Outline

• Policy
• Person
• Place
• Population
• Problem
• Partner
UK National Guidelines for HIV Testing

- Services with high background prevalence (e.g. STI clinics, Antenatal, Termination of Pregnancy etc)

- Patients at higher risk (e.g. MSM, PWID):

- Patients with clinical indicator diseases

- Expanded HIV testing in areas of high diagnosed HIV prevalence (>2/1,000)
  - Registrants in primary care
  - General medical admissions

- HIV testing in the community
Late HIV rates diagnosis in the UK by risk group, 2008-2014

Data source: Unlinked Anonymous Surveillance, HPA and the NSHPC, ICH
Modelled impact on HIV incidence of increased testing among MSM

% reduction in 2030
- test rate ++: 54% down
- test rate +: 32% down
- base test rate:...

Adapted from Phillips A CROI conference 2014
Counter-factual scenario
No condom use *Phillips et al PLOS One 2013*

No condom use
(a) ART at diagnosis from 2000

Cessation of all condoms in 2000 would have resulted in a 400% increase in incidence
HIV Testing in the UK

Increase in general population reporting HIV test 2000 and 2010\(^1\)

- Females: from 9% to 28%
- Males: from 9% to 17%

Most at-risk populations

- 58% of MSM reported an HIV test in the last year
- 40-50% of Black Africans had an HIV test

\(^1\)Sonnenberg et al Lancet 2013; \(^2\)Tweed et al STI 2010
Increase in general population reporting HIV test
Females: from 9% to 28%: Males: from 9% to 17%
Increases in reported HIV testing in targeted groups
Proportion Black Africans reporting HIV test: 2013-2014

- <1 month: 13%
- 1-12 months: 48%
- 1-5 years: 27%
- >5 years: 12%

• Increase from 51% in 2008/09

SIGMA:
African Sex and Health Survey 2013-2014
Proportion MSM in gay venues reporting an HIV test, London: 2000-2013

Gay Mens' Sexual Health Survey:
University College London/Public Health England
Need for increased HIV testing among MSM

• An estimated 7,300 MSM living with an undiagnosed HIV infection\(^1\)
• 60% of MSM with unsuppressed viral load are undiagnosed\(^2\)
• 29% late HIV diagnosis in 2014 (CD4 <350)
• 49% of MSM newly diagnosed were diagnosed at their first HIV test at that clinic
• Increased levels of sero-sorting among HIV- MSM

Guidelines for frequency HIV test for MSM

Australia: STIs in Gay Men Action Group (STIGMA)¹

- Modelled 14% reduction in HIV testing from annual to x4/year²
- Annual HIV and STI screen for sexually active MSM
- 3-6 month screen if reporting: UAI; group sex; >10 partners in 6 months; drug use during sex

USA: CDC guidelines for management STIs (2010)³

- Modelled testing every 3 months is cost saving⁴
- Annual HIV and STI screen for sexually active MSM
- 3-6 month screen who have multiple or anonymous partners

¹STIGMA STD testing guidelines 2 Hutchinson et al IAC (2012)
Frequency HIV testing in MSM

BASHH recommendations (2014):
• Annually and every three months if at high risk (unprotected sex or STI diagnosis)

NICE (2011):
• At least an annual HIV test

Public Health England (2013):
• HIV and STI screen at least annually, and every three months if having unprotected sex with new or casual partners
Community surveys of frequency of HIV testing among MSM

- 3 community surveys in 2011 asked about frequency HIV testing
  - MRC – commercial venues in Edinburgh & Glasgow
  - UCL/PHE – commercial venues in London
  - GCU – online survey in Scotland

- Self-reported frequency HIV testing among HIV- MSM
  - % reporting 4+ tests in previous 2 years

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>% testing 4+ in previous 2 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRC</td>
<td>940</td>
<td>22%</td>
</tr>
<tr>
<td>UCL/PHE</td>
<td>816</td>
<td>15%</td>
</tr>
<tr>
<td>GCU</td>
<td>1040</td>
<td>17%</td>
</tr>
</tbody>
</table>

¹McDaid et al BHIVA 2014
National pilot HIV self-sampling services

- PHE support of two national pilot services

- November 2013-March 2014:
  - 12,485 test requests
  - 6,593 returned (53%)
  - 92 new diagnoses (1.4%)

- Unique selling points:
  - High volumes managed through internet
  - Different to clinic populations
  - Used by those at high risk

