HIV surveillance - Are we missing out on key populations?

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Outline

- Rationale for key populations surveillance
- Surveillance data
- Survey methodological challenges
- Population size estimates
- Case-base surveillance
- Conclusions
>90% of PLHIV are found in 5 countries, Asia Pacific (2014)

PLHIV people living with HIV.
Source: Global AIDS Response Reporting 2015
Key populations

- Men who have sex with men (MSM)
- People who inject drugs (PWID)
- Sex workers (SW)
- Transgender women (TG women)
Key populations are central to the HIV response

- Globally, key populations have 12 to 49 times the odds of being HIV-infected compared to the general population.

- HIV services must reach at least 80% of their members to halt HIV epidemic among key populations.

- Sex worker-driven epidemics can result in general population HIV prevalence of up to 10% to 12%.


New infections have shifted to MSM in mature HIV epidemics like Thailand

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MSM men who have sex with men, PWID people who inject drugs, FSW female sex workers

Snapshot: New HIV infections and PLHIV in Philippines, 2014

The population attributable fraction of HIV is highest among key populations in recently emerging HIV epidemics

Proportion of new HIV infections by risk group

- **FSW**: 2%
- **PWID**: 11%
- **MSM**: 77%
- **Other males**: 4%
- **Other females**: 6%

Proportion of PLHIV by risk group

- **FSW**: 1%
- **PWID**: 8%
- **MSM**: 72%
- **Other males**: 8%
- **Other females**: 11%

MSM men who have sex with men, PWID people who inject drugs, FSW female sex workers

More systematic sero-surveys among ANC attendees and key populations (2009 vs 2014)

ANC antenatal care, MSM men who have sex with men, PWID people who inject drugs

Key population behavioral surveys available in most countries

Percentage of countries in Asia Pacific with behavioral surveys among SW, MSM and PWID, 2010-2014

MSM men who have sex with men, PWID people who inject drugs, SW sex workers

Total number of countries = 26

No survey= Bhutan, Brunei, DPR Korea, Maldives

1 population = Bangladesh, Myanmar

2 populations = Fiji, Lao PDR, Mongolia, Pakistan, Papua New Guinea, Republic of Korea, Singapore, Timor-Leste

3 populations = Afghanistan, Cambodia, China, India, Indonesia, Japan, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Viet Nam

## Why key populations are challenging to survey

| Socially hidden | • Poor geographic information  
|                | • Unknown population sizes  
| Stigmatized, criminalized | • Reluctant to enroll in surveys  
|                  | • Reporting bias in interviews  
| Poor access to services | • Challenge to estimate service uptake as individuals may not identify as ‘key population’  
|                      | • Challenge to sample through facilities  

Issues frequently encountered with key population surveys

- Poor adherence to protocol, sampling, data collection and analysis
- Trend analysis hardly done and data are analyzed year by year
- Difficulty to obtain HIV incidence data
Many sampling strategy choices, but no gold standard

Non-probability sampling

Convenience
Purposive
Quota
Chain referral (snowball, indirect sampling)

Probability based sampling

Conventional cluster sampling (rare among key pops)
*Time location (TLS) / Venue based sampling (VBS)
*Respondent driven sampling (RDS)

*Currently most widely used

Source: Bio-Behavioral Survey (BBS) Guidelines, CDC, UNAIDS, WHO, FHI360, forthcoming
# Time location sampling (TLS) and respondent driven sampling (RDS)

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<td><strong>TLS</strong></td>
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<tr>
<td>• Map universe of physical venues where target population congregates</td>
</tr>
<tr>
<td>• Randomly selects day, time, location for recruitment</td>
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<tr>
<td>• Systematically select participants from time-venue units</td>
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<tr>
<td><strong>RDS</strong></td>
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<tr>
<td>• Modified link-tracing recruitment</td>
</tr>
<tr>
<td>• Recruits per enrolee are limited</td>
</tr>
<tr>
<td>• Special software apply referral patterns and participant’s reported social network sizes to produce population estimates</td>
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RDS serial cross-sectional surveys suggesting different subsets

Comparison of two RDS surveys among MSM in Zanzibar, Tanzania:

<table>
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<tr>
<th>Year</th>
<th>2007</th>
<th>2011</th>
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<tr>
<td>Sample size</td>
<td>509</td>
<td>344</td>
</tr>
<tr>
<td>HIV prevalence</td>
<td>12.3%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Age &lt; 19 yrs</td>
<td>9.9%</td>
<td>31.4%</td>
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“...suggests that the two rounds of RDS likely sampled different subsets... of the MSM population

RDS Respondent driven sampling, MSM men who have sex with men.
Source: Haji et al., Sex Trans Infections, 2013
TLS serial cross-sectional surveys suggesting different subsets

Comparison of four TLS surveys among female sex workers in Ho Chi Minh City, Viet Nam:

2009 sample appears to have captured more sex workers who injected drugs than in 2006 or 2013.

