

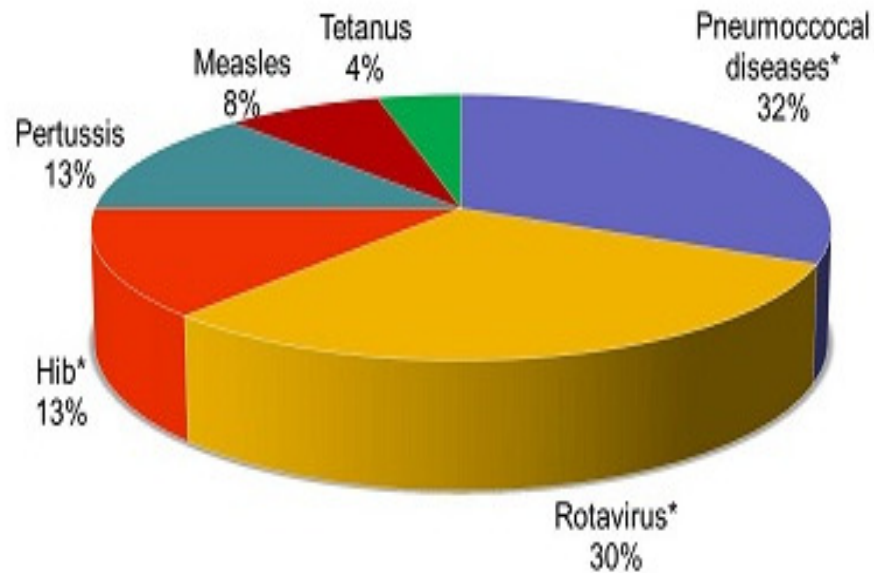
Global and National Trends in Vaccine Preventable Diseases

Dr Anna Clarke
National Immunisation Office



www.immunisation.ie

Global mortality 2008 Children under 5 years of age



1.5 million deaths
due to vaccine preventable
diseases

17% of global total mortality in
children under 5 years of age



www.immunisation.ie

Global picture

Annual number of deaths in children <5 years
~ 9.6 million in 2000



Immunisation
+
Clean water and sanitation
Better hygiene
Education






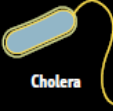





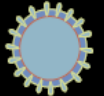















7.6 million in 2010
(despite an increase in the number of children born each year)



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



Reidhmeannacht na Seirbhíse Sláimie
Health Service Executive

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

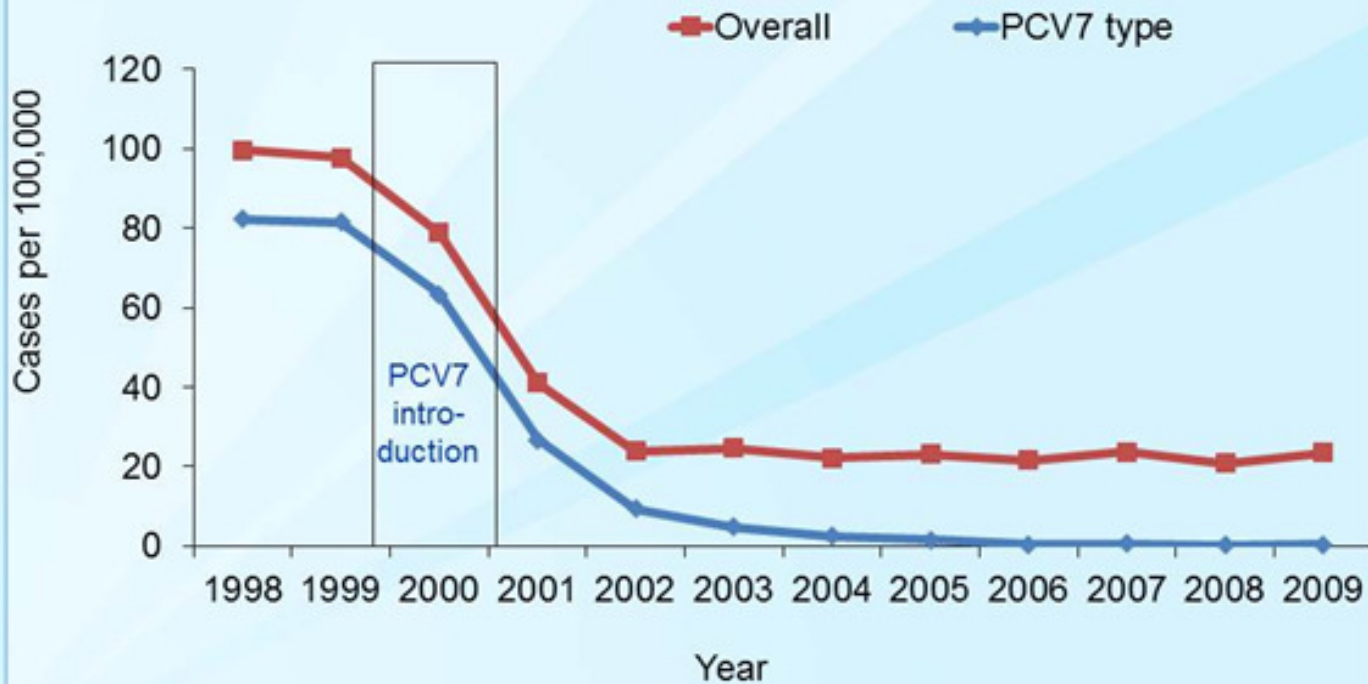
- 87% birth cohort in high income countries
- 2% birth cohort in low income countries



