

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

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# Background & methods

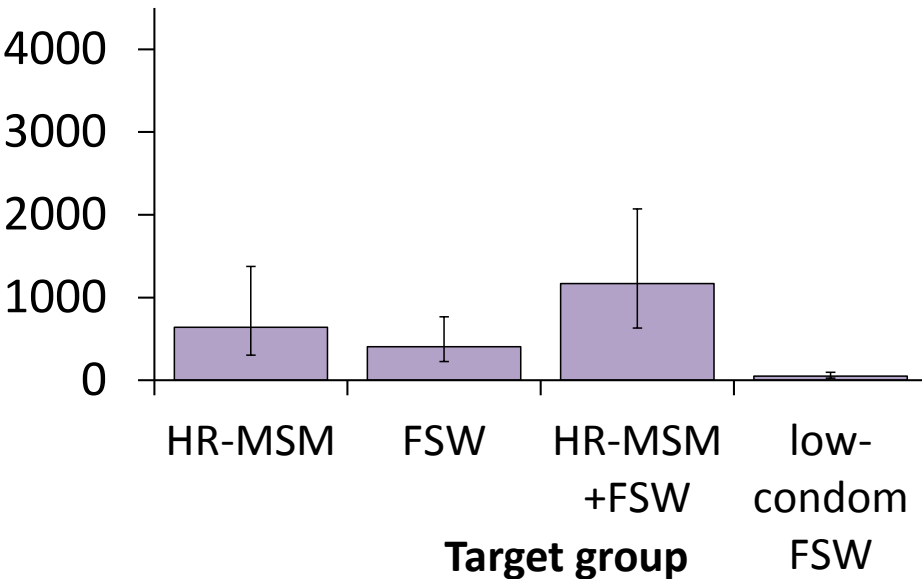
- In Bangalore, HIV infection is **concentrated** amongst
  - female sex workers (FSWs) **HIV prevalence 8.0% (2009)**
  - FSWs' commercial clients **2.4% (2007)**
  - men who have sex with men (MSM) **16.5% (2009)**
- Following previous interventions, **reported condom use** by MSM and FSW is high (75-90% 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

Infections averted over 10 years



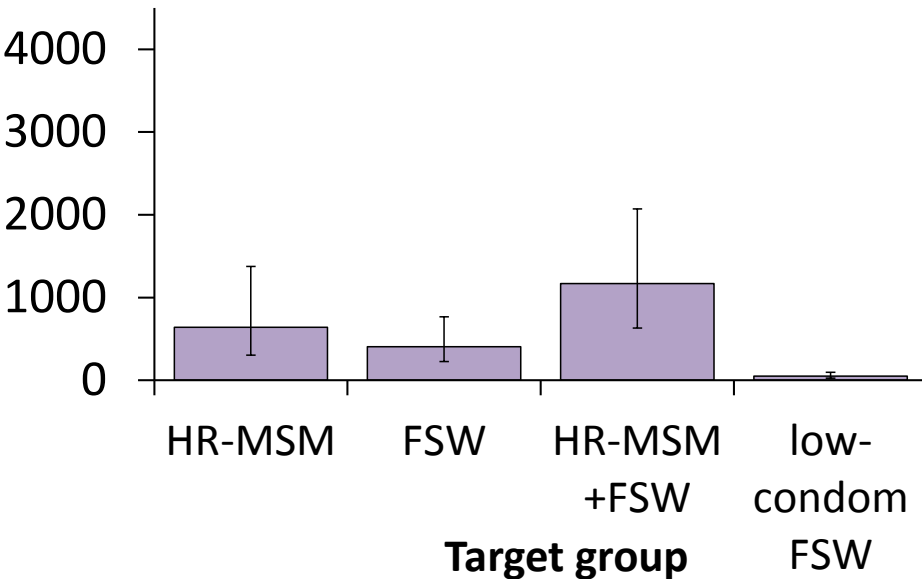
- 40% coverage, 60% PrEP effectiveness
- 20-25% of infections averted amongst target group
- Greatest number averted targeting high-risk MSM



