Using mathematical models to estimate the potential impact of PrEP for FSWs and MSM in Bangalore, India

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Background & methods

• In Bangalore, HIV infection is **concentrated** amongst
  – female sex workers (FSWs) HIV prevalence **8.0%** (2009)
  – FSWs’ commercial clients **2.4%** (2007)
  – men who have sex with men (MSM) **16.5%** (2009)

• Following previous interventions, **reported condom use**
  by MSM and FSW is high (75-90% always use condoms
  with high-risk partners)

• We used a **mathematical model**, parameterised and fitted
  using data from Bangalore, to estimate the **additional impact**
  and **efficiency** of PrEP targeted to FSW or high-risk MSM
Results: infections averted

In group targeted

- 40% coverage, 60% PrEP effectiveness
- 20-25% of infections averted amongst target group
- Greatest number averted targeting high-risk MSM
**Results: infections averted**

**In group targeted**

- Infections averted over 10 years

  - **HR-MSM**
  - **FSW**
  - **HR-MSM + FSW**
  - **low-condom FSW**

**In whole population**

- Infections averted over 10 years

  - **HR-MSM**
  - **FSW**
  - **HR-MSM + FSW**
  - **low-condom FSW**

- 40% coverage, 60% PrEP effectiveness
- 1.4% of total infections averted targeting HR-MSM, 2.4% targeting FSW
- Targeting both groups – effect almost additive
Results: PrEP efficiency

• 40% coverage and 60% PrEP effectiveness: PrEP most efficient when targeting FSWs with low condom use, followed by all FSWs and then FSW+MSM

• Efficiency improves over time
Results: targeting

- 40% coverage of FSWs with low condom use, 60% PrEP effectiveness
- Impact and efficiency halved if same amount of PrEP distributed randomly amongst FSWs or given to FSWs with high condom use
Conclusions

• PrEP could substantially reduce incidence amongst target groups (FSW or MSM)
• Larger population-level impact from targeting FSW vs MSM
• More efficient to target FSW than MSM
• Even more efficient to target FSWs with lower condom use
• Mis-targeting of PrEP to FSWs with lower condom use could halve the impact and efficiency
• PrEP more efficient in the longer term
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