risk sub-population based on the
data inputs, and the predicted curve is then “fit” to the actual HIV prevalence over time (an
input) by adjusting the transmission probabilities and cofactors until the two curves are
comparable. Transmission frequencies are in this way set at country (or region-specific) values.

Table 2: Detailed data input needs for AEM

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of key at-risk populations in each year</td>
<td>Male clients, Female sex workers (high and low frequency classes are defined based on their numbers of clients per night), IDU (male injectors and injecting female sex workers), MSM and MSW</td>
</tr>
<tr>
<td>Average time spent in at-risk populations</td>
<td></td>
</tr>
</tbody>
</table>
| Sexual behavior for key populations in each year | Frequencies of sexual acts  
  - In sex work, in relationships, in casual encounters  
  - In male-male encounters, including sex work  
  - Condom use  
  - With different types of partners |
| Injecting and sexual behaviors among IDUs     | Frequency of injection, Percentage of sharing, Frequency of sex, Condom use with different partners |
| Biological factors                           | STIs for key at-risk populations, Circumcision.                          |
| Fitting and parameters and data for validation | Probability of transmission, cofactors for STI and circumcision, Prevalence over time in key populations, Numbers of male and female passive reported HIV and AIDS cases |
Data Outputs for prioritization

The normative methods described suggest which populations should be addressed by interventions based on empirical evidence or detailed analysis that has been accumulated from countries with enough data to make projections by modeling, or by experience from countries where an impact on the HIV epidemic has been made.

The UNAIDS workbook outputs are estimates of the numbers of people living with HIV/AIDS in each defined population (higher and lower risk) and geographical zone.

AEM Outputs

The major outputs of the AEM include HIV prevalence, new and cumulative HIV infections, AIDS cases, and deaths. Any of these variables may be extracted for the population as a whole by age, or by at-risk population.

Key Model Outputs

- Total new, cumulative, and current
  - HIV
  - AIDS, and
  - Deaths
- Age distributions for HIV and AIDS
- New and current infections among at-risk
  - Clients, FSWs, MSMs, MSWs, IDUs
  - General population men and women
  - Children
- Routes of transmission over time
In conclusion: A national strategy that does not target the people who are most at risk will ultimately not be effective, and the human, social, and economic costs can be crippling as the experiences of many countries around the world clearly demonstrates.

Supplementary reading:
Averting and Reversing Asian HIV Epidemics, Tim Brown et. al.
Core Elements for a Country Led HIV Response in Asia, EWC – UNAIDS
A2-Guidelines, FHI (forthcoming)
### Annex 1. Strategic information, Programme and Policy Actions based on Epidemic scenario (from “Practical Guidelines for Intensifying HIV Prevention”)

<table>
<thead>
<tr>
<th>Low-level epidemic scenario</th>
<th>Concentrated epidemic</th>
<th>Generalized epidemic scenario</th>
<th>Hyperendemic scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gather and analyse strategic information to define most-at-risk populations and risk settings and on the HIV response, response capacity and resource needs in the public and private sector. Provide the data and analyses to the National AIDS Authority and other stakeholders on a regular basis.</td>
<td>• All actions outlined in low-level scenarios • Include plans and budgets for second generation surveillance in the national HIV monitoring and evaluation system, according to guidelines for generalized epidemics, including: sentinel HIV surveillance among pregnant women, urban and rural; cross-sectional surveys of attitudes and behaviour and HIV infection in the general population; cross-sectional surveys of attitudes and behaviour among young people; HIV and behavioural surveillance in sub-population with high-risk behaviour; and data on morbidity and mortality.</td>
<td>• Conduct periodic, participatory national assessments of the HIV response and response capacity and resource needs in the public and private sector, beginning in high-risk settings. • Monitor HIV programme coverage, disaggregated by population subgroup, sex, age, marital status and geographic area; analyse information with stakeholders; identify implementation gaps; and coordinate partners and adjust programmes to meet demand and improve programme performance.</td>
<td>• All actions outlined in low-level, concentrated and generalized scenarios • Conduct additional behavioural and ethnographic studies (e.g., young people, girls, married men) to map and define sexual networks, communication networks and opportunities to promote social change.</td>
</tr>
<tr>
<td>• Introduce and/or maintain/adapt second generation surveillance system and establish a national HIV monitoring and evaluation system to include surveys of behaviour in sub-populations, surveillance of sexually transmitted infections and other biological markers of risk, HIV surveillance in subpopulations, HIV case reporting, and tracking of HIV in donated blood. • Gather information on the HIV response and response capacity in the public and private sector, beginning in high-risk settings.</td>
<td>• All actions outlined in low-level and concentrated scenarios • Include plans and budgets for second generation surveillance in the national HIV monitoring and evaluation system that includes all of the elements recommended for a low-level epidemic along with additional elements that focus on the intersection of groups with differing risk (e.g., behavioural surveillance in sub-populations with risk behaviour and in bridging groups).</td>
<td>• Conduct additional research on sexual networking patterns to better understand the potential HIV transmission flow from most-at-risk populations to the general populations.</td>
<td>• Gather and analyse data from additional sources to estimate HIV incidence in key audiences, in order to refresh HIV prevention planning and keep it aligned with the epidemic.</td>
</tr>
<tr>
<td>• Gather and analyse data from additional sources to estimate HIV incidence in key audiences, in order to refresh HIV prevention planning and keep it aligned with the epidemic.</td>
<td>• Gather and analyse data from additional sources to estimate HIV incidence in key audiences, in order to refresh HIV prevention planning and keep it aligned with the epidemic.</td>
<td>• Gather and analyse data from additional sources to estimate HIV incidence in key audiences, in order to refresh HIV prevention planning and keep it aligned with the epidemic.</td>
<td>• Gather and analyse data from additional sources to estimate HIV incidence in key audiences, in order to refresh HIV prevention planning and keep it aligned with the epidemic.</td>
</tr>
<tr>
<td>Low-level epidemic scenario</td>
<td>Concentrated epidemic</td>
<td>Generalized epidemic scenario</td>
<td>Hyperendemic scenario</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>• Ensure high coverage of most-at-risk populations with acceptable and high quality HIV prevention, treatment and care services</td>
<td>• All actions outlined in low-level and concentrated scenarios.</td>
<td>• All actions outlined in low-level and concentrated scenarios.</td>
<td>• All actions outlined in log-level, concentrated and generalized scenarios.</td>
</tr>
<tr>
<td>• Build the capacity of the most-at-risk populations to organize, advocate and deliver peer prevention; secure the active participation of these populations in designing, delivering and evaluating prevention services.</td>
<td>• Provide and promote voluntary HIV counseling and testing with referral to services; begin in high-risk settings where HIV rates are high and expand within the public and private health sector as rapidly as possible.</td>
<td>• Promote and provide quality HIV prevention, treatment, care and support for most-at-risk populations and people living with HIV</td>
<td>• Ensure well informed, active and visible participation of leaders in HIV prevention and AIDS response</td>
</tr>
<tr>
<td>• Promote and provide access to comprehensive prevention, treatment and care services, including prevention of mother-to-child transmission, for people living with HIV.</td>
<td>• Provide prevention and care programmes focused on vulnerable and ‘bridge’ populations such as mobile population, uniformed forces, clients of sex workers and most-at-risk young people.</td>
<td>• Build capacity for HIV prevention planning and implementation in government, non-governmental organizations and civil society, including the capacity of most-at-risk populations and people living with HIV to organize and advocate; to deliver peer prevention and to lead “positive prevention programmes.” secure the active participation of communities in designing, delivering and evaluating prevention services.</td>
<td>• Develop and implement diversified programmes for young people, reaching both boys and girls that include gender equality and respect, access to comprehensive sexual and reproductive health services including access to treatment, ensuring access to information, sexuality education, life skills.</td>
</tr>
<tr>
<td>• Provide training to law enforcement personnel to reduce harassment at prevention and treatment sites serving most-at-risk populations.</td>
<td>• Integrate HIV prevention issues, including the adverse effects of stigma and discrimination, sexual violence, gender inequality, homophobia and human rights violations in broader public health and development campaigns.</td>
<td>• Promote programmes aimed at promoting livelihood alternatives to transactional sex.</td>
<td>• Ensure special programmes for orphans, street children and others at high risk, balancing needs for risk, vulnerability and impact reduction.</td>
</tr>
<tr>
<td>• Provide programmes aimed at promoting livelihood alternatives to transactional sex.</td>
<td>• Provide and promote access to comprehensive sexual and reproductive health services including access to treatment, ensuring access to information, sexuality education, life skills.</td>
<td>• Provide programmes aimed at promoting livelihood alternatives to transactional sex.</td>
<td>• Promote and ensure male involvement in sexual and reproductive health programmes including HIV prevention, STI treatment, HIV counselling and testing, prevention of mother-to-child transmission services.</td>
</tr>
<tr>
<td>• Provide training of service providers (e.g. community, social and healthcare workers) for working effectively with most-at-risk populations.</td>
<td>• Provide sexuality and reproductive health education, including HIV prevention information and education on issues such as dealing with stigma and discrimination, sexual violence and abuse as well as gender sensitivity and equality to young people through the school curriculum and to teachers through teacher education curriculum.</td>
<td>• Provide sexuality and reproductive health education, including HIV prevention information and education on issues such as dealing with stigma and discrimination, sexual violence and abuse as well as gender sensitivity and equality to young people through the school curriculum and to teachers through teacher education curriculum.</td>
<td>• Ensure health care and other social services employees are trained on HIV issues, including stigma, human rights and gender issues.</td>
</tr>
<tr>
<td>• Ensure adherence to blood safety standards (all blood and blood products tested for HIV before transfusion; all health care settings observe universal precautions).</td>
<td>• Provide adherence to blood safety standards (all blood and blood products tested for HIV before transfusion; all health care settings observe universal precautions).</td>
<td>• Provide adherence to blood safety standards (all blood and blood products tested for HIV before transfusion; all health care settings observe universal precautions).</td>
<td>• Identify priority geographic settings where male circumcision is likely to have the greatest impact on the HIV epidemic and progressively expand access to safe male circumcision services within the context of ensuring universal access to comprehensive HIV prevention and care.</td>
</tr>
<tr>
<td>• Provide prevention and care programmes focused on vulnerable populations (e.g., mobile populations, uniformed forces, clients of sex workers and most-at-risk young people such as street children and in- and out-of-school youth), on a national and regional basis.</td>
<td>• Partner with Ministry of Labour, employer associations and trade unions to promote the availability of HIV prevention and treatment services or referrals at the workplace.</td>
<td>• Provide prevention and care programmes focused on vulnerable populations (e.g., mobile populations, uniformed forces, clients of sex workers and most-at-risk young people such as street children and in- and out-of-school youth), on a national and regional basis.</td>
<td>• Ensure health-care law enforcement and social services employees are trained on HIV issues, including gender and human rights.</td>
</tr>
<tr>
<td>• Identify priority geographic settings where male circumcision is likely to have the greatest impact on the HIV epidemic and progressively expand access to safe male circumcision services within the context of ensuring universal access to comprehensive HIV prevention, treatment, care and support.</td>
<td>• Partner with Ministry of Labour, employer associations and trade unions to promote the availability of HIV prevention and treatment services or referrals at the workplace.</td>
<td>• Identify priority geographic settings where male circumcision is likely to have the greatest impact on the HIV epidemic and progressively expand access to safe male circumcision services within the context of ensuring universal access to comprehensive HIV prevention, treatment, care and support.</td>
<td>• Ensure health-care law enforcement and social services employees are trained on HIV issues, including gender and human rights.</td>
</tr>
<tr>
<td>Low-level epidemic scenario</td>
<td>Concentrated epidemic</td>
<td>Generalized epidemic scenario</td>
<td>Hyperendemic scenario</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>• Provide a clear mandate for leadership, resource mobilization, coordination and reporting to the National AIDS Authority and define a costed plan for effective HIV prevention, in the context of the “Three Ones” and with reporting annually to government and to civil society on planning, development and implementation.</td>
<td>• All actions outlined in low-level scenarios.</td>
<td>• All actions outlined in low-level and concentrated scenarios.</td>
<td>• All actions outlined in low-level, concentrated and generalized scenarios.</td>
</tr>
<tr>
<td>• Mobilize and commit resources to HIV prevention sufficient to meet the needs of the essential HIV prevention plan; track and analyse expenditures to improve future planning cycles.</td>
<td>• Train and support leaders (political, networks of people living with HIV and vulnerable communities, private sector, faith-based) to speak out against HIV-related stigma and discrimination and in favour of human rights, including gender equality and universal access.</td>
<td>• Advocate and promote removal of user fees or taxes that reduce access and use of key commodities, such as HIV test kits, male and female condoms, treatments for sexually transmitted infections and antiretroviral drugs.</td>
<td>• Build public awareness and demand to amend legislation and policies that create barriers to HIV prevention, such as laws that discriminate against women and girls.</td>
</tr>
<tr>
<td>• Review and amend legislation and policies that create or enforce barriers to HIV prevention (e.g., laws that discriminate against women and girls, criminalize sex work or sex between males, or restrict access to male and female condoms, sterile needles and syringes and harm reduction measures such as substitution treatment).</td>
<td>• Review, amend and enact appropriate laws and policies and enforce antidiscrimination legislation.</td>
<td>• Train and support leaders (e.g., political leaders and leaders from within networks of people living with HIV, vulnerable communities, the private sector, faith-based organizations and traditional healers) to speak out against HIV-related stigma and discrimination and to demonstrate solidarity and support for universal access to HIV prevention, treatment, care and support.</td>
<td>• Conduct a high profile, national review of every sector to establish that current practices do not promote risk behaviour or hamper access to HIV prevention services.</td>
</tr>
<tr>
<td>• Promote full enforcement of laws against child marriage, sexual abuse and gender-based violence.</td>
<td>• Promote male circumcision as an additional, important strategy for the prevention of heterosexually acquired HIV infection in men as part of a comprehensive HIV prevention package which includes: promoting delay in the onset of sexual relations, abstinence from penetrative sex, and reduction in the number of sexual partners; providing and promoting correct and consistent use of male and female condoms; providing HIV counselling and testing services and treating sexually transmitted infections.</td>
<td>• Review imposition of user fees or taxes on key commodities such as HIV test kits, male and female condoms, treatments for sexually transmitted infections and antiretroviral drugs.</td>
<td>• Promote male circumcision as an additional, important strategy for the prevention of heterosexually acquired HIV infection in men as part of a comprehensive HIV prevention package which includes: promoting delay in the onset of sexual relations, abstinence from penetrative sex, and reduction in the number of sexual partners; providing and promoting correct and consistent use of male and female condoms; providing HIV counselling and testing services and treating sexually transmitted infections.</td>
</tr>
<tr>
<td>• All actions outlined in low-level and concentrated scenarios.</td>
<td>• Review every sector to establish that current practices do not facilitate risk behaviour (e.g., promoting sex tourism, requiring overnight stays at border crossings) or hamper access to HIV prevention services.</td>
<td>• Conduct a high profile, national review of every sector to evaluate whether current practices promote risk behaviour or hamper access to HIV prevention services.</td>
<td>• Review every sector to establish that current practices do not facilitate risk behaviour (e.g., promoting sex tourism, requiring overnight stays at border crossings) or hamper access to HIV prevention services.</td>
</tr>
<tr>
<td>• Identify government departments or sectors that can reduce risk situations and provide services for most vulnerable populations (e.g., by reducing spousal separation; enforcing laws and regulations governing treatment of prisoners) and engage them in improving AIDS responses.</td>
<td>• Review, amend and enact appropriate laws and policies and enforce antidiscrimination legislation.</td>
<td>• Review, amend and enact appropriate laws and policies and enforce antidiscrimination legislation.</td>
<td>• Review, amend and enact appropriate laws and policies and enforce antidiscrimination legislation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Latent</th>
<th>Expanding</th>
<th>Maturing</th>
<th>Declining</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trend of the epidemic</strong></td>
<td>• Low, but slowly increasing prevalence</td>
<td>• Epidemic has accelerated</td>
<td>• Increasing level of infection to spouse of clients of sex workers with continued high prevalence among sex workers and their clients</td>
<td>• Declining levels of prevalence among sex workers</td>
</tr>
<tr>
<td><strong>Level of prevention interventions</strong></td>
<td>• Low coverage of most-at-risk populations</td>
<td>• Low coverage of sex workers and their clients</td>
<td>• Inadequate coverage of sex workers and their clients</td>
<td>• Spousal transmission is increasing and wives of clients make up a majority of new infections</td>
</tr>
<tr>
<td><strong>Biological Marker (HIV Prevalence)</strong></td>
<td>• Female sex workers &lt;5%</td>
<td>• Female sex workers &gt;5%</td>
<td>• Female sex workers &gt;5%</td>
<td>• Optimal coverage of sex workers and their clients</td>
</tr>
<tr>
<td><strong>Primary source of new infection</strong></td>
<td>• Injecting drug users or sex workers and clients or men who have sex with men (in combination or separately)</td>
<td>• Mainly sex workers and clients</td>
<td>• Mainly clients of sex workers and their wives and children</td>
<td>• Marked decline in prevalence among female sex workers, with trend falling over the last 3 years</td>
</tr>
<tr>
<td><strong>Interventions with the highest impact</strong></td>
<td>• Sex worker/client interventions</td>
<td>• Sex worker/client intervention</td>
<td>• Sex worker/client interventions</td>
<td>• Sex worker/client interventions</td>
</tr>
<tr>
<td></td>
<td>• Injecting drug user interventions</td>
<td>• Men who have sex with men, injecting drug user interventions</td>
<td>• Men who have sex with men, injecting drug user interventions</td>
<td>• Opt-out testing at antenatal clinics, sexually transmitted infection clinics and tuberculosis clinics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prevention of mother-to-child transmission in tertiary hospitals (through opt-in testing at ANC)</td>
<td>• Prevention of mother-to-child transmission</td>
<td>• Injecting drug users, men who have sex with men (if still unaddressed)</td>
</tr>
</tbody>
</table>
**Session 3: Size estimation and Mapping**

**Early Alert and Response System (EARS)**

Purpose: The purpose of the *Early Alert and Response System (EARS)* is to help countries stay AHEAD of HIV epidemics by ensuring that adequate information for prioritizing and planning appropriate responses is available in all geographic areas of the country.

**Objectives:**

1. Guidance on routine monitoring of information/data to identify *hotspots* (at-risk areas) in a timely manner (i.e. before HIV starts to spread in those areas)
2. Analysis of information/data to prioritize intervention responses in identified hotspots
3. Guidance on more in-depth data collection needs in identified hotspots

Note: The framework laid out below assumes an Asian-style epidemic where commercial sex is the main driving factor, and commercial sex epidemics are seeded or enhanced by injecting drug and/or male-to male sex, and/or migration.

The EAR system should have the following components to ensure that the country is well positioned to stay AHEAD of the epidemic.

A: Identify all AREAS at risk for spread of HIV  
H: Understand who the HIGH RISK populations are in those areas  
E: Obtain good ESTIMATES of how large the at-risk populations are in those areas  
A: ASSESS levels of risky behaviour among the identified risk populations in those areas  
D: Assess levels of DISEASE (HIV and STIs) in identified risk populations in those areas

**Epidemic Zones**

- An Epidemic Zone is a functional geographic unit for collecting, analyzing and using data to guide prevention, care and treatment responses.
- Defining the “unit” or Epidemic Zone is a critical step which falls under the responsibility of the Data Policy Unit/Epidemic Intelligence Unit at the central level.
- In some cases, several geographically contiguous administrative units (e.g. district, state, province or town) may be combined to make one Epidemic Zone, if those units are similar in terms of their epidemic pattern. In other cases, one administrative unit may need to be divided into multiple Epidemic Zones, especially if the unit is very large or has a lot of epidemic diversity (e.g. one district with a population of several million and a mix of metropolitan and rural areas).
- The concept of an Epidemic Zone is helpful for making efficient use of limited data, because data can be more powerful when there is more of it. Combining data from more than one epidemiologically similar unit can provide this type of power. However, combining data across very dissimilar units can make the data less powerful, if it masks important differences that require unique prevention or care responses.
- An Epidemic Zone should ideally have the following characteristics:
  - Be administratively convenient i.e. made of up an administrative units or group of units for which passive data are more likely to be available. (Note that these units may also be relevant for planning activities if health officers or other key informants divide their responsibilities according to these jurisdictions).
  - Be comprised of units that have similar epidemic characteristics or patterns of HIV transmission (i.e. commercial sex, injecting drug use, male-to-male sex, in- or out-migration, or combinations of these).
  - Most importantly, be comprised of units that are in similar epidemic phases (e.g. expanding, latent, declining)
Categorization of Epidemic Zones

Epidemic Zones should be classified annually according to the following categories:

**A – Suspected or known high-risk area or “hotspot”:** Areas with reliable evidence of concentrations of at-risk populations (whether or not the risk has been quantified in those populations).

**B – Suspected or known low risk area:** Areas with reliable evidence that there are currently no concentrations of at-risk populations and where HIV is unlikely to spread.

**C – Unknown/uncharacterized risk area:** Areas that have little or no information about whether or not there are concentrations of at-risk populations.

This categorization (A, B, C) serves as a screening process at the central level for geographic prioritization between Epidemic Zone for further action.