www.immunisation.ie

Pneumococcal disease USA

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



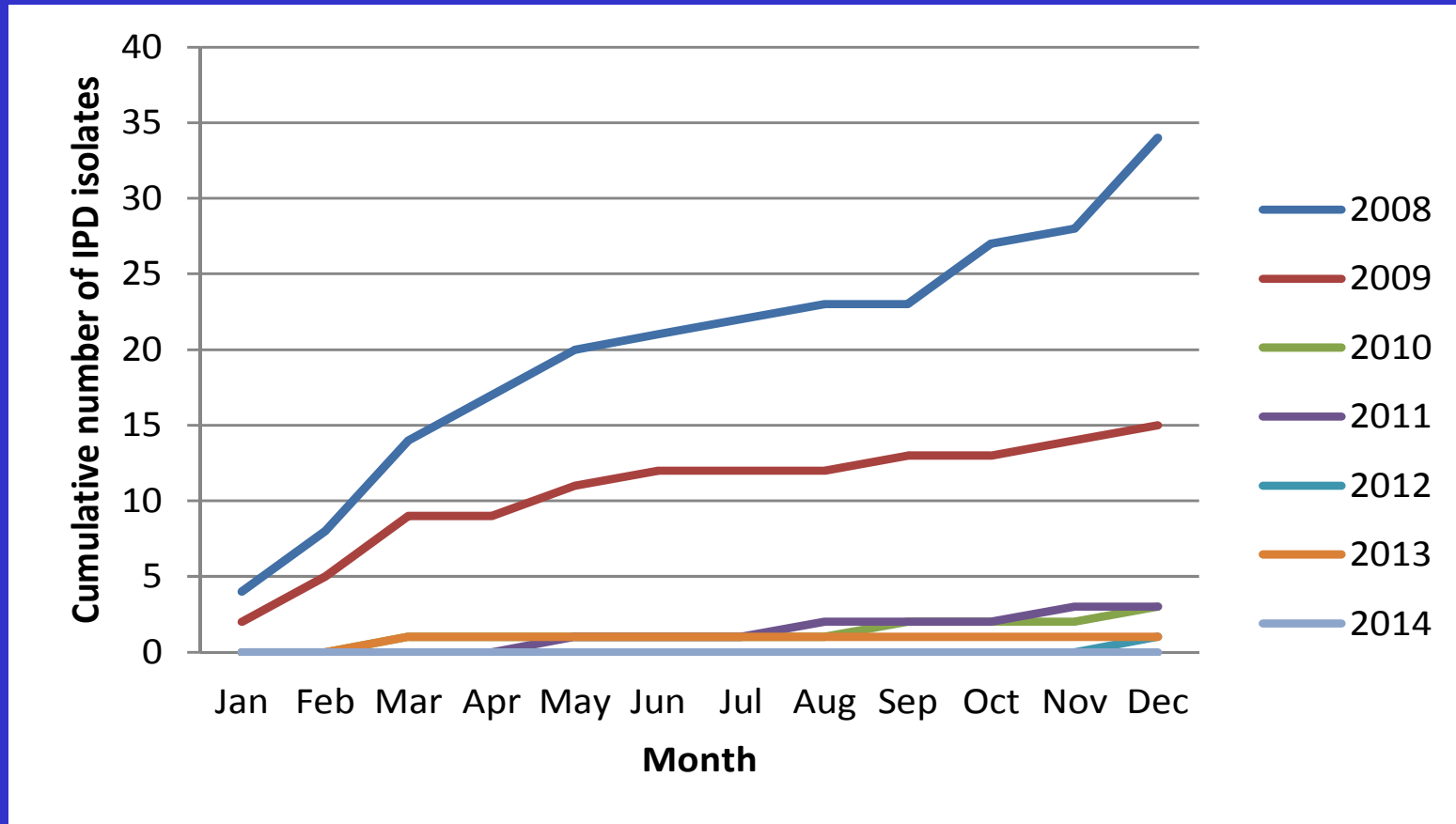
Moore, IDSA, 2009 & CDC Unpublished



www.immunisation.ie

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

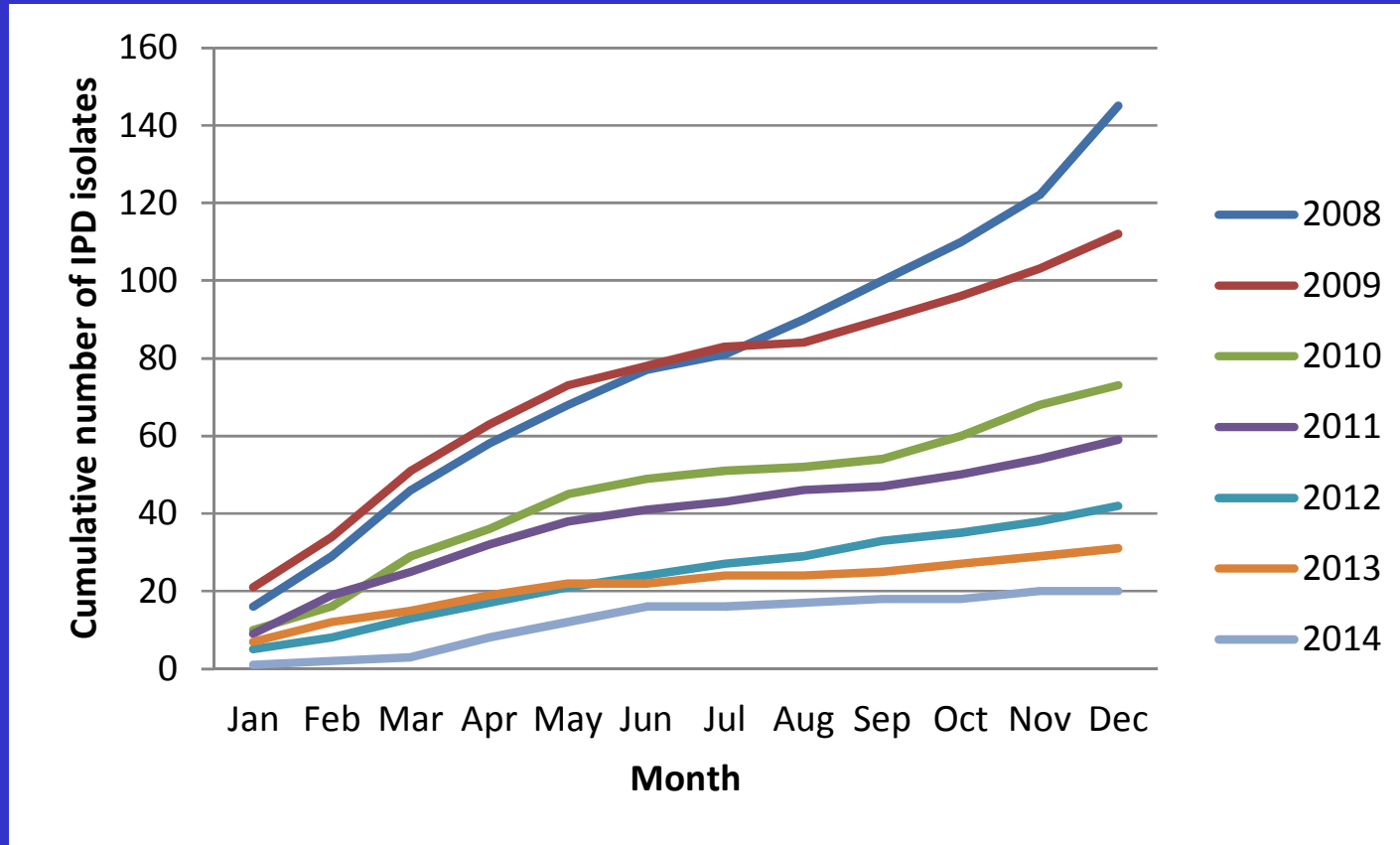
Data source: IPD Typing Project

www.immunisation.ie



Pneumococcal disease Ireland

