HIV surveillance systems in the Asia Pacific region

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In 2011, the United Nations Joint Programme on HIV/AIDS (UNAIDS) Regional Support Team for Asia-Pacific conducted a stock-taking process of available strategic information in the Asia Pacific region. This paper summarizes the progress of HIV surveillance for 20 countries in the region, covering population size estimates of key populations at higher risk, HIV case reporting, HIV sentinel surveillance and probability surveys of behavioural and biological markers. Information on surveillance activities was obtained from publically available surveillance reports and protocols, supplemented by personal communication with the UNAIDS monitoring and evaluation advisers and surveillance experts in country. Key findings include substantial efforts in broadening the number and types of HIV surveillance components included in national HIV surveillance systems and adopting approaches to make surveillance more cost-efficient, such as integrating routine programme monitoring data and passive surveillance case reporting systems. More investment in regularly analysing and applying surveillance data to programme strengthening at the subnational level is needed but will require additional capacity-building and resources. The ability to triangulate multiple sources of surveillance data into a more comprehensive view of the HIV epidemic will be enhanced if more investment is made in better documentation and dissemination of surveillance activities and findings.

During the decade following the introduction of second generation surveillance for HIV and AIDS in 2000,1 there was a proliferation of surveillance data collection activities throughout the Asia Pacific region. HIV and AIDS surveillance systems evolved differently in different countries depending on a host of factors including type and stage of the epidemic, level of government and donor commitment and support and local capacity. Over the last decade, two global HIV surveillance conferences and several reviews of HIV surveillance systems have documented some of this progress.2–4 In 2011, the Joint United Nations Programme on HIV/AIDS (UNAIDS) Regional Support Team for Asia-Pacific reviewed available strategic information in the Asia Pacific region as part of a stock-taking process.5 The intention was to describe how surveillance and monitoring and evaluation systems had evolved in the countries in the region and to identify strengths and opportunities for better use of data to understand and respond to the epidemic. This paper focuses on the surveillance components of the project.

METHOD
The project included 20 countries within the UNAIDS Asia Pacific region, including Afghanistan, Bangladesh, Bhutan, Cambodia, China, Fiji, India, Indonesia, the Lao People’s Democratic Republic, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Sri Lanka, Thailand, and Viet Nam. Four types of surveillance activities were included: estimation of the size of key populations at higher risk; HIV case reporting; HIV sentinel surveillance (HSS) and probability surveys of risk behaviours, including those integrated with biological markers. It also covered the use of surveillance data for epidemic modelling, programme design and monitoring and evaluation.

Information on surveillance activities collected for this review came from publically available surveillance reports and protocols supplemented by unstructured interviews with the UNAIDS monitoring and evaluation (M&E) advisers and surveillance experts in country.
A large array of approaches are being used to generate size estimates in the region, most commonly mapping of key populations in certain locations and survey-based multipliers in conjunction with probability surveys of key populations at higher risk (Table 2). Since 2000, 14 countries have generated population size estimates using mapping techniques, while 10 have used the multiplier method. As solicitation points and partner-meeting venues are easier to define for sex workers and men who have sex with men (MSM), these populations are more often estimated using the mapping method. Almost twice as many countries have relied on multiplier-based approaches for estimating the population size of people who inject drugs (PWID) than those that use mapping. Six countries have used both mapping and the multiplier method in the same population to enable comparison of results between methods. National-level estimates of the size of key populations at higher risk are usually made by extrapolating local-level estimates from a few areas (Table 2).

Despite these efforts, a large number of countries still lack local size estimates of key populations at...
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cases, e.g. occupation, whether the person has a regular sex partner. Place of residence is another important characteristic to collect on HIV cases to identify emerging geographic pockets of the epidemic; however, some routine monitoring systems for HIV counseling and testing use the location of the testing site as an imperfect proxy for this information. On the other hand, a benefit of most routine monitoring systems for HIV testing and counseling is data on the number and types of people tested. The availability of these “denominators” are critical for determining whether trends in HIV case reports reflect changes in testing patterns rather than potential changes in the number of actual cases.

HIV sentinel surveillance

Globally, HSS originated as a relatively low-resource method for observing trends in annual HIV seroprevalence among clinic-based populations who provided blood specimens for other routine tests, i.e. syphilis screening among antenatal care (ANC) attendees. Data from ANC attendees are valuable in generalized epidemic settings, but are less useful in tracking the HIV epidemic in low-level and concentrated epidemic settings. Eleven countries in the Asia Pacific region have adapted HSS methods of sampling to measure HIV seroprevalence among key populations – Bangladesh, Cambodia, China, India, Indonesia, Mongolia, Myanmar, the Philippines, Sri Lanka, Thailand and Viet Nam.