Classifying the Epidemic Zones

**Major Indicators**

- Spike in reported AIDS case or HIV infections
- Spike/rising trends in reported STIs
- Mapping data (from NGO or other) indicating presence/absence of at-risk populations
- Anecdotal information from key informants

**Key Points**

- Generally you will use passive data that is available at the administrative unit level as the first cut in categorizing an Epidemic Zone. Possible sources of data might include reported HIV infections and/or AIDS cases from hospitals, public/private practitioners/clinics, treatment/rehabilitation centres, counselling and testing centres, blood banks, TB programs, prisons and/or other detention centres.
- You should consider working on the categorization in stages if a country is very large. It may be useful to start with large geographic areas, e.g. states or provinces, and then prioritize smaller units within, e.g. districts, townships, etc.
- Involve local partners in the categorization process to obtain more accurate information. Inviting local experts to be involved at this stage may turn up new evidence or provide information about the quality or provenance of data that was collected locally. Local partnership is also key for later stages of this process and it makes sense to develop local ownership as early as possible.
- Consider non-traditional units: after the first attempt to classify areas using more standard geographic units is complete, it may be useful to look at other population characteristics that would be helpful to define geographic areas. For example, large metropolitan areas or special economic zones may be important to define separately. This may also be true of border areas which are adjacent to known high prevalence areas, drug trafficking routes, transport hubs (both by road and waterways), or other important industries (e.g. power plants, factories, mines, etc.)
Checklist for categorizing Epidemic Zones

**Category A**
- Large numbers of HIV or AIDS cases have been reported in the area
- Large and/or growing numbers of STDs have been reported in the area
- There is a sizable group of sex workers, injection drug users or MSM in the area (this may be evidenced by mapping data or the presence of targeted interventions located in the area)
- There is a sizable group of migrant labourers who are separated from their families for long periods of time in the area
- This is an out-migration area for large numbers of males and/or females who travel to other areas (especially high HIV prevalence areas) for work, and return periodically (e.g. once every few months or once a year, etc.) to visit their families
- There is a large transport hub/stopping point in the area with large numbers of transport workers
- There is a high volume of drug-trafficking through the area (may be evidenced by drug seizure data)

**Category B**
- None of the above characteristics are true of the area
- The local population is sparse and not well connected to other communities
- Local sexual norms do not enable multiple sexual partnerships among general population females
- Men engaging in commercial sex is rare (e.g. <1%)
- Drug use is uncommon and there is no easily available cheap supply

**Category C**
- There are no data specific to the geographic area
- Data that are available are outdated and incomplete
- No specific effort to assess the potential HIV/AIDS epidemic has been conducted using local knowledge, or the methods used are unclear and do not appear to be reliable
- There is some data available, but no clear picture is emerging and more data should be collated and analysed

**How to organize the information**
- Start with existing data that are more accessible (e.g. monthly reports of routinely collected program data; lists of HIV intervention sites; previous assessments or reports on related projects).
- Some sources may contain information from a number of sites. Create a file or other way to collate the available data from the same geographic area so that it can be considered together. If data from multiple years or time periods are available be sure to use as much as possible.
- Summarize the key pieces of information into tables or spreadsheets that can be reviewed to form a more cohesive view of the potential for an epidemic.
- When possible, use maps to show the location of sites where data are coming from, especially if the geographic area you are trying to characterize spans a relatively large area. Photocopied maps or maps scanned into a PowerPoint slide with handwritten/typed notations can work well.
- Use a structured checklist (as above) to catalogue what information is available for different areas and time periods.
Further action after initial screening and categorization to A, B and C

Category A

EZs that fall into **Category A** are the highest priority for action. Staff from the Field Unit (from the Epidemic Intelligence Unit), should be dispatched to these areas to assess and understand the situation in more depth. Some areas for further investigation will include the following:

- Where you see infected people i.e. Areas where AIDS cases have been reported and/or areas where HIV testing sites (VCT, PMTCT, STD, Blood banks, etc.) turn up positives
  - Conduct investigations into reported HIV infections and AIDS cases to find out how/where those people got infected
  - Determine whether there are data from referral/tertiary sites. If yes, is it possible to trace back to where people are from and confirm the positives are from the geographic area being categorized?
  - Are there cases that are related to each other? (e.g. couples tested together, etc. this may be determined by reason for testing)
  - Is there available risk factor data? (e.g. is it possible to determine modes of transmission for HIV positives – i.e. commercial sex, MSM, or injecting drugs)

- If there are many “A” zones, the field unit will need to prioritize which ones to address first, based on the expected severity of the situation.

Planning the response within Epidemic Zones

Once this preliminary information has been assessed, the next task is to plan prevention, care and treatment responses within the zone. This process can begin by following the steps in Track 1, and to the extent that more extensive data are available, can be validated or adjusted by following the steps in track 2, either now or at a later point in time.

Track 1:

- The Epidemic Intelligence Unit and the Field Unit should work with partners within the Epidemic Zone to use all available information (passive and active) to best plan the response within the Zone. Ideally this should be based on a good understanding of who is currently infected with HIV and where the most new infections are likely to come from in the future, as well as an understanding of current and future burden of HIV/AIDS disease. The section below on “How to investigate further”, discusses in more detail the type of information that may help with this process.

- Services should be put in place to cover all high-risk populations in the area. If there are already AIDS cases in the area, you will also need to look into the need for ART services and referral as part of the response package.

- When projects are initiated, systems should be put in place to track project level inputs, activities, outputs and quality on an ongoing basis, and project-specific outcomes on an annual basis, to help with design, evaluation and mid-course correction of the project. The responsibility for collecting this type of data rests with the project implementers.

- This is also the right time to initiate IBBSC surveys in the Epidemic Zone, so that a base of information will be available to track trends and measure coverage over time. The IBBSC surveys falls under the responsibility of the Survey Unit (of the Epidemic Intelligence Unit) within the Data Policy Unit at the central level. It is recommended that such surveys be conducted among relevant high-risk populations every three years in category “A” zones.
Track 2:

- If there is already extensive behavioural, biological and trend data available on the relevant populations in the area, the Modeling and Forecasting Unit (of the Data Policy Unit) can become involved in using more sophisticated tools (EPP and/or AEM) to answer these questions:
  - Who is currently infected with HIV?
  - Where will most new infections come from in the future?
  - What is the current and expected future burden of HIV/AIDS disease?

- It is recommended that these higher level modelling and forecasting exercises be conducted every 2-3 years in category “A” zones if sufficient data are available, and that this information be used to confirm that the current response is best positioned for maximum impact.

Category B

- Epidemic Zones that fall into Category B are low priority for action and should be reassessed as new information/data become available (at least yearly).

Category C

- Epidemic Zones with insufficient or inconclusive passive information fall into Category C, and it is recommended that the Field Unit be dispatched to these areas to investigate and recommend next steps. If there are several EZs in Category C, the Field Unit will need to prioritize, where to organize more formal rapid situation assessments. This decision should be based on the likelihood of high-risk or vulnerability in the area (as understood from initial investigation).

How to investigate further within an Epidemic Zone

**Commercial sex workers or clients**

- Are there known groups/locations where people go for commercial sex?
- Is there a client population/economy that supports clients? Information may come from industry reports, reports or studies from Ministries of Labour, Transport, Commerce, Defence, Planning, etc.
  - Are there factories, mines, agricultural areas, military bases, or transport hubs in the area?
  - Are there major construction projects ongoing where large numbers of workers have been brought on site and live nearby?
  - Are there residential compounds/blocks where male migrants are housed or go for recreation?
  - Is this an out-migration area where large numbers of men leave for long periods to work in other areas?
- Is there any information about the approximate number of sex workers or clients in the area?
  - This information may come from mapping data, rapid situation assessments, or service provider data
- Is there information about the type of sex workers and the pattern of soliciting clients and what the usual number of clients per SW?
  - Is sex work direct or indirect? Do sex workers work part time?
  - Do sex workers have free mobility? Do they work through pimps, brokers, or madams?
Men who have sex with men

- Are there known groups/locations of cruising spots?
  - These may include specific parks or outdoor spaces, bus stands or train stations, bars or nightclubs, shopping areas, cinemas, public latrines or baths
- Is male sex work a common type of MSM activity?
- Is there a visible group of transgenders or eunuchs?
- Is there a context which makes MSM behaviour more likely (large groups of men residing away from their families, cultural practices or events where MSM behaviour is socially acceptable)
- What are the approximate sizes of this group or sub-groups?

Injecting drug users

- Are there known injection sites or areas to buy drugs?
- Does injection take place in public areas or in homes?
- Where are drug arrests occurring?
  - Data may come from Narcotic Control Boards, Ministries of Interior or Police, etc.
- Are injectable drugs accessible or inexpensive in the area? Is there a drug trafficking route in the area or nearby?
- What types of drugs are most commonly used in the area?
- Is injection a common practice among drug users?
- Are there services for drug treatment or harm reduction? Where are these located?
- What is the approximate size of this group?

Suggestions on how to confirm/augment your information:

- Discuss and interpret the data with local experts. When data have been collated for a geographic area, consider holding a meeting with local experts (e.g. health officers, NGO representatives, etc.) to review the information. It may be useful to call together experts from different areas in the region to the same meeting so that they can share experiences and form a network of local resource persons.
- Document local knowledge about the social context of the area (e.g. economic situation/changes; social practices/norms around sex and drug use; the methods used or conditions under which data were collected)
- In some areas data will simply not be available. Depending on time and resources develop a plan with local experts about what might be needed to obtain useful information (e.g. talk to other key informants; conduct a site visit/ rapid situation assessment)

Glossary of Terms

Types of Data:
(ongoing vs. periodic) – Information that may be useful in characterizing an epidemic or a shift in an epidemic can come sporadically (e.g. findings from a research study are released/shared), at regular frequent intervals (e.g. monthly service statistics from a VCT site), or through deliberate planned attempts to gather information that is scheduled at specific points in a planning cycle (e.g. annual sentinel surveillance). A strong surveillance system accommodates a continuous, ongoing process of gathering and analysing new data as it becomes available, as well as maintaining a backbone of scheduled, periodic data collection events to monitor the course of the epidemic.

(Health sector vs. other sectors) – Most data used for secondary analysis in HIV surveillance comes from the health sector (e.g. VCT service statistics, PMTCT data, STI rates, AIDS case reporting) But HIV surveillance also requires data from other sectors, to the extent that it can help to characterize and estimate the size of groups with high risk behaviours, especially sex workers and their clients, injection drug users, and MSM. Information from other sectors may include: migration and transport sector maps and statistics, drug trafficking and arrest data, data from jails and prisons, entertainment industry (e.g. bars, restaurants, etc.) permits or registration data, condom retail sales data, etc.
(government vs. NGO vs. private) – Data can come be generated by different sources. The most readily accessible data may be those pieces collected at government clinical facilities and laboratories (e.g. ANC sentinel surveillance, VCT data from district hospitals, etc.) or commissioned by government Ministries (e.g. BSS, HSS, DHS). NGOs implementing services funded outside government channels often collect data for their own management or donor reporting purposes (e.g. monthly statistic reports on coverage, testing, periodic surveys, etc.). In many countries, a large proportion of the public seeks health services from private providers, so these data are collected in private clinics or laboratories, including private company employee clinics or health services. Identifying sources of private sector data can be valuable for understanding the situation among the segment of the population not usually captured through government or NGO data.

(active vs. passive) – This dichotomy relates to the type of effort involved in collecting data for use for surveillance purposes. Data which are collected actively are those data which the local surveillance unit makes a special effort to collect or collate (e.g. HIV sentinel surveillance data) as opposed to that which depends on service provider reporting which is considered part of a passive system. (e.g. AIDS case reporting or VCT service statistics). Passive reporting is used when there are few available resources to support data collection and collation, and the consequence is that most datasets are incomplete.

(dynamic vs. closed) – When sampling a population to look at trends in HIV prevalence or risk behaviours over time, it is important to know if the group is dynamic, meaning that if the survey were repeated after some time, e.g. in the next year or later, some individuals would have left the area or are no longer members of the population and they have been replaced by others who have entered into the area. (An example of this type of population may be sampling seasonal workers in an agricultural area or truckers who come through a particular rest stop.) The trends you may expect to see from a dynamic population would be different than if you surveyed a population that was closed and there were no new entrants into a population. An example of a closed population may be inpatients of a treatment facility in which there are limited numbers of slots and people stay in treatment for many years, or surveying a population from a well-established NGO drop-in centre in which a group of sex workers regularly come to receive services and socialize with each other.

A model for surveillance systems which takes advantage of different sources of data:

A high functioning surveillance system will consider how to best use different types of data. Surveillance systems which are being updated or assessed for completeness may consider the following issues to build a stronger more responsive system:

- Collate both ongoing and periodic types of data by establishing a mechanism to facilitate data coming to an “epidemic intelligence” unit which is able to analyse the data in terms of characterizing the epidemic. This requires a way to anticipate when and what type of data may become available and housing the data from the same geographic area so that it can be analysed and interpreted together.
- Develop relationships and liaise with officials in other sectors, such as Ministries overseeing Labour, Transport, Narcotics Control, Justice/Police Authority, etc.
- Understand the mix of utilization of services across government, private sector, and NGO sites by different risk groups. Design data collection systems that are compatible with how NGOs and private sector health care providers implement their services. Lowering the burden of reporting may make it more likely for other types of providers to send their data in to be analysed for surveillance purposes.
- Prioritize what and where data will be collected actively to optimise the resource available for data collection. Being aware of the limitations of both passively and actively collected data will be important for formulating a picture of the epidemic from several different pieces of information.
- Understand how dynamic and closed samples may impact the interpretation of trends from sentinel surveillance or behavioural surveillance data. Ensure clear documentation of the sampling methods utilized in collecting different types of surveillance data, so these can be taken into consideration during triangulation and synthesis of data.
**Types of Epidemic Areas:**

(known vs. unknown) - For every geographic area the characteristics of the local epidemic may be known (i.e. well understood through putting together different pieces of available information, including active collection of key pieces of information) in terms of the current magnitude and broad trajectory and key drivers (e.g. populations, geographic distribution etc.). Alternatively, the local epidemic may be poorly understood for lack of available data or incomplete analysis or synthesis of information. The classification of known or unknown depends on how up to date the analysis of an epidemic is.

(established, potential is going on vs. nothing going on at present) - In an area where HIV infection has not been well established (e.g. large numbers of cases have been diagnosed, HIV prevalence among a specific risk group has been measured, etc.), but there is sufficient information and analysis for a local epidemic to be classified as known, a further determination is made about whether there is potential for an epidemic (e.g. presence of a core or bridge group, prevention services are not readily available or under-utilized, presence of other sexually transmitted or blood bourne diseases are established, etc.) or the conditions to establish infections locally are missing.

(expanding vs. stable) - An epidemic that is expanding show signs where new infections are occurring in different groups, in different geographic pockets, and/or is increasing in magnitude of prevalence among a particular group. A stable epidemic is one in which infections appear to be contained and the number of new infections appear to be small or decreasing.

(mature vs. emerging) - In a mature epidemic the key drivers have established a particular course and are well known and persistent. In epidemics driven by core groups, infection has reached a level of saturation in these groups in a mature phase, but new infections may continue to occur in large numbers among bridge groups and their regular sex partners. Levels of HIV may or may not have reached the >1% threshold among the general population. An emerging epidemic is one which is in an early phase, and prevalence continues to rise among the core groups.

(concentrated vs. generalized) - The terms concentrated and generalized refer to the primary drivers of the epidemic. In a concentrated epidemic high levels of transmission occur among groups that are a relatively small proportion of the population. These groups are classically defined as sex workers and their clients, injection drug users, and MSM. Large numbers of infections may occur among low risk individuals (e.g. regular sex partners of clients, MSM, or IDU) but the primary risk of transmission occurs between members of these high risk groups.

(Saturated) - In the natural progression of the epidemic where transmission occurs within a relatively closed group with a particular high risk behaviour pattern, the prevalence of infection will reach a plateau and tend to remain at the same level. This is described as infection being saturated in the population, because the people who are prone to developing infection have already become infected and there are no new people who can acquire HIV. This is most often seen among populations of injection drug users.
Tool Box for conducting size estimation, coverage surveys and surveillance activities among Most-At-Risk Populations
(prepared by Abu Abdul-Quader)

SIZE ESTIMATION, RAPID ASSESSMENT AND MARPs SURVEILLANCE TOOLS

Estimating the Size of Populations at Risk for HIV: Issues and Methods
Updated in July 2003, this 56 page report is the product of a joint UNAIDS/IMPACT/FHI size estimation workshop that was conducted in Indonesia in April 2002 in collaboration with USAID, UNAIDS, WHO and UNDCP. This report describes the major methods available for population size estimation, with their strengths and weaknesses, and provides information on how best to choose the right method depending on the county and target sub-population. This document is available at: http://data.unaids.org/Publications/External-Documents/EstimatingPopSizes_en.pdf

PLACE Manual: Priorities for Local AIDS Control Efforts
Priorities for Local AIDS Control Efforts method is a rapid assessment tool to monitor and improve AIDS prevention program coverage in areas where HIV transmission is most likely to occur. PLACE is designed for local program managers who might want to know where to target resources to prevent new infections. PLACE systematically identifies gaps in current prevention programs, enhances the local use of the finding to improve program delivery, and monitors program coverage over time using easy-to-understand indicators and coverage maps. PLACE findings may be used to inform several AIDS control activities, the focus is on monitoring behaviour, and program coverage. In addition to the core outputs, the PLACE method can also be used to estimate the size of a target population by counting the number of persons visiting a site at busy times and determining how frequently people report visiting a site. Additional information about the PLACE method is available at: http://www.cpc.unc.edu/measure/tools/infectious-disease/hiv-aids/place

Technical Guide to Rapid Assessment and Response (TG-RAR)
Rapid Assessment and Response (RAR) is a method of assessing a public health issue in a particular study area, including the characteristics of the health problem, population groups affected, settings and contexts, health and risk behaviours, and social consequences. It identifies existing resources and opportunities for intervention, and helps plan, develop and implement interventions. The Technical Guide to Rapid Assessment and Response (TG-RAR) provides a detailed introduction into all aspects of planning and implementing rapid situation assessments. It is generic in nature and can be used for a variety of health issues. TG-RAR is best used in conjunction with Adaptation Guides, providing brief guidance on how to use the RAR approach with regard to a specific health issue. The Adaptation Guides are under development for "HIV/AIDS Prevention and Male-to-Male Sex", and "HIV/AIDS Prevention among Especially Vulnerable Young People". The Technical Guide to Rapid Assessment and Response is currently only available online at: http://www.who.int/docstore/hiv/Core/Index.html

MARPs Sampling Selection Tool
In 2005, following a consultation on surveillance of most at-risk populations, the Surveillance and Survey Technical Working Group of the US Office of the Global AIDS Coordinator tasked CDC to lead a renewed effort to create a user friendly tool that would help survey practitioners think about and decide upon appropriate sampling methods for different populations in different settings. This interactive tool includes information on sampling options for: sex workers, men who have sex with men, transgendered persons, drug users, voluntary migrants, refugees and internally displaced persons, STD clinic attendees, uniformed personnel, prisoners and youth and describes many probability, quasi-probability and non-probability sampling techniques. Keep in mind that this interactive, web-based tool is just a tool and should not be treated as a final, authoritative conclusion. This tool is available online at: http://www.theagencyfordesign.com/clients/cdc/
Surveillance of HIV Risk Behaviours

The US Centers for Disease Control and Prevention (CDC) in collaboration with the World Health Organization Regional Office for South-East Asia recently developed a comprehensive training on HIV/AIDS/STI surveillance including behavioural surveillance. The two modules listed here are part of this comprehensive training package.

Module 5: Surveillance of HIV Risk Behaviours

This training module introduces behavioural surveillance with an emphasis on pre-surveillance activities, measures and indicators, survey methods, sampling approaches, data use and ethical considerations. After completing this course, participants should be able to:

- Identify the uses of behavioural surveillance
- Understand the methodological difficulties with indicators for behavioural surveillance and select indicators most suited to particular situations
- Understand sampling issues and options for behavioural surveillance and understand the criteria for choosing a sampling approach
- Describe the types of data analysis commonly used in behavioural surveillance and understand the steps in ensuring appropriate data analysis and use
- Be able to discuss the ethical consideration unique to behavioural surveillance.

This course is meant primarily for state/national-level surveillance officers, planners and decision makers. This module can also be used for self-study. This training module is available at: [http://www.searo.who.int/LinkFiles/Publications_Module-5.pdf](http://www.searo.who.int/LinkFiles/Publications_Module-5.pdf)

Module 6: Surveillance of populations at high risk for HIV transmission

Module 6 introduces HIV surveillance among high-risk populations. Module 5, described above, is a pre-requisite for Module 6. Eight high-risk populations relevant to WHO/SEAR member countries are described in-depth with recommended surveillance techniques. Detailed case studies are provided for each population to help participants think through implementation. After completing this course, participants should be able to:

- Discuss the importance of surveillance in high-risk populations
- Understand the purpose of pre-surveillance assessments and the role of qualitative and quantitative research in these assessments
- Discuss the advantages and disadvantages of various sampling approaches
- Discuss how to choose the most effective biological and behavioural measures in surveys of high-risk groups
- Understand the special ethical consideration of conducting behavioural and biological surveillance among high-risk groups.

This course is meant primarily for state/national-level surveillance officers. This module can also be used for self-study. This training module is available at: [http://www.searo.who.int/LinkFiles/Publications_Module-6.pdf](http://www.searo.who.int/LinkFiles/Publications_Module-6.pdf)

GUIDELINES AND TOOLS FOR COVERAGE ESTIMATES

High Coverage Sites: HIV Prevention among Injecting Drug Users in Transitional and Developing Countries: Case Studies

UNAIDS commissioned this report to investigate programs and sites in developing and transitional countries which were regarded by international authorities as “high coverage sites” i.e. where more than 50% of injecting drug users had been reached by one or more HIV prevention programmes. In all, seven sites were examined in the following countries: Belarus, Russian Federation, Ukraine, Bangladesh, Hong Kong, China, and Brazil. Each case study includes a description of the development of the program and features of the services provided, an estimation of program coverage, factors that led to high coverage, and a discussion of ways to maintain and expand coverage. This report is available at: [http://data.unaids.org/Publications/IRC-pub07/JC1254-HighCoverageIDU_en.pdf](http://data.unaids.org/Publications/IRC-pub07/JC1254-HighCoverageIDU_en.pdf)

Geographic Information Systems

Geographic Information Systems can used to assess product availability, service delivery and accessibility in geographically defined areas. By collecting GPS coordinates of locations of interest (such as condom-selling outlets, STI clinics, or VCT centres, and known high transmission areas), service sites can be graphically represent on country maps to show areas
of high and low service coverage. This method was used in Nepal to measure condom coverage, quality of coverage and access to condoms among women working in places where sex negotiation or sexual activity take place, so as to facilitate more targeted marketing and distribution of condoms in these high-risk areas. The study was carried out in 15 of the 75 districts of Nepal to assist evidence-based program-related decisions, and to monitor product and service performance. Further information on the methodology and results of this study are available at:

http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1014&context=insm08

Monitoring Information System (MIS)
This tool was designed to estimate coverage, of among other things the number of clients accessing harm reduction services, the frequency of contacts as well as provides a mechanism for correlating these data with changes in risk behaviour among the surveyed populations in Myanmar. Using unique identifier codes, the system relies on simple data collection tools to record information about individuals’ types and locations of contact with services. The data is then entered into a database that manages the information and has the ability to produce simple and standardised reports.