Impact of PCV on the burden of IPD caused by PCV7 vaccine serotypes in ≥ 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





Diphtheria

Globally each year

- ~7500 cases
- 5-10% fatal



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



www.immunisation.ie



Measles Europe

EU 2015

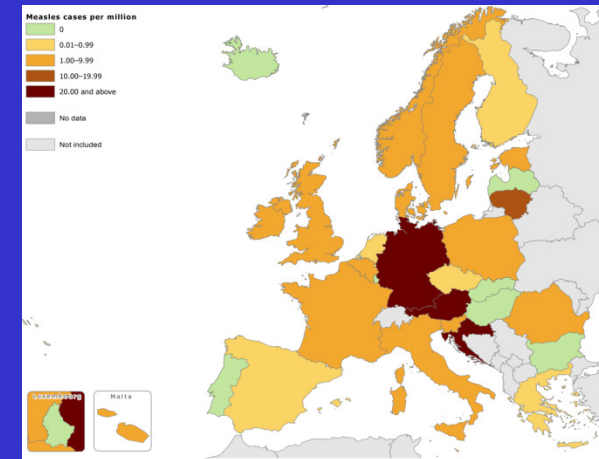
- 3969 cases reported
- 30 countries
- Germany, France, Italy and Austria
- Majority of cases not vaccinated (75%)
- 1 death and 6 cases of encephalitis

