

## Vaccination Lets be Advocates!

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IPC Course  
September 2019



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## Presentation Outline

- How vaccines work
  
- HCWs as promoters of vaccines
  - HPV



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## How vaccines work

- Induce active immunity
  - Immunity and immunologic memory similar to natural infection but without risk of disease
  
- Immunological memory allows
  - Rapid recognition and response to pathogen
  - Prevent or modify effect of disease



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### Live attenuated vaccines

**Weakened viruses /bacteria**

- Achieved by growing numerous generations in laboratory
- Produces long lasting immune response after one or two doses
- Stimulates immune system to react as it does to natural infection
- Can cause mild form of the disease (e.g. mini measles which is non transmissible)
- CANNOT be given to immuno-compromised persons

e.g. MMR/ Rotavirus/ Varicella/ Yellow fever



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### Inactivated vaccine and toxoids

- Cannot cause disease they are designed to protect against
- Doses
  - Two of more doses plus booster doses usually required
- Inactivated
  - e.g. pertussis, Pneumococcal, Men C, influenza
- Toxoids
  - e.g. tetanus, diphtheria



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### Protection from Vaccines

- Individual protection e.g. Tetanus
- Individual protection + population protection e.g. Measles (MMR vaccine), influenza, HPV
- High uptakes are needed to get protection effect in the population



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## Herd Immunity

- <https://www.youtube.com/watch?v=kLUzwT9tWxY>

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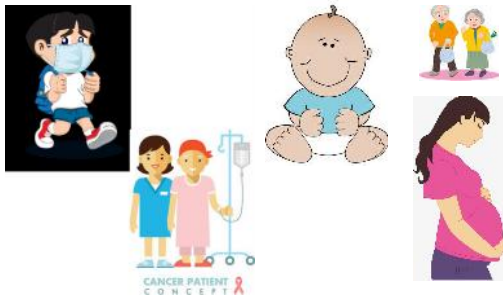
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## Our Community at Risk



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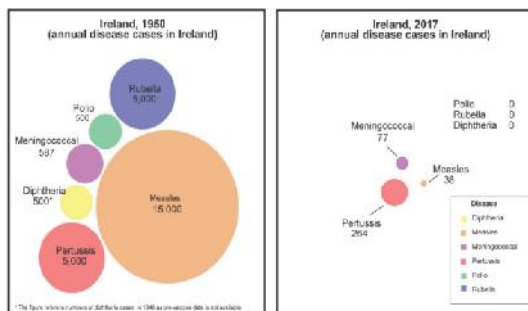
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## Vaccines Work!



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## HEALTHCARE WORKER AS ADVOCATE HUMAN PAPILLOMA VIRUS (HPV)



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## HPV: Why immunise?

- HPV – about 100 different serotypes – 13 high risk types. Invade epithelial cell : skin cells, mucous membrane cells.
- Almost everybody will experience an infection with HPV at some time in their lives Generally transmitted by close, skin to skin contact and sexual contact
  - Infection can be transient – with no symptoms
  - For others - infection can persists
- Some – ‘High Risk’ serotypes if they persist , cause changes in the cells, which can progress to a pre cancers stage and ultimately result in cancer
- Some of the low risk types cause genital warts (6 and 11 cause 90%)



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## HPV Vaccine

Ideally needs to be given before sexually active  
2 doses over 6 months if started <15 years

### September 2010

- Vaccine HPV4 – 4 types (6, 11,16, 18)
- Offered to all girls 1<sup>st</sup> Year in Secondary School

### September 2019

- Vaccine **HPV9** – 9 types (6,11,16,18 +31,33,45,52,58)
- Will be offered to all girls and **boys** in 1<sup>st</sup> year in secondary school

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### HPV in Ireland

**In Ireland - Every Year**

- Over 6,500 women diagnosed with high grade CIN (cervical intraepithelial neoplasm) and require hospital treatment
- About 300 women develop invasive cervical cancer
- 90 women die from cervical cancer

**PREVENTING INFECTION WITH HPV 16 AND 18 WILL PREVENT 7 OUT OF 10 (70%) CERVICAL CANCERS**

**PREVENTING INFECTION WITH HPV 16, 18 AND 31,33,45,52,58 WILL PREVENT 9 OUT OF 10 (90%) CERVICAL CANCERS**



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### HPV and Cancer

And that's not all.....

HPV cause other cancers:

- 90% anal
- 70% vaginal
- 50% penile
- 40% vulvar
- And 13- 72% oropharyngeal cancers



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### Impact & Effectiveness

- Reduction in prevalence of HPV infection
  - Scotland 90% uptake since 2008 HPV infection rates fallen by over 90%
- Countries where commenced since 2006 and high levels of uptake have shown a major fall in high grade CIN.
  - Australia – 75% reduction
  - Denmark - >50% reduction



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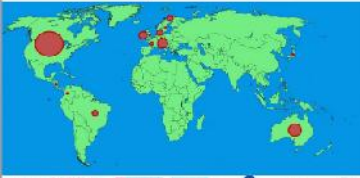
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## Is the HPV Vaccine Safe?

HPV Vaccine Safety & Effectiveness 2006 - 2019



Introduced in 2006  
 Now used in >60 countries  
 280+ million doses globally

- 660,000 doses in Ireland
- >200,000 fully vaccinated

>80 publication

- RCT: 72,835 subjects
- Cohort studies
- Post licensure studies
- Systematic review
- Safety reviews



[www.hpv.ie](http://www.hpv.ie)

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- “There are now accumulated safety studies that include several million persons and which compare the risks for a wide range of health outcomes in vaccinated and unvaccinated subjects. However, despite the extensive safety data available for this vaccine, attention has continued to focus on spurious case reports and unsubstantiated allegations. The Committee continues to express concern that the ongoing unsubstantiated allegations have a demonstrable negative impact on vaccine coverage in a growing number of countries, and that this will result in real harm”.
- WHO Global Advisory Committee on Vaccine Safety June 2017




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## HPV Vaccine uptake Ireland

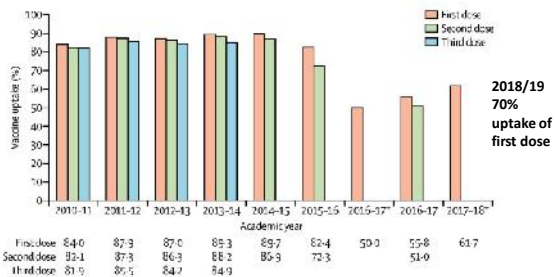


Figure HPV vaccine uptake by academic year in Ireland, from 2010-11 to 2017-18  
 Lancet 26<sup>th</sup> May 2018




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### Why can we all do?

We have a vaccine that is SAFE and EFFECTIVE  
It can prevent Cancer and it will save Lives  
We all need to be advocates  
We need to be informed  
We need to direct people to reputable sources of information

HPV – [www.hpv.ie](http://www.hpv.ie)  
National Immunisation Office –  
[www.immunisation.ie](http://www.immunisation.ie)



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### Advocacy

<https://www.youtube.com/watch?v=DHzW2-nCVAE>

#### Acknowledgments

National Immunisation Office  
Health Protection Surveillance Centre  
Prof Karina Butler, Chair National Immunisation  
Advisory Committee



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