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New strategies and methods for HIV surveillance in low and middle income countries

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Abstract

HIV surveillance continues to be the cornerstone of our understanding of the HIV epidemic, with its dynamics and diversity across geographic regions, segments of the population, and time. HIV surveillance systems continue to change to adapt to new insights and to respond to the greater need for accountability that results from the vastly increased funding for HIV/AIDS.

On 2-5 March 2009, the IInd global HIV/AIDS surveillance meeting was held in Bangkok, Thailand, supported by the Office of the Global AIDS Coordinator (OGAC) and several specialized USG agencies, the World Health Organisation (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). The meeting brought together approximately 300 surveillance practitioners and experts to review the current state of HIV-related surveillance in low and middle income countries, and to assess advances in surveillance methodologies and implementation since the 2004 Addis Ababa meeting.

The main strategies and methodologies emerging from presentations and discussions at the Bangkok conference were documented in a peer-reviewed journal special issue that this manuscript summarises. This journal special issue aims to advance the science of HIV surveillance by highlighting recent developments in selected areas in HIV surveillance, building on presentations and discussions at the Bangkok meeting. The papers in this special issue cover a range of topics, ranging from surveillance and analytic methods for HIV incidence to surveillance of HIV-related mortality, and from surveillance methods per se to the evaluation of surveillance systems and to the use of surveillance data.

This special issue is published in the "Journal of HIV/AIDS Surveillance & Epidemiology" (http://www.ieph.org/hase/jHASE.htm), a new online journal specialized in HIV surveillance and epidemiology. We hope that this special issue, building on the 2009 IInd global HIV/AIDS surveillance meeting in Bangkok, contributes to increased exchanges and learning about the science and practice of HIV surveillance around the world.

BACKGROUND

HIV surveillance continues to be the cornerstone of our understanding of the HIV epidemic, with its dynamics and diversity across geographic regions, segments of the population, and time. HIV surveillance systems continue to change to adapt to new insights and to respond to the greater need for accountability that results from the vastly increased funding for HIV/AIDS [1].

In 2000, the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) developed second-generation surveillance guidelines [2], which encouraged the expansion of HIV surveillance activities. These guidelines recommend the use of a variety of data to obtain a more complete picture of the HIV epidemic, and promoted the adaptation of the HIV surveillance system to the type and stage of the HIV epidemic.

In January 2004, a conference was convened in Addis Ababa, Ethiopia, to take stock of HIV surveillance practices, and to discuss recent developments and strategies for surveillance in resource-constrained countries. The main strategies and methodologies emerging from presentations and discussions at the Addis Ababa conference were documented in a large report [3] and a journal supplement [4].

On 2-5 March 2009, the IInd global HIV/AIDS surveillance meeting was held in Bangkok, Thailand, supported by the Office of the Global AIDS Coordinator (OGAC) and several specialized USG agencies, the World Health Organisation (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) [5]. The meeting brought together approximately 300 surveillance practitioners and experts to review the current state of HIV-related surveillance in low and middle income countries, and to assess advances in surveillance methodologies and implementation since the 2004 Addis Ababa meeting.

OVERVIEW

The current special issue aims to highlight recent developments in selected areas in HIV surveillance, building on presentations and discussions at the Bangkok meeting. We would like to thank the authors of the papers for having documented these presentations and discussions, thereby advancing the science of HIV surveillance. The papers in this special issue cover a range of topics, ranging from surveillance and analytic methods for HIV incidence to surveillance of HIV-related mortality, and from surveillance methods per se to the evaluation of surveillance systems and to the use of surveillance data.

Johnston et al. discuss sampling for most at risk populations [6]. The authors review the advantages and limitations of two sampling techniques, respondent driven sampling and time location sampling. The circumstances under which it may be best to use one or the other sampling technique are discussed and recommendations made for the optimal use of each sampling method. Saidel et al. focus on estimating the size of most at risk populations. [7] Long recognized as an important element of surveillance and programme monitoring, renewed efforts to estimate population size have led to some potential advances using “network scale-up.” The authors describe the application of various other methods for obtaining estimates, emphasizing the importance of including size estimation variables in all surveillance activities.

