

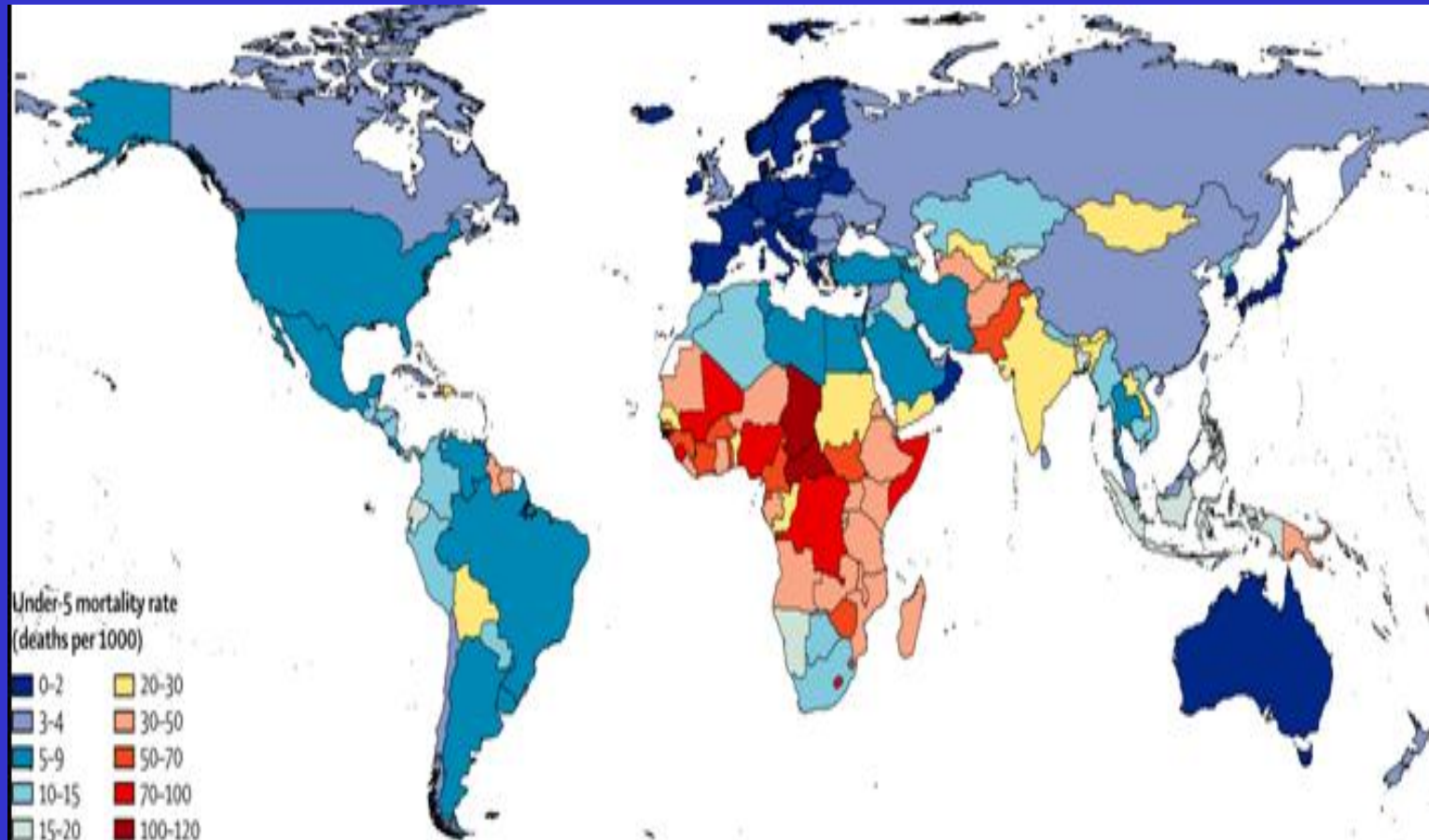
# Global and National Trends in Vaccine Preventable Diseases

