Global and National Trends in Vaccine Preventable Diseases

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www.immunisation.ie
Under-five mortality rate (probability of dying by age 5 per 1000 live births), 2015


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Global Child Mortality

**2000**- deaths <5 years
~ 9.6 million

Immunisation
Clean Water and Sanitation
Better hygiene
Education

**2015**- deaths <5 years
~ 5.9 million
(despite increase in number of children born)

Adapted from www.immunisation.ie
Global picture

25 vaccine preventable diseases

<table>
<thead>
<tr>
<th>Table 1: Vaccine-preventable infectious agents or diseases</th>
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<tbody>
<tr>
<td>Anthrax</td>
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<td>Influenza</td>
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<td>Pertussis</td>
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<td>Hepatitis E</td>
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<td>Varicella and herpes zoster (shingles)</td>
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www.immunisation.ie
Pneumococcal disease - global

• Major cause of morbidity and mortality

2005

• 1.6 million deaths
• 0.7 – 1 million in children < 5 years
• developing countries
• children < 2 years

2010 PCV in immunisation schedules

• 87% birth cohort in high income countries
• 2% birth cohort in low income countries

2015 PCV in immunisation schedules
129 countries
Pneumococcal disease USA

Impact of 7-valent pneumococcal conjugate vaccine on invasive pneumococcal disease among children <5 years old, 1998-2009

Cases per 100,000

Year

Moore, IDSA, 2009 & CDC Unpublished

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Impact of PCV on the burden of IPD caused by PCV7 vaccine serotypes in <5 year olds

100% reduction in IPD cases, comparing Jan-Jun 2016 with the same period in 2008

Data source: IPD Typing Project
Diphtheria

Globally 2015
• 4778 cases
• 5-10% fatal

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Diphtheria global annual reported cases and DTP3 coverage, 1980-2015

Source: WHO/IVB database, 2016
194 WHO Member States.
Data as of 15 July 2016
Immunization coverage with DTP3 vaccines in infants (from <50%), 2015

Map production: Immunization Vaccines and Biologicals (IVB). World Health Organization. 194 WHO Member States.
Date of slide: 28 July 2016

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Measles - global

Since 2000 vaccination has
• led to 75% drop in deaths
• prevented 15.6 million deaths

Every year
• 20 million cases each year
• 146,000 deaths
• 16 deaths every hour
• 95% in low income countries

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2015

117 cases linked to measles outbreak

74% of all cases reported in 2015

Index case
- unvaccinated 11 year old
- rash onset December 2014

24 million visitors annually
Measles Europe

EU 2015

• 3969 cases reported
• 30 countries
• Majority of cases not vaccinated (75%)
• 1 death and 6 cases of encephalitis

2016
• 2230 (1666 confirmed) cases
• UK outbreak in London March-Apr
• Italy 537 cases confirmed
• Romania 487 cases this year

EU Measles notification rate
1 March 2015 – 29 Feb 2016

www.immunisation.ie
Measles - Ireland

49 cases to date in 2016

Source: HPSC

www.immunisation.ie
Number of Reported Measles Cases with onset date from Mar 2016 to Aug 2016 (6M period)
Pertussis - global

Every year

- 16 million pertussis cases
- 195,000 pertussis deaths in children
  - Most in unvaccinated or incompletely vaccinated young infants.
- Recent increases in many developed countries
  - Australia 2009-2011
  - UK 2011- 2012
  - New Zealand 2012 - 2013

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Pertussis

- Cough lasting at least 2 weeks

- No other cause

+ Paroxysms of coughing

  or

  Inspiratory ‘whoop’

  or

  Vomiting post cough

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No. of cases in under 6 month age group

2012
- Most < 5 years of age
- 48% unvaccinated

2016
- 190 cases notified
- HSE East (70)
- 31 cases under 6 months
- Majority Mothers unvaccinated

Source: HPSC

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Pertussis vaccination

Age appropriate vaccination

• 2, 4, 6 months (6 in 1)
• Junior infants (4 in 1)
• 1st year (Tdap)
  – given with HPV (for girls)
  – no interval required between previous tetanus containing vaccine

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Pertussis vaccination

- Pregnant women
  - between 27-36 weeks gestation
  - every pregnancy
  - can be given later or in 1st week post partum (may not be as effective)
  - 91% reduction in disease in first months of life compared with babies whose mothers had not been vaccinated.

**Vaccine from HSE National Cold Chain Service**


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Pertussis vaccination

Cocooning

- for close contacts of infants born before 32 weeks gestation
  - age appropriate vaccinations
  - older adolescents and adults ideally 2 weeks before beginning contact with the infant

*Private administration*

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Pertussis vaccination

- **HCWs** in contact with
  - infants
  - pregnant women
  - immunocompromised

- **WHY**
  - documented pertussis transmission to patients
  - health care workers exposed to pertussis much more frequently than the number of diagnosed cases suggests

Vaccine from HSE National Cold Chain Service

[www.immunisation.ie](http://www.immunisation.ie)
Vaccines available to prevent 25 vaccine preventable diseases

3.7 million deaths prevented from 2000-2015

High vaccine coverage and surveillance essential to prevent outbreaks


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