Miranda et al [8], Marsh et al [9] and Patel et al. [10] provide in-depth discussions of components of the HIV surveillance system, primarily dealing with HIV prevalence. Miranda et al build on the recent change in availability of HIV testing results among tuberculosis patients to advocate that the surveillance system should increasingly make use of these data for surveillance purposes, and make less use of special prevalence surveys [8]. Marsh et al discuss a similar opportunity that arises as a result of the scale-up and roll-out of prevention of mother-to-child transmission PMTCT [9]. They review studies that have compared the HIV seroprevalence estimates generated by unlinked anonymous surveillance among pregnant women presenting at antenatal clinics to HIV seroprevalence estimates generated by PMTCT programmes. While

they argue that it is desirable to make increasing use of the PMTCT seroprevalence data as these data become more reliable and available, they also suggest that the quality of the PMTCT programme data needs to be improved to allow them to be used for surveillance purposes and that validation studies evaluating the uptake of HIV testing in PMTCT programmes and studies comparing the HIV prevalence in both sources are needed. Patel et al discuss the glaring lack of HIV surveillance among children [10]. They advocate for the inclusion of children in national HIV surveillance systems and propose new approaches building on new opportunities that result from increased access to services and from experience with national population-based surveys. Specifically, they call for strengthening case reporting of HIV infections among children building on the increased HIV testing in programmes for early diagnosis. They also call for surveys of children presenting to immunization clinics and for inclusion of children in national population-based surveys, wherever the expected levels of HIV prevalence makes these approaches efficient.

Mastro et al [11] and Mahy et al. [12] both deal with estimation of HIV incidence, recognizing that it is HIV incidence that is expected to decline as a result of effective prevention programmes, while HIV prevalence changes more gradually and is increasingly influenced by the longer survival of people on antiretroviral treatment. Mastro et al discuss the status of laboratory assays for recent HIV infection and their use for the estimation of HIV incidence. They show the limitations of the currently available assays and propose approaches that correct for these limitations as well as avenues for the development of new assays and assay algorithms that would have improved validity. Mahy et al build on an approach that is well established for generalized epidemics, where trends in HIV prevalence data for young people are used to infer trends in HIV incidence [13, 14]. Mahy et al argue that similar to young people having initiated sex relatively recently and therefore HIV infections in this age group being relatively recent, HIV prevalence data from most-at-risk populations can similarly be restricted to those who have initiated risk behaviour relatively recently and that trends over time in these HIV prevalence data would be parallel to trends in incidence [12]. They illustrate this with data from Cambodian sex workers and Ukrainian injecting drug users and support their contention with concordant BED assay and prevention data, respectively.

Smith et al discuss an orphan area in HIV surveillance, notably surveillance for HIV-related mortality [15]. While surveillance for HIV-related mortality was seen as an explicit part of second generation surveillance systems [1], in most countries in which vital registration is not comprehensive, hardly any HIV-specific mortality data are currently available. Smith et al describe a range of approaches that have been or are scheduled to be implemented in several countries with extremely high HIV prevalence. More of these systems need to be put in place urgently to demonstrate the important demographic impact of HIV as well as the reduction in HIV-related mortality resulting from the important scale-up in antiretroviral treatment.

Loo et al. make an important contribution in discussing the evaluation of HIV surveillance systems [16]. The quality of surveillance data can only be assured by regularly evaluating the overall surveillance system and its individual components. Loo et al, describe the criteria by which such evaluations should be measured. The authors describe the results of three evaluations and the processes undertaken to achieve them. The evaluations provided a sense of the validity of the surveillance data and offered recommendations for improving future surveillance rounds.

Finally, Mahy et al. show some examples of how surveillance data are being put to use in countries [17]. Specific examples are provided from Bangladesh, Nigeria, Kazakhstan and Rwanda in which several sources of surveillance and programme data are combined to determine which groups are most in need of additional services. They demonstrate that sharing these findings and working with program managers can result in more focused and more efficient programmes.

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Competing interests

The authors declare that they have no competing interests.

Author contributions

All authors contributed equally to this work.

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