

## HPV vaccine uptake in men who have sex with men in Scotland

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1 **HPV vaccine uptake in men who have sex with men in Scotland**

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11 **Keywords:** MSM; HPV; vaccine; sexual health

12

13 **Abstract**

14 Human papillomavirus (HPV) vaccines are currently utilised globally in national  
15 immunisation programmes. In July 2017, a national HPV vaccine programme for men who  
16 have sex with men (MSM) was initiated across Scotland with vaccine being offered in the  
17 sexual health clinic setting. During the first year of this targeted vaccination programme,  
18 there were 5,905 individuals who received at least one dose of HPV vaccine, representing  
19 63.7% of eligible MSM attendees in this period. Vaccine uptake was relatively stable across  
20 all age groups (range 49.8-55.5%). The vaccination programme appears to have dovetailed  
21 well with pre-existing sexual health services and appears to be popular with MSM attending  
22 the service. The MSM HPV vaccine programme is a robust adjunct to the national girls  
23 programme but gender-neutral immunisation will reduce stigma and inequality in HPV-  
24 driven disease.

25 **Introduction**

26 Since 2008, school-based uptake in Scotland of the HPV vaccines in girls aged 12–13 has  
27 been impressive, with vaccine uptake sustained at levels approximating 90% (Sinka *et al.*  
28 2014). We have recently reported on the effect of the bivalent vaccine on the prevalence of  
29 HPV types in women immunised routinely at age 12 or 13 years who attended for screening  
30 at age 20, where virtual abolition of HPV 16 and 18 infections was observed (Kavanagh *et al.*  
31 2017). Indeed, the prevalence of virus (0.5%) was comparable in vaccinated and  
32 unvaccinated women, demonstrating significant herd protection against the two most  
33 prevalent oncogenic HPV types known to precipitate anogenital and oropharyngeal cancers  
34 (Lin *et al.* 2017; Chaturvedi *et al.* 2013).

35 A HPV vaccination programme for men who have sex with men (MSM) aged up to and  
36 including 45 years old who attend sexual health and/or HIV clinics commenced in Scotland  
37 in July 2017 (CMO Directorate, 2017). The vaccine is administered irrespective of HPV  
38 infection status. The programme was initiated by the Scottish Government based on advice  
39 from the UK Joint Committee on Vaccination and Immunisation (JCVI, 2015), which  
40 recognised that MSM receive little benefit from the national schools' HPV programme in  
41 girls. Furthermore, HPV anogenital infection and related disease is disproportionately higher  
42 in MSM who are significantly more likely than heterosexual men to develop anal cancer  
43 (Piketty *et al.* 2012).

44 We present national vaccine uptake data for the first year of this selective immunisation  
45 programme for MSM attending sexual health clinics in Scotland.

46

47 **Methods**

48 The National Sexual Health IT System (NaSH) is currently used by all eleven mainland  
49 Scottish NHS board sexual health services (SHS) to record patient attendances. Denominator  
50 numbers of MSM were identified as those who attended 81 sexual health services during the  
51 first full year of the MSM HPV immunisation programme (1<sup>st</sup> July 2017 to 30<sup>th</sup> June 2018),  
52 who were age  $\leq$  45 years at the time of attendance, and where the patient sex was male and  
53 gender of lifetime sexual partners was recorded as "men and woman" or "men only".  
54 Immunisation status of these 'eligible MSM' was derived from prescription data on NaSH  
55 during the same 12 month period, with three prescriptions (or doses) of Gardasil considered  
56 'Complete' for adults and 2 doses for those under 15 years of age. Due to the flexibility in the  
57 Gardasil summary of product characteristics (SPC), variable spacing options for the doses are  
58 possible. This enables the administration of subsequent doses to be aligned with  
59 recommended GUM re-attendance, routine investigations for HIV+ MSM, or other care.