Dr Anna Clarke  
National Immunisation Office

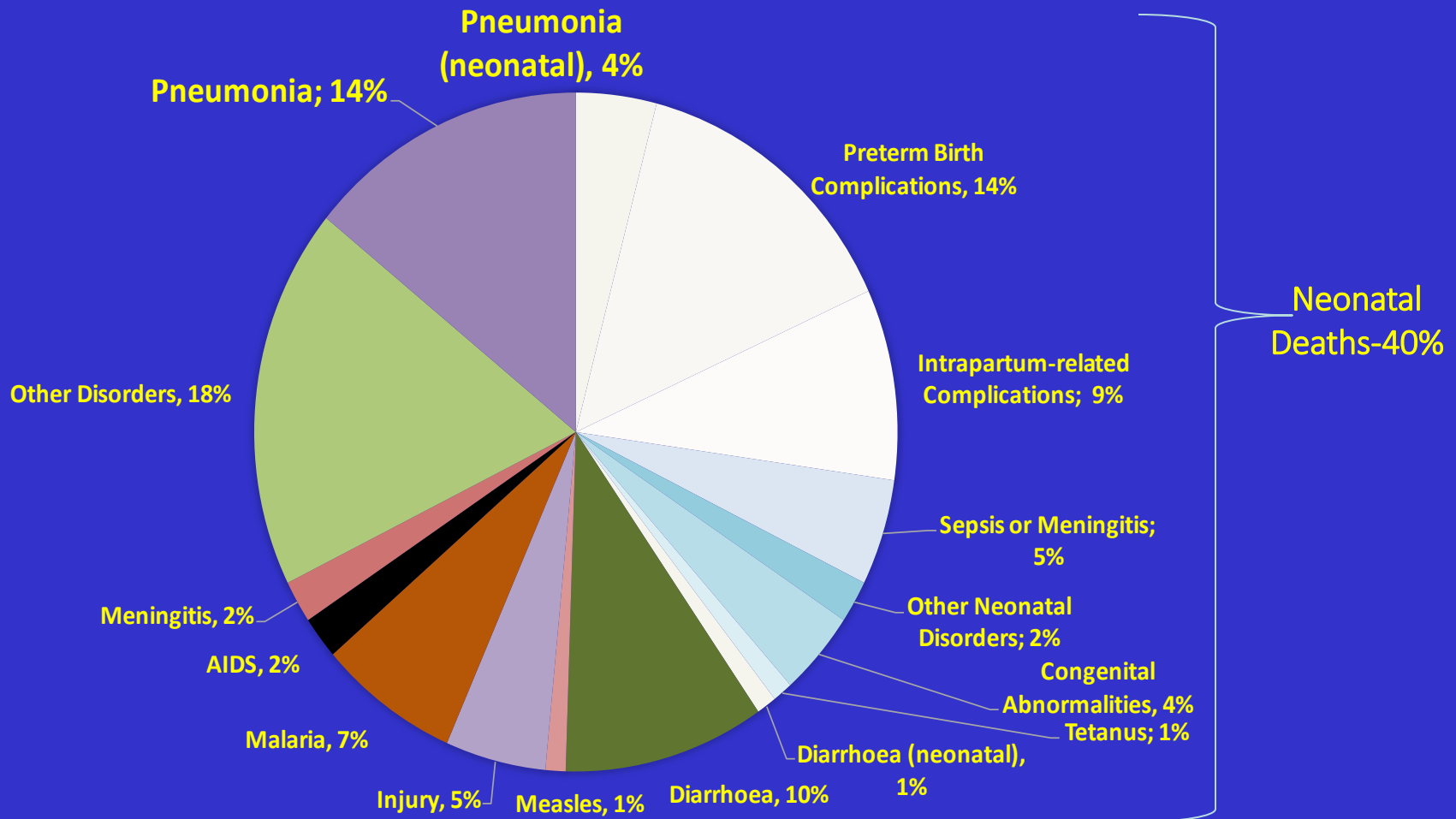


[www.immunisation.ie](http://www.immunisation.ie)

# Under 5's Deaths per 1,000 2013



# Global Deaths, Children <5 Years, 2014 (6.2m)



Adapted from Liu L et al. Lancet. 2012;379:2051-61



# Global Child Mortality

2000- deaths <5 years  
~ 9.6 million



Immunisation  
Clean Water and Sanitation  
Better hygiene  
Education



2014- deaths <5 years  
~ 6.2 million  
(despite increase in number of  
children born)



Adapted from [www.immunisation.ie](http://www.immunisation.ie)




























Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive

# Global picture

## 25 vaccine preventable diseases

TABLE 1: VACCINE-PREVENTABLE INFECTIOUS AGENTS OR DISEASES

 Anthrax	 Measles	 Rubella	 Cholera	 Meningococcal Disease
 Influenza	 Diphtheria	 Mumps	 Tetanus	 Hepatitis A
 Pertussis	 Tuberculosis	 Hepatitis B	 Pneumococcal disease	 Typhoid fever
 Hepatitis E	 Poliomyelitis	 Tick-borne encephalitis	 Haemophilus influenzae type b	 Rabies
 Varicella and herpes zoster (shingles)	 Human papilloma-virus	 Rotavirus gastroenteritis	 Yellow fever	 Japanese encephalitis