2016

418 by end March 2016

- UK 76 cases in London in last 2 months

Romania 130 cases this year



EU Measles notification rate
1 March 2015 – 29 Feb 2016

29th April

2016

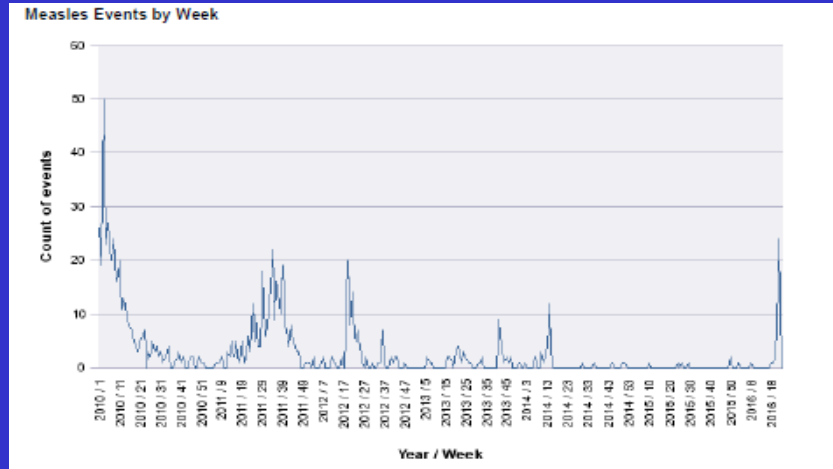


www.immunisation.ie

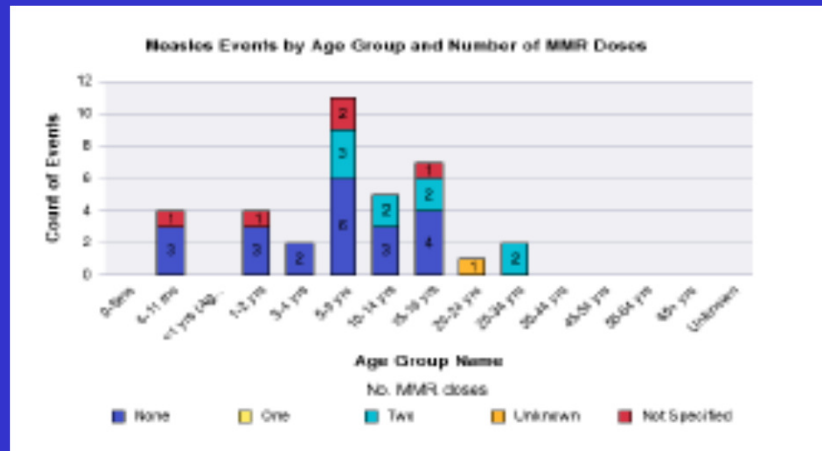


Reidhmeannacht na Seirbhíse Sláimie
Health Service Executive

Measles - Ireland



36 cases to date in 2016



Source: HPSC

