

Global and National Trends in Vaccine Preventable Diseases

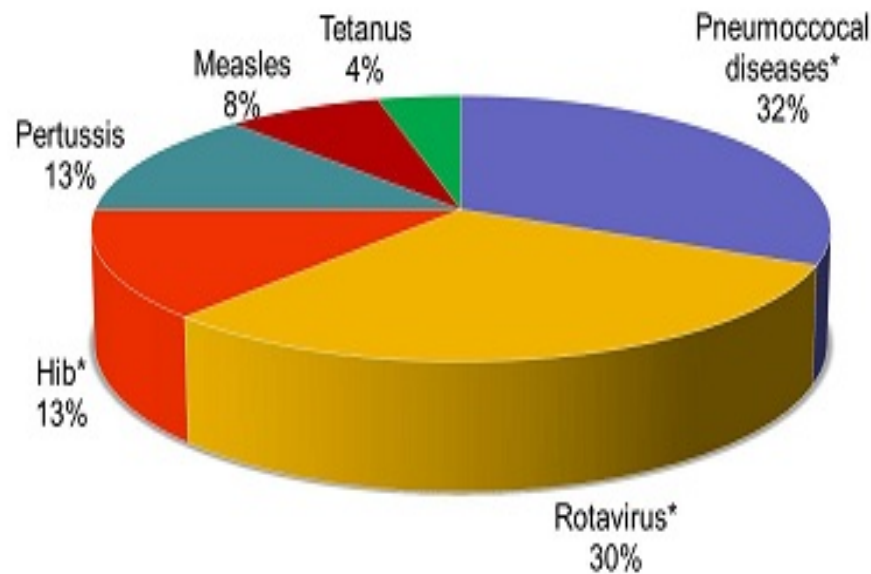
Dr Brenda Corcoran
National Immunisation Office



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



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)




























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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

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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

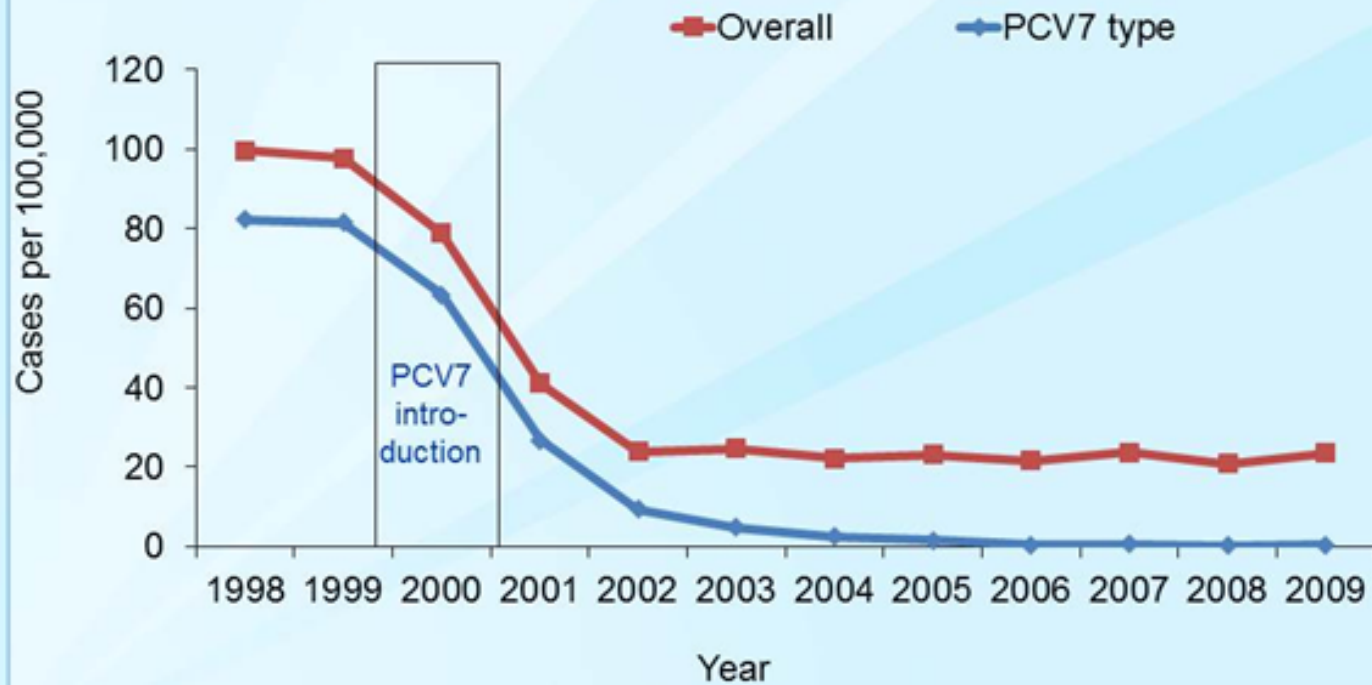
- 87% birth cohort in high income countries
- 2% birth cohort in low income countries