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



# Pneumococcal disease - global

- Major cause of morbidity and mortality

2005

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



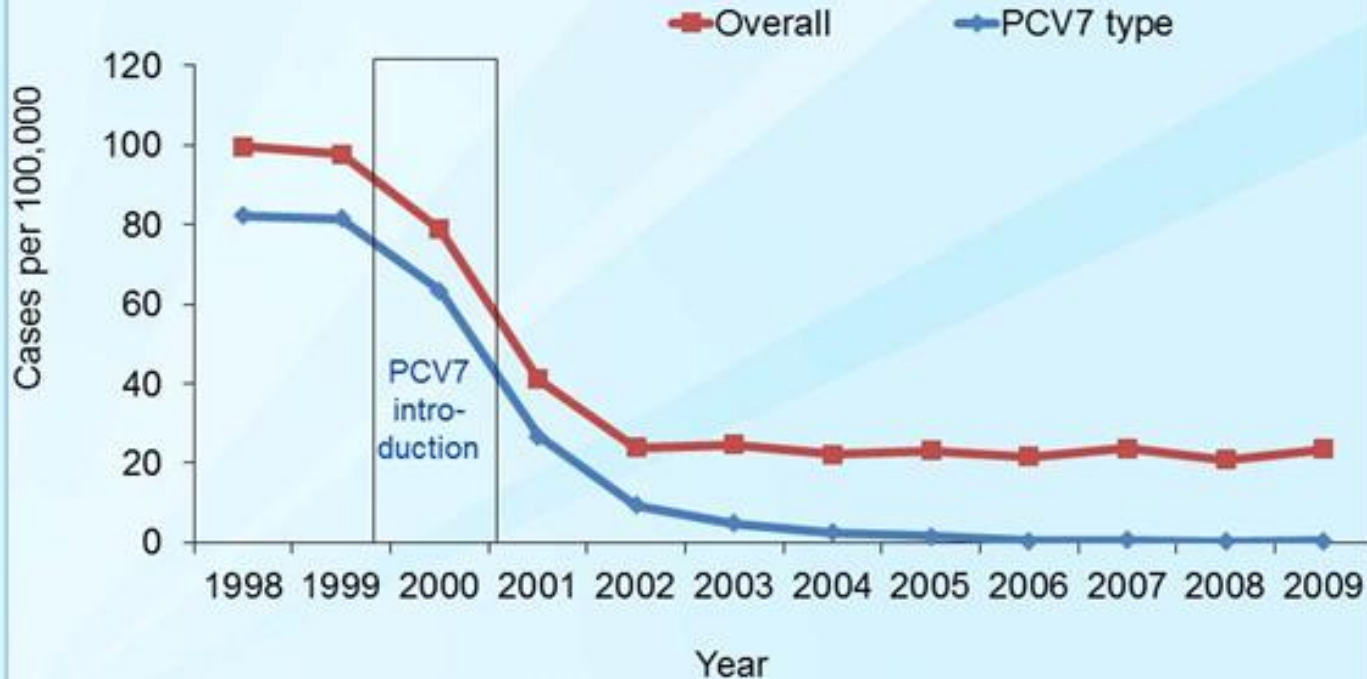
2010 PCV in immunisation schedules

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



# Pneumococcal disease USA

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

