



## Knowledge Exchange Seminar Series (KESS)

*...is a forum that encourages debate on a wide range of research findings, with the overall aim of promoting evidence-based policy and law-making within Northern Ireland*

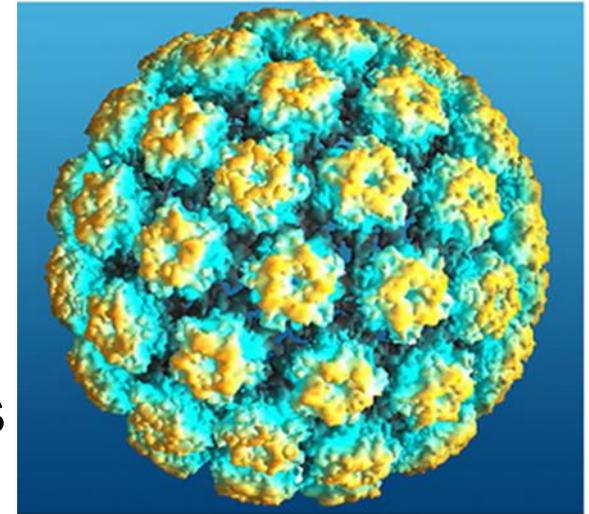


# Human Papillomavirus (HPV) Vaccination

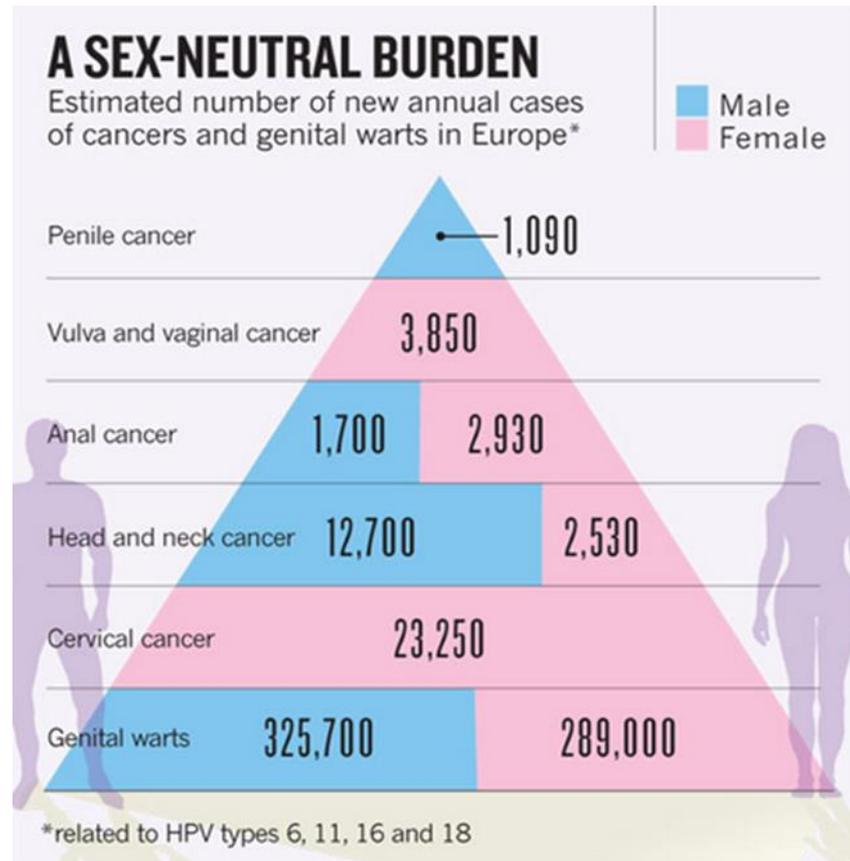
Should we be  
vaccinating boys too?  
Impact for Northern  
Ireland

# HPV

- Very common and easily acquired STI.
- Very large family of viruses
  - Two types: Low risk and high risk.
- High risk types (HPV 16, 18)
  - Cervical cancer
  - Other cancers in females and males
- Low risk types (HPV 6, 11)
  - Genital warts