1. Brady et al PHE Annual Conference 2013
2. McGowan Personal communication
Socio-demography of users (MSM)

Age Group distribution for different user groups:
- THT/HPE
- Dean St
- GUM

- <20: THT/HPE (10%), Dean St (5%), GUM (10%)
- 20-24: THT/HPE (25%), Dean St (20%), GUM (30%)
- 25-34: THT/HPE (40%), Dean St (45%), GUM (25%)
- 35-44: THT/HPE (20%), Dean St (15%), GUM (25%)
- 45-64: THT/HPE (5%), Dean St (10%), GUM (15%)
- 65+: THT/HPE (1%), Dean St (1%), GUM (5%)
Socio-demography of users (MSM)
Reported HIV testing behaviour of users (MSM)

- Never tested: 33%
- Over a year ago: 41%
- Within the last year: 25%

n=3270
Reported sexual behaviour of users (MSM)
National self-sampling service

• Public Health Minister announced national service to deliver “up to 50,000 kits per year”
• Co-commission between PHE and local authorities
• Specification development March – July 2015
• Invitation to tender 1/8/15
• Procurement by Eastern Shires Procurement Office (ESPO)
• Evaluation of bids
  • 60% price (ESPO) and 40% quality (LA/PHE)
Establishing national HIV self-sampling service

• Successful bidder Preventex/MESMAC
• Service commissioned for 50,000+ kits
  • 30,000+ from 89 local authorities
  • 20,000+ from PHE
• PHE to pay for tests delivered until 1/1/16
• Connection:
  • “It starts with me” during National HIV Testing Week
  • www.freetesting.hiv
Around 25% of the estimated 100,000 people living with HIV in the UK remain undiagnosed.

Free self-sampling HIV test kits are available in many areas of the country — enter your details below to check your eligibility:
HIV Testing: What is Working?

Michael Rayment
Chelsea and Westminster NHS Foundation Trust
BHIVA Autumn Conference, 2015
How might we measure what works in HIV testing?

- Policy
- Person
- Place
- Population
- Problem
- Partner
PERSON
Trends in new HIV diagnoses: addressing late diagnosis

- Late diagnoses: 57% [2004] → 40% [2014]
- Recent diagnosis (RITA): 14% [2010] → 22% [2013]
Place of HIV diagnosis: a helpful indicator?

- BHIVA 2011 audit: 47% new diagnoses made outside GUM

- 2006-2009: 73% of new diagnoses made in GUM, 6.5% in antenatal, 6.5% in primary care, 5.0% in medical admissions or ED

Kall et al, BHIVA 2011
Laboratory Surveillance

- Sentinel surveillance labs (n=15)
- 1.4 million HIV tests 2008-2012
- Absolute number in GU/ANC stable, but fraction fell from 71% (2008) to 64% (2012)
- Testing in non-traditional settings increased 160% from 69,940 in 2008 to 112,033 in 2012
- Testing in primary care increased 161% from 25,731 in 2008 to 41,310 in 2012 with sustained sero-positivity

Collins et al, BHIVA 2014
Routine HIV testing in recommended settings

- Systematic review and meta-analysis of outcomes in settings where routine HIV testing recommended (El Mahdi, 2014)
- Heterogeneous group of studies

- Outcomes for routine HIV testing in recommended settings (excluding GUM, antenatal and community):

<table>
<thead>
<tr>
<th>% eligible receiving HIV test (95%CI)</th>
<th>N studies</th>
<th>% eligible offered an HIV test (95%CI)</th>
<th>N studies</th>
<th>% offered accepting HIV test (95%CI)</th>
<th>N studies</th>
<th>% tested HIV+ (95%CI)</th>
<th>N studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.5% (24% - 35%)</td>
<td>20</td>
<td>45.5% (28% - 63%)</td>
<td>12</td>
<td>69.2% (55% - 86%)</td>
<td>12</td>
<td>0.4% (0.2% - 0.6%)</td>
<td>17</td>
</tr>
</tbody>
</table>

- Only independent predictor of testing rate: prospective vs. retrospective study design
- Staff support **HIGH** in quantitative and qualitative studies
Translational research

- >34% LAs exceed 2/1000 diagnosed HIV prevalence

- Number of routine HIV testing programs now in operation in high prevalence areas
- Challenges re: sustainability, commissioning
- Sustainability methodology can be helpful
- Engagement with specialist services
- Pan-UK collaboration to share resources (practice points, business cases, PILs, audit standards)
Routine HIV testing in an ED (May 2012 – present)

<table>
<thead>
<tr>
<th></th>
<th>HIV test offer rate</th>
<th>HIV tests done</th>
<th>Total number of new diagnoses</th>
<th>Prevalence newly diagnosed HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED</td>
<td>38%</td>
<td>26,100</td>
<td>72</td>
<td>0.28%</td>
</tr>
<tr>
<td>AAU</td>
<td>11%</td>
<td>1,508</td>
<td>8</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
Results – Croydon University Hospital MAU