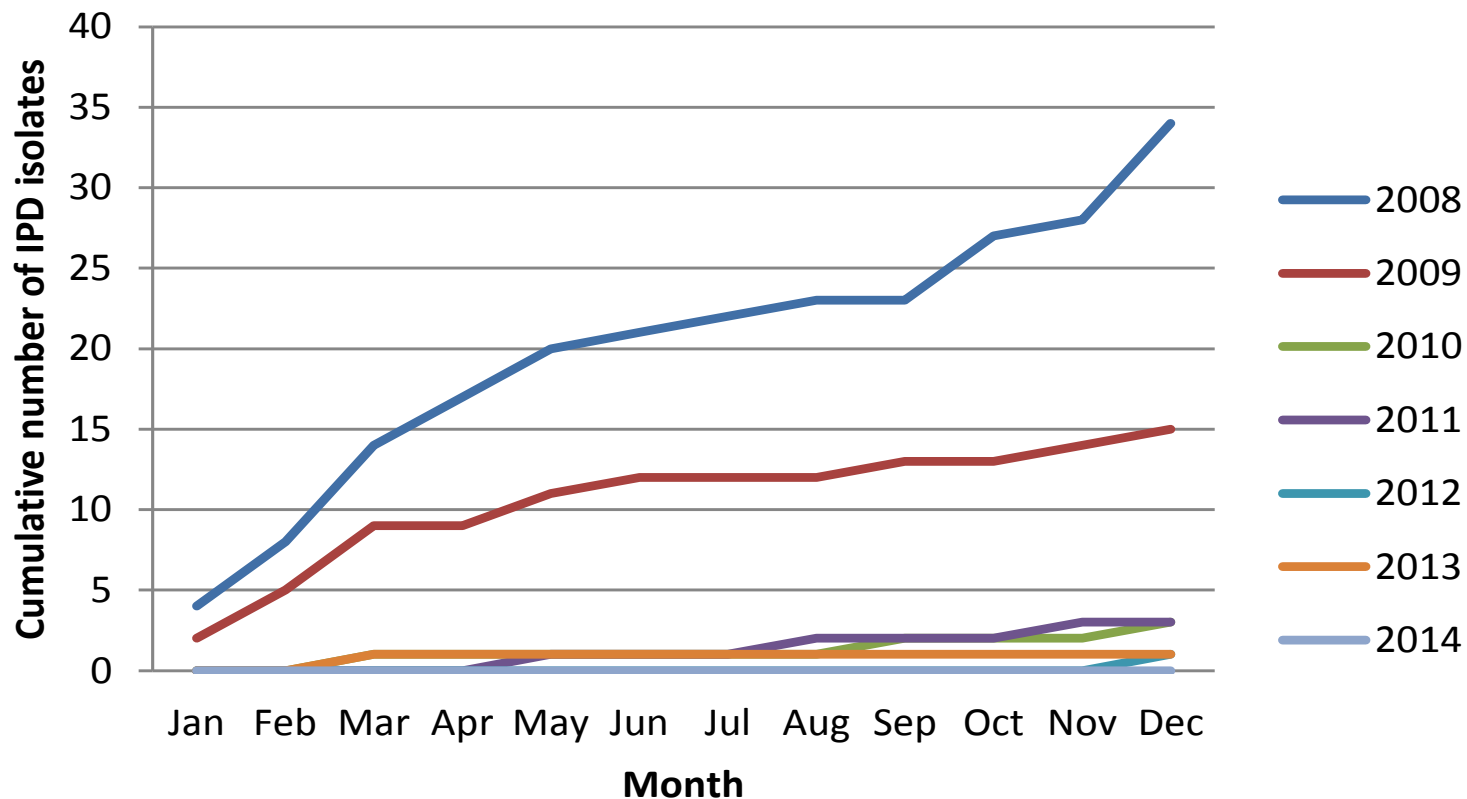


Moore, IDSA, 2009 & CDC Unpublished



# Pneumococcal disease Ireland

Impact of PCV on the burden of IPD caused by PCV7 vaccine serotypes in <2 year olds



100% reduction in IPD cases, comparing Jan-Dec 2014 with the same period in 2008

Data source: IPD Typing Project

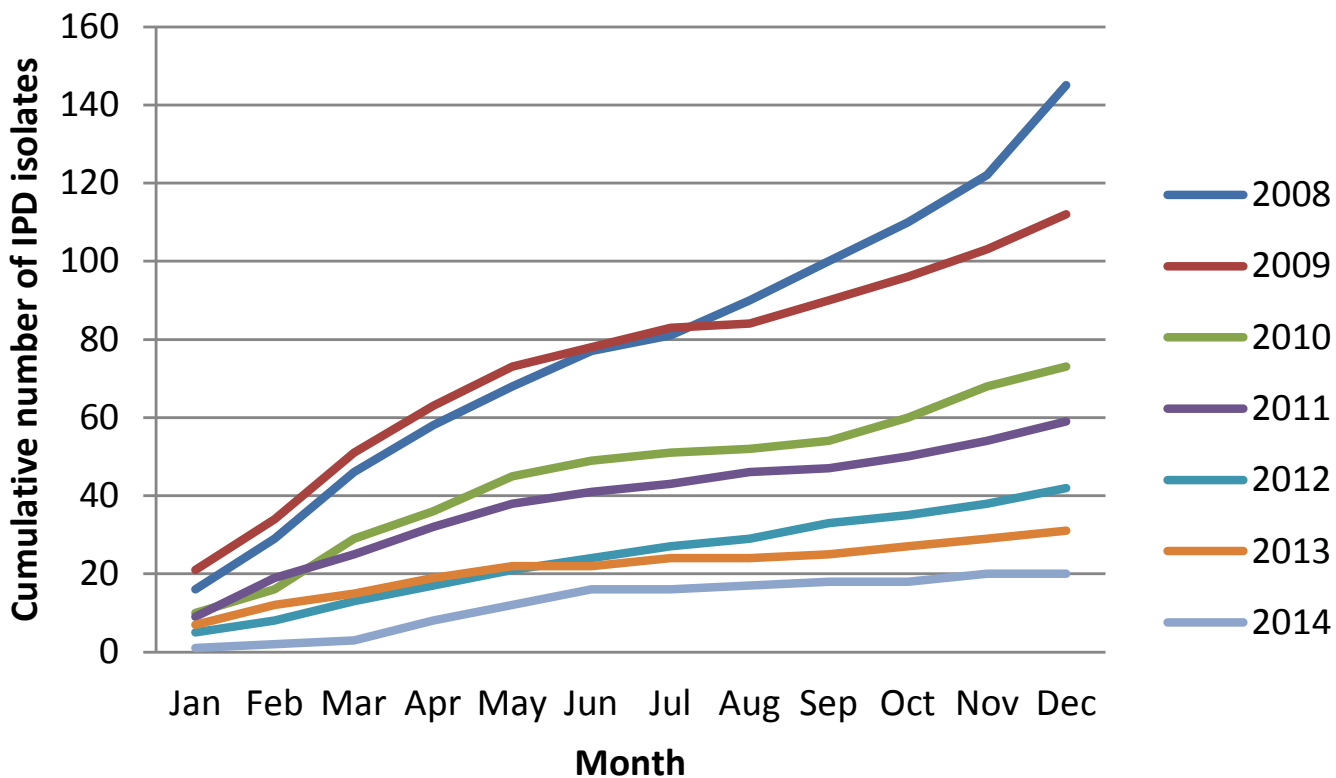
[www.immunisation.ie](http://www.immunisation.ie)