Unique Identifier Code System
This system was developed to track the extent and frequency of clients contact with services and interventions. The UIC system employs a simple and anonymous code that is assigned to each client and recorded into a simple database to track the client's interaction with the program. The data produced by the system can be compared against HIV and STI sentinel surveillance data by site, thus allowing programs to assess the quantity of coverage needed to reduce risk behaviour. These data can be used by program managers to understand coverage levels and gaps in coverage, and enables decision makers to make evidence-based decisions regarding resource allocation.


Coverage Surveys
One measure of progress towards achieving the UNGASS goals is the percentage of people living in low and middle income countries who have access to key prevention and care services. WHO coordinated an assessment of the coverage of several key health services in 70 countries in 2003 and again in 2005. The report titled Coverage of Selected Services for HIV/AIDS Prevention, Care and Support in Low and Middle Income Countries in 2003 is available at:

The report titled Coverage of Selected Services for HIV/AIDS Prevention, Care, and Treatment in Low- and Middle-Income Countries in 2005 is available at:


Demographic and Health Surveys (DHS)
Demographic and Health Surveys are nationally-representative household surveys that provide data for a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition. DHS surveys measure many AIDS related indicators, including knowledge of HIV/AIDS and HIV/AIDS prevention methods, attitudes towards those with HIV/AIDS, and HIV/AIDS related behaviors such as higher-risk sex and HIV testing which can be used to assess the coverage of HIV/AIDS prevention and testing programmes. Additionally, DHS surveys may include questions about sex work, male-male sex, and injection drug use which can be used for population size estimations. Standard DHS surveys have large sample sizes (usually between 5,000 and 30,000 households) and typically are conducted every 5 years, to allow comparisons over time. In the Asian region, DHS surveys have been conducted in:
Bangladesh, Cambodia, India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam.

**AIDS Indicator Surveys (AIS)**
AIS provide countries with a standardized tool to obtain indicators for the effective monitoring of national HIV/AIDS programs. AIDS Indicator surveys consist of two survey instruments: a household questionnaire and an individual questionnaire. In addition to collecting demographic and behavioural information, the individual questionnaires include questions related to condom use, treatment response to STIs, knowledge and attitudes related to HIV/AIDS, and coverage of HIV-testing, which in turn can be used to assess coverage of prevention, testing, care and treatment services. The survey will take approximately nine months to complete, including two months of fieldwork, and two months of data entry and editing. Vietnam is the only country in the Asian region to have conducted an AIDS Indicator Survey.

**Behavioural Surveillance Surveys (BSS)**
Behavioural Surveillance Surveys (BSS) use reliable methods to track trends in HIV/AIDS knowledge, attitudes and risk behaviour over time in select populations, typically in high-risk areas. When used in conjunction with HIV sero-surveillance, BSS enable program managers to plan and implement interventions that respond to trends in risk behaviours and to evaluate the interventions’ intermediate outcomes. In 2000, Family Health International (FHI) in conjunction with IMPACT, DIFID and USAID developed a guidance document titled Guidelines for Repeated Behavioural Surveys in Populations at Risk of HIV. These guidelines are available at: [http://www.fhi.org/en/hivaids/pub/guide/bssguidelines.htm](http://www.fhi.org/en/hivaids/pub/guide/bssguidelines.htm)

**Epidemiological Software and Tools**
The UNAIDS Reference Group on Estimates, Modelling and Projections provides the relevant technical basis for the UNAIDS/WHO global estimates and projections of HIV prevalence. UNAIDS/WHO recommend the following methods to obtain national HIV and AIDS estimates.

**Workbook Method**
The Workbook Method is a spreadsheet used to estimate and project adult HIV prevalence from surveillance data in countries with low level or concentrated epidemics. Estimates are based on prevalence in populations with high risk behaviours and populations at low risk, as well as estimates of the size of populations with high risk behaviours. The national prevalence projections produced by the workbooks can be imported into SPECTRUM to calculate the number of people living with HIV, new HIV infections, AIDS cases, AIDS deaths, treatment needs, AIDS orphans, etc. Additional information on the Workbook Method and the following Workbook Method files are available at: [http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi_software2007.asp](http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi_software2007.asp)

- **Workbook Method spreadsheet** (May 2007)
- **Workbook Method manual** (March 2007)
- **Workbook Method presentation** (March 2007)

**Estimation and Projection Package (EPP)**
EPP is used to estimate and project adult HIV prevalence from surveillance data up to five years in the future. EPP can be used in all countries with sufficient surveillance data, it is specifically recommended for countries with generalized epidemics. The input to EPP in countries with generalized epidemics is surveillance data from various sites and years showing HIV prevalence among pregnant women, as well as data from national population-based surveys. EPP is used to fit a simple epidemic model to data from urban and rural sites. The national prevalence projections produced by EPP can be imported into SPECTRUM to calculate the number of people living with HIV, new HIV infections, AIDS cases, AIDS deaths, treatment needs, AIDS orphans, etc. The major limitations of the EPP are related to the quality and non-representative nature of the available data. Rural data are often not very representative of rural populations, and the EPP by itself cannot resolve this problem. Similarly, in concentrated epidemics, such as those in the Asian region, representative data are often unavailable for MARPs. For example, surveillance of HIV prevalence among IDUs may only occur in clinics in major cities or a handful of detention centres. Additional information on the applications of EPP
and the following EPP files are available at:
EPP manual for concentrated epidemics (March 2007)
EPP presentation for concentrated epidemics basic (March 2007)
EPP presentation for concentrated epidemics new features (March 2007)

SPECTRUM
SPECTRUM is a suite of policy models. Each model includes a detailed user manual that not only describes how to use the software but also includes sections on data sources, interpreting and using the results, a tutorial, and a description of the methodology. Additional information on SPECTRUM and the following SPECTRUM files are available at:
Spectrum software latest version (April 2008)
Spectrum quick start tutorial (March 2007)
Spectrum presentation (March 2007)
In countries with concentrated or low-level epidemics national estimates of HIV prevalence are primarily based on surveillance data collected from MARPS and estimates of the size of populations at high and low risk. This information is entered into the Workbook Method to find the best fitting curve that describes the evolution of adult HIV prevalence over time. This adult prevalence curve, along with the national population estimates and epidemiological assumptions, is then entered into the Spectrum software program to calculate the number of people infected, new infections and deaths.

In countries with a generalized epidemic national estimates of HIV prevalence are based on data generated by surveillance systems that focus on pregnant women who attend a selected number of sentinel antenatal clinics, and in an increasing number of countries on nationally representative sero-surveys. This data is entered into the Estimation and Projection Package (EPP) software which fits a simple epidemiological model to find the best fitting curve that describes the evolution of adult HIV prevalence over time, and calibrates that curve to the prevalence found in the national survey. This adult prevalence curve, along with national population estimates and epidemiological assumptions, is then entered into the Spectrum software program to calculate the number of people infected, new infections and deaths.
Operationalisation of the data collection and use of data to stay ahead of the epidemic and creation of a Data Policy Unit

Develop a **Data Policy Unit**, which would serve as the central warehouse for all HIV-related data collected in the country and should be responsible for oversight and quality control of all activities related to data collection, analysis and use of data at all levels. The unit should produce a biannual report that synthesizes this data and provides concrete recommendations for governments to improve their national strategic planning processes.

This unit should start at the federal or central level. If it is successful, people will understand the need for such a comparable unit in their state or county (particularly those areas that are most in need).

Because no country in Asia has a unit that is explicitly dedicated to the collection, synthesis and analysis of HIV data, funding available for such a unit must initially come from international organizations. Human resources for this data policy unit should include:

- Senior medical officers or public health specialists: at least one officer to oversee each arm of data collection and analysis;
- Existing public health staff in the government, who would serve as a first-line support team for each data collection arm
- Local administrative and management staff to coordinate the work, assist workshop and logistic arrangements, and day-to-day secretarial support

The Data Policy Unit would have at least 3-4 data collection arms:

1) Epidemic Intelligence Unit;
2) Modelling and Forecasting Unit;
3) HIV Economics Unit; and a
4) Legal Policy Unit

The organization of these units is laid out in Figure 1 and each of these units and their responsible areas of data collection and is described below.
The **Epidemic Intelligence Unit** is a larger arm of data collection, which will include both active and passive data collection. The main part of this unit will sit in the Ministry of Health, but it will have many smaller divisions at the local levels or traveling to conduct field visits as needed. The main work will include:

- Field units, which are responsible for ongoing survey and rapid assessment to identify hot spots and areas where the epidemic could grow rapidly without immediate intervention; these units would be responsible for conducting such assessments at the lowest possible administrative level, so the number of people involved would depend on the size of the country but should number no more than 10 people (excepting China and India?)

<table>
<thead>
<tr>
<th>Estimation</th>
<th>Tools</th>
<th>Strength and weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of risk</td>
<td>AHEAD tool</td>
<td></td>
</tr>
<tr>
<td>Size estimation of risk groups</td>
<td>RDS, Snow balling, Capture recapture, multipliers</td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Passive data collection units, which are responsible for monitoring and making sure that existing health care outlets are collecting and reporting their data. The unit should sit at the national level with at least 1 staff for 4-5 provinces, making periodic field visits for monitoring and quality assurance; data collection should include:
  - treatment centers and antenatal clinics;
  - risk reduction sites, where prevention projects are being implemented, which should have ongoing data collection of biological, behavioral and coverage indicators, collected every year and comparable to national IBBC surveys

<table>
<thead>
<tr>
<th>Estimation</th>
<th>Tools</th>
<th>Strength and weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIS Data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- A **Survey** unit collection-arm of this collaboration would also exist at the national level, through a centralized agency responsible for national-level surveillance, which would feed back to the data policy unit. This unit should be housed in a government agency, such as National Statistics Bureau / Census Bureau, or the Ministry of Health. This data collection arm would be responsible for:
  - Providing technical support to build-in and adapt an HIV-module into the Demographic Health Survey (DHS), which is conducted every 5-7 years (depending on the country); this would require about 3-4 months from a consultant or existing government expert, to ensure that the questions are rigorous and will yield strong validity;
  - Conducting an Integrated Biological Behavioral and Coverage Survey (IBBCS): that surveys all ongoing project sites to monitor how risk behaviors and coverage of programs has changed over time;

<table>
<thead>
<tr>
<th>Estimation</th>
<th>Tools</th>
<th>Strength and weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of risk</td>
<td>BSS, Surveys</td>
<td></td>
</tr>
<tr>
<td>HIV prevalence among MARPs</td>
<td>HSS, IBBS</td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>Modified BSS tools</td>
<td></td>
</tr>
</tbody>
</table>
The **Modeling and Forecasting** unit could also be either within the Ministry of Health, or part of an independent academic institute, depending on the government willingness to house and support the salaries of this group. Such a unit would be responsible for:

- Ongoing data collection, which should be sent directly to this group through the data policy unit;
- A 5-day workshop to discuss the validity of data parameters used in modeling, and to validate and endorse the model estimates and proposed police scenarios that may be presented in reports or other government publications.

Data needs for this include:

<table>
<thead>
<tr>
<th>Estimation</th>
<th>Tools</th>
<th>Strength and weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART needs</td>
<td>Spectrum and AEM</td>
<td>Calculations based on incidence</td>
</tr>
<tr>
<td>Death</td>
<td>Spectrum and AEM</td>
<td></td>
</tr>
<tr>
<td>New infection</td>
<td>Spectrum, EPP, AEM</td>
<td></td>
</tr>
<tr>
<td>HIV prevalence</td>
<td>Spectrum, AEM, Work Book, DHS survey</td>
<td></td>
</tr>
</tbody>
</table>

AEM can be used in countries or regions where data are sufficient, as it provides greater detail for all sub-populations. Spectrum (linked to EPP or workbook), on the other hand, can be applied for situations where available data are limited.

An **HIV Economics** expert or research group will organize and support annual estimations of resource needs and unit costs; propose methods to best optimize budget allocation, using cost effectiveness and other tools or techniques; and tracking of HIV expenditures.

This group should also exist at the national government, but it may exist in an academic institute or in the government.

The institute would mainly carry out four activities:

- Unit cost estimation, which would require one consultant to conduct a field visit, discuss with the local providers, and estimate the unit cost of each of the assigned interventions;
- Calculate total resource needs, using estimated unit costs and validated through a 2-day consultative workshop;
- Conducting cost-effectiveness analysis for optimization and negotiation of budget, which may require another 2-day stakeholders' workshop; and
- HIV resource tracking, which requires a consultant to conduct field visits to various HIV projects and to hold a 3-4 day consultative workshop to validate and endorse the results.

The tools available for such activities are given here:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Tools</th>
<th>Strength and weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource need</td>
<td>RNM and Modified RNM, ASAP ABC-costing</td>
<td></td>
</tr>
<tr>
<td>Resources spent</td>
<td>NASA</td>
<td></td>
</tr>
<tr>
<td>Effectiveness and cost effectiveness</td>
<td>AEM and AEM Policy</td>
<td>Significant data input required</td>
</tr>
<tr>
<td>Unit cost</td>
<td>INPUT</td>
<td></td>
</tr>
</tbody>
</table>

(Embed the tools are discussed in further detail in their respective sections.)

The **Legal-Policy Unit** would be responsible for monitoring and collection of data and generate policy options and mid course correction of the program.
**Supplementary reading:**


PLACE Manual: Priorities for Local AIDS Control Efforts

Technical Guide to Rapid Assessment and Response (TG-RAR)

MARPs Sampling Selection Tool, US CDC-GAP


High Coverage Sites: HIV Prevention among Injecting Drug Users in Transitional and Developing Countries: Case Studies, UNAIDS


SPECTRUM Manual and tutorial, Constella Futures (2007)
Session 4: Elements of Effective Intervention

Prioritizing most-at-risk populations is not enough to halt and reverse the epidemic; these priorities must be reflected in resources and actions mobilized. Sufficient resources must be made available to ensure good coverage - in most cases to actually reverse the growth of the epidemic will require coverage of 80% or more in most-at-risk populations. Capacity to implement and evaluate programs for MARPs at scale must be built. And most importantly, effective interventions for MARPs must be implemented, taken to scale, and evaluated for effectiveness.

Currently, existing interventions for most-at-risk population are a mix of effective and ineffective interventions.

There is the need to define a package of effective prevention for most-at-risk populations that achieves, at an absolute minimum, two key goals: (1) A high and sustainable level of condom use among most-at-risk populations and their sexual partners; and (2) Sustainable harm reduction behaviors among injecting drug users.

Such a package should include:

- **Peer education/outreach** led by the most-at-risk communities. Content should include accurate information on safer sex, consistent and proper condom use, and accurate information on harm reduction practices for injecting drug users.

- **Availability and accessibility of prevention commodities** including condoms and lubricants for all MARPs, and clean needles and syringes for injecting drug users.

- **Availability and accessibility of prevention treatment** including STI treatment, voluntary counseling and testing, and substitution drugs (methadone and other drugs).

- **Supportive policy and regulations** which allow most-at-risk populations to access services and to practice safe behaviors.

- **Referral** for treatment in all prevention and community support services (see core element 5 for more detail).

- **A system of project-level monitoring-and-evaluation** to look at the coverage of most-at-risk populations, assess behavioural impacts of the programs, and continuously feedback to improve programming.

As an underlying principle, it is essential that the community of those most-at-risk is involved in all steps of in designing, implementing and monitoring interventions. Without direct involvement of most-at-risk community members, programs are unlikely to meet community needs, may be seen as intrusive and suffer from limited community access, and, as a result, will be less effective. It will also be more difficult to mobilize the community to take HIV prevention seriously and to build sustainable community capacity to respond.

**Designing a Project**

Some guidelines to designing an effective program that creates the necessary trust and mutual respect with the community is discussed below:

1. **RATIONALE**: Before starting a project, it is important to know what your aims and objectives are. These will serve as a reference point throughout the project and help you modify strategies, if necessary.

2. **AREA AND POPULATION**: The plan should include the name of the area where you think intervention is needed, and an estimate of the population to be covered. Include baseline figures for HIV/AIDS and STIs, where available. If such information is not available, local examples from similar populations should be sought. Also, consider your organization’s strengths, and the advantages of working in this area or with this population.
3. OBJECTIVES: Identify and document the aims and objectives of your project, and make them specific and measurable. Clarify what you aim to achieve and how you plan to do it.

4. STRATEGY: You need to clarify at the start your basic approach or strategy for intervention. You may wish to depend entirely on “peer outreach” or “staff outreach” or a combination of both. Experience suggests that peer outreach is very effective among marginalized sub-populations. Ensure that your methodology includes the following ideology, philosophy and values:

- Respect for the vulnerable group
- Rights-based approach
- Flexibility in planning and implementing activities
- Participatory approach
- Democratic systems of functioning
- Involving the vulnerable group in planning, implementation, monitoring and evaluation

5. ACTIVITIES: The activities for an institution-based project (e.g., brothel) can be based on the following framework. Include:

- Direct activities for institutional beneficiaries, such as STI treatment; as well as
- Indirect activities to establish and maintain an enabling environment within and outside the institution, for example advocacy with the power structure.

These should be designed in consultation with the community, and based on needs as well as institutional strengths and mandate.

6. STAFFING: Interventions based on peer outreach require fewer personnel than staff-based interventions. Categories of staff include peers, field workers, clinic workers (nurse, doctor), compounder and office administrator.

7. MONITORING AND EVALUATION: Plan how project activities will be monitored and how you will evaluate the impact of the project.

8. TRAINING REQUIREMENTS: Anticipate, plan and budget for initial and on-going training requirements.

9. TIMELINE WITH ACTIVITIES: Ensure you think about a realistic time-frame for the various activities. Things usually take longer than anticipated.

10. BUDGET: Include a breakdown of your anticipated costs over the life of the project.

Supplementary reading:
The Evidence Base for Interventions to Prevent HIV infection in low and middle-income countries, CMH Working Paper Series, No. WG5-2 (2001)
Intervention Checklist: Elements of Successful Programs, A Tool for Assessment of Local HIV/AIDS Interventions (US-CDC)
Session 5: Delivering at-scale

Scaling for Impact -- Recommendations for National Strategic Planning and Implementation in HIV Prevention

By Aparajita Ramakrishnan, Programme Officer, Bill & Melinda Gates Foundation

Introduction

HIV prevalence in Asia is low in terms of percentages, but this belies a large absolute number of people living with HIV – approximately 4.9 million.¹ The Global HIV Prevention Working Group 2008 calls for expanded delivery of known and effective behaviour change interventions for preventing HIV transmission in many countries, including those in Asia². The Commission on AIDS In Asia has pointed out the fact that while Asian epidemics are similar in many ways, the national responses have several gaps in their strategic plans:

“Although the epidemics vary considerably from country to country [within Asia], they share important characteristics, namely that they are centred mainly around: unprotected paid sex, the sharing of contaminated needles and syringes by injecting drug users, and unprotected sex between men…..The Commission’s review of the responses in 14 Asian countries showed that all have national strategic plans but the quality of these plans varies significantly. In some, resource allocation does not match the plan’s highlighted priorities. Overall, most of the plans lack key planning components for the operation, management, and financing of the response”³,⁴

In order to address some of the gaps mentioned above, this note attempts to lay out the framework for ‘scale,’ identify why scale is important for national strategic planning and implementation, and provide recommendations on key success factors in scaling up. The delivery of public health through national programmes requires good strategy and design backed by good operations. This note outlines recommendations for strategy and praxis to assist national programme managers of HIV programmes with developing and implementing plans which effectively scale prevention for HIV outcomes.

Why think about scale differently?

Simply put, effective scale in HIV prevention has rarely been demonstrated. Various definitions of ‘scale’ exist in the literature. Some commonly cited definitions include the following:

- UNICEF defines scale as “Widespread achievement of impact at affordable cost.”⁵
- Uvin and Miller describe scaling up as “the rapid expansion of services and access to reach large numbers of people, especially the poor and most vulnerable, with targeted services in the shortest possible time.”⁶
- Edwards and Hulme have used the term ‘scaling up’ to “imply enlarging the scope of the activities of an organization in order to reach more people.”⁷

The area of scaling up is plagued with two major lacunae: a lack of a truly generalizable definition of scale linked to impact; and a ‘how-to’ guide to the operational facets of scaling up for impact.

---

³ Ibid.
⁴ Ibid.
⁵ “Unite for Children, Unite Against AIDS – Strategies for Scaling Up,” UNICEF EAPRO and ROSA. Presentation received from Swarup Sarkar, ADB
In addition, the world of national strategic planning suffers additional lacunae – in fact, it might be said that there is a poverty of thought in strategic planning for scale. For example, UNAIDS estimates that in concentrated epidemics (such as those in Asia), current levels of coverage of prevention services fall well below necessary levels.8

And yet, scaling up of HIV prevention efforts is more critical now than it has ever been before. Joyce DeJong states that given the large number of incident infections each day, “Epidemiologically, the rapid transmission of HIV/AIDS can only be countered when prevention efforts are organized at sufficient scale to affect the dynamics of the epidemic.”9

This brings us to the question of what the different approaches to scaling up are, and what really works.

