KNOW YOUR EPIDEMIC AND KNOWING YOUR RESPONSE
MSM AND THEIR NEEDS IN LOW- AND MIDDLE-INCOME COUNTRIES

Stefan Baral MD MPH CCFP FRCPC
Johns Hopkins School of Public Health, USA
Overview

- **Know your epidemic**
  - Epidemiology of HIV among MSM
    - Epidemic Scenarios of HIV among MSM
    - Burden and Risk Factors for HIV

- **Know your Response**
  - Combination HIV Prevention Interventions for MSM
  - Prevention Expenditures
  - Modeling HIV epidemics according to response to MSM
  - Human Rights, HIV, and MSM

- **Moving Forward**
Introduction

- Epidemiology
  - Ongoing epidemics among MSM in multiple LMIC
  - Newly identified epidemics in previously unstudied areas
  - Resurgent epidemics among MSM in high income countries (HIC)

- Responses
  - Inadequate coverage and access for prevention, treatment, and care
  - Inadequate “toolkit” of prevention services for MSM

- Human Rights
  - Multiple advances in LGBT rights awareness, community empowerment, activism
  - Major “pushback” on MSM/LGBT and rights effort
Systematic search: systematic methodology used to search databases including PubMed, EMBASE, EBSCO, and the Cochrane Database of Systematic Reviews through January 30th, 2010.

- MeSH terms: "Homosexual, Men" OR "Homosexual"; "Human Immunodeficiency Virus"; "Primary Prevention"; "Secondary Prevention"; "Tertiary Prevention"

Electronic global consultation: done in October, 2009 to obtain information on epidemiology, rights contexts, and programming for MSM

- Used dedicated listserves in Asia, Africa, Latin America and the Caribbean, and Eastern Europe, including the amfAR MSM Initiative, the MSMGF, UNDP, and UNAIDS.

Face to Face consultation (Bangkok, Feb. 2010) with key informants from 28 countries to obtain country specific data
Potentially relevant studies identified and abstracts screened for retrieval from international conference searches (n=819)

Duplicates Studies excluded (n=255)

Abstracts excluded based on abstract due to lack of quantitative data, geographical context, sample size, self-reported HIV status. (n=503)

Conference abstracts retrieved for further analysis (n=61)

Abstracts excluded based on inability to find background data on specific country HIV prevalence, inability to find further information on statistical methods (n=8)

Unique studies retrieved from US Census Bureau Database for HIV/AIDS (n=2)

133 prevalence studies from 130 unique reports: data from 50 countries

Potentially relevant studies identified and abstracts screened for retrieval from literature Searches (n=1612)

Reports excluded based on abstract due to lack of quantitative data, geographical context, sample size, self-reported HIV status. (n=1434)

Full texts retrieved for further analysis with QUOSA (n=178)

Reports excluded based on lack of HIV prevalence data, inability to calculate country population HIV prevalence (n=111)

Studies retrieved that were coordinated by EuroHIV and commissioned by European Union (n=16)

Epidemic Scenarios Algorithm

Unavailable Data

HIV prevalence in any high-risk subgroup >5%

HIV prevalence ratio (MSM/gen pop)

Ratio ≥ 10

HIV prevalence ratio (IDU/gen pop)

Ratio < 10

% population IDU

< 1%

≥ 1%

% population MSM

< 10%

SCENARIO 1

SCENARIO 2

SCENARIO 3

SCENARIO 4

Evidence suggested four epidemic scenarios for LMIC MSM epidemics:

- Scenario 1
- Scenario 2
- Scenario 3
- Scenario 4

Scenario 1 - MSM risks are the predominant exposure mode for HIV infection in the population
Scenario 1 - MSM risks are the predominant exposure mode for HIV infection in the population

Scenario 2 - MSM risks occur within established HIV epidemics driven by injecting drug use (IDU)
Scenario 2 - MSM risks occur within established HIV epidemics driven by injecting drug use (IDU)