# Pneumococcal disease Ireland

Impact of PCV on the burden of IPD caused by PCV7 vaccine serotypes in  $\geq 2$  year olds



88% reduction in IPD cases, comparing Jan-Dec 2014 with the same period in 2008

Data source: IPD Typing Project

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





# Diphtheria

Globally each year

- ~7500 cases
- 5-10% fatal



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

# 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



# Measles USA 2015

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

AFP

## LIFE & HEALTH

### US measles outbreak linked to low vaccine rate – study

A measles outbreak in the United States that began at a Disney theme park in California was able to spread because not enough children are being vaccinated, a study finds

Agence France-Presse

Published 1:39 PM, Mar 17, 2015  
Updated 1:39 PM, Mar 17, 2015

People visit Disneyland on January 22, 2015 in Anaheim, California. File photo by Frederic J. Brown/AFP



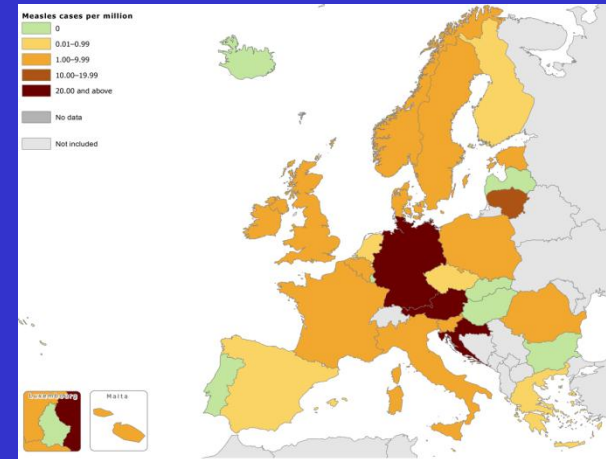
# Measles Europe

## EU 2015

- 3969 cases reported
- 30 countries
- Germany, France, Italy and Austria
- Majority of cases not vaccinated (75%)
- 1 death and 6 cases of encephalitis