**Different approaches to scaling up – and a recommendation on what works**

There is a vicissitude of literature on approaches to scaling up.10 Clarke differentiated between scaling up as project replication, building grassroots movements, and influencing policy efforts. Edwards and Hulme differentiate between ‘vertical’ and ‘horizontal’ scale – that is, unrelated activities vs. vertically integrating up the value chain of a single problem or area. Economists such as Kumaranayake have measured scaling up in terms of volume of output (e.g., number of condoms provided). Uvin and Miller outline four paths to scale – quantitative, functional, political and organizational.11

8 “Unite for Children, Unite Against AIDS – Strategies for Scaling Up,” UNICEF EAPRO and ROSA. Presentation received from Swarup Sarkar, ADB
10 This section relies on literature from DeJong, C. Joseph McCannon, BA, Donald M. Berwick, MD, MPP M. Rashad Massoud, MD, MPH, The Science of Large-Scale Change in Global Health and Edwards and Fowler
11 Uvin and Miller 1996
The diffusion of innovation model (or spontaneous scale up model) relies on viral diffusion of the innovation from individual to individual and from ‘innovative programme settings to other environments.’ In much of the literature scaling up is seen as a movement from a ‘pilot’ stage to a ‘full-scale’ operation stage. This kind of incremental scale up can be challenging in the face of a raging epidemic such as HIV whose prevention clock ticks in days, not years.

Based on an examination of best practices from a few programmes in the field, including the Thailand 100% Condom Use Policy Programme, The Bill & Melinda Gates Foundation’s Avahan India AIDS Prevention Initiative Programme, and the Brazilian government’s national scale up of HIV prevention and care, this section of the note will provide recommendations on how to scale prevention effectively in the Asian setting.

A good strategic plan should design for scale, organize for scale and ensure execution for scale. Only with all ingredients in place can a programme truly achieve scale.

**Designing for scale** - a good strategy and design is necessary but not sufficient to achieve scale for impact

1. **Divided by what?** - Many programmes fail to establish the denominator and subsequently linking project performance to health impact is virtually impossible. Numerator-based planning is not uncommon - for example, some HIV prevention projects have reported ‘number of contacts with female sex workers by peer workers in the past year’ as a measure of performance. This indicator is flawed as there is no denominator – reporting a ratio of target contacts is more appropriate. Size estimation at the start of a project is critical to plan and design a project which aims at scaled implementation of HIV prevention. Globally, best practices suggest that reaching at least 80% of the target core high risk group population with services at a high intensity is critical to have prevention impact.

2. **Focus, focus, focus** - Many programmes do not investigate where the greatest risk resides. Under the second phase of the Indian National AIDS Control Programme (NACP II, 199-2006), there were more interventions for a dispersed group of migrants and slum dwellers than there were for core groups such as sex workers, men who have sex with men and drug users even though India’s epidemic was primarily driven by core groups. In fact, one of the first things that the Third Phase of NACP (NACP III, 2007-2012) did was to evaluate the 1200 interventions under NACP II and discontinue over 450 of those deemed ‘non-core,’ and to reconfigure interventions to focus on core high risk groups.

3. **A little bit everywhere is a better starting point than a lot in only one place** - It is important to design and implement the scale up of coverage simultaneously across all targeted geographies. Establishing the basic infrastructure and services for prevention is a critical first step. Increasing quality and intensity of prevention intervention delivery can be layered on once a basic ‘footprint’ of intervention is established.

---


15 Prabhat’s Lancet article from 2003?
4. **Rules of the game** -- In the case of most ‘known solutions,’ there is a risk of ignoring the obvious. Lucidly defining the ‘product’ or ‘solution’ or ‘package of services’ is essential, and ensuring that this product is fully understood all the way through the delivery chain is equally important. Setting guidelines, developing common minimum programmes and defining technical standards are key steps in scaling up. They help to build a common platform of understanding the programme’s targets, processes and outcomes. A good ‘product definition’ includes “well-documented guidelines for programmatic and technical approaches, key project milestones, a common management framework, and a common set of indicators against which the programme could be monitored.” An example of setting the ‘common minimum programme’ comes from the Avahan project in India.

5. **Counting beans** – Designing data collection from the ground up, ensuring periodic surveys to assess interim impact indicators and a system of grassroots data management are critical for evidence based programmes. Semi-literate formats for peers to track the riskiest sex workers and ensure they receive uninterrupted services and commodities are one way to use data. The most elaborate CMIS is of no use if the managers all the way up the implementing change do not act on gaps identified through data analysis.

---

Session 6: Unit cost and Resource needs

Costing of Strategic and Operational Plans in Asia

Introduction
The strategic plans in Asia include as minimum five key areas:

1. Programme interventions to avert new cases of HIV targeted at MARPs
2. Wider prevention interventions targeting bridge populations, non-injecting drug users, uniformed services, PEP, VCT, STI, blood screening, and general awareness campaigns
3. Health and social care to PLHIV, OVCs and campaigns to eliminate stigma & discrimination
4. Evidence for response planning and implementation management (BBSS and operational research)
5. Strengthen national capacity to respond to HIV and AIDS including a capacity building agenda or plan, coordination, M&E and research.

The emphasis from a strategic point of view would be on programme interventions to avert new cases of HIV interventions and the second priority would be to outline strategies for wider prevention interventions. The global treatment agenda has over the past years attracted significant attention and financial resources to the implementation of ART for PLHIV. However, the area also includes planning of interventions for opportunistic infections of PLHIV including co-infections of HIV-TB and palliative care and community- and home-based care activities.

Bio-behavioural sentinel surveillance studies of MARPs (Most At-Risk Populations) have grown in number and importance over the years also in countries with concentrated epidemics and play an important role along operational research in responding appropriately to the national epidemic and its characteristics.

Capacity building is essential for effective scale-up to reach universal access targets. The concept of scaling up means going to scale in a planned, coordinated, and systematic manner. However, this is only possible if a programmatic plan is available with yearly targets for prevention and treatment services that takes into account the availability of resources – human as well as infrastructure. From a planning perspective strengthening of the national capacity to respond to the epidemic is the fundament for an effective response. An important tool for an effective and efficient national response is a comprehensive and consolidated plan for capacity building to support the scale-up of interventions. In many countries a capacity building plan does not exist as one document instead capacity building is often attached to individual intervention programmes, for example capacity building of health staff to undertake monitoring of ART (Anti-Retroviral Treatment), capacity building of outreach workers in the field of IDUs (Injecting Drug Users) to implement OST (Opioid Substitution Therapy) etc. In a great number of countries in Asia the capacity building plan is piecemeal and linked to some programmatic interventions but not others. Although capacity building is often important part of GFATM applications the issue seems to have an opportunistic nature and does not originate from a national plan including both human resources (which cadres are needed in which areas and when) and physical infrastructure including equipment (where and when).

Costing National HIV strategies and derived operational plans
Since the beginning of 2008 three approaches to costing HIV strategies and operational/activity plans have been available in Asia. These include the Resource Needs Model, which can be used as a stand-alone on cost estimations or as part of the broader Goals model developed by Futures Group/Constella, the INPUT approach published by ADB and UNAIDS for Asia and Pacific region, and the recent developed ASAP tool uses an accounting-based approach (2008) available through World Bank. All three costing models/frameworks use data on costs but at different levels of aggregation and detail and all three models use data on coverage but from
different sources. Two of the models include a range of demographic and HIV data (ASAP and RNM). Presentation of the approaches followed an analysis of their strengths and weaknesses according to objectives are below:

**The INPUT approach**

Since 2004 Asia has had costing guidelines (Rapid Costing Approach) targeted at prevention interventions aimed at reducing HIV among high-risk groups (ADB and UNAIDS 2004). The costing guidelines have later been extended to include a small cost model to handle scale-up of ART for adults as well as children. The ART model use scenarios to demonstrate the cost implications of split between provisions of different drug regimens. The Rapid Costing Approach is based on a model initially developed by Kumaranayake and Watts (UNAIDS 2000) and has been used by nine countries in Asia and Eastern Europe for costing HIV strategies - the results of one has been used directly to enter into a GFATM application (funding for high-risk groups).

The spreadsheets developed for the rapid costing approach is INPUT, which is explained in the Costing Guidelines (2004). The INPUT model is aimed at strategic planning level and provides unit costs for key prevention and treatment interventions. The model is transparent and each programmatic interventions has its own sheet that provides details as well as overview of cost of behaviour change, commodities and services, enabling environment, programme management, investments and M&E. The data included in the individual spreadsheets originates from expenditures on the ground be it governments, private or NGO providers that implement services with two important requirements:

1. The interventions must be evidence–based (include what it takes to change behaviour if it is a prevention programme) and apply to what is current best practice in the particular field (IDU outreach, MSM outreach, prison, migrant program);
2. The scale-up cost should be the focus of the cost of interventions (ex-ante perspective). This requirement has implications for the assumptions made for capacity utilisation and needs for capacity building (start-up training or refresher training, investments in infrastructure).

**Process of costing, INPUT**

As a principle the INPUT approach only includes globally recognized best practice interventions. As a consequence the fist step in the process of costing individual HIV interventions includes a discussion on quality of the programme: what is the probability that the intervention in question will reach the set targets. If the interventions being implemented are best practice the cost will equal implementation expenditures. At other times sub-components will need to be added to a running programme and the costs included in total programme cost. Two examples from the Asia region illustrates this: a prison programmes did not include dissemination of condoms although a study in the same prison system found that more than 60% of prisoners were having sex while incarcerated; or as another example a number of IDU programmes did not have needle and syringe distribution. The argument for basing the costs on best practice is that scaling up interventions that have not proved effective in achieving set targets could be an inefficient use of resources and might not reflect the cost of scaling up effective programmes. Costing what is there irrespective of the programme’s predicted capacity to deliver has no bearing for future planning.

The second step in the costing process is to ensure that all interventions that will have an impact on the HIV epidemic are included. A dialogue between the costing team and the AIDS authorities with partners and researchers in the field must agree on a list including relevant interventions that can have an impact on the epidemic. It is often a case of diversification of interventions targeting one group of high-risk interventions, for example injecting drug users. How many sub-programmes would be beneficial to include? Outreach by foot, van, motorcycles? oral substitution therapy with more than one drug regimen? Drop-in centers in a house or mobile? special interventions for sex workers who are also taking drugs? etc. To determine the optimal mix of services is a complicated process. However, it should not discourage decision makers to undertake the exercise to reach consensus on the set of interventions based on what works best and the feasibilities on the ground.
The third step includes identifying an organisation/provider that offers best practice intervention and project the cost of scaling up to set targets from the national M&E plan that will often be identical to most of UNGASS targets. This part of the process includes estimation of a unit cost that must take into account capacity issues for the planning period. For each prevention and treatment programme utilisation of human- and infrastructure capacity must be assessed and determined. Capacity is one of the determining factors of unit cost. In the start of a programme running one drop-in-center, the number of clients might not be at par with the center's capacity (number of staff, rent of house and other overhead costs) – as time passes the center might reach 90-100% capacity. Transparent assumptions on utilisation of capacity in the planning period must be provided in the spreadsheets for others to assess the unit cost. The costing team must decide it they want to use an average of for example 75% capacity although they know that some centers utilises 100% while other newly established only utilise 50%. Over time you would expect the unit cost to decrease as utilisation of services gather momentum we have some evidence supporting that (Guinness 2006 and Marseilles 2007) – however, if the services are provided in units of 200-300 clients, scale-up will include a range of new centers until the target is reached or nearly reached.

Overall, costing is not only a technical collection of expenditures to be imputed in spreadsheets for the electronic shelf but a process of activities that includes the involvement of decision makers and technical providers of services to ensure a consolidated result that reflects both future needs and the priorities of decision makers.

When all programmatic interventions are costed and unit costs derived for scaling-up in the planning period, the unit costs are multiplied with the set targets from the M&E plan to estimate the resource requirements per year per intervention and in total. Eventually the costs of capacity building matching the scale up level of the HIV sub-programmes are added. Finally the total resource need is estimated by adding the estimated cost of response planning and implementation of evidence-based management; coordination, and M&E – often estimated as a percentage of total running costs in HIV Strategic Plans.

**The Resource Need Model approach**

The Goals model includes two modules: a module on cost estimation (RNM) and a module projecting the impact of the different scenarios used in RNM. The Resource Need Model, RNM, can be used to estimate costs of HIV strategies. It was first presented in 2002 and has a global scope. The latest version of the spreadsheets that are commented on here is from January 2008 and the Guidelines are from October 2005 (Futures Group/Constella 2005). The model has three key elements: Prevention, Care & Treatment, and Mitigation (OVC). The RNM is aimed at strategic level of decision-making but does not only provide cost estimations of resource need based on demographic data and applied unit costs but can be used to demonstrate impact on the HIV epidemic using different scenarios (mix of prevention and/or treatment interventions) if imputed into the Goals model. The RNM does not provide a specific spreadsheet for estimating sub-components of prevention services, for example the females sex worker interventions are split into

- Cost per sex worker targeted
- Cost per male condom distributed
- Cost per female condom distributed,

but suggest that cost estimations be made by using INPUT (Futures Group/Constella 2005, page 13). However, the ART model in RNM offers a relatively more sophisticated alternative to INPUT and provides also a demographic model for OVC activities – however global unit costs.

**Process of costing, RNM**

The RNM emphasises the importance of the process when utilising the framework. There are five major steps involved: 1) the country must form a national team to implement the model that will receive initial training; 2) data on socio-demographic variables, health systems, HIV prevalence and condom use, and the costs of prevention and care programmes must be collected; 3) all collected data must be entered into the RNM spreadsheets; 4) workshops with decision-makers must be conducted on resource needs to validate assumptions on costs and coverage; and 5) follow-up on workshop outcomes in a variety of workshops is recommended (Futures Group/Constella 2005, page 4-5).
Box 1. Indicator requirements by RNM

**Demographic indicators**
- Total population
- Male population 15-49
- Female population 15-49
- Male population 15-64
- Female population 15-64
- Crude birth rate (births/1000 pop)
- Children of primary school age
- Children of secondary school age
- Adult HIV population
- Paediatric HIV population
- Newly symptomatic adults
- Newly symptomatic children
- Adult HIV Deaths
- Paediatric HIV deaths

**Epidemiological indicators**
- Adult HIV prevalence (%)
- Pregnant women HIV prevalence

The RNM works with the SPECTRUM model for demographic data and data on HIV for different population groups. For Asian countries that have used the GOALS model for planning HIV interventions or recently updated Asia Epidemic Model (AEM) spreadsheets the data might already be available in the country.

The latest model of RNM includes a framework for OVC disaggregated into age groups, for example number of OVCs 0-4 years, number of OVCs 5-9 years.

The ASAP tool uses the RNM indicators and adds selected population data for youth interventions and health resource indicators – for more see the description of the ASAP tool below.

ASAP approach

The AIDS Strategy and Action Plan (ASAP) tool has been developed by the World Bank and disseminated in 2008 at [www.costs/worlbank.org/resources](http://www.costs/worlbank.org/resources) (CHECK link) and is at present (July 2008) still undergoing changes. As the previous two costing models ASAP tool holds a excel spreadsheet that is menu driven and a user manual. The tool is based on accounts of disaggregated costs – comparatively to the RNM that operates with aggregated costs in form of unit costs of services (outreach services, condoms, needles and syringes) and health resource indicators (number of nurses, doctors, hospitals, labs). The framework is a revised and disaggregated RNM including prevention (exclusive prisons), treatment & care, and OVC but the focus is on costing at account level. This includes cost of vendor machine for condoms, blood tubes, electricity charges, tents and office furniture to be used as appropriate.

Box 2. Example, IDU activity costing ASAP

<table>
<thead>
<tr>
<th>IDU Harms Reduction</th>
<th>Units</th>
<th>Unit Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harm Reduction Programs for IDU</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IDU’s receiving harm reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IDU’s receiving Counselling and Testing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IDU’s receiving Community Outreach and Peer Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IDU’s receiving Needle and Syringe Exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IDU’s receiving Drug Substitution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IDU’s receiving condom promotion interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Counsellors to be trained</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costs not related to number of beneficiaries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The ASAP tool enables the user to collect unit cost per needle and syringe, different substitution treatment, and per condom. However, the level of costing can be limited to the key cost items for individual interventions targeting MARPs, PLHIV, OVCs. The tool is in many ways targeted at one provider rather than many - probably because it has so far been tested in Swaziland and Guyana. The technical part of the spreadsheet includes a sheet for targets and coverage levels; standard chart of fairly comprehensive accounts and mapping, which can be added to and modified as appropriate; standard unit costs for each expenditure account; activity costing of standard interventions. As an extra asset the tool allows for total costs to be aggregated into function using the NASA (National AIDS Spending Assessment) format, Government format (for Government interventions), and GFATM format. Overall, the tool can be used in a very detailed version that requires substantial resources of the costing team. The reward is a range of possibilities including direct use of the work for GFATM applications, procurement planning, and human resource capacity analysis. In principle the ASAP tool can be used for HIV strategic planning as well as planning at the operational level due to the many details included.

**Process of costing, ASAP**

ASAP is a relatively technical tool that involves human resources with financial or economic professional experience when first implemented due to its many costing data requirements. The tool can be used in a decision-making process presenting different results of different scenarios guided by decision-makers or proposed by a technical interdisciplinary planning group. The tool demands some training of of national counterparts including people involved in preparing GFATM application and procurement plans to ensure efficient use of the tool. By nature (accounting-based) the tool is ex-post oriented.

**Strengths and weaknesses of the ASAP, INPUT and RNM**

Strengths and weaknesses of using different models for costing HIV interventions in strategies and action plans will naturally depend on the purpose, the time available, the financial and human resources available including the process the results are going to feed into. Since HIV strategies and National Action Plan (operational plans) are different plans with different purposes, decision-makers, time horizons, we have distinguished between these two purposes below as appropriate.

A list of what the three costing models cover is in Appendix A and a further description and examples of the approaches are incorporated at a later stage.

The scaling up of ART has been the focus of attention for some years and a number of planning and costing models have been made available to estimate the cost of service delivery. These includes RNM/Goals and the Cape Town model (source to be provided) Since INPUT was originally developed to accommodate the need for estimating unit costs for high-risk groups in Asia and Eastern Europe a relatively simple module for service delivery of ART programmes has been added later for strategic planning purposes only. The model can provide an estimate of national future cost of ART using different (imputed) proportion of 1st and 2nd regimen ARV drugs and aligning to the national protocol. The model does not include training of staff and strengthening of infrastructure to deliver ART – this information needs to be imputed from national infrastructure plans. The RNM model for service delivery of ART is more advanced than INPUT including estimates for how long people are on which regimens, when they stop receiving ART, and when they die. RNM also includes modules for training for ART and nutritional support.

A number of tools are available for planning purposes of HIV and AIDS interventions. If reliable national data are available on patients’ time spent on different ARV drug regimens and the time of non-tolerance of ARV drugs – the RNM is superior to INPUT from a planning perspective and holds more features than INPUT. For strategic planning purposes in Asia you could use INPUT for high-risk group interventions including the ART module and/or use the more advanced RNM model in total with imputed unit cost data of prevention interventions from INPUT (or other national cost studies) or aggregated cost data from ASAP. The easiest tool to use is probably INPUT – however, it comes at a price of sophistication at its present level.
<table>
<thead>
<tr>
<th></th>
<th>ASAP</th>
<th>INPUT</th>
<th>RNM</th>
<th>HIV-MDG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus and aggregated level of information</strong></td>
<td>Focus is Action Plans but can also be used for HIV Strategies. Estimates conducted using this tool hold the potential to deliver disaggregated cost data at lowest level and provide overviews of results. The model is ex-post</td>
<td>Focus is HIV Strategies in concentrated epidemics (emphasis on MARPs). The information can be used as part of an Action Plan but would need to be supplemented by a separate infrastructure plan. The model is ex-ante based on effective scale-up service provision.</td>
<td>Focus is HIV Strategies but if incorporated into Goals model, the impact of resource scenarios can be used for GFATM applications. The model has the potential to include some infrastructure costs. The model is ex-ante based on global unit costs as defaults.</td>
<td>Focus is HIV strategies for MDG-development plans with flexibility of inserting national or local costs. The model is ex-ante based on country-level unit costs or some, with regional or global reference unit costs readily available as proxies.</td>
</tr>
<tr>
<td><strong>Key Functions covered</strong></td>
<td>All functions included in the NASA classification (that does not hold a separate prison intervention class). Prevention, Treatment &amp; Care, OVC, AIDS program development, Human resources, Social mitigation, Community Development, HIV- and AIDS- related research</td>
<td>Functions included are prevention interventions, (with emphasis on MARPs and treatment interventions) and a antiretroviral therapy program. The MARPs include a range of sub-interventions per MARP and includes a model for prison interventions.</td>
<td>Functions included are Prevention of priority populations, service delivery (e.g. Condom provision), health care (e.g. safe injection and blood transfusion) Care and Treatment (ARV diagnosis of HIV), Mitigation (OVC) and program management.</td>
<td>Costing areas include prevention focusing on MARPs, ARV treatment, care &amp; support and health systems (human resource and infrastructure), and enabling environment (gender, legal, governance, capacity development and data-related costs).</td>
</tr>
<tr>
<td><strong>Data requirements</strong></td>
<td>Although the tool is flexible of aggregation level the account data requirements are comprehensive and demands involvement of several people, covering a wide range of expertise</td>
<td>The tool demands insights and data on actual provision of services their applied costs and best practice. Technical skills required are planning incl. M&amp;E and program management.</td>
<td>The tool demands insights in global cost studies (global resource need requirements studies) to understand the unit cost assumptions. Technical skills required are demography, epidemiology and (some) planning and clinical knowledge.</td>
<td>The tool demands some prior knowledge or data collected on unit costs, in addition to technical skills or knowledge of demography or related tools.</td>
</tr>
<tr>
<td><strong>Reliability and validity of data</strong></td>
<td>The reliability of cost data based on accounts are by nature reliable if accessible for interventions outside Government provision of services</td>
<td>Most cost estimations of MARP interventions are from private and NGO providers. For these interventions it is paramount that data are from actual costs of best practice services - or an average of best practice services.</td>
<td>The cost estimations by default from global studies are not valid for resource estimations at national levels. Local cost studies should be used instead - or as a minimum means of regional studies.</td>
<td>Since the model encourages the use of locally-obtained unit costs, the model could produce estimates that are highly representative of the local situation. A tool such as INPUT could be used to generate reliable unit costs at the national level, which can be used in the model.</td>
</tr>
<tr>
<td>Time and resources</td>
<td>ASAP</td>
<td>INPUT</td>
<td>RNM</td>
<td>HIV-MDG</td>
</tr>
<tr>
<td>--------------------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>---------</td>
</tr>
<tr>
<td>Requires time and resources for financial skilled staff - time increases with level of disaggregating of costs, requires time and resources of getting actual cost cases of best practice interventions of NGOs</td>
<td>Requires time and resources of getting actual cost cases of best practice interventions of NGOs</td>
<td>The technical part of costing - if using default unit costs - requires relatively little time. However, the RNM process proposed is quite time consuming.</td>
<td>The data entry itself is straightforward and can be done in a short time span. What requires time is to come up with the appropriate unit cost and activities for certain interventions.</td>
<td></td>
</tr>
</tbody>
</table>

| Application to Asia | Several modules are relevant for Asia epidemics for Action Plans, (HIV Strategies), GFATM applications, and procurement plans | The MARP module is built for Asia HIV epidemic context for HIV strategic Plans | If the MARP uses national cost data it applies well to Asia and the ARV module is also applicable for Asia context for HIV Strategic Plans |
| Application to Asia | | | The MARP module is built for Asia HIV epidemic context for HIV Strategic Plans |

| Use for cost-effectiveness studies | Medium: All financial costs are registered for providers. The approach will need to add economic costs (time of volunteers, time of patients, etc.) | Medium: Total financial costs including some costs for volunteers are included - however, time and money spent by patients needs to be included. | Not possible: If the approach does not operate with local cost data - it cannot be used to estimate total economic costs. | Low: If the approach uses proxy data provided and does not operate with local cost data - it cannot be used to estimate total economic costs. |

| Ensuring link to GFATM applications | Has a separate module for this | Not directly applicable - will take substantial extra resources to apply except for MARPs and ART | Not applicable since it does not necessarily include national cost data | Not directly applicable - will take substantial extra resources to apply and produce GFATM-relevant matrix |

| Ensuring link to procurement plans | Has a separate module for this | Not applicable but could hold some cost information that could be used (ARVs, drugs, condoms and needles for MARPS) | Not applicable but holds cost information that could be used (ARVs, drugs, condoms and needles for MARPS) | Not applicable but holds cost information that could be used (ARVs, drugs, condoms and needles for MARPS) |
## Table 1b. Strengths and weaknesses of ASAP, INPUT, and RNM. ARV module