**5% of all cancers  
estimated to be  
caused by HPV**



M Stanley, Nature 2012

# HPV prevalence: males v females

- Rate of genital HPV infection is similar in males and females

## **BUT.....**

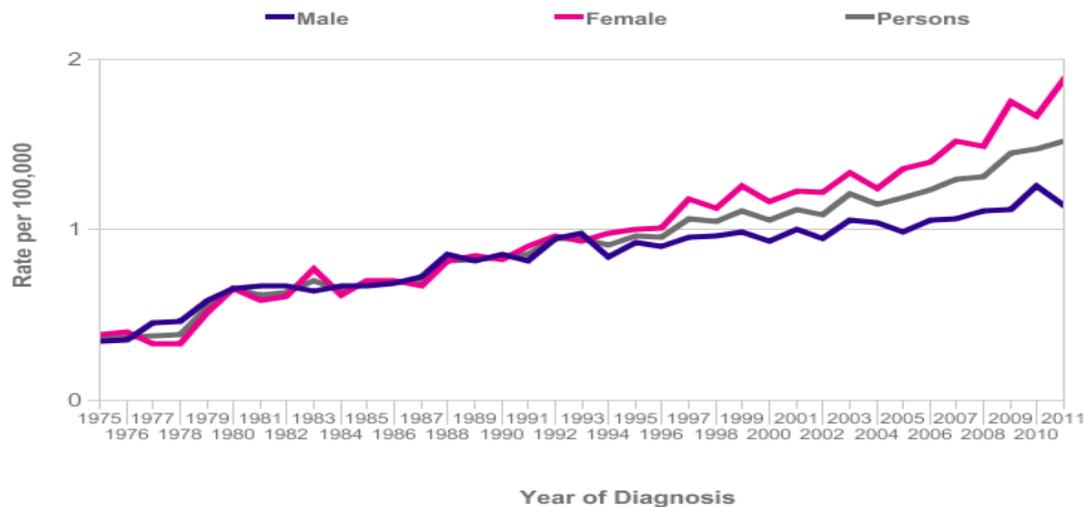
- In women, HPV prevalence peaks between 18 -24 years and subsequently declines.
- In men, there is a consistently higher prevalence of HPV.
  - **Males have a lower immune response to natural HPV infection.**

# Rising HPV-related cancer incidence

- Cervical cancer controlled by cervical screening programmes
- Other HPV-related cancers are rising in incidence.
  - Anal cancer (90% HPV-related)
  - Oropharyngeal cancer (at least 70% HPV-related)
  - Penile cancer (50-60% HPV-related)

## Anal Cancer (C21): 1975-2011

### European Age-Standardised Incidence Rates per 100,000 Population, by Sex, Great Britain



Anal cancer <sup>a</sup>	
Year of diagnosis	No. of cases
1993	3
1994	7
1995	4
1996	8
1997	7
1998	9
1999	<3
2000	9
2001	7
2002	8
2003	13
2004	10
2005	12
2006	3
2007	14
2008	8
2009	17
2010	7
2011	7
2012	8
2013	11

Please include the citation provided in our Frequently Asked Questions when reproducing this chart: <http://info.cancerresearchuk.org/cancerstats/faqs/#How>

Prepared by Cancer Research UK

Original data sources:

1. Office for National Statistics. Cancer Statistics: Registrations Series MB1. <http://www.statistics.gov.uk/statbase/Product.asp?vlnk=8843>.
2. Welsh Cancer Intelligence and Surveillance Unit. <http://www.wcis.u.wales.nhs.uk>.
3. Information Services Division Scotland. Cancer Information Programme. [www.isdscotland.org/cancer](http://www.isdscotland.org/cancer).