# Results: infections averted

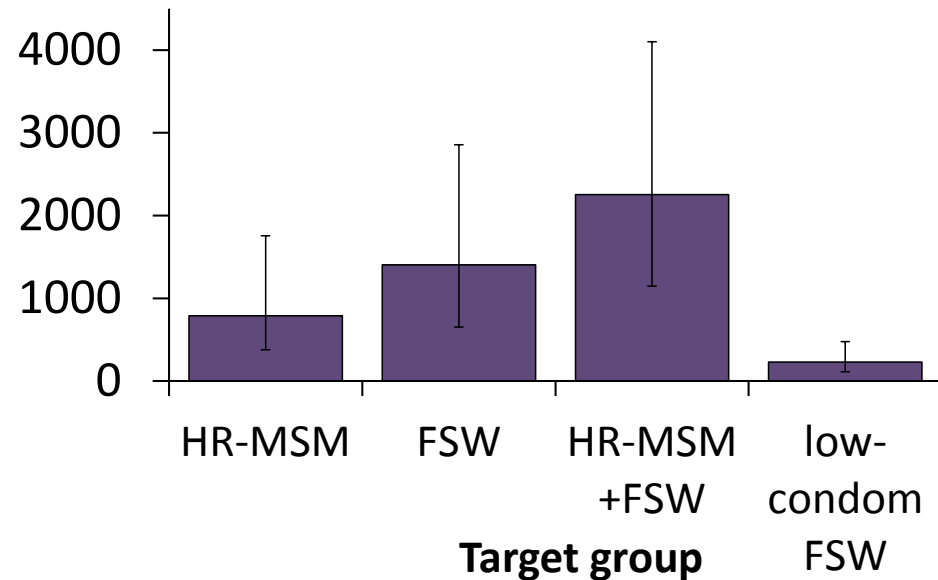
## In group targeted

Infections averted over 10 years



## In whole population

Infections averted over 10 years

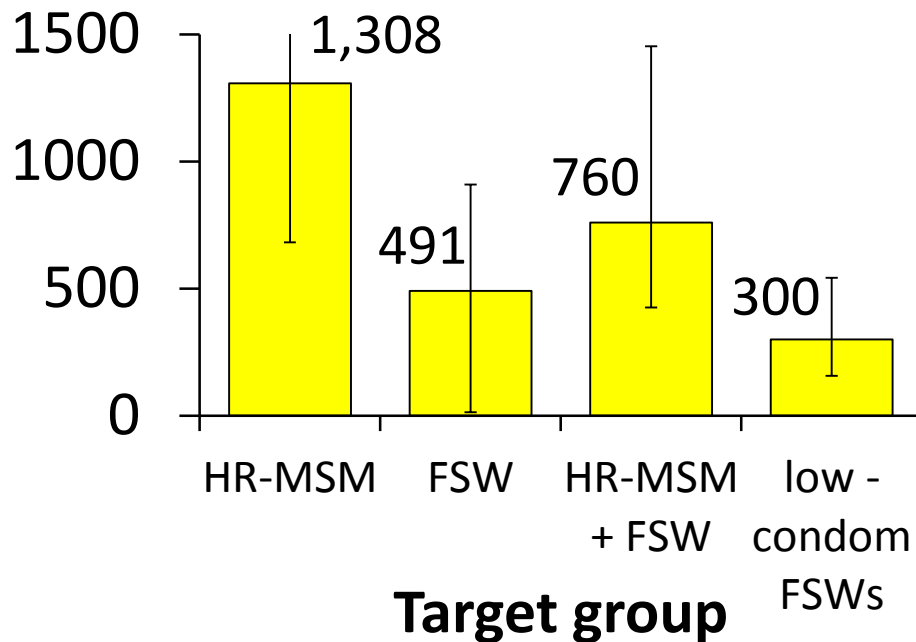


- 40% coverage, 60% PrEP effectiveness
- 1.4% of total infections averted targeting HR-MSM, 2.4% targeting FSW
- Targeting both groups – effect almost additive