<table>
<thead>
<tr>
<th></th>
<th>ASAP</th>
<th>INPUT</th>
<th>RNM</th>
<th>HIV-MDG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning Focus</strong></td>
<td>ASAP can include unit costs (price) of all combinations of ART regimens and lab tests being used in the country. You will have to impute % of PLHIV projected to receive the individual drug and test. Further, number of HIV/ART visits per year and inpatient days spent at secondary health care facilities.</td>
<td>INPUT works with a model focusing on the proportion of patients receiving 1st, 2nd, and (if needed) 3rd level of ARV drugs per year – separately for adults and children including average number of visits and test per year according to the national protocol. The proportion of drug regimens uses a weighted average.</td>
<td>RNM has incorporated default values for drugs that can be replaced with the price of various individual drugs used in the country at yearly basis. The RNM incorporates an epidemiological model including proportion of patients failing treatment and those who die per year. The model has an adult component and a pediatric component. The model provides a prediction of retention and an overview of patients on 1st and 2nd line regimens over time using a projection.</td>
<td>The MDG model uses national unit costs or proxy unit costs to calculate cost for drugs. It uses the percentage of adults and children in need of ARV among all PLHIV and uses a projected PLHIV population growth rate (adjustable) to calculate the future needs. It has data entry sections for 1st, 2nd and 3rd line medicines, for both adults and children. It uses an average annual cost of ARV as opposed to combination-specific costs.</td>
</tr>
<tr>
<td><strong>Data Requirements</strong></td>
<td>Although the tool is flexible of aggregation level the account data requirements are comprehensive and demands detailed cost information.</td>
<td>The tool aligns with the national ART protocol and works with weighted averages and proportion of patients on 1st, 2nd and 3rd regimen drugs. The tool is only for strategic planning only.</td>
<td>The tool has several planning features useful for strategic planning including a module for non-ART care and prophylaxis.</td>
<td></td>
</tr>
</tbody>
</table>
The technical toolbox

Over the years a number of tools have been made available and their validity tested through country cases in Asia and elsewhere. The first tool to appear on the scene was the Goals model originally developed as a demographic tool using the SPECTRUM demographic model to predict the impact of up-scaling interventions on the HIV epidemic in Africa. The costing approach was later developed to the RNM module and has been revised over the years. RNM has been used in a number of Asian countries including Cambodia (Martin, 2006).

The toolbox for RNM includes:
1. Spreadsheet RNM (January 2008 version)
2. Guidelines for RNM (Bollinger, Boulle, Cleary 2006)
3. Example of use of RNM, Cambodia (Martin 2006)

Links to Internet downloads for tool and guide to be provided

Since 2004 the INPUT model has been widely available in Asia targeted for countries with concentrated epidemics of high-risk groups. The input model builds on unit costs for programmatic HIV interventions and is not developed for operational plans Investments and capacity building interventions are incorporated directly from existing capacity building plans if they exist or incorporated from GFATM applications into the relevant programme components and costed if needed (material from GFATM is already costed).

The toolbox for INPUT includes:
1. Spreadsheets for prevention interventions including a range of IDU interventions and prison interventions
2. Spreadsheets for provision of ART
3. Costing Guidelines 2004
4. Example of use of INPUT (Alban 2008)
5. We could use (with permission) the Nepal M&E plan as data for coverage
6. We could include the cost-effectiveness analysis of IDU interventions from Kathmandu or Karachi to demonstrate how the costs (with some changes) can feed into the cost-effectiveness approach?

Links to Internet downloads for tool and guide to be provided

In 2008 the World Bank facilitated the development of the ASAP tool that as a framework builds on the Goals/RNM approach using basic demographic data, HIV data, and as something new includes health resources and for the technical costing takes accounting approach (collection of expenditures) of all cost components of the interventions/activities listed in NASA (the complete list of these can be found in Annex A of the ASAP user manual). A relevant selection of these comprehensive numbers of services is applicable in Asia but would probably have to incorporate prison programmes (Version 1.1 of May 2008).

The toolbox for ASAP includes:
1. Spreadsheets (May 2008 Version 1.1)
2. User manual (March 2008 or latest)
3. No examples are yet available from Asia??

Links to Internet downloads for tool and guide to be provided

Using the tool box in Asia

Throughout this section it is assumed that the aim of the costing process is to achieve national/local cost data. This makes the RNM model of less use for actual costing than ASAP and INPUT. But the RNM model holds other features in its design that makes it useable either in combination with ASAP and INPUT. The three tools available including the UNDP MDG spreadsheet from UNDP using the RNM approach provide the decision makers and technical
staff with a number of choices and mix of choices. For the first time it is possible to choose a costing tool that best fits to specific objectives instead of having to use one tool only and try to make it fit the objective. But with choices follow the demand for decisions and clarifications before the process takes off. In order to ensure effective and efficient use of the toolbox a number of questions need to be addressed by the decision makers. The list below is only examples and is not exhaustive.

What is the end result of the costing? 1) costing of a HIV strategy; 2) costing of an infrastructure plan; 3) costing of an Operational Plan /National Action Plan; or costing of a GFATM application.

Should the costing be used across end-products? For example can costing of a HIV strategy be applied to GFATM applications? How do you use – if at all – the costing of an HIV strategy for costing a National Action Plan?

Is the costing going to be part of a decision-making process or left to technical people? If it is going to be part of a decision-making process the requirements for transparency of different cost scenarios are assumed to be more challenging.

Do government or NGOs and/or private organisations provide key interventions? What information will be available from NGOs and private organisations and will the information necessarily be in line with government strategies?

What resources (technical and financial) are available for the costing process? Are any of the tools easier to handle than others?

How much time is available for the costing process? The technical costing with ASAP and INPUT takes minimum ten working days – however getting access to the correct basic data can prolong the process.

We have tried to provide answers in table 2. The answers can only be indicative since the objectives of costing, the resources available, and past experiences all play part of the process when deciding which tool to use when. A piece of advice: Never trust a technical person who only provides one answer – one thing you can be sure of is that s/he is not an economist.
<table>
<thead>
<tr>
<th>What is the objective and what can the models do for you?</th>
<th>ASAP</th>
<th>INPUT</th>
<th>RNM</th>
<th>HIV-MDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is possible to use the ASAP model to generate cost of one or a number of operational and programme HIV interventions at different levels of cost aggregation</td>
<td>It is possible to use the INPUT model to generate national costs for one or a number of HIV programmes (prevention and treatment)</td>
<td>The RNM model can impute national cost data for one or a number of HIV programmes at sub-programme level. However, RNM does not generate national cost data per se</td>
<td>The MDG model aims to generate national costs for one or a number of HIV programmes but also provides proxies at global- or regional-level</td>
<td></td>
</tr>
</tbody>
</table>

1) Costing of National HIV Strategy?

| | Medium-low: The model is based on accounts at a low level of aggregation. It does not call for important questions such as best practice or use of correct unit - important for processes leading to HIV strategies. It is uncertain how the ASAP model will handle costing of prevention interventions provided by several NGOs - a key question in Asia | High-medium: INPUT is developed for strategic planning purposes. It has modules for key programmes incl. prison programmes as the only model. It operates at programme level, but can be broken down in sub-programmes (for IDUs: outreach, OST, street children etc.). At programme level it provides the best overview of the three models. However, it is also the most "primitive" tool since it does not automatically use demographic update of target groups per year | High-zero: If no national cost figures can be imputed the use of RNM is not recommended for costing (no ownership, great risk of being wrong, does not pose important questions in the process). If national cost figures are generated from the ASAP or preferably from INPUT, RNM is assessed useful for posing questions and priority setting. Further, the RNM is linked to the Goals model, which adds to its value as a planning tool. | High-medium: The HIV-MDG model was developed as a part of the MDG Integrated Health Model, which addresses all MDG-related health issues including maternal and child health. It defines programs in the same way as RNM, except that it requires input of local unit costs data (proxies are provided when no data are available). In this way, it is similar to RNM in that it is useful for policy scenarios (?) and priority setting. |

2) Costing of infrastructure plan?

| | High: The accounting approach is superior for costing human and physical infrastructure | Low-zero: When the INPUT model has been used for operational costing it has worked with estimated norms: cost of a workshop, cost of new clinic etc. | Low-zero: The RNM model has been develop as a planning tool and is not well suited for costing infrastructure plans - when it does so it works with norms like INPUT | Medium: The HIV-MDG model has a separate worksheet for health systems but it is quite confusing and difficult to use [e.g., how do you estimate the cost of “non-standard in-service courses” for physicians, nurses, etc.?] |

3) Costing of Operational Plan / National Action Plan

<p>| | High: The accounting approach is superior for costing human and physical infrastructure, which is important in NAP. It is possible to use RNM with national cost data or INPUT to estimate programmatic costs and then use ASAP for operational costs - depending on the requirement for the process | Low-medium: INPUT model is not appropriate for operational costing. It has worked with estimated norms: cost of a workshop, cost of new clinic etc. It is possible to use INPUT to estimate programmatic costs and then use ASAP for operational costs - depending on the requirement for the process | Low-medium: RNM model is not appropriate for operational costing. It is possible to use RNM with national unit costs to estimate programmatic costs and then use ASAP for operational costs - depending on the requirement for the process | Low-medium: The HIV-MDG model is preliminary designed for activity costing. However, the Health Systems worksheet of the model enables operational costing as well. It is possible to use HIV-MDG to estimate programmatic costs and then use ASAP for operational costs - depending on the requirement for the process |</p>
<table>
<thead>
<tr>
<th>Costing of a GFATM application?</th>
<th>ASAP</th>
<th>INPUT</th>
<th>RNM</th>
<th>HIV-MDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>High: The accounting approach is superior for costing at the detailed level required for the GFATM applications. Further the model includes a module for procurement and set up for GFATM</td>
<td>Low-zero: INPUT model can be used for programmatic costs and has a record for acceptance. It is not possible to use INPUT for operational costs for GFATM</td>
<td>Zero: The RNM model does not generate costs but uses other cost available studies</td>
<td>Low-medium: Costs and information generated by the HIV-MDG model could be used in GFATM proposals?? HOW? WHICH COSTS??</td>
<td></td>
</tr>
</tbody>
</table>

| Is the costing going to be part of a decision-making process or left to technical people? | ASAP demands technical people who are literate in spreadsheets and financial accounting at the programme level. The model can be used solely as a technical tool or in a process involving decision-makers. However, it strength is the details not the overview it produces. | INPUT demands first of all planning and programmatic expertise. The spreadsheet model is by far the most simple (technical primitive) of the three models. The INPUT model should not be used as a technical exercise but present key questions to decision makers during the strategic planning process. | RNM does not require any specific financial or economic skills since it is "only" a question of imputing already generated unit costs. If national unit costs are imputed in RNM (especially as part of the Goals model), it proves a very good tool for decision-making - but it does not pose any key costing questions. |
| Do government or NGOs and/or private organisations provide key interventions? | It is uncertain how ASAP is going to handle this challenge, which is common for key prevention interventions in Asia | INPUT handles this challenge by comparing NGOs approaches to best practice as we know it to make sure that only unit costs for best practice are scaled up. INPUT also questions how the term of "unit" is used. The costs of inputs in calculating the unit costs can be used as the standard for any implementing agencies requesting funds from the HIV budget. | It is uncertain how RNM assesses if the national unit cost included represents best practice - or how it handles the question of definition of "unit". |
| What resources (technical and financial) are available for the costing process? | ASAP demands fairly high level of financial resources - for many countries in Asia it means training of national staff and international consultant | INPUT demands resources who are often available in the countries (experience shows that programme experts can easily be trained) and is less reliant on international consultants | RNM is easy to use if costing data is available. It does not require financial expertise - but rather familiarity with spreadsheets. |
| | | | HIV-MDG model does not require financial expertise but rather familiarity with spreadsheets. |
**Unit cost**

The concept of scaling up has been central to the commitment of governments to HIV and AIDS since 2001 and remains the focus via the bi-yearly national UNGASS reports - latest 2008 versions. The global Universal Access movement has amplified the focus away from access to ARV but equally so for prevention interventions. The recently published report from the Commission On AIDS In Asia\(^{17}\) makes a strong call for a renewed and enhanced response in Asia emphasising prevention of high-risk groups as one of the key strategies. One of the means to ensure this happens is building the capacity of Asian HIV institutions to be able to scale up and estimate the cost of this process to effectively halt and reverse the epidemic. We know what works. We know what levels of coverage to reach to have an impact of the epidemic. However, we need to use this knowledge to provide reliable estimates of what it takes of organisational, human, and financial resources to scale up effective prevention interventions for high-risk groups in a planned, systematic and coordinated manner. The road to achieve good cost estimates goes via estimating national unit costs of key interventions/programmes that will make a difference to the national HIV epidemic.

A unit cost has two elements: the account or estimated cost of a service/good/programme and the number of beneficiaries being covered by this particular service/programme, for example the cost of one condom if you take an account approach at disaggregated level or the cost of delivering a specific HIV service covering one target person one year if you take a programme approach. The three models: ASAP, INPUT and RNM all uses unit cost to project expenditures for HIV activities and programmes now and in the future. However, the models use the term unit cost at different levels of aggregation. ASAP tool uses expenditures at the most disaggregated level: cost per good/service per year: cost per laboratory test, cost per kit, rental of buildings in a bottom-up approach. INPUT tool uses total costs (accounts) of HIV prevention programmes from NGOs, government or private institutions and then disaggregates to key predetermined cost components regarded as good practice to estimate: cost of delivering female sex worker interventions per person per year, cost of delivering home-based care service per person per year. RNM tool operates at programme level like INPUT but splits the HIV programme into a number of sub-programmes. For example the unit cost of sex worker interventions are divided into: counselling per sex worker targeted, cost per male/female condom distributed, and cost per STI treated. While ASAP and INPUT always generate national unit costs - be it governmental, NGO, or private delivery partners - the RNM operates with mean global unit costs in USD if national costing studies are not available. RNM is developed from a database including a range of available cost studies and cost estimates from mainly Africa, Asia and South America to estimate global estimates for resource need for advocacy purposes. This global approach has been applied to cost national HIV plans in the RNM tool. Global and preferable regional unit costs in International Dollar can be used to compare findings of national studies – but are not assessed appropriate as fundament for national unit costs.

The other element of the unit cost equation is the denominator: definition of the unit. You could say that costing is one side of the coin and the unit the other. In the account model it is often relatively simple since you work from the bottom up at the most disaggregated level: good X at price Y, which makes the unit =1. If you need the price per year for a drug taken every day you multiply 365 days with the price of the drug and you get the unit cost per year. In the ASAP tool a range of demographic, epidemiological and clinical data is imputed into the model to estimate the need for goods and services in the future - this element is based on SPECTRUM - a demographic model developed by Futures Group. For example the estimated number of female sex workers is a set proportion of total female populations 15-49 year, the number of people with HIV needing ARV is a set proportion of estimated number of PLHIV. In Asia the alternative to SPECTRUM is the Asia Epidemic Model, AEM (Brown and Peerapatanapokin 2004). An example of rather detailed data requirements for the ASAP model is shown in table 3. It is not clear from the model how the combinations are handled for planning purposes and will have to be discussed when filled, for example what is the service

---

package for IDUs receiving drug substitution? Does it include condom promotion and/or counselling and testing?

**Table 3. Example of data requirements from ASAP model: IDU interventions**

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of IDUs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counsellors to be trained per 100 IDU’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% IDUs receiving harm reduction</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>% IDUs receiving Counselling and Testing</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>% IDUs receiving Community Outreach and Peer Education</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>% IDUs receiving Needle and Syringe Exchange</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>% IDUs receiving Drug Substitution</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>% IDU’s receiving condom promotion interventions</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

*Source: ASAP HIV/AIDS costing tool, Version 1.1*

For comparison we show the overview of a filled box of key components of IDU interventions for people receiving OST (table 4).

**Table 4a. Example of unit cost using INPUT. OST programme, Asia**

<table>
<thead>
<tr>
<th>Cost component</th>
<th>USD</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviour Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff</td>
<td>12,720</td>
<td>52.64%</td>
</tr>
<tr>
<td>Training</td>
<td>636</td>
<td>2.63%</td>
</tr>
<tr>
<td>Running Cost</td>
<td>2,100</td>
<td>8.69%</td>
</tr>
<tr>
<td>IEC</td>
<td>50</td>
<td>0.21%</td>
</tr>
<tr>
<td>Commodities &amp; Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methadone</td>
<td>5,475</td>
<td>22.66%</td>
</tr>
<tr>
<td>Condoms</td>
<td>1,248</td>
<td>5.16%</td>
</tr>
<tr>
<td>Enabling environment Investments</td>
<td>250</td>
<td>1.03%</td>
</tr>
<tr>
<td>M E R</td>
<td>560</td>
<td>2.32%</td>
</tr>
<tr>
<td>Investments</td>
<td>1,124</td>
<td>4.65%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24,163</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

*Unit cost per year* 10

USD 242 in 2007 (conversion from local currency).

**Are we measuring identical service delivery?**

The first complication to be overcome when using unit cost of HIV interventions for up-scaling HIV interventions is to analyse if service delivery is **standardised** at delivery point. For example most people expect that the delivery of ART is standardised - the same protocol is used (same laboratory test for same clinical need, same drugs for same clinical need etc.). However, for the most important prevention HIV interventions in Asia: sex worker interventions, injecting drug user interventions, men who have sex with men interventions, prison interventions, migrant interventions, the service delivery is often carried out by a range of NGOs and not standardised. Since ASAP model has not yet been used in Asia we do not know how this is going to be tackled. In principle an accounting model would require data collected from all NGOs. The INPUT model based on rapid costing approach takes a middle way. A number of NGOs providing the service is assessed to ensure they provide sub-services regarded as **good**
practice – for example by using UNAIDS and/or WHO Guidelines (FSW, IDU, prison). Data of expenditures and service coverage for latest year is then collected. The RNM uses national unit costs if available or rely on mean values from a range of international cost studies. The RNM and INPUT can be combined to ensure national values but the INPUT model then needs to be disaggregated to sub-services used by RMN to make a good fit.

Some governments, for example Nepal, has via its support from GFATM standardised the contracts to NGOs who deliver services for vulnerable populations, for example IDU and mobile populations. Examples at: http://www.undp.org.np/hivaids/pdf/contracts/IDUS/ARC.pdf and http://www.undp.org.np/hivaids/pdf/contracts/Migrants/ARSOW-Nepal.pdf. While standardisation of service delivery might solve the problem accomplishing usable unit costs for up-scaling it does not solve the problem of the denominator: the coverage – see below.

Costs vary with approach. It matters if FSW interventions to prevent the spread of HIV including STI services provide the services using syndromic approach or test before treating. The outcome may be more favourable using testing procedure – however the costs will increase. The cost of delivering HIV services also varies with utilisation of capacity. INPUT model often uses different unit cost per year assuming 80%/90% use of capacity over the years. Further, the reference year of costing HIV interventions impacts on the end result. When services are being implemented a substantial amount of money goes into investments in training – some organisations depreciate training over five years while others relate the costs to the year it arise. The account approach will always use the year of actual cost, INPUT model depreciates the cost of investment over five years. When comparing costs across sites the number of years in operation might assist in explaining differences in unit costs.

What is the correct measure of coverage?

Unit costs are estimated based on number of clients being served (INPUT), number of condoms being distributed or STIs being treated (RNM) - the denominator of the equation. Some NGOs running IDU services use the number of registered IDUs as the number of clients being served while others use the recommended denominator: IDUs reached per day (the IDUs would need 2-3 clean needles per day). By using number of registered IDUs as a measure of clients served, unit costs will decrease but impact of services will become uncertain. Using an incorrect denominator influences both unit costs (that will be under-valued) and the impact on services (that will be over-valued).