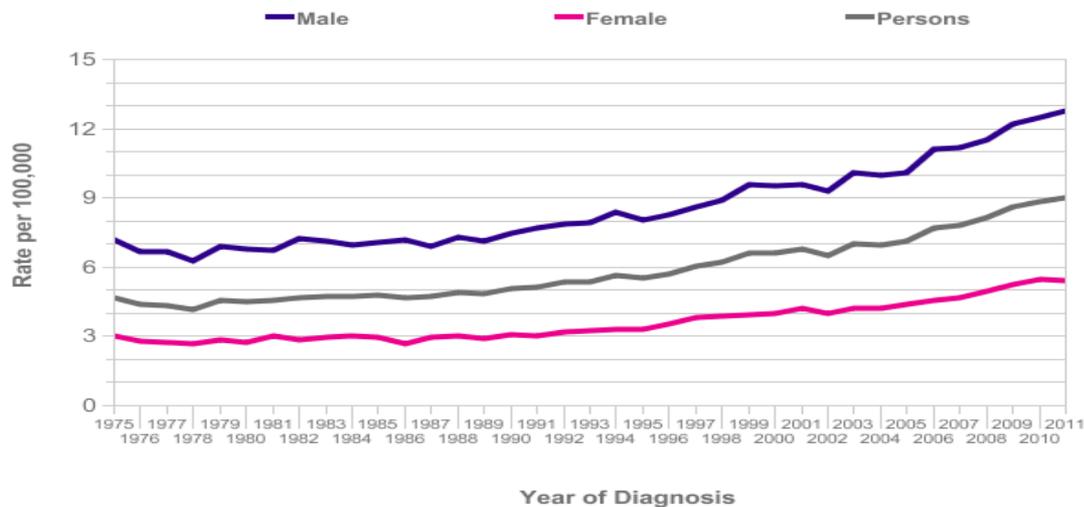


Figures from NICR, June 2015

158 cases of anal cancer caused by HPV

## Oral Cancer (C00-C06,C09-C10,C12-C14): 1975-2011

### European Age-Standardised Incidence Rates per 100,000 Population, by Sex, Great Britain



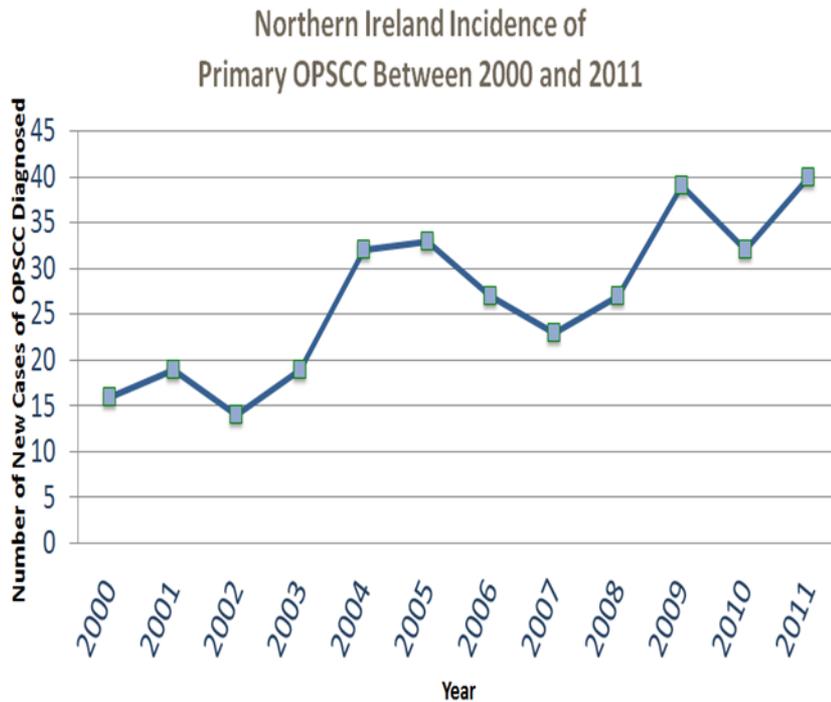
Please include the citation provided in our Frequently Asked Questions when reproducing this chart: <http://info.cancerresearchuk.org/cancerstats/faqs/#HowPrepared> by Cancer Research UK

#### Original data sources:

1. Office for National Statistics. Cancer Statistics: Registrations Series MB1. <http://www.statistics.gov.uk/statbase/Product.asp?vlnk=8843>.
2. Welsh Cancer Intelligence and Surveillance Unit. <http://www.wcisuwales.nhs.uk>.
3. Information Services Division Scotland. Cancer Information Programme. [www.isdscotland.org/cancer](http://www.isdscotland.org/cancer).