## 2016

- UK outbreak in London March-Apr
- Romania 130+ cases this year



EU Measles notification rate  
1 March 2015 – 29 Feb 2016

EveningStandard. News Football Going Out Lifestyle Showbiz Homes & Property

News & Health  
**Outbreak of measles declared in London after spate of cases**

ROSS LYOMALL | Friday 29 April 2016 | 2 comments

f t e

29<sup>th</sup> April  
2016

An outbreak of measles has been declared in London

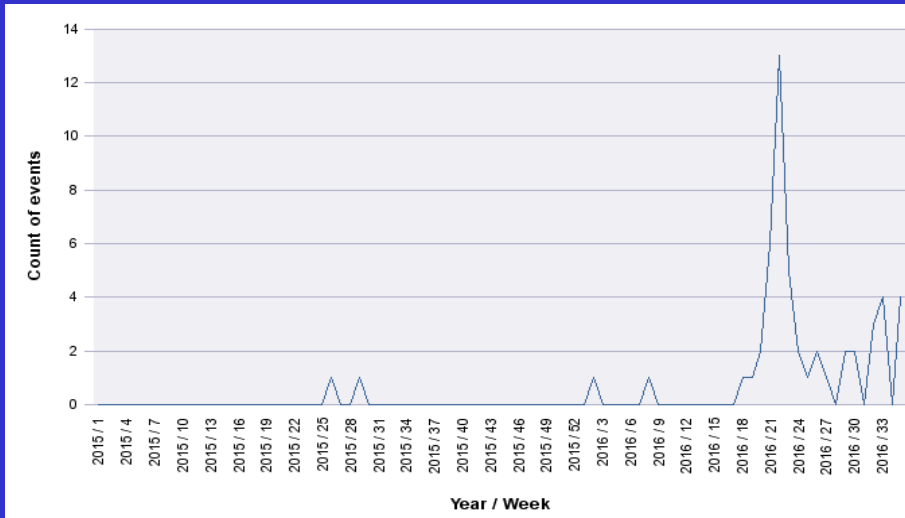
ES

0:00 / 0:43





# Measles - Ireland



49 cases to date in 2016



Source: HPSC

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



# Pertussis - global

Every year

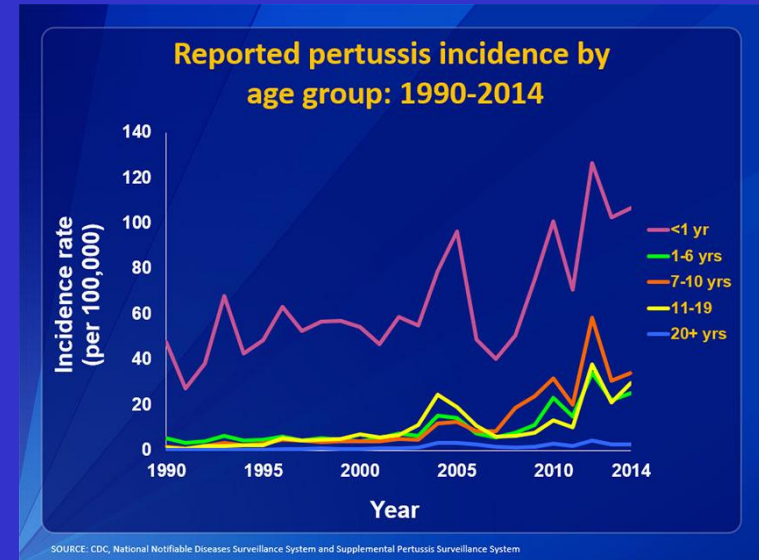
- 16 million pertussis cases
- 195,000 pertussis deaths in children
  - Most in unvaccinated or incompletely vaccinated young infants.
- Recent increases in many developed countries
  - Australia 2009-2011
  - US 2010 – 2012
  - UK 2011- 2012
  - New Zealand 2012 - 2013

*Why killer  
infection  
whooping  
cough  
is back*



# Pertussis

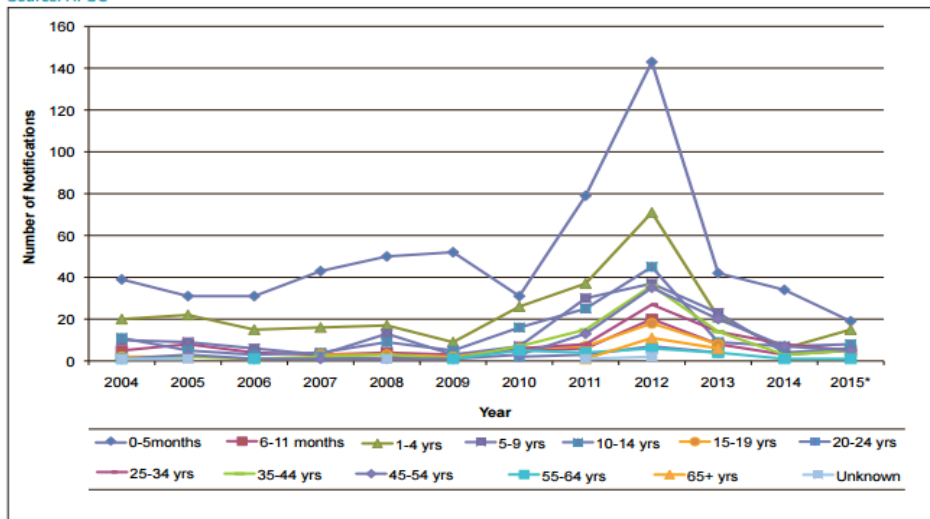
- Cough lasting at least 2 weeks
- No other cause
- +
- Paroxysms of coughing  
or
- Inspiratory 'whoop'  
or
- Vomiting post cough