Use of unit costs across sites

The unit cost of IDU interventions from one site in Cambodia cannot necessarily be used to assume the same level of cost in another site in Cambodia – or Myanmar and Laos. Transferring unit cost from interventions in one site in a country to another in the country would require the same best practice approach, same utilization of capacity, scale, and identical group of IDUs (HIV prevalence, heroin or pharmaceutical drug users, drug behavior, sexual behavior etc).

From unit cost to resource need

All three costing models operate with coverage targets for prevention and treatment to project future costs. These targets are derived from the national M&E plans – an example from Nepal is below showing estimated baseline of 2006/07 and targets of 80% for female sex worker interventions:
Table 5. Example of coverage targets to be included in costing models (the denominator)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Sex workers reached with targeted HIV prevention (UNGASS: received condom, knowing where to go for VCT) in Eastern Terai</td>
<td>10,550</td>
<td>TRC</td>
<td>12,282</td>
<td>43.50%</td>
<td>80%</td>
</tr>
<tr>
<td>Female Sex workers reached with targeted HIV prevention (UNGASS: received condom, knowing where to go for VCT) in Kathmandu</td>
<td>7,500</td>
<td>TRC</td>
<td>9,076</td>
<td>36.00%</td>
<td>80%</td>
</tr>
<tr>
<td>Female Sex workers reached with targeted HIV prevention (UNGASS: received condom, knowing where to go for VCT) in Western Terai</td>
<td>3,350</td>
<td>TRC</td>
<td>3,933</td>
<td>39.6%</td>
<td>80%</td>
</tr>
<tr>
<td>Female Sex workers reached with targeted HIV prevention (UNGASS: received condom, knowing where to go for VCT) in Far-West</td>
<td>800</td>
<td>TRC</td>
<td>728</td>
<td>34.0%</td>
<td>80%</td>
</tr>
<tr>
<td>Female Sex Workers reached with targeted HIV prevention: National (incl. BCC with QFPE or DTC or SSI Clinics or community events)</td>
<td>20,000</td>
<td>100,000 (2005)</td>
<td>20,010</td>
<td>9,019</td>
<td>80%</td>
</tr>
<tr>
<td>Number of female sex workers receiving HIV test results &amp; post-test counselling</td>
<td>30,000</td>
<td>4% (2005)</td>
<td>1,200 (2005)</td>
<td>30,015</td>
<td>178% (2007)</td>
</tr>
<tr>
<td>Condoms distributed or sold (in millions)</td>
<td>25,000,000</td>
<td>17,000,000</td>
<td>14,000,000</td>
<td>14,700,000</td>
<td></td>
</tr>
</tbody>
</table>


The ASAP model uses the RNM approach to incorporate targets at the same breakdown of service delivery while the INPUT model uses target data at the highest level of aggregation: target for coverage of specific IDU programmes: one for substitution treatment, one package for outreach services (sometimes broken down into proportion using motorbikes, mobile vans), peer-driven interventions, one package for street children depending on national strategy. For each of the selected interventions to form the response to HIV spread among IDUs, unit costs are estimated separately. If the national target is to cover 60% of all IDUs estimated at 15,000 after five years, the unit cost is estimated for each IDU sub-programme and sub-targets are set per programme - an example is provided in Table 6.

Table 6. Example of coverage for different IDU interventions in the same programme

<table>
<thead>
<tr>
<th>Activity</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU-Out Reach</td>
<td>800</td>
<td>1,400</td>
<td>2,600</td>
<td>3,300</td>
<td>3,500</td>
<td>15000 IDUs, 60% = 9000</td>
</tr>
<tr>
<td>IDU(Oral Substitution)</td>
<td>200</td>
<td>500</td>
<td>900</td>
<td>1,200</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>IDU-PDI (Peer-Driven)</td>
<td>0</td>
<td>500</td>
<td>1,500</td>
<td>2,750</td>
<td>4,000</td>
<td></td>
</tr>
</tbody>
</table>

In the INPUT model the unit cost is estimated for each IDU programme (outreach, OST, and peer driven interventions) according to the country’s HIV strategy.
## Data requirements

<table>
<thead>
<tr>
<th></th>
<th>ASAP</th>
<th>INPUT</th>
<th>RNM</th>
<th>HIV-MDG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data requirements</strong></td>
<td>The cost information must be evidence-based via accounts at low level of aggregation. Price of furniture, price of drugs, salary per staff category, cost per test etc. For public delivery of services, for example the health services or the education services, it might not be a challenge. However, the collection of detailed cost information from many organisations challenges the account approach. Working with ex-post cost data is a challenge for scaling-up. Economics of scale and use of capacity might change over the years.</td>
<td>Cost information must be evidence-based via total accounts for NGOs/private organisations for high-risk group interventions. The total cost information per specific HIV intervention is disaggregated into predefined cost components including in Best Practice. This is done based on total accounts in cooperation with the organisation in question. The ARV module works with weighted average of drug regimen and the cost of monitoring is modelled from the national protocol using national prices of tests, staff salaries etc.</td>
<td>RNM does not have a costing module for high-risk group prevention interventions, but uses global unit costs in USD or national cost studies - or unit costs estimated using the INPUT model. The ARV model operates with international drug costs for ARV drug regimens and monitoring costs (as default) or national cost data from accounts. <em>It is not possible to see what is spent on drugs and what is spent on monitoring.</em></td>
<td>Cost information is all user-defined and the quality of the estimates will depend upon the quality of the unit cost estimates. There are no specific requirements or quality standards in calculation of unit costs, but the proxy indicators suggested are based on best practice interventions within the region.</td>
</tr>
</tbody>
</table>
Building expertise in Asia countries

In order to respond appropriately to the HIV epidemic the country needs to know its epidemic; its options to control the epidemic and alleviate the impact of HIV and AIDS - be it via treatment & care or orphans support. What seems to have been less of an issue during the process of setting priorities of interventions in countries is making sure that costs of interventions are included. Estimation of national costs of HIV interventions is important for a number of reasons:

- It assists in raising important questions on approaches taken and efficiency of interventions
- It matters how countries invest their resources in the field of HIV - if technical efficiency is not achieved (the most cost-effectiveness approach to achieve X – e.g. coverage of 80% for IDUs) you get less value for money and some important services are not provided. If you want to spend extra money on extra services such as providing outreach services using a van instead of making the target group use drop-in-centres, you must ensure that the extra money could not have achieved a higher return if you invested differently
- It matters how allocative efficiency is decided across all HIV interventions: For example should you invest more in high-risk groups and less in youth programmes? Which high-risk groups should you scale-up first, second and third? What ever you want to achieve you need to know the cost of different investment scenarios – unless you are working from the perception of infinite availability of resources.

The conclusion is that national costs of HIV interventions help you allocate your resources to gain more benefits for target populations. Knowing what FSW interventions costs in Tamil Nadu, India, and using this cost figure in Nepal or in Bengali in India for that matter, is not going to make you discuss the approach taken and the efficiency it achieves. It provides perhaps some guidance to where you are comparatively to another site - but that it is. To get national unit costs, the country will need to build a national knowledge base that can assist in putting important questions on resource allocation upfront to decision makers. However, few countries in Asia have such expertise today.

The skills required for building expertise on costing and cost-effectiveness - since these cannot be separated - varies with the tools you want to use. Or maybe the skills you have eventually will determine the tools that are being used? Further, some countries might also want to be less reliant on external consultants in the future when preparing HIV strategies, capacity building plans, infrastructure plan, and maybe not least applications to GFTAM.

If resources fundraised from GFATM is the main source of funding for HIV and AIDS it is recommended to have people trained in ASAP model as a first priority. The country might cost the HIV strategy when it is revised maybe every 2-3 years but GFATM applications are more often in most countries. The ASAP model will probably have to work with one model/approach for high-risk groups from one provider to estimate one unit cost per interventions for scale-up. People with finance background or economists using excel spreadsheets in their work can fairly easy be trained to use ASAP. However, once trained they would have to work with programme managers to decide what needs to be costed for the future and not only impute the expenditures of the past. For example, the ART programme might not include a component for defaulting treatment that will need to be added. The cost data requirements for GFATM are detailed especially for procurement subjects – and ASAP is the superior tool for this purpose.

The INPUT model is useful for assisting decision-making processes at the strategic level when a new HIV strategy is being lined out or substantial revisions are made to the current one. The INPUT model is aimed at the programmatic level and can be used to raise questions related to cost-effectiveness of the response being discussed. Programme managers and planners could be trained to use the rather simple tool that require less detailed expenditure information than ASAP – but raises questions important for scaling up such as future utilisation of capacity, approach taken, target group reached as earlier discussed. Experience shows that it is possible to train programme managers to use INPUT for their specific programme components and reach a higher understanding of planning for scale-up in 1-day workshops.
The RNM approach does not assist in estimating costs for scaling up prevention interventions but when national costs are available from ASAP- or INPUT tools, or national cost studies, the RNM can be included into the comprehensive Goals planning model to provide different scenarios and their consequences for scaling up. The Goals model has the advantage of incorporating projected impact of interventions (based on global evidence but could in principle include only data from Asia – or results from AEM) and costs per intervention. To be able to handle all aspects of the Goals model will require minimum several days of training and probably some supervision back up from a group of super-users in the region. The target group to use Goals are planners, programme managers, economists and epidemiologists.

Countries will have to decide which processes they would like to carry out in the future for planning and priority setting and determine the need for national capacity building for strategic planning, operational planning, human resource planning, infrastructure planning, financial assistance to GFATM applications. When the need has been determined and choices made the country should list what national skills are required in the short term and longer term. This will enable the countries to build a national knowledge base to assist decision makers to make priorities based on evidence. It is important that the national knowledge base on costing HIV interventions and activities draw on expertise including planning, epidemiology, programme management, and finance. The number of people being trained should form a critical mass of human resources to assist in generating data and carry out analyses that assist decision makers in making informed choices. This area of competence is too important to be left to only one group.

The country will have to use standardised approaches to costing to reduce uncertainty of data. The obvious thing to do is to streamline data requirements into regular data collections – at least for costing at relative short intervals.

**Implementing QA of national costs**

The ASAP tool is generating costs of prevention and treatment interventions based on accounts w/o questioning what is achieved but expenditures are by definition costs occurred in the past. As mentioned earlier it is uncertain how the ASAP tool will handle several providers targeting the same vulnerable group. In principle ASAP should collect data from all providers and find the unit cost on an average cost across providers. The INPUT tool uses account data at an aggregated level from good practice prevention interventions, which is a subjective choice that adds to uncertainty of unit cost. However, INPUT addresses the denominator problem: who is actually benefiting from the services and assesses the validity of the numbers being brought forward. It is often difficult to determine the correct denominator if no studies are available – however some guidance are available from international norms and regulations: average use of needles per injecting drug user per day/year; average use of condoms per FSW per week/year etc. and BBS studies of the target group often assists in determining behaviour patterns. For future scale up it is important to assess the present utilisation of capacity and hold discussions with the provider to assess if scaling up will gain economics of scale – reducing the unit cost per person per year. Although this process might not generate unit cost w/o uncertainties it will at least address a key issue. The RNM uses either international unit costs for high-risk group prevention interventions, which are highly uncertain at country level or national unit costs generated from either ASAP or INPUT tools.

For both the ASAP tool and RNM estimating costs of ART the problem of uncertainty does not lie with actual costs collected but with the incorporated demographic model that estimates number of people needing different drug regimens: when and how many people needing which drugs, when. If this model does not relate to the realities on the ground - it has to be adjusted as experience is gained. That applies in principle to estimated number of people needing different drug regimens per year, number of people failing treatment, number of estimated deaths per year of the cohorts. Changes in drug prices can be imputed in the models and does only constitute a problem if this is not done at regular basis. The INPUT model for cost of ART is less sophisticated and builds solely on M&E plans (which in principle should build on epidemiological projections of future need) for up-scaling w/o an underlying model for number
of new cases and changes in treatment regimens. Further, the difference between proportion of patients on first and second regimen is imputed based on discussion with programme managers of the ART programme and the starting point (e.g. basis year; 95% on first regimen; second year of planning 92.5% on first regimen etc). Although the INPUT is less sophisticated it holds at least transparency of what changes the cost per year and can be adjusted as experience is gained. Which models hold the greatest uncertainty need to be proved by gaining experience of their strengths and weaknesses for planning purposes. Change of drug prices over time can easily handled by all models.

One strategy to ensure quality of cost data being used could be to form networks of people working in costing strategic, operational and other HIV plans, and GFATM applications to share experience among themselves on how uncertainties are dealt with on the ground and to discuss results of costing exercises. A group of “super users” of the different tools could form a “peer group” from different countries in the region with international researchers/consultants to assist countries in diminishing uncertainties of their costing results. Another strategy could be to encourage comparative analyses of costs of HIV interventions and preferably including cost-effectiveness studies to raise important issues on both costs and effectiveness. Again, to encourage regional research by providing a fund for studies administered for example AsDB or UNAIDS. Today significantly resources are being spent on determining resource allocation to HIV in the past (NASA studies) including training, consultancies etc. - the time has come to determine what the resources are being spent on; the cost of these interventions; and eventually the effectiveness of the resources allocated.

A complementary strategy could include that stakeholders such as AsDB or UNAIDS support regional workshops, conferences to encourage researchers to work in this field. The regional ICAAP conference could also act as a market place for disseminating academic papers on costing, cost-effectiveness, and economic impact studies. This happens already at the global AIDS conference level but the regional conferences could add a strong training aspect.

Training requirements and its use in national planning processes

It is desirable that the countries aim for One costing scheme at programmatic level for five-year HIV Strategic Plans; One comprehensive costing scheme for capacity building plans; and One detailed comprehensive Action Plan at yearly or bi-annual basis that incorporates both the programmatic level and the operationalised level for capacity building and other strategic components.

Costing HIV interventions needs incorporated into a national planning frameworks to determine how often, which tools are used and how the different costing schemes are to be aligned. The area of costing has so far been left to external consultants as a one off exercise - every time. The countries have been reluctant to build capacity in this field since resources for external consultants have been forthcoming and often the external consultants have been left with the task to prioritise and develop cost scenarios in a decision-making vacuum due to lack of understanding of the importance of the strategic issues being raised during a costing process. The main focus of decision-makers in the first five years of GFATM has been to develop successful applications. Maybe, the future will also bring the process of the technical part of the applications to the attention of decision makers and hopefully the donors will be focusing more on building sustainable planning resources at country level. Today ownership of costing results at national decision making forum - comes rare. The capacity of countries to overcome this shortcoming has hardly started. From an efficiency point of view (and donor effectiveness) it is surprising that so much effort is being directed at generating One M&E plan without including costs of achieving set targets. Most donors prefer to invest in activities and are much more reluctant to invest in coordination and planning. However, the World Bank has recently shifted its HIV strategy for Africa from supporting HIV activities via its MAP (multi-country programme for AIDS) to strengthen country planning and financial systems (World Bank 2008) and the AsDB has shown willingness to support economic analyses. However, without getting the lack of sustainable costing and planning capacity at national level raised at relatively high policy levels in countries, it is doubtful that the investments in human resources will be realised.
Although, many nationals have been trained over the past years in planning and costing it often proves very difficult to include these human resources in the national processes for various reasons: They have left the sector either because they are part of a rotation system, been promoted, or got a better job outside the sector; or they are not allowed by the same authority that originally selected them for training to use their required skills because their resources for administrating an ever increasing burden of financial portfolio cannot be replaced. So those trained are not always (made) available to perform the task. This will not change if those who provide the training does not make it conditional that the required skills are brought to best use in the country – although some loss might be expected since people do move jobs at intervals. It calls for national researchers, consultants, and programme managers outside government jobs to be included in capacity building efforts to form a pool of human resources the authorities can tap on.
Reference List

1 ADB and UNAIDS. Costing Guidelines for HIV/AIDS Intervention Strategies. For use in estimating resource needs, scaling-up, and strategic planning in the Asia and Pacific Region. 2004. Manila and Bangkok, ADB and UNAIDS.
2 Alban A and Hahn M. INPUT Model. 2004. Manila and Bangkok, ADB and UNAIDS. Ref Type: Computer Program
9 Hansen DH and Alban A. References and Annotated Bibliography of cost, and cost-effectiveness studies of HIV and AIDS in Asia and the Pacific. 2007. Manila, ADB.
Ref Type: Computer Program

Supplementary reading:
**Session 7: Human Resource Planning**

**Organizing for scale** – establishing the right architecture for implementation is critical to delivery. In the world of business, it is well known that organizational structure follows from organizational strategy. Aligning the two in delivering national HIV prevention programmes is equally important. Some key considerations for organizing for scale are listed below.

Human capital is a critical input into a scaled programme. A recipe for success in this area involves allocating the right levels of human resources with the right mix of skills at the right levels of implementation, armed with the appropriate training. This document aims to define the ‘right’ configuration of human resources in a national prevention programme setting.

There are a few key principles of human resource deployment. These principles underlie can also be described as ‘key success factors’ since their absence (or lack of application) can lead to sub-optimal management outcomes for large scale projects.

1. **The implementation architecture should reflect the scale of the project** – Large scale projects require an implementation pyramid which reflects the appropriate levels of staffing and oversight to ensure quality and a rapid scale up. Many organizations are ‘virtual organizations’ with a large donor or government at the top, with several sub-implementers taking on quotidian responsibilities. Ensuring a well-architected virtual pyramid is key – otherwise, a scenario can arise where individual sub-implementers don’t have enough oversight themselves and veer off track pulling large chunks of implementation with them.

2. **NGOs are more than objects of implementation** – Many projects treat the sub-implementing NGOs as objects of implementation, passive recipients of funds who channel those funds to services or infrastructure delivered by grassroots NGOs or individuals. This is not good practice. NGOs and implementing agencies are ‘partners’ in the implementation, in that they partner with the parent organization (donor or government) in sharing the burden of execution. To this end, NGOs are more than cash conduits – it is important to recognize their critical role in the provision of techno-managerial support and oversight. The role of implementing NGOs in sharing the management burden is described further in the pyramid below.

3. **Community involvement is a first principle** – In business, keeping the customer at the center of the strategy and execution is best practice. Similarly, in achieving development and health outcomes, allowing the ‘customer’ or ‘beneficiary’ of services the space to contribute at all levels is critical. This translates into involvement of community members such as sex workers or MSM or transgenders in both the management and governance structures of any effort. One should be cautioned against tokenism – there are meaningful ways to involve the community in committees and groups.

An issue arises whenever governments or donors bring in international NGOs and agencies to implement in local country settings. The push-pull dynamic of requiring the appropriate level of high level technical experience (international or local) vs. the need to ‘push’ the capacity as far down the pyramid of implementation as possible is tenuous. As a rule of thumb, one way to check the project’s ‘top-heaviness’ is by looking at the ratio of implementation budget vs. management budget. If the project budget is 100, it is safe to say that at least 60 should be spent on implementation (whether through direct implementation by the agency or through sub-grants to grassroots NGOs). Of the remaining 40, it should be allocated heavily towards a strong management staff mix of local and international members. General and administrative and indirect costs (e.g., rent, workshops, events and launches, expensive meetings, other indirect costs) should be kept to a minimum, with a bulk of the management cost of 40 going towards thickly staffing mobile managers who can spend time in the field, backed by technical experts (who may come at a higher cost) and led by a strong bench of 1-3 high level managers who may or may not have any subject matter experience in the area of implementation but who come with strong management backgrounds and experiences.
Getting the pyramid architecture right
A typical country’s prevention implementation pyramid for HIV may look like this:

“Inverting” this pyramid by making the management too top heavy and not staffing enough individuals at the ‘regional manager’ level can lead to insufficient support and oversight at the field level.

Staffing starts at the top of the pyramid, with the nodal AIDS agency. At this level, the human resource requirements are dependent on the locus of HIV efforts within the country’s agenda. Depending on the size of the country, there could be another level of decentralization - regional or state level. China or India may have ‘Provincial AIDS Authorities’ or ‘State AIDS Control Societies’ to push the capacity requirements down the pyramid, closer to the target groups requiring the capacity. Management at this level, the regional or state level, is critical for programmatic success. Human resources at this level can be sourced both locally and internationally, but the staffing requirements at this level (e.g., state or ‘mother NGO’ level) are critical to translate policy into practice in the field. A ‘mother NGO’ can be defined as a large implementer, whose role is to make sub-grants to local/grassroots NGOs, set basic performance standards for these grassroots agencies, staff up regional managers or district managers to ‘programme manage’ the grassroots NGOs, and roll-up their MIS to aggregate performance at the regional or state level. Beyond this level, the ‘district’ becomes the unit of implementation.