- 26,052 admissions between 01/07/2011 to 31/12/2014
- 6,316 tests were requested (24.2%)
- 37 new HIV diagnoses were made (0.59%)

<table>
<thead>
<tr>
<th></th>
<th>Ad hoc screening</th>
<th>Routine screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4 &lt;350 (%)</td>
<td>92</td>
<td>54</td>
</tr>
<tr>
<td>Time since last test (yrs)</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Mean length of admission (days)</td>
<td>23.4</td>
<td>10.9</td>
</tr>
</tbody>
</table>
HIV testing in GUM clinics

- HIV testing coverage in GUM clinics continues to improve:
  69% [2009] → 71% [2013]

- Increase greater among MSM (78% → 86%)

- Marked variation in target across England
Test decliners in GUM Clinics

- Clarke et al (EACS 2015)
- Evaluation of 390 MSM newly diagnosed with HIV in 13 GUM clinics:
  - 39% had prior attendance at clinic
  - 24% NOT tested, of whom 39% refused a test
  - This group had longer median time since last test, and more likely to have CD4<100 at diagnosis

- Questionnaire re: policy for HIV test refusers in English GUM Clinics
- Response rate: 41% (92 clinics)
  - 72.2% of London clinics and 53.4% of non-London clinics offered a less invasive option
  - 87% of clinics recorded the occurrence of refusals and 75.6% the underlying reasons, but only 37.8% reviewed collected data
Failure to disclose known HIV status in GUM clinic attendees

- Savage *et al* (AIDS, 2015)
- Assessment of HIV status by ARV drug levels in serum samples from unlinked anonymous survey 2005-2009 flagging as “HIV undiagnosed”
- ARVs were detected in **27%** of samples overall
  - 24% in MSM; 32% heterosexual
  - 33% in London; 21% from non-London clinics

<table>
<thead>
<tr>
<th>Sexuality</th>
<th>Undiagnosed prevalence</th>
<th>Adjusted undiagnosed prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSM</td>
<td>3.04%</td>
<td>2.66%</td>
</tr>
<tr>
<td>Heterosexual men</td>
<td>0.31%</td>
<td>0.30%</td>
</tr>
<tr>
<td>Heterosexual women</td>
<td>0.40%</td>
<td>0.37%</td>
</tr>
</tbody>
</table>
PROBLEM
Routine HIV testing in indicator conditions (ICs): audit of UK practice

- Twelve audits were undertaken across six UK sites for six different ICs involving a total of 2312 patients

<table>
<thead>
<tr>
<th>Indicator Condition (IC)</th>
<th>Number patients accessing centre(s) with IC</th>
<th>Proportion offered an HIV test</th>
<th>Prevalence new diagnosis of HIV (%)</th>
<th>&quot;Missed&quot; diagnoses [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphoma</td>
<td>373</td>
<td>41.2%</td>
<td>8.49%</td>
<td>19 [7-35]</td>
</tr>
<tr>
<td>Hepatitis B / C</td>
<td>682</td>
<td><strong>78%</strong></td>
<td>0.75%</td>
<td>1 [-2-8]</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>43</td>
<td>4.7%</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Anal cancer</td>
<td>190</td>
<td><strong>3.6%</strong></td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Oesophageal candidiasis</td>
<td>524</td>
<td>u/k</td>
<td>8.89%</td>
<td>39 [24-100]</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>500</td>
<td>67%</td>
<td>2.42%</td>
<td>4 [-2-16]</td>
</tr>
</tbody>
</table>

- Where known, uptake of HIV tests >95%
Effectiveness of IC-based testing

- Case control study, THIN GP database
- 3515 patients: 939 cases vs. 2576 controls
- 12/37 non-AIDS ICs associated with subsequent HIV

[Damery et al, BJGP 2013]

<table>
<thead>
<tr>
<th>Diagnoses</th>
<th>OR for subsequent HIV diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial pneumonia</td>
<td>47.7</td>
</tr>
<tr>
<td>Oral candida</td>
<td>29.4</td>
</tr>
<tr>
<td>VZV</td>
<td>25.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
<th>OR for subsequent HIV diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss</td>
<td>47.7</td>
</tr>
<tr>
<td>PUO</td>
<td>29.4</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>4.4</td>
</tr>
</tbody>
</table>
HIV Indicator Diseases Across Europe Study – Phase 2