## 75% tonsillar and base of tongue cancers caused by HPV



Head and Neck <sup>a</sup>	
Year of diagnosis	No. of cases
1993	124
1994	123
1995	128
1996	117
1997	121
1998	109
1999	126
2000	100
2001	116
2002	121
2003	110
2004	127
2005	128
2006	158
2007	154
2008	138
2009	170
2010	161
2011	177
2012	183
2013	186
<b>Total</b>	<b>2877</b>

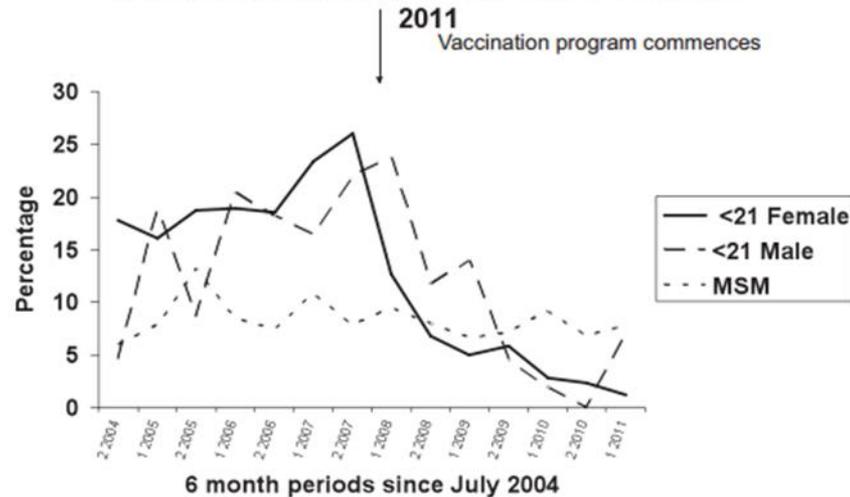
# Vaccination

- Most effective if given in adolescence before sexual debut (ie before exposure to HPV).
- UK currently vaccinate 12 – 13 year old girls.
- **USA, Australia, Austria, six Canadian provinces, Barbados, Israel, Italy, New Zealand, Liechtenstein, Switzerland** currently provide gender neutral vaccination.

# Herd Protection

- Herd protection for men depends on high coverage in women.
- Sustainability of herd protection depends on **sustained high coverage** in women.
- No protection if men move ‘outside of the herd’.

**Presentations with warts in men and women <21 years, and MSM all ages, July 2004 to end June**



**Figure 1** Proportion of patients aged <21 years, diagnosed as having genital warts by risk group compared with MSM of all ages: MSM, men who have sex with men, men <21 years excluded MSM, and non-residents excluded.

*Sex Transm Infect* 2011;**87**:544–547. doi:10.1136/sextrans-2011-050234

Read et al., The near disappearance of genital warts in young women 4 years after commencing a national HPV vaccination programme.

# HPV vaccination uptake in Northern Ireland

## Universal versus Targeted MSM programme?



In the past Northern Ireland has achieved high female vaccine uptake rates

**Annual HPV vaccine coverage in Northern Ireland: 2013-14**

**10 – 15% girls unprotected**

HPV coverage data of first, second and third dose for year 9 and year 10 at September 2014, by trust

**Vaccination coverage by end of year 9, girls (12-to-13 year olds) completing year 9 in June 2014**

Trust area	Total no. of girls in cohort	1 dose		2 doses		3 doses	
		Number	%	Number	%	Number	%
BHSCT	2555	2362	92.4%	2354	92.1%	2272	88.9%
SEHSCT	1544	1376	89.1%	1353	87.6%	1283	83.1%
NHSCT	2485	2289	92.1%	2280	91.8%	2217	89.2%
SHSCT	2283	2068	90.6%	2053	89.9%	1986	87.0%
WHSCT	1865	1724	92.4%	1709	91.6%	1600	85.8%
<b>Northern Ireland</b>	<b>10732</b>	<b>9819</b>	<b>91.5%</b>	<b>9749</b>	<b>90.8%</b>	<b>9358</b>	<b>87.2%</b>

**Vaccination coverage by end of year 10, girls (13-to-14 year olds) completing year 10 in June 2014**

Trust area	Total no. of girls in cohort	1 dose		2 doses		3 doses	
		Number	%	Number	%	Number	%
BHSCT	2530	2361	93.3%	2350	92.9%	2320	91.7%
SEHSCT	1584	1470	92.8%	1455	91.9%	1398	88.3%
NHSCT	2538	2341	92.2%	2337	92.1%	2322	91.5%
SHSCT	2378	2223	93.5%	2218	93.3%	2199	92.5%
WHSCT	2043	1915	93.7%	1901	93.0%	1871	91.6%
<b>Northern Ireland</b>	<b>11073</b>	<b>10310</b>	<b>93.1%</b>	<b>10261</b>	<b>92.7%</b>	<b>10110</b>	<b>91.3%</b>