Getting the right players involved
There are two types of structures influencing organizational performance – management and governance. Management structure (outlined above in the table) encompasses having the right people in the right place to get the job done. Governance or partnership coordination encompasses having the right people in the right place to ensure the job gets done. The details of management structures at the district level are outlined above. Governance of this management structure would include a few players – representatives of the management, but a few outsiders as well. One such person whom a district manager should coordinate with is a representative from the government’s district machinery – either the police function or the social welfare or health functions. In addition, having representatives from local community organizations (e.g., the secretary of a sex worker CBO or a positive women’s group). This will ensure that the management has enough ‘teeth’ to execute in a complex district setting where multiple power structures exert variable influence on a project and its ability to execute.
**Getting the human resource allocation at the implementation level right**

At the district level (for approximately a general population of 1-2 million), the following norms could be appropriate:

<table>
<thead>
<tr>
<th>Level of human resource</th>
<th>Staffing norms</th>
<th>Experience required</th>
<th>Field presence norms</th>
<th>Salary norms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District level regional managers</td>
<td>At least one regional manager for every 10,000 core group members under coverage AND/OR Span of control of each manager should not exceed 3-5 NGOs</td>
<td>Key skill should be programme management experience in private or public sector. Should be energetic, sensitive to target group issues but yet a ‘get it done’</td>
<td>At least one visit to every intervention location once in three weeks for year 1, once every month in year 2.</td>
<td></td>
</tr>
<tr>
<td>2. Grassroots NGO managers at the district level (for general populations of ~1-2 million)</td>
<td>1 per NGO</td>
<td>Committed leader of an NGO; sensitivity to core groups; good management skills, need not have health background.</td>
<td>Organize monthly meetings of NGO staff and core groups to address programme barriers and to ensure intensity of the programme is linked to risk of core groups.</td>
<td></td>
</tr>
<tr>
<td>3. Field supervisors</td>
<td>One field supervisor for every 5 ORWs</td>
<td>Masters in social work; however, over time, core group peer educators can be promoted to this role</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Outreach workers</td>
<td>1 outreach worker per every 5 peers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Peer educators</td>
<td>1 peer for every 50-60 core group members (can be closer to 100 for brothel based sex workers) 1 peer for every 250-500 bridge population</td>
<td>Active representatives of the target population, including of the typology, demographics and location of the population being served</td>
<td>Every day, at least 4-6 hours a day</td>
<td>Honorarium – expecting peers to be ‘volunteers’ is another myth. Why should they volunteer while we get paid?</td>
</tr>
</tbody>
</table>

Based on experience, a few generalizations can be abstracted from the types of managers who are high performing – they are usually highly independent workers who border on irreverent but definitely do not cowtow to the party line; many come without any experience in the field of work (e.g., formerly managers of consumer products sales teams or management consultants) and thus have little ‘baggage’ of health and how it needs to be done; they are footloose and fancy free – that is, they are not afraid to travel extensively (in fact travel energizes them), and usually have insights from travel which they generalize across their programme. In other words, such managers are not afraid to get their hands dirty sometimes helping to DO the work and thus teach their teams by doing rather than telling. This tendency needs to be balanced, since it could border on micro-management if taken too far.
Getting the human resource plan for programme management of HIV prevention efforts right

1. **Step 1 - Start from the bottom upwards.** If there are 1,000 high risk group members at each site, and there are 10 such sites per district and there are 3 NGOs implementing to serve these 10,000 high risk group members within the district, the district requires at least one dedicated programme manager to manage day to day operations at the district level. If there are 10 such districts in the state, the state needs to employ 10 managers to be placed in the 10 districts. In addition to day-to-day programme management, these staff would be the key conduits of MIS and performance measurement up the implementation pyramid.

2. **Step 2 - Arm the grassroots NGOs with the most capacity building support.** Like with any pharmaceutical or consumer products company, HIV prevention has a frontline ‘sales force.’ Peer educators and outreach workers are the day to day sales force of the prevention programme. Investing heavily in their capacity building, including literacy, leadership skills, microplanning, advocacy/negotiations, and other areas is critical. Running many ‘trainings’ or ‘orientation workshops’ in hotels in big cities for high level managers is unlikely to have field level impact. Local trainings, at grassroots levels, with translated materials customized for the local setting, using local language speaking trainers is critical. Thus, programmes which do not ‘push’ the capacity down the pyramid are unlikely to see scaled effectiveness of their projects. Mentoring and hand-holding for community based organizations, networks and self-help groups will generate an army of frontline workers equipped with the communications and MIS tools to focus their behaviour change communications and advocacy efforts in the areas which yield the maximum epidemic impact (e.g., a peer educator who knows which of her portfolio of community members is a new entrant into sex work, requiring immediate communications, access to commodities and services).

3. **Step 3 - Simultaneity in capacity rollout.** Cascading the rollout of capacity and knowledge building among the implementation teams is critical. Many choose to roll out capacity in a phased manner, choosing some areas first and then adding on other areas or geographies. In settings with a real paucity of capacity, it is better to rollout one level or round of training across the board and then build capacity selectively based on customized requirements. For example, NACO has chosen to rollout peer educator training across all its 38 state and district societies simultaneously. Recognizing that the quality of this initial training was varied but by and large sub-optimal, NACO chose to standardize this rollout so that a lowest common denominator is established in terms of quality. Upon this, NACO plans to layer on additional elements of the training cascade – e.g., state specific training centers linked to but independent of the lead management agency in the state (SACS), a smattering of geographically dispersed learning sites to demonstrate community mobilization, state technical support units whose role it is to supervise the speed and quality of training implementation.

4. **Step 3 - don’t fall into the classroom lecture trap.** We are all done with our schooling. And yet, like this very meeting, we depend on classroom settings to teach. Active programme managers throughout the implementation pyramid should recognize the following traits of an effective pedagogy of learning:
   a. **Hands on training and support** -- equipping local staff through training of trainers models with the skills to provide constant and unwavering *in situ* support is almost always better than calling all the high level staff to an offsite to train them. Ultimately, the support provided locally is what helps problem-solving and de-bottlenecking so equip your grassroots district level manager with the skills to develop local capacity, rather than expecting the technical support to parachute in once every six months from headquarters.
   b. **When in doubt, rely on the community** -- involving active community members from high risk groups works best. For example, a police sensitization workshop on the issue of MSM being led by MSMs, or an STI training workshop where a sex worker helps illustrate the internal examination idea to her peers will be highly effective training methods.
c. **Go to the field, don't wait for the field to come to you** – in most cases, the state level or regional level manager has never visited the NGOs. It is a target that any state level manager should have visited all of his/her 30-50 NGOs within the first six months. This entails spending on average 4 days of a week in the field. And by field, it does not mean the capital city – venture out to the most remote areas where programmes exist.

**Executing and managing scale for impact** -- The area of scaling up is plagued with two major lacunae: a lack of a truly generalizable definition of scale linked to impact; and a 'how-to' guide to the operational facets of scaling up for impact. Here are some tips on how to manage scale for impact.

i. **Go back to the drawing board** – Review your national plan with a new set of lenses, keeping in mind the state of the epidemic in your country, key drivers of the epidemic, and therefore, priorities for your country’s scale up. Ask yourself the key questions – is this programme targeting the right groups with the right proportion of resources? Are we too ‘youth’ focused when what we really need is 100% coverage of injecting drug users? Have we assumed victory in spite of warning signs of epidemic resurgence among core groups in our country? It may not be easy to revamp an established national plan, but as programme managers, you have the ability to use your authority to make mid-course corrections based on what you have learned.

ii. **Commission size estimations based on global best practices** – Getting the denominator right is critical. Many programmes fail to establish the denominator and subsequently linking project performance to health impact is virtually impossible. Numerator-based planning is not uncommon – for example, some HIV prevention projects have reported ‘number of contacts with female sex workers by peer workers in the past year’ as a measure of performance. This indicator is flawed as there is no denominator – reporting a ratio of target contacts is more appropriate. Size estimation at the start of a project is critical to plan and design a project which aims at scaled implementation of HIV prevention. Globally, best practices suggest that reaching at least 80% of the target core high risk group population with services at a high intensity is critical to have prevention impact.18 Do you feel you have a correct handle on the actual size of the populations you are targeting with HIV prevention? If not, commission size estimation exercises to do so. Several best practices exist. For example, the Indian National AIDS Control Organization (NACO) has standardized guidelines for mapping sex workers, men who have sex with men and injecting drug users. The guidelines are available at [http://nacoonline.org/Quick_Links/Publications/NGO_Targeted_Interventions/Operational_Technical_guidelines_and_policies/Targeted_Interventions_Under_NACP_III_-_Volume_I_CORE_HIGH_RISK_GROUPS/](http://nacoonline.org/Quick_Links/Publications/NGO_Targeted_Interventions/Operational_Technical_guidelines_and_policies/Targeted_Interventions_Under_NACP_III_-_Volume_I_CORE_HIGH_RISK_GROUPS/), chapter 2 and Annexures 1 and 2.

iii. **Don’t fall for the ‘lean and mean’ myth**: Organizations have a tendency to apply the ‘lean and mean’ team concept to programme management. “Let’s keep the management team lean and mean,” they often say. What that translates into is an inverted pyramid of implementation, with heavy ‘top’ or ‘international’ managers getting paid tens of thousands of dollars, and very few grassroots oversight managers who spend time in the field, problem solve, and support and supervise programme performance. Staffing appropriately for field oversight is a critical component of programme management. In some cases, where core high risk groups are involved, a ‘mother NGO’ which makes sub-grants to several smaller NGOs each covering 1000 sex workers should have at least one ‘regional’ or ‘programme’ manager for each 8,000-10,000 core groups being covered by the NGOs. This will enable the regional manager to make frequent field visits, convey and reinforce performance norms and

---

standard guidelines, and help the NGOs problem solve their local issues. For more details see Appendix A, Human Resource Allocation for Scaled Implementation

iv. **Scale simultaneously, build quality:** It is important to design and implement the scale up of coverage simultaneously across all targeted geographies. Establishing the basic infrastructure and services for prevention is a critical first step. Increasing quality and intensity of prevention intervention delivery can be layered on once a basic ‘footprint’ of intervention is established. For example, quickly contracting NGOs to deliver services across all geographies is optimal, compared to selecting a few geographies to contract NGOs in, while investing heavily in developing their quality before contracting NGOs elsewhere. In this model, a few have much, but many have nothing. In an epidemic setting, this is not ideal. Layering on quality can come later, but the initial establishment of infrastructure spawns early learnings which can be built upon. Without even this basic infrastructure, there is no ground zero to start from.

v. **Define the terms of engagement --** In the case of most ‘known solutions,’ there is a risk of ignoring the obvious. Lucidly defining the ‘product’ or ‘solution’ or ‘package of services’ is essential, and ensuring that this product is fully understood all the way through the delivery chain is equally important. Setting guidelines, developing common minimum programmes and defining technical standards are key steps in scaling up. They help to build a common platform of understanding the programme’s targets, processes and outcomes. A good ‘product definition’ includes “well-documented guidelines for programmatic and technical approaches, key project milestones, a common management framework, and a common set of indicators against which the programme could be monitored.” An example of setting the ‘common minimum programme’ comes from the Bill & Melinda Gates Foundation’s Avahan programme in India. This common framework allowed for much local customization and innovation without straitjacketing the implementers, but allowed for some standardization. For details see attached PDF files of Avahan’s Common Minimum Programme.

vi. **Build quality – invest in capacity building.** Expanding the existing scope of work after intensifying quality improvement is a critical next step. Once a footprint is established and services are available (even with poor levels of quality) in all target geographies, quality is layered on through intensive focus on capacity building. Using the standards established in (v) above, regional managers spend time in the field building measuring gaps in quality vs. the standards and assisting the NGOs in problem solving these gaps to reach targets. This assisted problem solving is a key step which many NGOs miss. They simply make the grants to NGOs and expect quality to build itself. The famous adage ‘garbage in garbage out’ applies here. If you put in quality technical inputs, chances of higher quality outputs increase.

vii. **Use it or lose it.** Programme effectiveness will ultimately hinge on the active programmatic USE not COLLECTION of data. Making mid-course corrections in a programme ensure a programme remains true to the ever-changing realities of a given intervention context. Data can inform such mid-course corrections which can take the form of simple changes in programme emphasis (e.g., low uptake of condoms could be addressed by increasing the distribution of condoms through peers rather than outreach workers), or large scale programme revamps (e.g., attendance at male STI clinics was low, so a programme is reconfigured to reduce the number of service delivery points and increase intensity at these reduced number of sites catering to disproportionately high numbers of clients).

---

Avahan's Common Minimum Program
The Common Minimum Program (CMP) aims to build a common vision and define a set of operating standards for the Avahan virtual organization. In its larger sense, the CMP includes well-documented guidelines for programmatic technical approaches, key project milestones, a common management framework, and a common set of indicators against which the program could be monitored.

Programmatic and technical standards aim to facilitate a program-wide common minimum approach to launching and running interventions on the ground, supported by guidelines and, where appropriate, tools. The guidelines cover the following areas:

- Community participation
- Clinical services for prevention
- Outreach and behavior change communication

Key project milestones aim to provide time-bound measurable targets for the program to guide intervention. These quantitative milestones cover pace of infrastructure and service roll-out as well as specified desired service utilization levels. These targets form the basis of regular reviews and discussions across partner. The milestones in the CMP have evolved with the program life-cycle from start-up to mature phase and at each stage have helped set direction and clarify priorities across the Avahan organization, thereby phasing the program.

Common program management framework articulates the management process for execution. These include:

- Defined relationships across the virtual organization and clarified ownership of specific areas for lead implementing partners, capacity building and other partners, NGOs, and peers
- Management support guidelines for such areas as intensity of field engagement and relationship with local stakeholders
- Formal review process guidelines

Data collection for decision-making includes tools and processes for data collection and analysis to inform decision-making at all levels. This includes metrics for program-wide analysis of Avahan, predictive and warning capabilities for a district, the ability to look at individual NGO level data and individual risk assessment and planning by peers. These include:

- Grassroots up to program-wide routine monitoring metrics and indicators
- Qualitative assessments
- Quantitative assessments (surveys)
- Repeat mapping and size estimation exercises
- Estimated condom (or needle/syringe) needs of target community
Session 8: Cost-effectiveness Analysis and Socio-economic Impact

Why cost-effectiveness is important
Marseille et al (2002) noted that in spite of the widely acknowledged HIV problem, resources available to confront the epidemic are severely limited. As a result of resources being constrained, it is important that funds be spent for interventions that are cost-effective, i.e., interventions that avert the maximum number of HIV infections. These authors suggest that cost-effectiveness can help decision makers in a number of ways.

Firstly, because priority setting is about choosing between alternatives, cost-effectiveness analysis requires a clear description of all relevant policy options. Second, cost-effectiveness analyses accounts for perspective. A program that may not be cost-effective to a particular governmental agency may however be desirable from a societal perspective. The trade-off between various institutional perspectives can be explored using this technique. Thirdly, the results of cost-effectiveness analysis maybe persuasive and influence political processes with many viewpoints.

Cost effectiveness analysis is simply a comparison of intervention benefits against respective costs that are realized or incurred through time. Costs could involve drugs, condoms, staff, training and overheads and benefits are typically the gains realized by avoided cases of STI, HIV or deaths (measured in numbers, avoided treatment costs, life years or disability adjusted life years). The cost-effectiveness ratio is simply the sum of all benefits divided by the sum of all costs. This is comparable to a return on investment calculation; however, the benefits are not measured in terms of just dollars, but in a ratio that incorporates both health outcomes and dollars.

The Asia Commission (2008) suggests that too much HIV funding is targeting general population youth interventions. Cost-effectiveness analysis could be used to demonstrate that interventions focused on sub-populations with higher prevalence would be a more effective targeting of finances. This type of evidence base would strengthen epidemiological, rather than political, decision making. A selection of benchmark ratios are provided in the following table for costs per infection averted. It is evident that the most effective allocation of resources in Asian settings involves targeting sex workers, as the cost per averting an HIV infection is lowest for this intervention. Using the technique, the number of lives saved or cases avoided can be calculated for each $1 allocated to a care or prevention program. As such, the types of interventions that maximize the reduction of burden of disease can be identified and program prioritises established.
What are various approaches and tools for estimating cost-effectiveness?

The results of cost-effectiveness analyses are driven mainly by the assumptions that underlie them, such as intervention effectiveness or baseline HIV incidence. Key principles in approaching cost-effective analysis by Marseille et al (2002) are provided in this section, along with some tools to help with calculating ratios.

**Transparent Analysis.** All major assumptions that drive the analysis should be clearly identified and justified. These include modelling and data assumptions. Selected models have been developed to model the output implications from various types of interventions. Key models used in Asia include:

- Brown and Peerapatanapokin (2004) describe the Asian Epidemic Model (AEM) as having "been designed to reflect the primary groups and transmission modes driving HIV transmission in Asia. The user adjusts AEM fitting parameters until HIV prevalence outputs from the model agree with observed epidemiological trends. By varying the input behaviours and STI trends, one can examine the impact of different prevention efforts on the future course of the epidemic. It provides a useful tool for policy and programme analysis in Asian countries".

- "Note the perspective". Marseille et al (2002) highlight the need to define the perspective of a cost-effectiveness analysis. For example is the study being conducted from the viewpoint of an individual clinic, agency, national government, or from a national standing. The authors make the point that a cost-effectiveness analysis that calculates the financial effects for a clinic may conclude that an intervention is not cost-effective, if for example, avoided future care costs do not accrue to the clinic. From a national perspective the savings in medical cost are included in the analysis and the intervention could be found to be cost-effective.

- "Confront the uncertainties". There typically is a great deal of uncertainty surrounding key assumptions in cost-effectiveness studies. A "base case" with ‘best bet’ assumptions should be

---

**Table. Cost-effectiveness of selected HIV/AIDS interventions**

<table>
<thead>
<tr>
<th>HIV/AIDS activities</th>
<th>Cost per HIV averted US$ 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex Worker, peer education (1,3)</td>
<td>79-160, 813</td>
</tr>
<tr>
<td>Injecting Drug Users (2,3)</td>
<td>54-128**</td>
</tr>
<tr>
<td>Prevention of Mother to Child Transmission (1)</td>
<td>20-341***</td>
</tr>
<tr>
<td>Treatment of STI (1)</td>
<td>271</td>
</tr>
<tr>
<td>Voluntary Counselling and Testing (1)</td>
<td>393-482</td>
</tr>
<tr>
<td>AIDS vaccine, standard* (4)</td>
<td>210-1410</td>
</tr>
<tr>
<td>HAART, Senegal and Ivory Coast (1)</td>
<td>NA</td>
</tr>
<tr>
<td>TB, DOTS treatment (1)</td>
<td>NA</td>
</tr>
<tr>
<td>Community Based Care</td>
<td>NA</td>
</tr>
<tr>
<td>Youth Intervention</td>
<td>NA</td>
</tr>
</tbody>
</table>

Notes:
* A standard vaccine program has 65% coverage of adults after 5 years, 50% efficacy, 10 years duration of protection and no behavioural reversals
** 1998 prices
*** Single dose niverapine, targeted
(2): Kumararayake, Watts, Vickerman, Walker, Zviagin; Samoshkin; Romantzov. UNAIDS, 2000
(3) Guiness L. Watts, Azim et al: Unpublished data Personal communication Watts@2003
firstly presented. These findings should then be supplemented using sensitivity analyses, which investigates how changes in inputs affect the results.

Walker (2003) reviewed the methods applied to estimate HIV program costing and cost-effectiveness analysis and questioned reliability, validity and transparency. These three themes are the central three elements of best practice outlined above. Walker (2003) noted however that many studies failed to systematically report the methods used to compute costs. Additionally, the identification of costs was often missing from these studies. Elements of how staff time and overheads were allocated, was omitted; the value of the chosen currency and appropriate exchange rate was missing and details concerning adjustments made for differential timing of costs was lacking. The lack of these details makes it hard for researchers to assess the reliability of the cost data.

- The HIVTools Research Group at the London School has developed a toolkit. The School’s websites outlines the [http://www.hivtools.lshtm.ac.uk/models.htm](http://www.hivtools.lshtm.ac.uk/models.htm) the various “HIVTools which comprises a range of dynamic, user-friendly mathematical models that can be used to estimate how different interventions impact on patterns of STI and HIV transmission. Each model is accompanied by a manual which gives detailed information about how to use the model. The models are designed to be used alongside “Costing Guidelines for HIV/AIDS prevention strategies”. These guidelines provide the basis for standardising the collection of cost data for HIV prevention strategies. There are two components to the costing guidelines: Three models are currently available to download: IDU: models the impact of strategies to reduce HIV transmission among injecting drug users, SexWork: models the impact of interventions focussed on sex workers and their clients (including the promotion of condom use, and improved STI treatment), School: models the impact of school based education projects, simulating the patterns of HIV and STD transmission between in-school youth and older age groups”. The models and manuals are available to download at [http://www.hivtools.lshtm.ac.uk/models.htm](http://www.hivtools.lshtm.ac.uk/models.htm).

### Resources for Cost-Effectiveness Analysis

- **Agency for Healthcare Research and Quality**


- **United States Preventive Services Task Force**


- **National Health Service Centre for Reviews and Dissemination**
  [http://www.york.ac.uk/inst/crd/crddatabases.htm](http://www.york.ac.uk/inst/crd/crddatabases.htm). The National Health Service database of economic evaluations.

- **Harvard Center for Risk Analysis - CEA**

- **Gold M. R., Siegel J. E., Russell L. B., Weinstein M.C. Cost-Effectiveness in Health and Medicine.** Details the recommendations of the Panel on Cost-Effectiveness in Health in Medicine, Source: [http://www.businessgrouphealth.org/pdfs/ceaissuebrief.pdf](http://www.businessgrouphealth.org/pdfs/ceaissuebrief.pdf)
What is the most recommended APPROACH for cost-effectiveness?

Cost-effectiveness analysis compares the costs and health benefits of an intervention to assess its attractiveness from an economic perspective. Benefits are expressed in non-monetary terms related to health effects, such as life-years gained, avoided cases, or averted disability adjusted life years. Cost-effectiveness is one technique that could be employed in making decisions. Issues of equity, needs and priorities, for example, should also be part of the decision-making process. A three step approach is presented below and should be supported with transparent assumptions, a statement about perspective and include sensitivity analysis.

Step 1: Identification of the Objective of the Intervention. Examine the aims of your intervention and define elements of your cost-effectiveness analysis. Example: reducing the risk of infection, expanding coverage of ART, or providing a sex worker prevention intervention. Specify the activities associated with the intervention. Examples include: HIV education curriculum was developed, a peer outreach expert was engaged in the project, counseling for families was offered.

Step 2: Collection and Preparation of Cost Data. Which resources were necessary to achieve the selected aim? Examples include: personnel time, supplies, testing. Costs can be estimated in terms of unit cost values. Unit costing and associated costing analysis are found in ADB and UNAIDS (2004), Alban and Hahn (2004), Futures Group/Constella (2005), and UNAIDS (2000). Examples of definitions of unit costs are: costs per IDU or FSW or MSM intervention per year, cost per client receiving HAART/year, cost per

Disability adjusted life years (DALY)

DALYs for a disease are the sum of the years of life lost due to premature mortality (YLL) and the years lost due to disability (YLD) for incident cases of the health condition. The DALY is a health gap measure that extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of 'healthy' life lost in states of less than full health, broadly termed disability. One DALY represents the loss of one year of equivalent full health. See:


HIV infected person being monitored for need of ARV and cost per prisoner of HIV interventions. Alban (2006) noted economic cost includes expenditures of staffing (whether volunteers or paid personnel) and commodities (condoms, test kits) whether provided by a donor, in kind or bought by the supplier. In CEA it is conventional to distinguish between the direct costs and the indirect costs associated with the intervention. Direct costs include medical: drugs; staff time; equipment and out-of pocket expenses for the patient. Indirect costs include production losses.

