Estimating the impact of pre-exposure prophylaxis for Men who have Sex with Men (MSM) in England

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On behalf of Monica Desai, Sarika Desai, Sheena McCormack and Noel Gill
Background

• Biological efficacy of pre-exposure prophylaxis (PrEP)
  • FDA licensed Truvada (2012)

• Number guidelines recommend offer of PrEP to Men who have Sex with Men (MSM)\(^1\)

• Targeted PrEP programme for high-risk MSM may be cost-effective\(^2\)

• Sexual health of MSM in England
  • Population most at-risk from HIV
  • Network of 200 open access free sexual health clinics
  • PrEP only available in UK through PROUD pilot study

1: US CDC 2014, WHO 2014  
**Aims and objectives**

**Aim:** To explore the potential impact of different eligibility criteria for PrEP for MSM attending Genitourinary Medicine (GUM) clinics in England to inform the development of a targeted programme by determining possible:

- **Size:** number MSM eligible
- **Impact on the HIV epidemic:** number of infections averted
- **Effectiveness:** number needed to treat (NNT)
Methods

**Dataset:** GUMCAD (GUM Clinic Activity Dataset)

**Variables:** Observed HIV incidence in repeat attenders, annual attendees

**7 possible criteria investigated:**
1. all MSM attending GUM clinics
2. Sexual partner reported as HIV + or unknown
3. Prior bacterial STI (chlamydia, gonorrhoea, syphilis (1/2/early latent), LGV, NSGI, chancroid, donovanosis)
4. ≥10 sexual partners in the past 6 months
5. Frequent HIV tester (≥2 tests per annum)
6. Prior infection with chlamydia in past 12 months
7. Prior infection with gonorrhoea in past 12 months

**Outputs:** estimated number of HIV infections averted, NNT to prevent an infection

**Assumptions:** 90%/60%/30% PrEP coverage and 100% adherence and 100% efficacy
## Estimated size of eligible population

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Attending for a HIV test</td>
<td>74000</td>
<td>100%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Sexual partner HIV+ve or unknown status</td>
<td>15500</td>
<td>21%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Prior bacterial STI</td>
<td>17000</td>
<td>23%</td>
<td>3.7%</td>
</tr>
<tr>
<td>≥10 sexual partners</td>
<td>22000</td>
<td>30%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Frequent HIV tester</td>
<td>22000</td>
<td>30%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Prior chlamydia</td>
<td>2000</td>
<td>3%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Prior gonorrhoea</td>
<td>3000</td>
<td>4%</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

Data sources: Murphy 20014, Dodds 2007, Desai M 2013, Desai S 2014 (unpublished)
Estimated impact of PrEP

All testing for HIV

- 30% coverage
- 60% coverage
- 90% coverage

HIV+/Unknown Partner

HIV infections averted
Conclusion

• Targeted offer of PrEP could have a dramatic impact on the HIV epidemic among MSM in England if offered to MSM:
  • reporting a sexual partner as HIV +/ unknown status or
  • diagnosed with a prior bacterial STI in the past 12 months

• These criteria could avert almost:
  • ~1/3 infections with NNT <30 at 90% coverage or
  • ~1/5 new infections with NNT <45 at 60% coverage

• Cost-effectiveness modelling will determine optimal eligibility criteria for population level benefit
GUMCAD team, HIV& STI Dept, CIDSC, PHE
Gwenda Hughes, Hamish Mohammed
GUM clinics for provision of data

Clinical Trials Unit, Medical Research Council
David Dolling, David Dunn, Mitzy Gafos, Gemma Wood, Liz Brodnicki,
Yolanda Collaco-Moraes, Sarah Banbury, Brendan Mauger, Yinka
Sowunmi, Christina Chung

Thank you
## Results

<table>
<thead>
<tr>
<th>Possible PrEP eligibility criteria</th>
<th>Annual Attendees (2012)</th>
<th>Annual Attendees Percent</th>
<th>Observed HIV incidence</th>
<th>Annual HIV infections averted per PrEP person years</th>
<th>PrEP Person Years (90% coverage)</th>
<th>HIV infections averted (100% adherence)</th>
<th>NNT to prevent an infection</th>
<th>PrEP Person Years (60% coverage)</th>
<th>HIV infections averted (100% adherence)</th>
<th>NNT to prevent an infection</th>
<th>PrEP Person Years (30% coverage)</th>
<th>HIV infections averted (100% adherence)</th>
<th>NNT to prevent an infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic population</td>
<td>88000</td>
<td>100%</td>
<td>2.5%</td>
<td>66000 1600 45</td>
<td>45000 1100 67</td>
<td>22000 550 133</td>
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<td>Eligibility criterion</td>
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<tr>
<td>Sexual partner reported as HIV+ve/ unknown status</td>
<td>15500</td>
<td>21%</td>
<td>5.5%</td>
<td>14000 770 20</td>
<td>9300 510 30</td>
<td>4700 260 61</td>
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<td>15000 560 30</td>
<td>10200 380 45</td>
<td>5100 190 90</td>
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<tr>
<td>Prior 10 or more partners (6 mths)</td>
<td>22000</td>
<td>30%</td>
<td>2.7%</td>
<td>20000 540 45</td>
<td>13200 360 62</td>
<td>6600 180 123</td>
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<tr>
<td>Frequent HIV tester (≥2 tests pa)</td>
<td>22000</td>
<td>30%</td>
<td>2.0%</td>
<td>20000 400 56</td>
<td>13200 270 83</td>
<td>6600 130 167</td>
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<td>Prior chlamydia (12 mths)</td>
<td>2000</td>
<td>3%</td>
<td>4.5%</td>
<td>2000 90 25</td>
<td>1300 60 37</td>
<td>600 30 74</td>
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