www.immunisation.ie



Pertussis - global

Every year

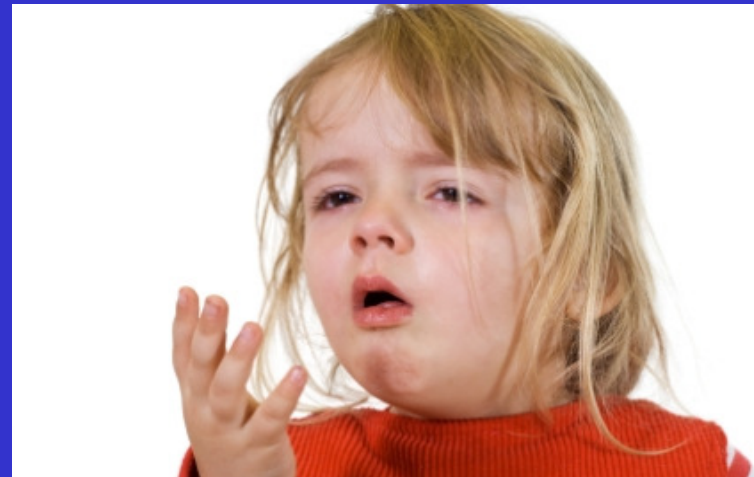
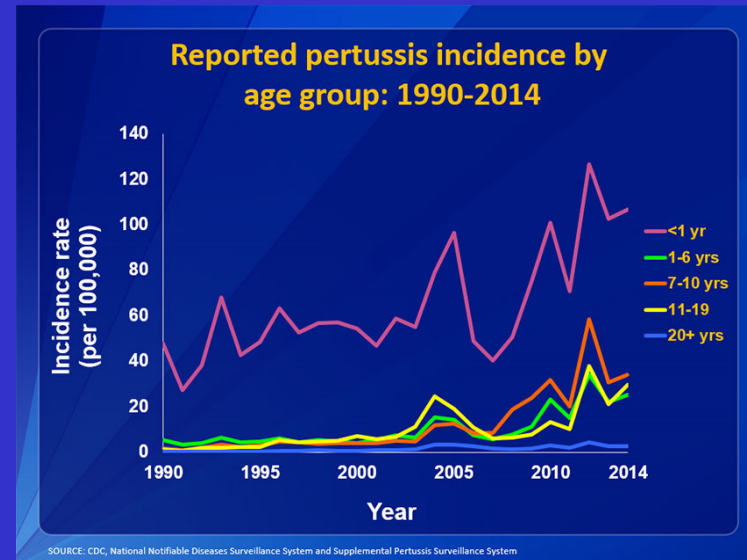
- 16 million pertussis cases
- 195,000 pertussis deaths in children
 - Most in unvaccinated or incompletely vaccinated young infants.
- Recent increases in many developed countries
 - Australia 2009-2011
 - US 2010 – 2012
 - UK 2011- 2012
 - New Zealand 2012 - 2013