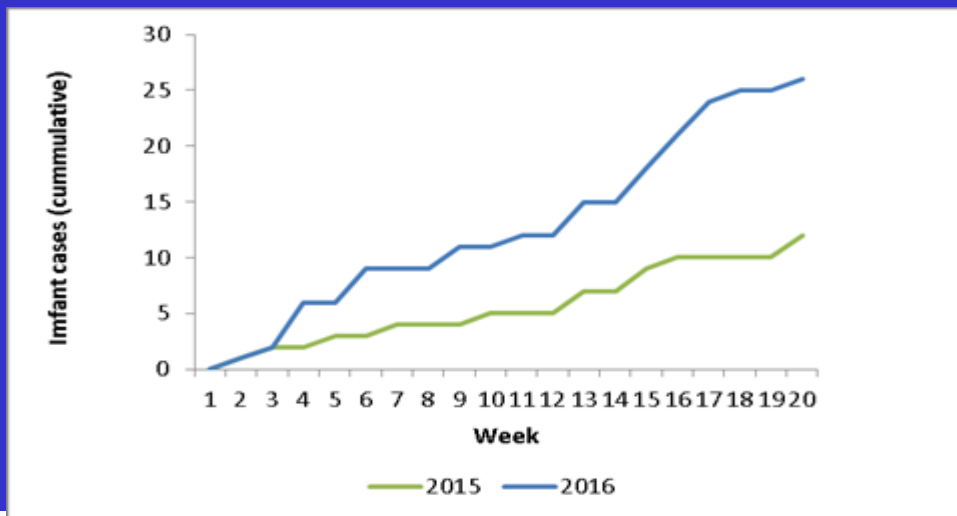


# Number of notifications 1999- 2015

Source: HPSC



## No. of cases in under 6 month age group



# Pertussis Ireland

## 2012

- Most < 5 years of age
- 48% unvaccinated

## 2016

- 133 cases to date
- HSE East (70)
- 31 cases under 6 months
- Majority Mothers unvaccinated



Source: HPSC

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

# Pertussis vaccination

## Age appropriate vaccination

- 2,4, 6 months (6 in 1)
- Junior infants (4 in 1)
- 1<sup>st</sup> year (Tdap)
  - given with HPV (for girls)
  - no interval required between previous tetanus containing vaccine

### Immunisation Schedule

for children born on or after 1st July 2015

AGE	WHERE	VACCINATION
At birth	HSE clinic or maternity hospital	BCG 1 INJECTION
2 months	GP surgery Visit 1	6 in 1 + PCV 2 INJECTIONS
4 months	GP surgery Visit 2	6 in 1 + MenC 2 INJECTIONS
6 months	GP surgery Visit 3	6 in 1 + PCV 2 INJECTIONS
18 months	GP surgery Visit 4	MMR + PCV 2 INJECTIONS
5 years	GP surgery Visit 5	MenC + Hib 2 INJECTIONS

Appointment for your child's next visit?

Next Appointment

www.immunisation.ie

## Tdap vaccine

Information for parents of children in First Year of second level school.