Scenario 3 - MSM risks occur in the context of mature and widespread HIV epidemics among heterosexuals.
Scenario 3 - MSM risks occur in the context of mature and widespread HIV epidemics among heterosexuals.
SCENARIO 4 - MSM, heterosexual, and IDU transmission all contribute significantly to the HIV epidemic.
SCENARIO 4 - MSM, heterosexual, and IDU transmission all contribute significantly to the HIV epidemic

EPIDEMIC SCENARIOS: Unavailable Data

- Algeria
- Azerbaijan
- Djibouti
- Iran
- Iraq
- Jordan
- Kazakhstan
- Kyrgyzstan
- Lebanon
- Libya
- Syria
- Tunisia
- West Bank and Gaza

- 94 other Countries
Assessment of Data Quality

- Disease burden among MSM in LMIC
  - Data is predominantly
    - Prevalence
    - Convenience Samples
      - Tells us where epidemic was and not where it is going
      - May not be generalizable to general population of MSM
        - Samples are among young MSM—so likely very conservative estimates of disease burden
  - HIV Incidence has been characterized in cohort studies from:
    - Kenya
    - Peru
    - Brazil
    - Thailand
Ecological Model for HIV Risk in MSM

Source: Baral and Beyrer, 2008
HIV among MSM in High Income Countries

Number of newly diagnosed HIV infections among men who have sex with men, Hong Kong, Singapore, Taiwan and Japan, 2002 - 2007

Know Your Response

- Systematic Review and Global Electronic Consultation
  - Dearth of data characterizing effective HIV prevention interventions for MSM in Low and Middle Income Countries
- Responding to multiple levels of HIV risk among MSM requires combination prevention that is multilevel and multimodal
A modified Grade approach for HIV Public Health Interventions for MSM

- Grading Evidence
  - 3 Primary Parameters
    - Efficacy Data
    - Biological Plausibility
    - Community Best Practices
  - 6 Grades
    - Strong
    - Probable
    - Possible
    - Pending
    - Insufficient
    - Inappropriate
Combination HIV Prevention Interventions for MSM

- **Combination HIV Prevention Interventions (CHPI)**
  - **Behavioural Interventions**
    - Increasing condom and lubricant use during sex
    - Secondary target is partner reduction
  - **Biomedical Interventions**
    - Biomedical interventions aim to decrease transmission and acquisition risk of but don’t decrease prevalence of risk practices
  - **Structural Interventions**
    - Paucity of efficacy and effectiveness data
      - Complex study designs required to evaluate these interventions
      - Challenge to implement and better evaluate
Prevention Expenditures for MSM

- **Concentrated Epidemics**
  - MSM are one of predominant risk groups
  - Epidemic Scenarios 1, 2, 4
    - 3.3% of total expenditures supporting MSM

- **Generalized Epidemics**
  - Epidemic Scenarios 3, 4
  - Emerging evidence of risk among MSM
    - 0.1% of total expenditures supporting MSM

Prevention Expenditures - Asia

Source: USAID, HIV Expenditure on MSM Programming in the Asia-Pacific Region, 2006
Prevention Expenditures – Latin America

Peru

Source: Medición del gasto en sida: avances y retos de la respuesta latinoamericana al VIH. ONUSIDA. 2010
Goals Model

Goals

• Mathematical model
  • Inputs: demographics; sexual practices; HIV/STI rates
  • Outputs: HIV Prevalence and Incidence

• We have refined the model by including:
  
  • Divided “MSM intervention” into separate parameters:
    1. outreach with condom promotion and distribution
    2. community level behavioral interventions

• Expanded risk categorization for MSM to low, medium, and high risk, and MSM IDU

Source: Bollinger, L. How can we calculate the “E” in “CEA”? AIDS 2008, Futures Institute
Scenario 1: Impact of MSM interventions on all new HIV infections in Peru
Peru

