Prevalence, type and factors associated with HPV infection at multiple sites in young HIV-positive MSM

On behalf of the HPV MAPS Research Group

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Anal high-risk (hr) HPV infection, in particularly hr HPV 16, is associated with anal cancer

HPV vaccine has potential to greatly impact the burden of HPV associated disease

BHIVA HPV vaccine recommendations for HIV-positive adults (1)

Documenting baseline epidemiology of HPV infection in young HIV+ MSM is important in guiding primary and secondary prevention strategies

(1) AM Geretti et al., 2015
Objectives

Investigate prevalence of hr HPV at multiple sites in young HIV+ MSM
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Investigate prevalence of anti-HPV 16/18 antibodies
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Investigate prevalence of hr HPV at multiple sites in young HIV+ MSM

Investigate prevalence of anti-HPV 16/18 antibodies

Investigate factors associated with hr HPV infection

Estimate susceptibility to HPV types covered by HPV-4v and HPV-9v
Methods

Study Design
HIV+ MSM >18 and < 26 years (n=50)

Enrolment from a single site, the GUIDE clinic, St James’s Hospital, Dublin

Data Collection
Oropharyngeal, anal and penile swabs
Serum for anti-HPV 16/18 antibodies

Demographic and Sexual behaviour data collected

Ethics approval from St James’s Hospital
Sample analysis
Swabs analysed for HPV DNA by Multiplex PCR using consensus primers and Next Generation Sequencing

HPV Classification
hr HPV types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59
Quadrivalent vaccine (HPV 4v) 6, 11, 16, 18
Nonavalent vaccine (HPV 9v) 6, 11, 16, 18, 31, 33, 45, 52, 58

Factors associated with prevalent hr HPV infection assessed using the chi-square and Fisher’s exact test

(²)ion Torrent Platform®, (³)http://pave.niaid.nih.gov/#home)
## Results

<table>
<thead>
<tr>
<th>Selected baseline characteristics</th>
<th>N=50 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age [IQR]</td>
<td>25 [23-26]</td>
</tr>
<tr>
<td>Current smoker, N (%)</td>
<td>20 (40)</td>
</tr>
<tr>
<td>Duration of HIV infection (years)</td>
<td>2 [1-3]</td>
</tr>
<tr>
<td>CD4+ T count cells/mm³</td>
<td>580 [440-696]</td>
</tr>
<tr>
<td>On HAART N (%)</td>
<td>43 (86)</td>
</tr>
<tr>
<td>Viral load not detected N (%)</td>
<td>36 (72)</td>
</tr>
</tbody>
</table>

Data reported as median [interquartile range, IQR] unless otherwise stated

Abbreviations: HAART highly active antiretroviral therapy, N number
## Results

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<tr>
<td>Age at sexual debut (years)</td>
<td>16.5 [15-17.3]</td>
</tr>
<tr>
<td>Lifetime number sexual partners</td>
<td>10 [3-20]</td>
</tr>
<tr>
<td>Number of sexual partners past 3/12</td>
<td>1 [0-1.5]</td>
</tr>
</tbody>
</table>

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**HPV DNA**

**Detected**

N=34 (68%)

**Not-detected**

N=16 (32%)
Detected
N=34 (68%)

Not-detected
N=16 (32%)

Oropharyngeal Swabs 8%
Penile Swabs 4%
Anal Swabs 66%
hr HPV types

46% (N=23) had hr HPV on anal swabs
4% (N=2) had hr HPV on penile swabs
hr HPV not detected on oropharyngeal swabs
**Antibodies**

**Anti-HPV 16 antibodies**
Detected N=22 (44%)

**Anti-HPV 18 antibodies**
Detected N=13 (26%)
Anti-HPV antibodies

Anti-HPV 16 antibodies
Detected N=22 (44%)

Anti-HPV 18 antibodies
Detected N=13 (26%)

Anti-HPV 16 and 18 antibodies
Detected N=8 (16%)
Concordance of HPV detection

Anti-HPV 16 antibodies Detected N=22 (44%)

8/22 with Anti-HPV 16 antibodies Detected had HPV16 on swabs

Anti-HPV 18 antibodies Detected N=13 (26%)

4/13 with Anti-HPV 18 antibodies Detected had HPV18 on swabs
Anti-HPV antibodies

Anti-HPV 16 antibodies Detected N=22 (44%)
8/22 with Anti-HPV 16 antibodies Detected had HPV16 on swabs

Anti-HPV 18 antibodies Detected N=13 (26%)
4/13 with Anti-HPV 18 antibodies Detected had HPV18 on swabs

Detectable HIV VL was associated hr HPV detection (p=0.04)
Limitations

Small sample size

Point prevalence study

Anti-HPV 16/18 antibodies only
Conclusion

A significant proportion of young HIV+ MSM are infected with one or more hr HPV type

The majority could derive some benefit from HPV vaccine

Frequent non-vaccine hr HPV types were observed

Requirement for improved primary and secondary prevention interventions in HIV+ MSM
Acknowledgements

Patients who participated in the study

HPV MAPS research group
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C Bergin

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