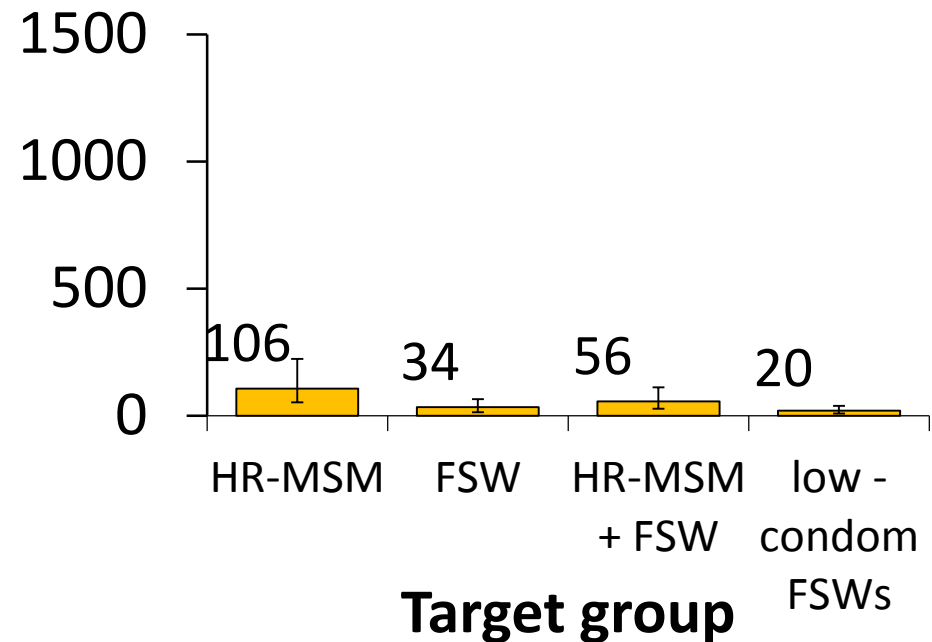


# Results: PrEP efficiency

Person-years of PrEP per life year gained over 10 years



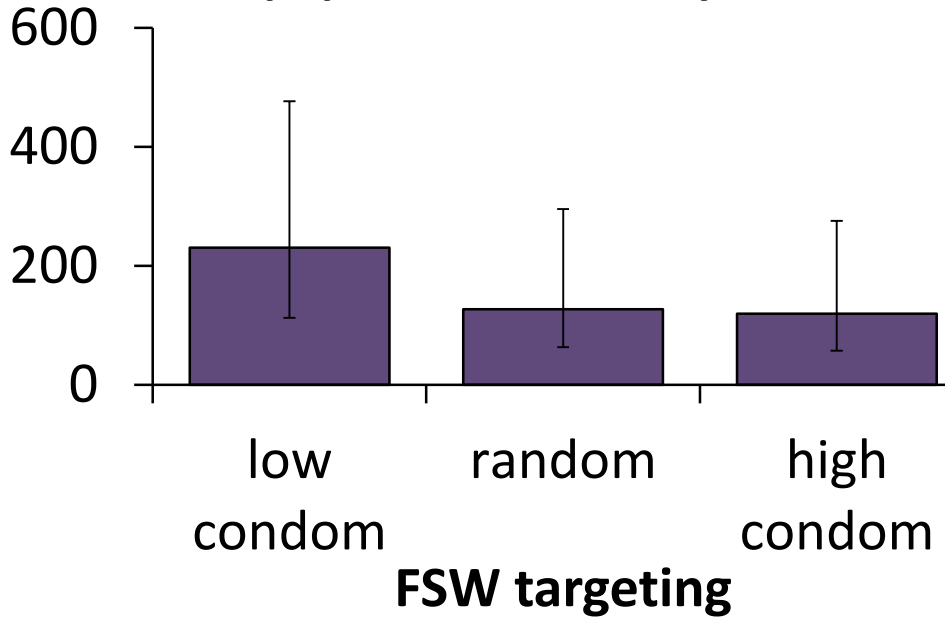
Person-years of PrEP per life year gained over 20 years



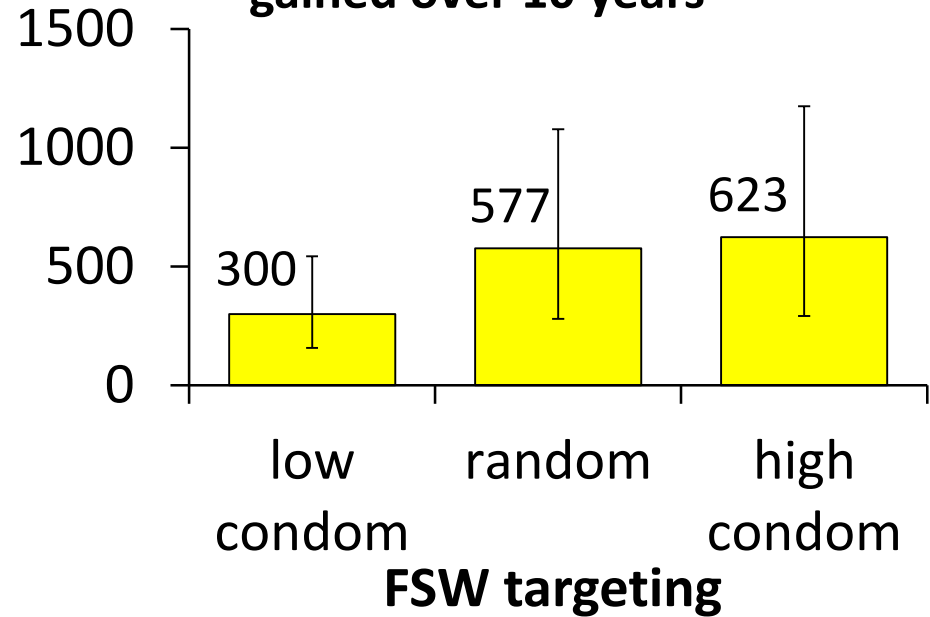
- 40% coverage and 60% PrEP effectiveness: PrEP most efficient when targeting FSWs with low condom use, followed by all FSWs and then FSW+MSM
- Efficiency improves over time

# Results: targeting

Infections averted in whole population over 10 years



Person-years of PrEP per life year gained over 10 years



- 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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