Tracking MSM migration in China: a web-based pilot study

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Outline

• Overview of migration and HIV/AIDS epidemic among MSM in China

• Pilot study for tracking MSM migration
Migration in China

• **Definition of migrant:** Anyone who has been away from his or her registered residence for more than 6 months in the last year (National Population and Family Planning Commission)

• **Size of migrant population:** 230 million people by 2011, accounting for 16% of the total population of China (National Bureau of Statistics)
HIV/AIDS epidemic among migrants

- **Sentinel surveillance system**
  - 37 sentinel surveillance sites target migrants
  - 400 people recruited per site per year through domestic migrant registration system or physical check-up
  - HIV prevalence: ~0.1%

- **HIV/AIDS case reporting system**
  - In Shandong Province, 70% of reported cases in last 10 years were migrants.
HIV/AIDS epidemic among MSM

HIV/AIDS prevalence increased sharply from around 1% in 2003 to approximately 6% in 2011 nationally among MSM.

National Sentinel Surveillance Data (2000-2011)
Objectives

• To explore migration patterns among MSM in China

• To predict impact of migration on regional population size estimation and HIV-1 transmission
Methods: Sampling

- Analyzed database of MSM dating website
  - Believed to be the largest and most representative in the country
  - More than 3 million registered members in 2012
  - National coverage

- Included all registered members who visited the website at least once from 2008 till 2012
Methods: Tracking

• Internet protocol (IP) address recorded automatically by website at each visit:
  – To determine migration routes: compare the IP records with the resident city which was filled in member registry form.
  – For de-duplication purpose, this was combined with other information such as username and email address.
Ethical Issues and Confidentiality

- Website introduction page:
  - Notifies that IP address will be recorded
  - Complies with Chinese laws and regulations
  - Registration and provision of demographic information are entirely voluntary

- Website manager ‘cleaned’ the database before any analysis:
  - Replaced IP address with provincial and city name
  - Removed all identifying information.
Results (1)

• Total of 794,912 individual records for study period, 34% migrants

• Median age: 26.0 years (range: 17-61)

• Migrants were younger (median age: 25.3 vs. 26.6, p<0.001) and more likely to be single (5.4% Vs. 8.9%, p<0.001) than non-migrants
Results (2)

- Top 5 provinces with high inflow and low outflow of MSM

<table>
<thead>
<tr>
<th>Province</th>
<th>Inflow vs. outflow*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>Guangdong</td>
<td>6.7</td>
</tr>
<tr>
<td>Shanghai</td>
<td>4.3</td>
</tr>
<tr>
<td>Beijing</td>
<td>4.4</td>
</tr>
<tr>
<td>Tianjin</td>
<td>2.3</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>1.9</td>
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</tbody>
</table>

* Inflow versus outflow is a ratio of people migrating-in to people migrating-out (e.g., approximately 7 MSM moved in for every MSM who moved out of Guangdong province)

- The MSM population size will likely increase substantially in the above provinces due to in-migration
Results (3) : Migration Patterns of MSM

Guodong Mi et al. *Hidden and mobile: A web-based study of migration patterns of men who have sex with men in China.* (in preparation)
Conclusions

• Migration of MSM can strongly influence regional population size estimation.

• MSM migration patterns between 2008 and 2012 suggest the potential for enhanced HIV transmission from higher-prevalence Southwestern China to lower-prevalence Eastern coastal cities.

• Web-based tracking of MSM migration is a relatively simple and practical method to identify relevant patterns and help inform HIV prevention.
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