**Step 3: Cost -Effectiveness Analysis.** Identify the outputs which reflect achievements of the project. Outputs like avoided infection and avoided deaths can be generated using tools such as HIVTools from London School of Hygiene and Tropical Medicine, or AEM. Benefits can also be expressed in avoided disability adjusted life years, or DALYs, inflicted by the disease. These benefits are then compared to costs and ratios presented. Sensitivity analysis tests all the assumptions used in the model An example of a sex worker cost-effectiveness case study using AEM output is provided in the above table.

**What are the outputs of this tool and how are they important to national strategic planning?**

Marseille et al (2002) concluded that cost-effectiveness analysis provides a quantification of benefits and costs of a health intervention, therefore providing a tool for decision-makers seeking the largest health impact for limited HIV prevention dollars. Despite the increased availability of resources to fight the AIDS epidemic, little gain will be evident if resources are used inefficiently. It is critical that available funds be allocated on interventions that are cost-effective so funding is scaled up to more closely reflect need (Marseille et al, 2002)
### Economic Calculation Spreadsheet - Sex Worker

**Key Assumptions**

- **29**: DALY averted per infection averted
- **40**: Life years lost per death (LE @ year of death)

### Results

Costs per DALY averted, or cost per life year gained

#### This Year's Annuals

<table>
<thead>
<tr>
<th>Year</th>
<th>Infections Averted</th>
<th>DALYs Averted</th>
<th>Intervention Costs ($m)</th>
<th>Deaths Avoided</th>
<th>Life Years Gained</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>417</td>
<td>12,150</td>
<td>7.0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>34,384</td>
<td>1,002,205</td>
<td>7.0</td>
<td>160</td>
<td>6,400</td>
</tr>
<tr>
<td>2009</td>
<td>84,927</td>
<td>2,475,434</td>
<td>7.0</td>
<td>755</td>
<td>30,200</td>
</tr>
<tr>
<td>2010</td>
<td>144,488</td>
<td>4,211,512</td>
<td>7.0</td>
<td>1,981</td>
<td>79,240</td>
</tr>
<tr>
<td>2011</td>
<td>205,462</td>
<td>5,988,770</td>
<td>7.0</td>
<td>4,074</td>
<td>162,960</td>
</tr>
<tr>
<td>2012</td>
<td>261,878</td>
<td>7,633,171</td>
<td>7.0</td>
<td>7,387</td>
<td>295,480</td>
</tr>
<tr>
<td>2013</td>
<td>303,495</td>
<td>8,846,208</td>
<td>7.0</td>
<td>12,382</td>
<td>495,280</td>
</tr>
<tr>
<td>2014</td>
<td>340,630</td>
<td>9,928,620</td>
<td>7.0</td>
<td>19,648</td>
<td>785,920</td>
</tr>
<tr>
<td>2015</td>
<td>372,916</td>
<td>10,869,686</td>
<td>7.0</td>
<td>29,812</td>
<td>1,192,480</td>
</tr>
<tr>
<td>2016</td>
<td>400,618</td>
<td>11,677,132</td>
<td>7.0</td>
<td>43,371</td>
<td>1,734,840</td>
</tr>
<tr>
<td>2017</td>
<td>424,304</td>
<td>12,367,511</td>
<td>7.0</td>
<td>60,588</td>
<td>2,423,520</td>
</tr>
<tr>
<td>2018</td>
<td>444,591</td>
<td>12,958,851</td>
<td>7.0</td>
<td>81,463</td>
<td>3,258,520</td>
</tr>
<tr>
<td>2019</td>
<td>462,021</td>
<td>13,466,893</td>
<td>7.0</td>
<td>106,503</td>
<td>4,260,120</td>
</tr>
<tr>
<td>2020</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2021</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2022</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2023</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2024</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2025</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2026</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td>2027</td>
<td>474,811</td>
<td>13,839,695</td>
<td>7.0</td>
<td>174,871</td>
<td>6,994,840</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,278,620</strong></td>
<td><strong>212,155,703</strong></td>
<td><strong>147.0</strong></td>
<td><strong>1,767,092</strong></td>
<td><strong>70,683,680</strong></td>
</tr>
</tbody>
</table>

**AEM Output**

Multiply by DALYs per Infection Averted

**Estimate Annual Cost of Intervention**

**AEM Output**

Multiple Deaths Avoided by Years of Life Expectancy
REFERENCES


ADB and UNAIDS. Costing Guidelines for HIV/AIDS Intervention Strategies. For use in estimating resource needs, scaling-up, and strategic planning in the Asia and Pacific Region. 2004. Manila and Bangkok, ADB and UNAIDS.


Introduction to Socioeconomic impact
(prepared by Sukhontha Kongsin and Sukhum Jiamton)

Introduction
Economists and other social scientists concerned with social economic development increasingly emphasize the role of human resources.

There will generally be a great deal of economic data available and usable although these may sometimes be of questionable quality.

Economic data will include a measure of production and wealth as well as changes in these indicators Some examples are given in Table 1.

Table 1 Some comparative Economic data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>NA</td>
<td>NA</td>
<td>8,399</td>
<td>5.3</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>350</td>
<td>-2.3</td>
<td>61,897</td>
<td>6.6</td>
<td>52</td>
<td>14</td>
<td>35</td>
<td>0.55</td>
<td>140</td>
</tr>
<tr>
<td>Bhutan</td>
<td>NA</td>
<td>NA</td>
<td>942</td>
<td>8.5</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0.58</td>
<td>133</td>
</tr>
<tr>
<td>Cambodia</td>
<td>260</td>
<td>-2.3</td>
<td>7,258</td>
<td>10.8</td>
<td>70</td>
<td>11</td>
<td>19</td>
<td>0.6</td>
<td>131</td>
</tr>
<tr>
<td>China</td>
<td>750</td>
<td>6.4</td>
<td>2,644,681</td>
<td>10.7</td>
<td>44</td>
<td>18</td>
<td>16</td>
<td>0.78</td>
<td>81</td>
</tr>
<tr>
<td>India</td>
<td>440</td>
<td>4.3</td>
<td>911,813</td>
<td>9.2</td>
<td>67</td>
<td>13</td>
<td>20</td>
<td>0.62</td>
<td>128</td>
</tr>
<tr>
<td>Indonesia</td>
<td>640</td>
<td>-18</td>
<td>364,790</td>
<td>5.5</td>
<td>44</td>
<td>18</td>
<td>38</td>
<td>0.73</td>
<td>107</td>
</tr>
<tr>
<td>Laos PDR</td>
<td>320</td>
<td>1.4</td>
<td>3,437</td>
<td>7.6</td>
<td>85</td>
<td>4</td>
<td>11</td>
<td>0.6</td>
<td>130</td>
</tr>
<tr>
<td>Malaysia</td>
<td>3670</td>
<td>-8.0</td>
<td>150,672</td>
<td>5.9</td>
<td>15</td>
<td>30</td>
<td>53</td>
<td>0.81</td>
<td>63</td>
</tr>
<tr>
<td>Maldives</td>
<td>NA</td>
<td>NA</td>
<td>927</td>
<td>23.5</td>
<td>14</td>
<td>19</td>
<td>50</td>
<td>0.74</td>
<td>100</td>
</tr>
<tr>
<td>Mongolia</td>
<td>380</td>
<td>1.9</td>
<td>3,132</td>
<td>8.6</td>
<td>40</td>
<td>16</td>
<td>44</td>
<td>0.7</td>
<td>114</td>
</tr>
<tr>
<td>Myanmar</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>5</td>
<td>63</td>
<td>12</td>
<td>25</td>
<td>0.58</td>
<td>132</td>
</tr>
<tr>
<td>Nepal</td>
<td>210</td>
<td>0.3</td>
<td>8,938</td>
<td>2.8</td>
<td>79</td>
<td>6</td>
<td>21</td>
<td>0.53</td>
<td>142</td>
</tr>
<tr>
<td>Pakistan</td>
<td>470</td>
<td>0.5</td>
<td>126,836</td>
<td>6.9</td>
<td>42</td>
<td>21</td>
<td>37</td>
<td>0.55</td>
<td>136</td>
</tr>
<tr>
<td>Philippines</td>
<td>1050</td>
<td>-2.1</td>
<td>117,562</td>
<td>5.4</td>
<td>37</td>
<td>15</td>
<td>48</td>
<td>0.77</td>
<td>90</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>810</td>
<td>3.3</td>
<td>26,964</td>
<td>7.4</td>
<td>34</td>
<td>23</td>
<td>39</td>
<td>0.74</td>
<td>99</td>
</tr>
<tr>
<td>Thailand</td>
<td>2160</td>
<td>-8.6</td>
<td>206,338</td>
<td>5</td>
<td>43</td>
<td>20</td>
<td>37</td>
<td>0.78</td>
<td>78</td>
</tr>
<tr>
<td>Vietnam</td>
<td>350</td>
<td>4.3</td>
<td>60,999</td>
<td>8.2</td>
<td>58</td>
<td>17</td>
<td>25</td>
<td>0.73</td>
<td>105</td>
</tr>
</tbody>
</table>

The problems with these data

Firstly, they include all production, so in theory should include subsistence farmers and informal sector activities. Obviously this cannot be accurate and so they underestimate production in poorer countries. Secondly, data are converted into US$ at official rate of exchange and these do not take over or under valuing of currencies into account. Thirdly, the data do not say anything about the distribution of income in a country (the gini co-efficient).

Governments produce economic data denominated in the national currency.

Also important may be data on the balance of payments and government budgets. These data come from the governments: Ministries of Finance or Economic Planning, the statistical Offices, or the Central Bank.

Employment data will be included in the Annual Statistical Bulletin as well as health data. Where Ministries have their own statistics unit, data can be collected here.

About micro-level data, the country may have income and expenditure surveys; there are done at household level and are often the only micro-level sources of data. They are important because they give micro-level details.

This section is designed to provide the basic information and enable participants to understand and discuss further.

Some definitions of economics are:

- “The study of production, distribution and consumption of wealth in human society”
- “Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses”
- “The study of methods of allocating scarce resources and distributing product of these resources, and they study of these methods of allocation and distribution”
- “Economics is the science of greed”

Economics is usually divided into:

Macro-economics - a study of whole (national and international) economy, specifically a study of national economics and determination of national incomes.

Micro-economics - a study of economics at the level of individual consumers, groups of consumers or firms (the later are units of production)

What is an economist? Let us begin with:

Factors of Production

The three factors of production which are necessary to produce goods and services are land, labour and capital. Some economist would include a fourth factor - entrepreneurial ability.

**LAND**

This can be considered in terms of quantity and quality. Land may be defined a surface of earth, territorial waters and resources, e.g. minerals owned by the country

**CAPITAL**

This is any resource or factor of production which contributes to the production of goods and services. This does not include money, although firms and individuals may regard money as part of their assets. There are two sorts of capital; fixed, which include factory buildings, offices, machinery and some infrastructure; and circulating or working capital, which is incorporated into the products e.g. textiles, wood, etc.
Social capital is that owned by the state, which makes and undirected contribution to the production or economic welfare.

Fixed capital assets wear out - depreciate over time. To compensate for this, assets have to be purchased. This is called investment. If investment = depreciation then capital stock remains constant

**LABOR**

This is in the context of the people, urbanisation, migration, the most important factors of production. There are two aspects: the quantity and the quality.

**The quantity of labour** - this might be regarded as the number of people - and it will change over time, e.g. Utopia's population in 1995 was 750,000, it had 50,000 births and 40,000 deaths in the year. The population in 1996 was 760,000. The rate of increase is the difference between the birth rate and death rate.

**The demographic transition**

![Birth and Death Rates Graph](image)

The composition and number of population change over time. As the economy develops we expect greater medical knowledge, better nutrition, and improved sanitation and hygiene to cause the birth rate to remain constant but the death rate to fall. The result is the rate of population increase rises. We expect to enter a demographic transition when the birth rate falls because:

1. Improved living standards mean families rely less on children as insurance for old age (and the government may introduce social welfare program);
2. Increased opportunities for work and leisure mean women do not want to spend substantial periods in childbearing, plus more children survive as child mortality rate fall;
3. More reliable contraceptive methods are introduced. The birth rate will fall and the rate of population increase will slow.

**Migration** may also affect the quantity, but this is generally marginal. Of great importance is the age structure, as generally it is the age group between 15-64 who are labour force participants - note people (especially women) may enter and leave the labour force - labour force participation rate. Number of hours worked can also increase and decrease.

**The quality of labour** - this may be determined by inherent ability - quite what this is not clear - it may be people perception of other people - or by acquired ability - which comes from education and training. At present many donors argue for investment in human capital, meaning an increase in the levels of education and skills, but we should not forget experience, which can be enormously important.

The primary objective of this topic (social-economics impact of the HIV epidemic on an Asian epidemic has been to identify the patterns of trade, transport, population movement and economic intensification relevant to the social impacts on health. Consistent with impressions of the situation prior to the introduction section has described a process of idea generation.
In the newly industrialised countries (NIC) in the Asia/Pacific region, such as Thailand, China, Indonesia and Malaysia, rapid economic growth is fuelling equally rapid migration to urban areas, the growth of an affluent urban class and increasing demand for health services. Together with rural poverty and landlessness, rapid urbanisation is promoting the large scale entry of labour, with few viable alternative opportunities into work.

Migrant and mobile populations are highly vulnerable to HIV yet frequently have poor access to HIV-related services. Migrants, such as seafarers, construction and factory workers, generally live under conditions of difficult jobs, low wages, poor housing and sanitation, low literacy and lack of access to education. Limited access to health information and services including condoms, as well as culture and language barriers, increase vulnerability. Health risks include very low condom use with sex workers, drug use, alcohol consumption, accidents and injuries. As a result, HIV prevalence among migrants is frequently higher than among Thai nationals living in the same area.

In differential economic status of countries in the Asia and Pacific regions means that, besides intra-country migration, there is also inter-country migration from poorer to richer countries in the region for employment in the commercial sex and other industries. There are similar strong economic motives for some of the other activities that increase the risk of HIV infection, such as injecting drug use and blood donation. Trade in drugs is huge industry, driven by powerful interests, which often recruits the poor as producers, sellers and users. Attempts to stop both commercial sex work and the production and distribution of injectable drugs in the face of such strong local and international economic imperatives do not seem likely to succeed, at least in the short term.

**Socioeconomic Impact - the Concept**

Economists and analysts are often warning policy-makers that the HIV/AIDS epidemic will have profound national and even trans-national consequences. They predict it could push up wages, devastate health and education services and possibly slow economic growth. But the number crunchers rarely look at how individual families are being affected. Researchers in Thailand - one of the worst affected countries in Asia and one of the first to respond - recently studied the impact of HIV/AIDS on rural households. In addition, it examined how the welfare of surviving members was affected. The study findings have a number of implications for government policy-makers.

**Poverty**

AIDS will further impoverish already poor households and turn lower middle income households into poor households. As the poor generally lack collateral, the often have to turn to informal sources of credit with high interest rates. Families suffering from "health shock" and hardship need assistance, in particular those families where the main breadwinner is infected.

The government should - as part of its poverty reduction program - consider a special welfare assistance package in the form of food, clothing, or even cash transfer for the most needy. Special subsidies or fellowships for children of HIV/AIDS affected families unable to afford the cost of schooling should also be considered.

A special fund, charging no or very low interest, could be set up to provide credit for poor and needy households. They could borrow money to pay for medical treatment and household health and non-health needs.

**Labour shortage**

There is already a growing concern that Thailand is moving towards a labor shortage economy, even without HIV/AIDS. The reduction of the household labor supply due to HIV/AIDS, the employment of substitute labor, combined with increasing deaths for HIV/AIDS among labor and agricultural workers could lead to a shortage of hired labor in the community.

**Orphans and elderly**

Orphan and elderly care will become a greater problem in the future in the rural community if HIV/AIDS is still spreading widely. Extended families will not be able to care for everyone
affected. Orphanages for infected babies should be established in badly affected communities. These should be set up and supported by a government fund. NGOs caring for orphans should also be supported and encouraged. Elderly people left alone by HIV/AIDS also need help in the form of free medical care, nursing homes or home visits from nurses and social workers.

The orphaning of children is a lagged effect of the epidemic: even if countries are successful in reducing prevalence, the number of orphans will continue to increase over the following decades. But the rise in the number of AIDS orphans is more than a demographic and social problem; it is also an economic issue.

**Human rights**

Discriminating practices against people with HIV/AIDS and their families intensify the socio-economic strain on households. It is possible that the fear of being discriminated against may discourage some infected people from coming forward for early treatment so that the disease can be stopped from spreading to others.

The human rights of HIV/AIDS patients need to be protected. Ways of safeguarding the confidentiality of health records should be developed and implemented, to allow HIV-infected people to continue working while their health is good.

**Care**

HIV/AIDS patients’ rising demand for health care services at government hospitals has led to demands for increased government spending on HIV/AIDS prevention and care. Other areas are also competing for the health budget, and the government needs to seriously re-consider health financing policy and budget allocation.

Shortage of health manpower in government hospitals, especially physicians and nurses, is a serious issue in Thailand. Increasing demand for health care services by HIV/AIDS patients in government hospitals intensifies the problem. Government policy on training health workers, compensation and welfare benefits needs to be considered seriously. To lessen the demand for hospital care services for HIV/AIDS patients which are costly to both the service provider and the consumer, a home - based and community based care system should be considered.

**Public sector**

Although it is not the purpose of this paper to explore the effects of the HIV/AIDS epidemic on the public sector, these impacts influence the ability of the public sector to deal with poverty and inequality. By depleting human resource capacity of public sector bodies and negatively influencing availability of government resources, the epidemic has the potential to undermine the effectiveness of social services, which are in effect redistributive mechanisms. One of the sectors affected is the very one that has to deal directly with the epidemic: the health sector. Simultaneously, the epidemic will cause demand for health services to increase, and supply – both in terms of quantity and quality of health care – to diminish. In African countries, studies estimate that AIDS causes between 19% and 53% of all government health employee deaths, just when the need for health-care services is increasing rapidly (UNAIDS, 2004).

**The questions to be discussed**

1. Who was particularly vulnerable to HIV in this country when it had not yet been reached by pandemic? (Individual work followed by country group or large group discussion)
2. What approaches could have been applied to reduce the country’s vulnerability to HIV pandemic? (country group work followed by large group discussion)

---

Key Issues Related
- Operationalizing HIV/AIDS-economics-poverty-inequality links
- HIV/AIDS and vulnerability of rural economies and food production
- Gender (what do we know about the differential economic impacts of HIV/AIDS on women and men? What about distinctions between different groups of women and men?)
- Inequalities in and effects on the health system

What Kind of Problem is HIV & AIDS in Asia?
- Is it a health problem requiring a biomedical response? If so, the role of prevention may be important (as in vaccine or microbicide development) but not central
- Is it a problem resulting from human behaviour practices and hence requiring a response that focuses essentially on aspects of human behaviour (sexual or drug-injecting)?
- Is it a problem of the underdeveloped conditions in which behaviour takes place? If so, the focus would be on transforming these conditions and changing circumstances contributing to HIV transmission (Michael Kelly’s slide)

Is HIV driven by Poverty?
- Poverty does not cause AIDS — HIV does
- There is sex everywhere, but large-scale AIDS epidemics occur only among the poor
- The AIDS epidemic is driven primarily by poverty
- Infectious disease spreads in a supportive economic, social and environmental context— eg poverty
- “The virus is nothing, the terrain is everything” (Pasteur)
- Poverty establishes an ideal terrain or context for the rapid spread of HIV
- In the absence of the poverty experienced in our countries, would a heterosexually transmitted HIV epidemic occur?

AIDS causes poverty:
- Illness
- Death
- Income
- Parenting
- Choice and knowledge
Module 3: Curbing the Spread of HIV and the Impact of AIDS on Social and Economic Development in the Asian countries

Since the 1990s, many economists have been concerned with assessing the impact of AIDS on economic performance and, more specifically, on national GDP growth. One may question why so much attention has been afforded to this aggregate, representing the annual rate of increase in the total output of a country. The answer is that high and sustained growth - although not in itself sufficient - is associated with job creation and higher living standards, as well as a greater amount of resources that could be utilised for government spending. Economic growth can therefore influence the capacity of countries to deal with social injustice and to respond effectively to the epidemic itself. In the developing world, it is part of a promise of improved living standards, human development\(^\text{21}\) and quality of life.

Most of the studies cited up to now focus specifically on the effect of the AIDS epidemic on GDP growth. However, the predicted trend of this macroeconomic indicator does not, in itself, tell us what will happen to per capita GDP. Average wealth per head is an outcome not only of the level of aggregate national output growth, but also of population trends. Some authors predict that the HIV/AIDS epidemic will cause per capita GDP to increase as a result of greater productivity of capital (decreasing population and increasing capital/labour ratio).

The epidemic can affect individual firms both on the supply side (efficiency losses and subsequent higher production costs) and on the demand side (change in the demand for goods and services produced). There are both direct costs – provident fund contributions, absenteeism, additional recruitment and training costs, death and funeral benefits, in-firm medical services - as well as indirect costs, which are more difficult to quantify, such as lower productivity of ill workers, disruptions and lower staff morale\(^\text{22}\).

\(^{21}\) Development implies a tangible improvement in individual or national circumstances (Barnett and Whiteside, 2002). The 1999 UNDP Human Development Report states: ‘The purpose of development is to create an enabling environment for people to enjoy long, healthy and creative lives.’

Economic growth alone is not ‘the’ answer. Consider issues of Equity, Gender and Sustainability are also importance. There are three areas for further development:

− Macro level: HIV/AIDS and Economic Growth
− Household level: AIDS, poverty and inequality
− Sectoral analysis: impact on companies

Shall we focus programme strategies on the wider forces – in/around health issues – that determine HIV infection and AIDS’ impact, supporting action effective in a much shorter time?

− Responsive to local differences?
− Responsive to the other major stressors?