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Pneumococcal disease USA

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



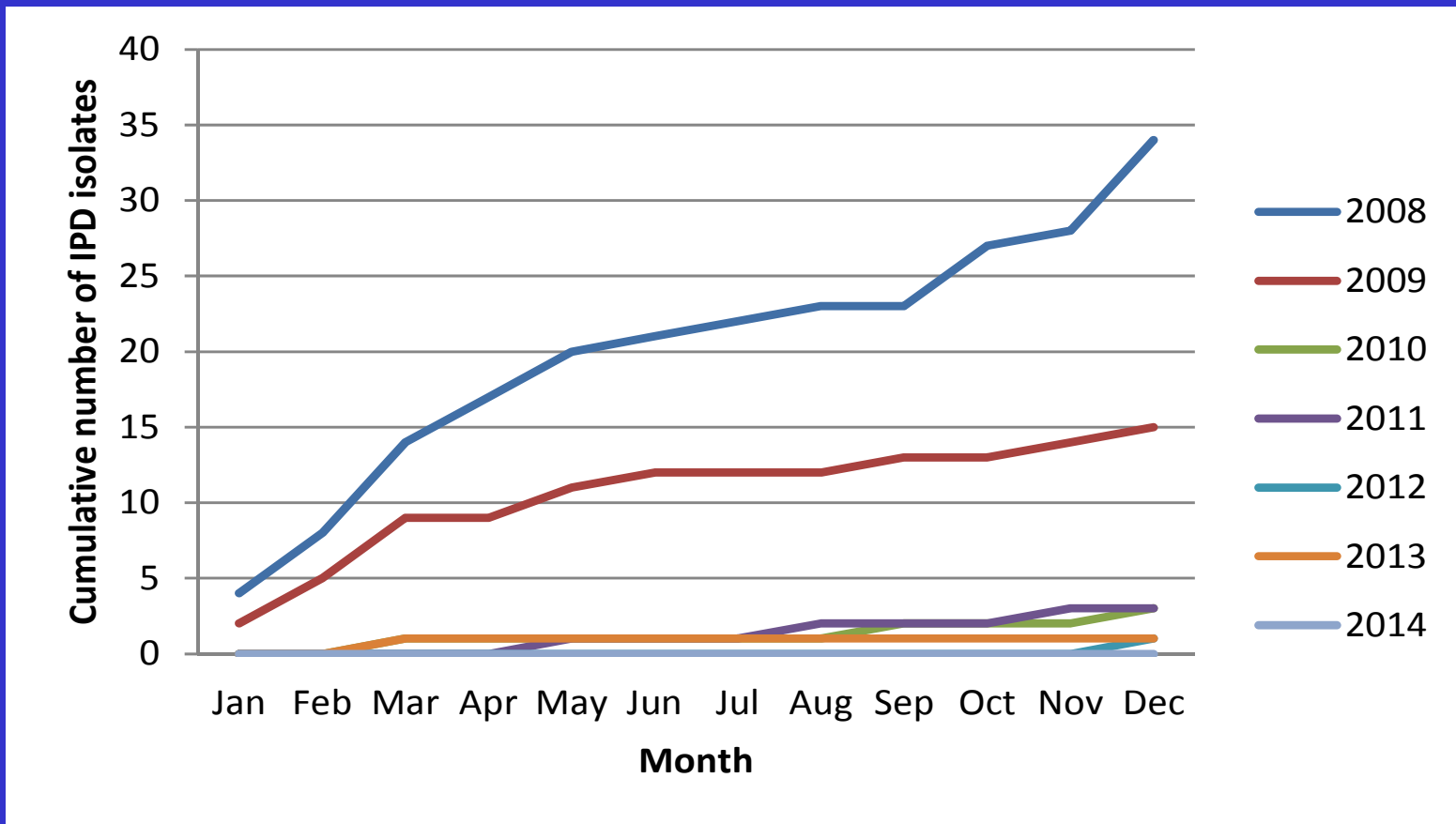
Moore, IDSA, 2009 & CDC Unpublished



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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