60 Age of those vaccinated was based on the age at first prescription (i.e. when the patient first  
61 started the HPV programme) and NHS board was based on the most recent appointment  
62 location. Patients had to have a valid sexual health clinic appointment linked to their  
63 prescription. This was required to consistently identify age and NHS board. Non-linking  
64 records were excluded (43, 0.7%). Data were extracted in October 2018.

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70 **Results**

71 During the first year of this targeted opportunistic vaccination programme, there were 5,905  
 72 individuals who received at least one dose of HPV vaccine. This represents a percentage first  
 73 dose uptake of 63.7% of eligible MSM attendees in this period (table 1). Vaccine uptake was  
 74 relatively stable across all age groups (range 49.8-55.5%). Few (447 of 5905, 7.6%) were  
 75 aged under 20. In this time period, 3,367 MSM who attended sexual health services (36.3%)  
 76 were eligible for HPV vaccination by age and lifetime sexual history but did not begin the  
 77 programme.

78 **Table 1. Uptake of HPV vaccine in MSM within Scotland by age group (patient**  
 79 **immunisation status was based on their most recent Gardasil prescription prescribed as**  
 80 **at 30 June 2018).**

Age band (years)	Number of MSM attending Individuals	Immunisation Status			Percentage Uptake (%)		
		Complete	In Progress	Total	Complete	In Progress	Total
<20	708	54	393	447	7.6	55.5	63.1
20-24	2,443	242	1,330	1,572	9.9	54.4	64.3
25-29	2,403	297	1,221	1,518	12.4	50.8	63.2
30-34	1,597	223	801	1,024	14.0	50.2	64.1
35-39	1,163	161	579	740	13.8	49.8	63.6
40-45	958	117	487	604	12.2	50.8	63.0
<b>Total</b>	<b>9,272</b>	<b>1,094</b>	<b>4,811</b>	<b>5,905</b>	<b>11.8</b>	<b>51.9</b>	<b>63.7</b>

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82

## 83 Discussion

84 The implementation and roll-out of the HPV vaccination programme in MSM within  
85 Scotland has been successful with a moderately high first dose uptake. The vaccination  
86 programme, designed to be opportunistic, has been accommodated into pre-existing sexual  
87 health services and is popular with MSM attending the service. Furthermore, the 1<sup>st</sup> dose  
88 uptake of 64% correlates well with estimates used in cost-effectiveness models (Lin *et al*,  
89 2017). The HPV programme commenced simultaneously with the offer of pre-exposure  
90 prophylaxis (PrEP) to eligible HIV-negative individuals, which presented significant  
91 logistical challenges for those delivering sexual health services. Limitations of this analysis  
92 include the fact that NaSH is not currently used by the three Scottish Island Boards (Orkney,  
93 Shetland & Western Isles), and not by some mainland HIV Services. Work is ongoing with  
94 these services to determine numbers of those eligible for the HPV vaccine among the HIV  
95 cohort and those vaccinated in non-NaSH using sexual health sites and in the prison setting,  
96 though numbers are predicted to be small.

97 The first dose uptake of 64% in Scotland broadly compares with other devolved UK nations  
98 where first dose uptake has been estimated to be 77% in specific areas of Wales (Knapper *et*  
99 *al.* 2018), 65% in Northern Ireland (HSCNI PHA, 2017) and 46% in England, albeit the latter  
100 figure was estimated through a pilot evaluation rather than national roll-out (PHE, 2018).  
101 While the offer of vaccine through sexual health clinics appears to be well-received,  
102 approximately 36% of eligible MSM attending sexual health clinics that are eligible for the  
103 vaccine have not commenced it and these men presumably remain at risk of acquiring new  
104 HPV infections. Given that 50% of MSM in Scotland are infected with a vaccine-specific  
105 HPV, the importance of increased vaccine uptake in this at-risk population cannot be  
106 understated (Cameron *et al.* 2018). Future analyses will detail the clinical impact of the  
107 programme in both the short and longer term.

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111



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