### 4-in-1 & MMR vaccines

Information for parents of children in Junior Infants

www.immunisation.ie

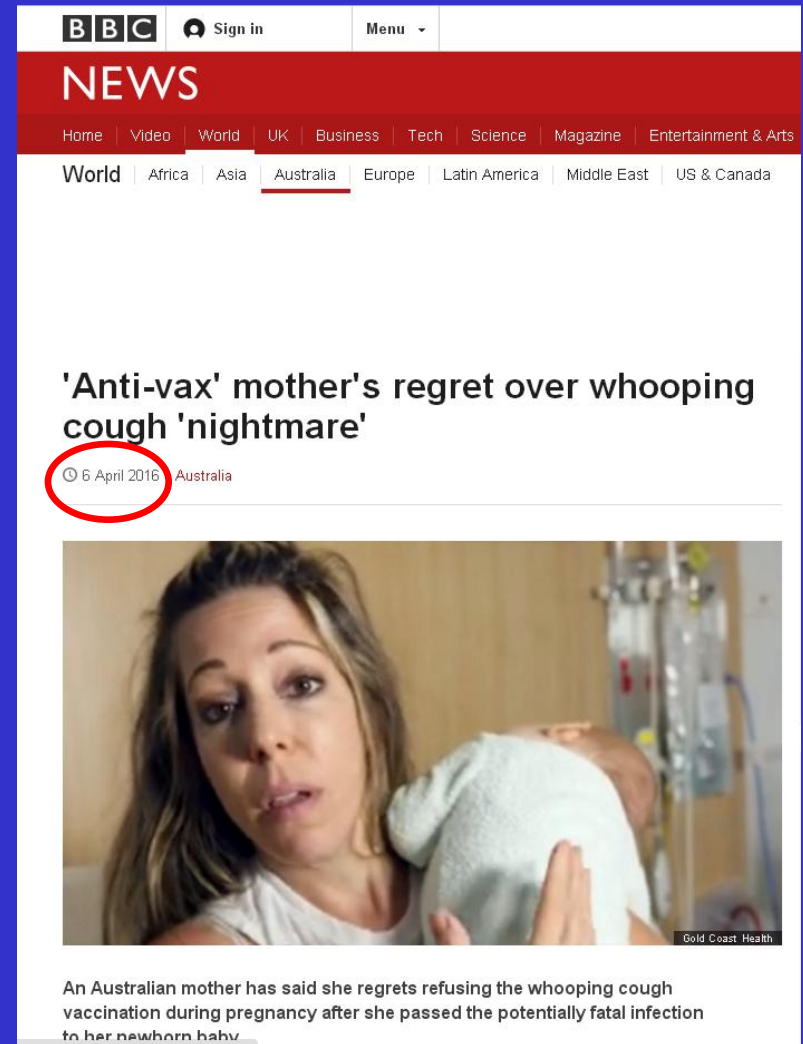





# Pertussis vaccination

- **Pregnant women**
  - between 27-36 weeks gestation
  - every pregnancy
  - can be given later or in 1<sup>st</sup> 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***



The image shows a screenshot of a BBC News article. The page header includes the BBC logo, a 'Sign in' button, and a 'Menu' dropdown. The main navigation bar lists categories: Home, Video, World, UK, Business, Tech, Science, Magazine, and Entertainment & Arts. Below this, a secondary navigation bar lists regional categories: World, Africa, Asia, Australia (highlighted with a red underline), Europe, Latin America, Middle East, and US & Canada. The article title is "'Anti-vax' mother's regret over whooping cough 'nightmare'", and the date is "6 April 2016" (circled in red) with "Australia" as the location. The article features a photograph of a woman holding a baby in a hospital setting, with a "Gold Coast Health" watermark. The text below the photo reads: "An Australian mother has said she regrets refusing the whooping cough vaccination during pregnancy after she passed the potentially fatal infection to her newborn baby."

<http://www.bbc.com/news/world-australia-35975011>

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



# 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



# 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



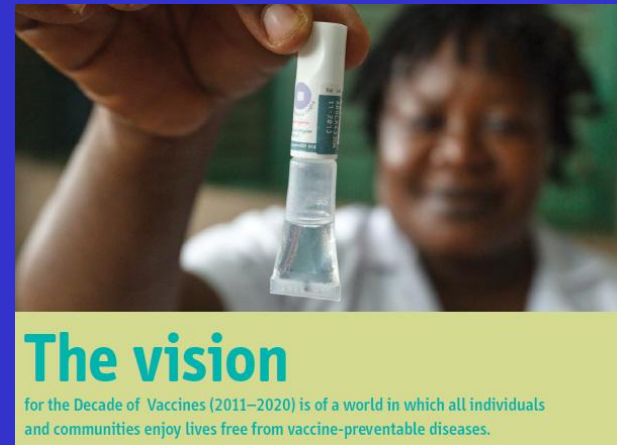
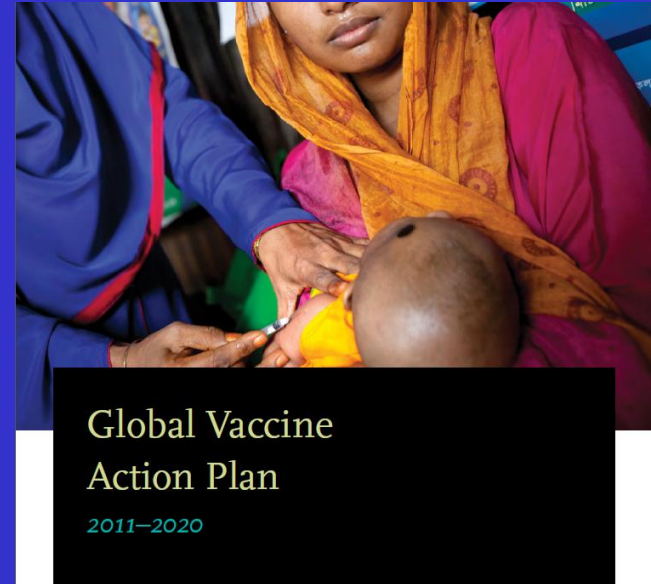
***Vaccine from HSE National  
Cold Chain Service***

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



# Summary

- ✓ Vaccines available to prevent 25 vaccine preventable diseases
- ✓ 2 million deaths prevented from 2000-2010
- ✓ High vaccine coverage and surveillance essential to prevent outbreaks



[http://www.who.int/immunization/global\\_vaccine\\_action\\_plan/GVAP\\_doc\\_2011\\_2020/en](http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en)



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



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