Table 2. Use of different population size estimation methods for key populations at higher risk in Asia Pacific countries

<table>
<thead>
<tr>
<th>Method</th>
<th>Group</th>
<th>FSW</th>
<th>MSM</th>
<th>PWID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mapping or rapid assessment and response</td>
<td>Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka</td>
<td>Bangladesh, Cambodia, China, India, Indonesia, Mongolia, Nepal, Pakistan, Sri Lanka</td>
<td>Afghanistan, Bangladesh, China, India, Indonesia, Mongolia, Nepal, Pakistan, Sri Lanka</td>
<td></td>
</tr>
<tr>
<td>Multiplier</td>
<td>Bangladesh, Cambodia, China, Indonesia, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Sri Lanka</td>
<td>China, Lao People’s Democratic Republic, Malaysia, Maldives, Myanmar, Philippines, Thailand</td>
<td>Bangladesh, China, Cambodia, Indonesia, Malaysia, Maldives, Myanmar, Nepal, Philippines, Thailand</td>
<td></td>
</tr>
<tr>
<td>Capture recapture</td>
<td>Bangladesh, Cambodia, China, Indonesia, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Sri Lanka</td>
<td>Cambodia</td>
<td>Cambodia, Thailand</td>
<td></td>
</tr>
<tr>
<td>Network scale-up</td>
<td>Bangladesh, Cambodia, China, Indonesia, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Sri Lanka</td>
<td>Thailand</td>
<td>Thailand</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2 notes:**

FSW - female sex workers; MSM - men who have sex with men; and PWID - people who inject drugs.

* In Viet Nam, specific implementing partners have used mapping, enumeration, capture-recapture and multipliers in selected provinces, but not through a national/centrally coordinated effort.

HIV and AIDS case reporting

Of the 20 countries included in the review, 18 maintain functioning HIV case reporting systems. Many of these systems rely on routine monitoring data for HIV counselling and testing services as the primary source from which to obtain HIV cases disaggregated most commonly by age, gender and risk factor. This combining of routine data with passive surveillance systems is efficient but may result in the exclusion of collecting more detailed information about newly diagnosed HIV cases.
Many countries in the region have put considerable resources into conducting probability surveys of female sex workers (FSW), MSM and PWID to obtain representative measures of HIV, sexually transmitted infections (STI) and risk behaviour. Eight countries, including Bangladesh, China, Cambodia, India, Nepal, Pakistan, Thailand, and Viet Nam, now have more than three rounds of consecutive BSS or IBBS survey data for key populations at higher risk in selected sites.

**Probability surveys**

As new components of surveillance have been introduced and the numbers of HSS sites have increased, the available management and technical resources have been stretched. In some cases quality control and continuity of data have suffered. These inconsistencies can be difficult to reconcile when interpreting HSS trend data. Further exacerbating this problem, there has often been an absence of written reports documenting methods and results and potential quality control problems during the implementation of surveillance activities.

### Use of surveillance data

From the review of available documentation, it appears that the main use of surveillance data in the region is related to quantifying the burden of disease at the national level every two years using the Estimation and Projections Package and reporting on biennial United Nations General Assembly Special Session indicators at the national level. More recently, countries have begun to apply these models at the subnational level to better understand local epidemic patterns that
These subnational analyses can highlight variations within a country and may be more likely to generate insight to guide effective prevention strategies. Countries should be supported to make decisions driven by their local epidemic context with surveillance data that allows for this.

To improve subnational analysis and use of surveillance data, it is essential that data collection and data analysis be integrated in the same unit with year-round attention to both. Data analysts and users need to coordinate well from the beginning. A clear understanding of how the data can or will be used can motivate more streamlined and efficient systems of data collection locally. Involvement of subnational-level programme staff in efforts to synthesize, triangulate and interpret data into national-level indicators may enhance the robustness of the results and consensus by all partners. Commitment from donors and technical agencies to support approaches to engage subnational partners in data analysis is also essential.

This assessment was based on publically available information and through communication with M&E and surveillance advisers for HIV and AIDS in country. Therefore it is likely that some activities may have been missed.

From the information collected in this assessment we can conclude that HIV surveillance systems in the Asia Pacific region are maturing; however, there are still opportunities for improving the collection and utilization of the data to understand and respond to the HIV epidemic.

**Conflicts of interests**

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References:


5. HIV and AIDS Strategic Information Review Asia-Pacific Region, UNAIDS Regional Support Team Asia Pacific, August 2011.