*Why killer
infection
whooping
cough
is back*

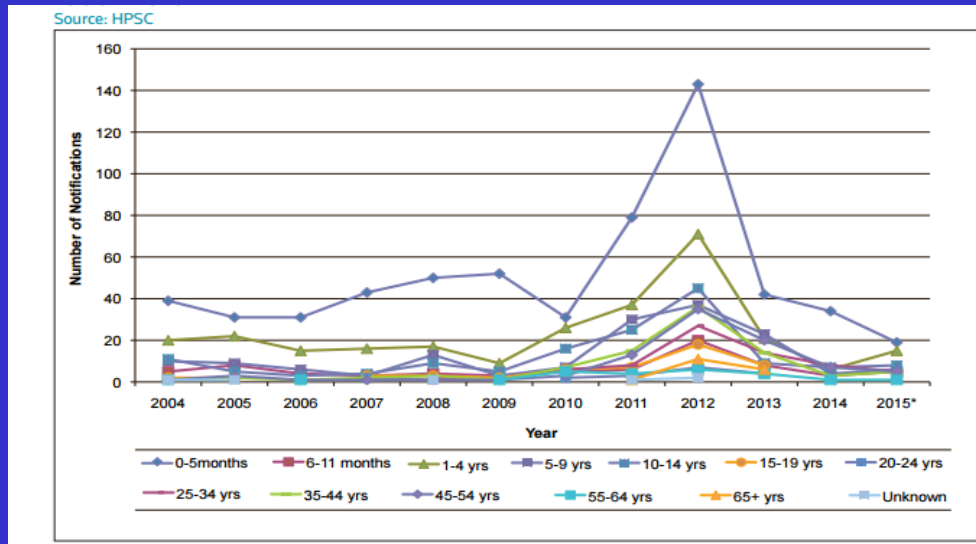


Pertussis

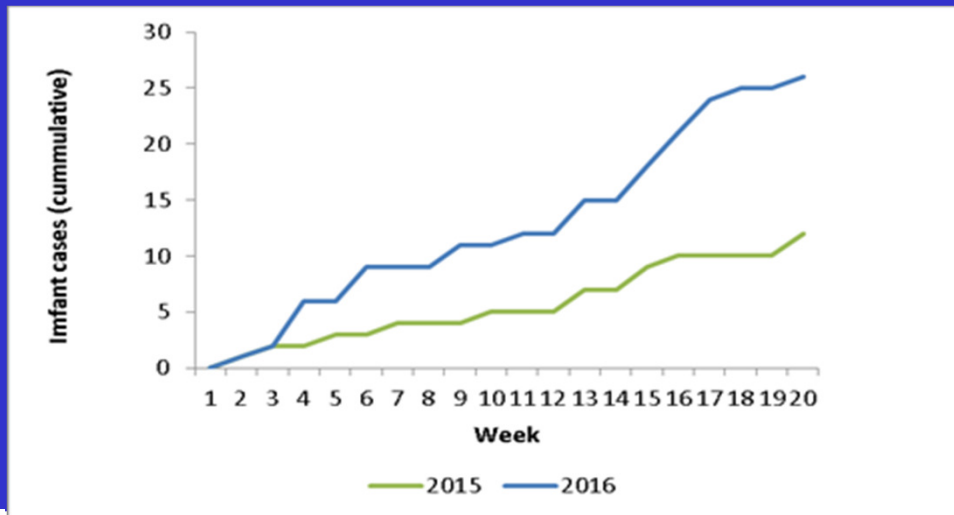
- Cough lasting at least 2 weeks
- No other cause
- +
- Paroxysms of coughing or
- Inspiratory 'whoop' or
- Vomiting post cough



Number of notifications 1999- 2015



No. of cases in under 6 month age group



Pertussis Ireland

2012

- Most < 5 years of age
- 48% unvaccinated

2016

- 63 cases to date
- HSE East
- 16 cases under 6 months
- Majority Mothers unvaccinated



Source: HPSC

www.immunisation.ie

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

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.