- Modeling outcomes: combined prevention for MSM
  - Markedly higher coverage of interventions for MSM will be necessary to change trajectory of HIV epidemic in Peru
Scenario 2: Impact of MSM interventions on all new HIV infections in Ukraine
Scenario 2: Impact of MSM and IDU interventions on all new HIV infections in Ukraine
Ukraine

- **Modeling outcomes: combined prevention for MSM**
  - Higher coverage of interventions for MSM has impact on the HIV epidemic in Ukraine
  - Combinations with IDU interventions have the greatest impact on the HIV epidemic
Scenario 3: Impact of MSM interventions on all new HIV infections in Kenya
Scenario 3: Impact of MSM interventions on all new HIV infections in Kenya
Kenya

- **Modeling outcomes: combined prevention for MSM**
  - Even where the HIV prevalence is high and mature among the heterosexual population, MSM specific interventions positively impact the general population.
Scenario 4: Impact of MSM interventions on all new HIV infections in Thailand
Scenario 4: Impact of MSM and IDU interventions on all new HIV infections in Thailand

The graph shows the impact of different intervention scenarios on HIV infections in Thailand from 1979 to 2015. The scenarios include:

- Null
- Current
- 100% MSM interventions
- 100% MSM + 60% IDU

The graph indicates a significant decrease in HIV infections with the implementation of MSM interventions and a combination of MSM and IDU interventions.
Thailand

- Modeling outcomes: combined prevention for MSM
  - Thai epidemic is stable overall
  - Higher levels of coverage for MSM with existing interventions would lead to overall declines in HIV epidemic
  - Substantial increases in coverage of IDU interventions have major impact on the HIV epidemic
Modeling the impact of MSM interventions and ARVs

Key messages

- **MSM specific interventions** impact new infections among MSM and general population but must include access to ARVs for MSM
  - Community-based behavioral interventions
  - Distribution of condoms and lubricants
- Where IDU plays a role in the epidemic, the greatest impact among the general population can be seen when coverage of needle exchange and substitution therapy are increased as well
- Benefits is seen in 4/4 epidemic scenarios
Human Rights Contexts

- **Methods**
  - Health Impact Assessment used to assess criminalization of same-sex practices a risk factor for HIV among MSM
  - Participatory methods in selected case study countries including

- **Results**
  - Increased enforcement of laws criminalizing same sex practices resulted in
    - widespread fear and hiding
    - interfered with the ability to provide HIV prevention, care, and treatment services limiting coverage
    - interfered with the ability of MSM to seek evidence-based HIV services limiting uptake
HIV continues to disproportionately affect MSM in high and low income settings with both individual and structural drivers of HIV infection.

To improve the health outcomes of MSM in low and middle income settings, a comprehensive effort is needed:

- **Know your Epidemic by**
  - Generating high quality epidemiologic data to
    - characterize populations
    - demonstrate need
    - inform prevention strategies

- **Know your Response by**
  - Adopting combination prevention strategies that address multiple levels of risk
  - Appropriately resourcing prevention programs for MSM in response to attributable fraction of HIV disease
Acknowledgements

Center for Public Health and Human Rights, Johns Hopkins
- Chris Beyrer MD, MPH
- Frangiscos Sifakis, PhD, MPH
- Andrea Wirtz, MHS
- Damian Walker, PhD
- Benjamin Johns, MHA

The Futures Institute
- John Stover, PhD
- Lori Bollinger, PhD

Global HIV/AIDS Program of The World Bank
- Robert Oelrichs, MD, PhD, MPH
- Iris Semini, PhD
- Laith Abu-Raddad, PhD
- David Wilson, PhD

UNDP
- Jeffrey O’Malley
- Mandeep Dhaliwal, MD LLB

UNAIDS
- Michael Bartos, Phd

WHO
- Ying Ro Lu, MD

Know your Epidemic and Response Session Team
- Shiv Khan, OBE
- Zoryan Kis
- Andy Seale
- Rob Carr
- Joel Nana
- Nyambura Njoroge
- Maria Prins
- Allison Talan