Source: Northern Ireland Child Health System



# ***Assessing Parental knowledge and attitudes towards Human Papillomavirus vaccination***

- Cross-sectional survey May – Nov 2016
  - 598 parents (mean age = 43 years; 96% white, 89% female)
- Parents had low knowledge of HPV and HPV vaccination
  - 16% scored 0/34 and 50% scored 16/34 or less
  - A sizeable minority (22%) where not aware of their childs vaccination status.
- Despite low knowledge, 40% of parents stated that if offered they would vaccinate their son against HPV
- **Low knowledge may make parents more susceptible to vaccine conspiracy theories**

# Joint Commission for Vaccinations and Immunisations (JCVI)

## Statement November 2015

*“JCVI advises that a targeted HPV vaccination programme with a course of three doses for MSM aged up to 45 who attend GUM and HIV clinics should be undertaken, subject to procurement of the vaccine and delivery of the programme at a cost-effective price”*

<https://www.gov.uk/government/publications/jcvi-statement-on-hpv-vaccination-of-men-who-have-sex-with-men>



# Targeted MSM programme

- May not protect the majority of MSM
  - Many MSM do not self-identify.
  - Many MSM do not attend a sexual health clinic.
  - Most will not present at a GUM clinic before sexual debut.
  - Upper limit of 45 presents a new inequality for women.

## ***YoungHIMMS (Human Papillomavirus in Men-who-have-sex-with-Men Study)***

- Mixed methods study (focus groups and questionnaire)
- Adolescent/young adult MSM (16-24 years)
  - 18 MSM participated, mean age 20 years
- Majority sexually active and not aware of HPV vaccine.
- Only 16% had discussed HPV vaccination with a HCP.
- Conversations with HCP about sexuality ‘unfamiliar and clinical’.

***‘Why wouldn’t it be offered to young males in school...why would they not just approach everyone?’***



# Cost effectiveness

## HPV in Northern Ireland

- HPV-related diseases in NI cost **£2.5m** annually
- Estimated additional cost of universal vaccination programme in NI **£700,000.**

## ***A cost effectiveness analysis of HPV vaccination for boys for the prevention of OPC (Graham et al., 2015)***

- 90% vaccine efficacy; 70% uptake:
  - 0.05 more QALYs and saved \$145 CAD
- 50% vaccine efficacy; 50% uptake:
  - 0.023 more QALYs and saved \$42 CAD
- Male vaccination could potentially save between \$8 and \$28 million CAD for the theoretical cohort over its lifetime.

**HPV vaccination for boys aged 12 years may be cost effective for the prevention of OPC**



# Summary

- There is an equivalent burden of HPV-related disease in men and women.
- A significant proportion of the young women not being fully vaccinated are ‘hard to reach’, at risk of making other ‘poor life decisions’, and at higher risk of sexually transmitted infections.
- Recent drop in female vaccination rates in Ireland may lead to a reduction in herd protection.
- Parents’ knowledge of HPV in Northern Ireland is low; they may therefore be more susceptible to anti-HPV vaccine messages.

# Summary

- Vaccinating all boys would obviate the need MSM having to self-present to a sexual health clinic.
- To optimise the vaccine effectiveness in MSM it should be offered to young MSM prior to sexual debut. Young MSM have low awareness of the vaccine.
- The human cost of HPV related diseases should be the primary consideration for including boys in HPV vaccination programmes.
- To “not fund” a vaccine for any group of individuals at risk of developing a vaccine-preventable disease is questionable; thus, including boys in vaccination campaigns is important to ensure equity in protection from HPV-related diseases.



Northern Ireland  
Assembly



Queen's University  
Belfast



The Open  
University



Ulster  
University

## Knowledge Exchange Seminar Series (KESS)

*...is a forum that encourages debate on a wide range of research findings, with the overall aim of promoting evidence-based policy and law-making within Northern Ireland*