PROTECT HEALTH IMMUNISE

HSE
HeALTH SERVICE EXECUTIVE

4-in-1 & MMR vaccines

Information for parents of children in Junior Infants



www.immunisation.ie



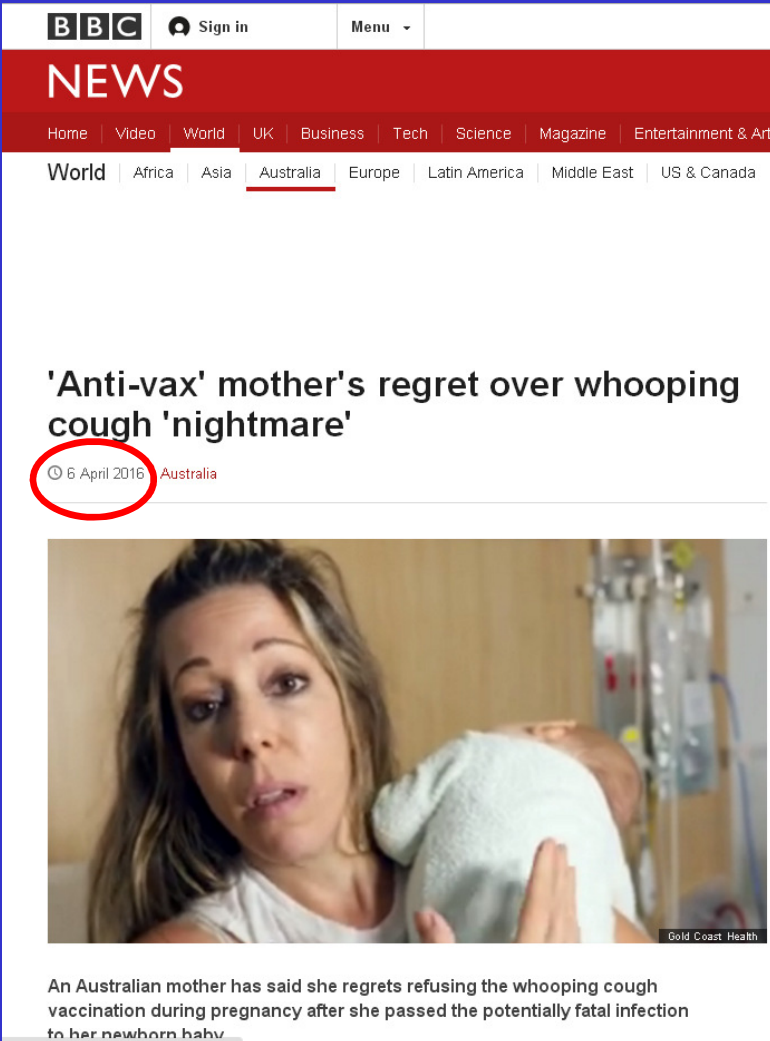
www.immunisation.ie



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***



The screenshot shows a BBC News article. The top navigation bar includes 'BBC', 'Sign in', and 'Menu'. Below this is a red 'NEWS' header with a navigation menu: 'Home', 'Video', 'World', 'UK', 'Business', 'Tech', 'Science', 'Magazine', and 'Entertainment & Arts'. Underneath, there's a sub-menu for 'World' with links to 'Africa', 'Asia', 'Australia', 'Europe', 'Latin America', 'Middle East', and 'US & Canada'. The article title is "'Anti-vax' mother's regret over whooping cough 'nightmare'", with the date '6 April 2016' and 'Australia' circled in red. Below the title is a video thumbnail showing a woman holding a baby in a hospital setting. The caption 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



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



www.immunisation.ie

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



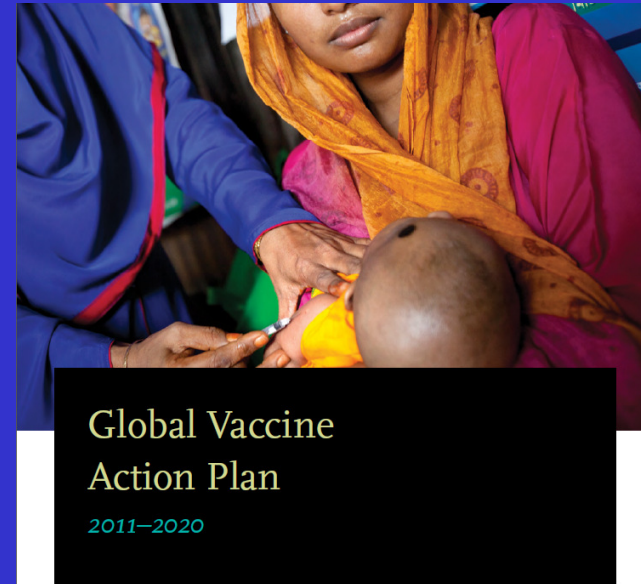
***Vaccine from HSE National
Cold Chain Service***



www.immunisation.ie

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



www.immunisation.ie



Reidhmeannacht na Seirbhíse Sláimie
Health Service Executive