- Open call to European centres
- Routine offer of HIV test to patients (18-65 yrs) presenting with indicator condition
- Simple demographic data collected; additional data items for those newly diagnosed HIV+
- **Primary endpoint:** demonstration of previously undiagnosed HIV infection >0.1% in each indicator condition (IC)
- Projected n=11 000
- Open 2012 - 2014

<table>
<thead>
<tr>
<th>Disease Area</th>
<th>Indicator Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignancies</td>
<td>Lymphoma</td>
</tr>
<tr>
<td></td>
<td>Cervical dysplasia or cancer (CIN II and above)</td>
</tr>
<tr>
<td></td>
<td>Anal dysplasia or cancer (AIN II and above)</td>
</tr>
<tr>
<td></td>
<td>Primary lung cancer</td>
</tr>
<tr>
<td>Viral infections</td>
<td>Hepatitis B infection</td>
</tr>
<tr>
<td></td>
<td>Hepatitis C infection</td>
</tr>
<tr>
<td></td>
<td>Hepatitis B &amp; C co-infection</td>
</tr>
<tr>
<td></td>
<td>Ongoing mononucleosis-like illness</td>
</tr>
<tr>
<td>Haematological disorders</td>
<td>Leucocytopenia and / or thrombocytopenia</td>
</tr>
<tr>
<td></td>
<td>Lymphadenopathy</td>
</tr>
<tr>
<td>Dermatological</td>
<td>Severe psoriasis</td>
</tr>
<tr>
<td></td>
<td>Seborrhoeic dermatitis</td>
</tr>
<tr>
<td>Other</td>
<td>Pneumonia (hospitalised)</td>
</tr>
<tr>
<td></td>
<td>Peripheral neuropathy</td>
</tr>
</tbody>
</table>
HIV prevalence by indicator condition

- Hep B & C
- Mononucleosis
- Lymphadenopathy
- Leuco / thrombocytopenia
- Pneumonia
- Neuropathy
- Hep C
- Seborrhoeic dermatitis
- Lymphoma
d
- Cervical dysplasia / cancer
- Anal dysplasia / cancer
- Lung cancer

95% CI > 0.1
95% CI < 0.1

<table>
<thead>
<tr>
<th>Tested</th>
<th>73</th>
<th>734</th>
<th>401</th>
<th>722</th>
<th>1881</th>
<th>84</th>
<th>1751</th>
<th>299</th>
<th>1126</th>
<th>1339</th>
<th>588</th>
<th>276</th>
<th>53</th>
<th>144</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV+</td>
<td>7</td>
<td>39</td>
<td>16</td>
<td>32</td>
<td>61</td>
<td>2</td>
<td>41</td>
<td>6</td>
<td>43</td>
<td>13</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
HIV testing for ICs in UK Specialty Guidelines

- Lord et al (EACS, 2015)

- Reviewed UK guidelines for recommendation to perform HIV test in management of all AIDS-defining conditions (ADCs), and HIV ICs

- 79 guidelines were reviewed (range 1-13 per condition)

- HIV testing was recommended in 32/79 (41%) guidelines

- At least one guideline recommended HIV testing for:
  - 50% ADCs
  - 47% ICs
Case note review regarding PN process of up to forty consecutive patients newly diagnosed with HIV infection during 2011 (index cases) and their contacts (up to 5 per index case)

169 HIV services (156 GUM, 13 non-GUM) took part in the case-note review
21% of 1399 contacts tested through PN process were newly diagnosed with HIV infection
Summary Outcomes and Regional Variation

<table>
<thead>
<tr>
<th></th>
<th>Index cases</th>
<th>Percentage for whom PN done</th>
<th>At risk contacts attending service per index case</th>
<th>Among contacts tested, percentage positive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>2921</td>
<td><strong>87.6 (72.4 – 97.7%)</strong></td>
<td>0.48 (0.29 – 0.81)</td>
<td>20.9% (6.7 – 31%)</td>
</tr>
</tbody>
</table>
Policy • Person • Place • Population • Problem • Partner

- HIV testing is a central tenet of HIV prevention
- Evidence of shifting attitudes and behaviour re: HIV testing in risk groups
- HIV testing in all domains is acceptable and likely effective
- **Implementation** is patchy
- Top-down strategic vision
- Engagement with commissioners is key
- Targeting of risk groups and opening up of novel testing pathways essential
- Operational programs to facilitate implementation such as OptTest (HIV in Europe)
Acknowledgements

Colleagues in PHE: HARS team, Immunisation, Sam Lattimore,

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Alan McOwan, Ann Sullivan, Caroline Rae and colleagues at Dean Street Clinic/Chelsea & Westminster Hospital NHS Foundation Trust

Thank you