Program impact difficult to assess using cross-sectional surveys

TLS surveys among FSW in Ho Chi Minh City, Viet Nam


TLS time location sampling, SSW = street-based sex workers VSW = venue-based sex workers.
%HIV in MSW in national sentinel HIV surveillance, Thailand (2015)

Sentinel HIV surveillance in MSW by reporting provinces, Thailand (2005 – 2014)

Total number of reports, MSW reported and period HIV prevalence sentinel HIV surveillance in MSW, Thailand, 2005 – 2014, by reporting provinces

MSW Male sex workers, compiled from: Sentinel HIV surveillance data, Ministry of Public Health Thailand 2014
2012 and 2014 HIV prevalence estimates differ between BOE and BMA due to differences in data handling.

Number of PWID included in national sentinel HIV surveillance

Thailand, 1990-2013, by calendar year

Number of injecting drug users

Year


5362 4973 4354 4701 4901 3585 3152 3899 3590 2715 2714 2306 1940 1045 902 485 434 476 257 223 504 162 323 333

PWID People who inject drugs.
Source: HIV sentinel surveillance, Ministry of Public Health Thailand, 2014
Population size estimates inadequate

Of 140 low- and middle-income countries:

- 71% had at least 1 estimate for 1 population
  - 27% of 140 had nationally adequate data (empirically derived)
  - 21% of 140 were nationally inadequate but locally adequate (empirically derived by applied at specific sites with targeted services)
- 62% had 2+ groups
- 38% had 3 or 4 groups
- 6% had all 4 groups

By population:

- 88 countries have size estimates for MSM
- 87 for FSW
- 53 for PWID
- 17 for TG women

MSM men who have sex with men, FSW female sex workers, PWID people who inject drugs, TG transgender.

Population size estimates methods

Traditional methods:
• Most commonly applied are multiplier, capture-recapture, census, enumeration, and programmatic mapping
  - Multipliers, e.g., 60% of PWIDs are in methadone treatment, clinic data show 3000 PWIDs are receiving methadone, hence the population size is \((3000/60 \times 100) = 5000\)
  - For FSW and MSM, one-third of estimates used census, enumeration or programmatic mapping
  - Can be also be used to improve the understanding of typology and places where risk behaviors occur

New approaches:
• Chatting & dating tools and apps present challenges for all the traditional approaches, but HIV programs are now testing ways to apply usage
• Respondent-driven sampling using respondent network size to estimate proportion in service (software comes up with size estimate)

Case-based surveillance and monitoring among key populations

Link case reporting and patient monitoring systems to achieve longitudinal follow-up of individuals across sentinel events.

- Referred to testing (for key populations)
- Negative HIV tests
- 1st confirmed positive HIV test
- Entry to care
- 1st and F/U CD4 count
- 1st and F/U viral load
- ART initiation
- Retention
- Viral suppression
- Death

ART antiretroviral treatment
Case-based surveillance and monitoring among PWID, Cebu (2013-15)

HIV performance and monitoring for two NGO-government programs serving people who inject drugs in Cebu, Philippines during a two-year time period

Source: Mills S, Cebu City, the Philippines
Case-based surveillance and monitoring among key populations in Thailand, 2013

Source: NAP-Plus database, National Health Security Office Thailand
Surveillance must provide a bigger picture

- Better articulation of subpopulations
  - Identities of MSM, transgender people, male sex workers
  - Sexual networks affecting risk

- Address evolving cultures
  - Internet-mobile networks
  - Diversification of drug use

- Understanding structural determinants affecting visibility and risk
  - Violence
  - Stigma
  - Legal, cultural contexts

- Supplement with formative ethnography and rapid surveys
  - Added value of specific prevention strategies
  - Identify, locate and reach various groups of people and practices

MSM men who have sex with men
Conclusion

- Lack of HIV incidence information in key populations
- Poor sampling methods and low data quality
- Lack of in-depth analysis and available data often not fully analysed
- Delay in dissemination and poor reporting of results
- Not connected to programs; not connected to epidemic
- Population size estimates not yet adequate despite global call for reporting program coverage
Recommendations

- Improve consistency of surveillance surveys on key populations including for transgender people
- Exploring ways to conduct online surveys
- Governments and NGOs should collaborate to improve surveillance among key populations especially to address the prevailing stigma and discrimination
- So much time spent on data collection rather than analysing and interpreting the available data
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For more information please go to http://www.wpro.who.int/hiv/en/