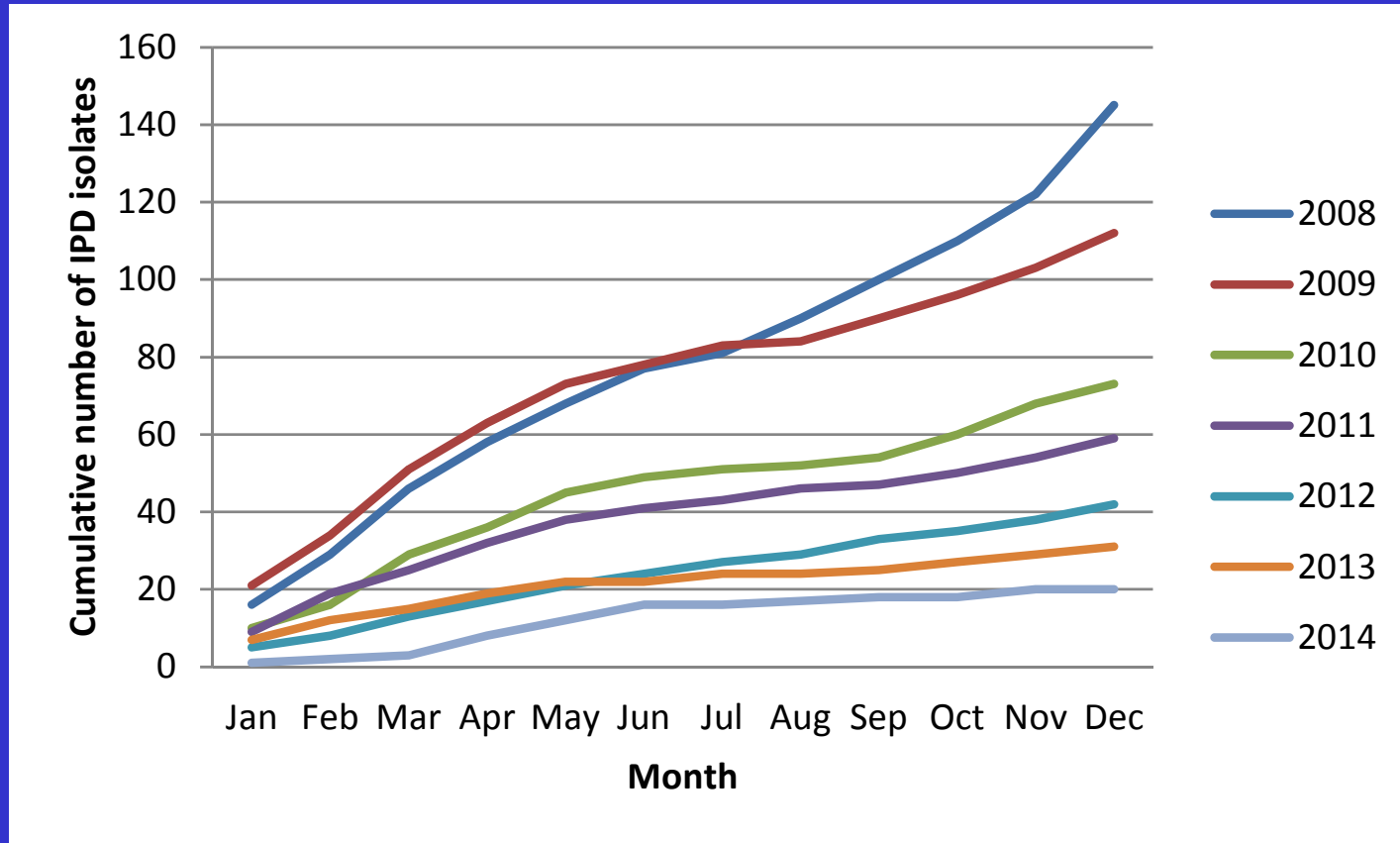
Data source: IPD Typing Project

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Pneumococcal disease Ireland

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



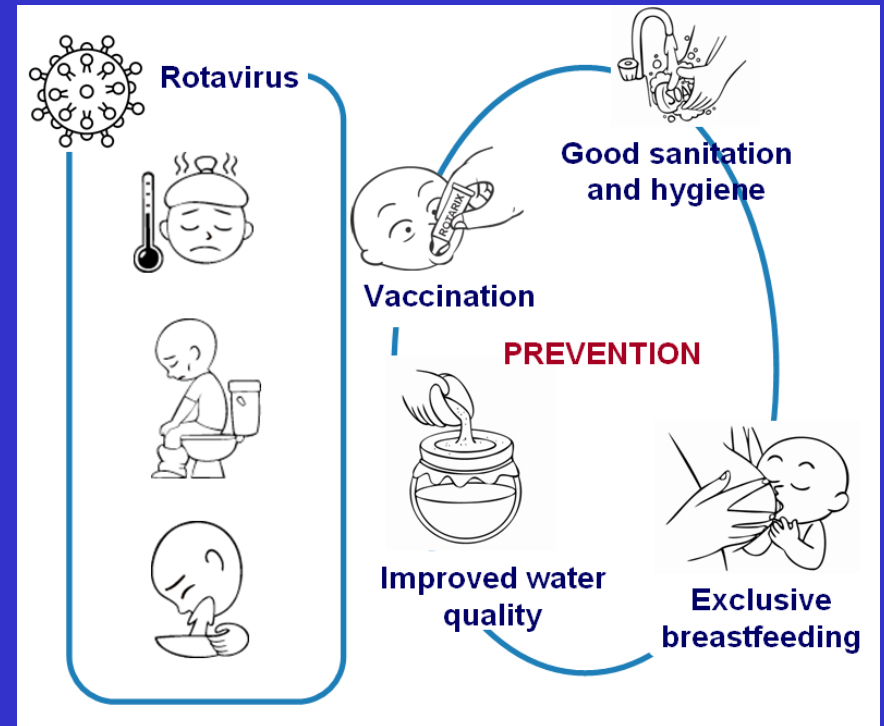
88% reduction in IPD cases, comparing Jan-Dec 2014 with the same period in 2008
Data source: IPD Typing Project

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Rotavirus - global

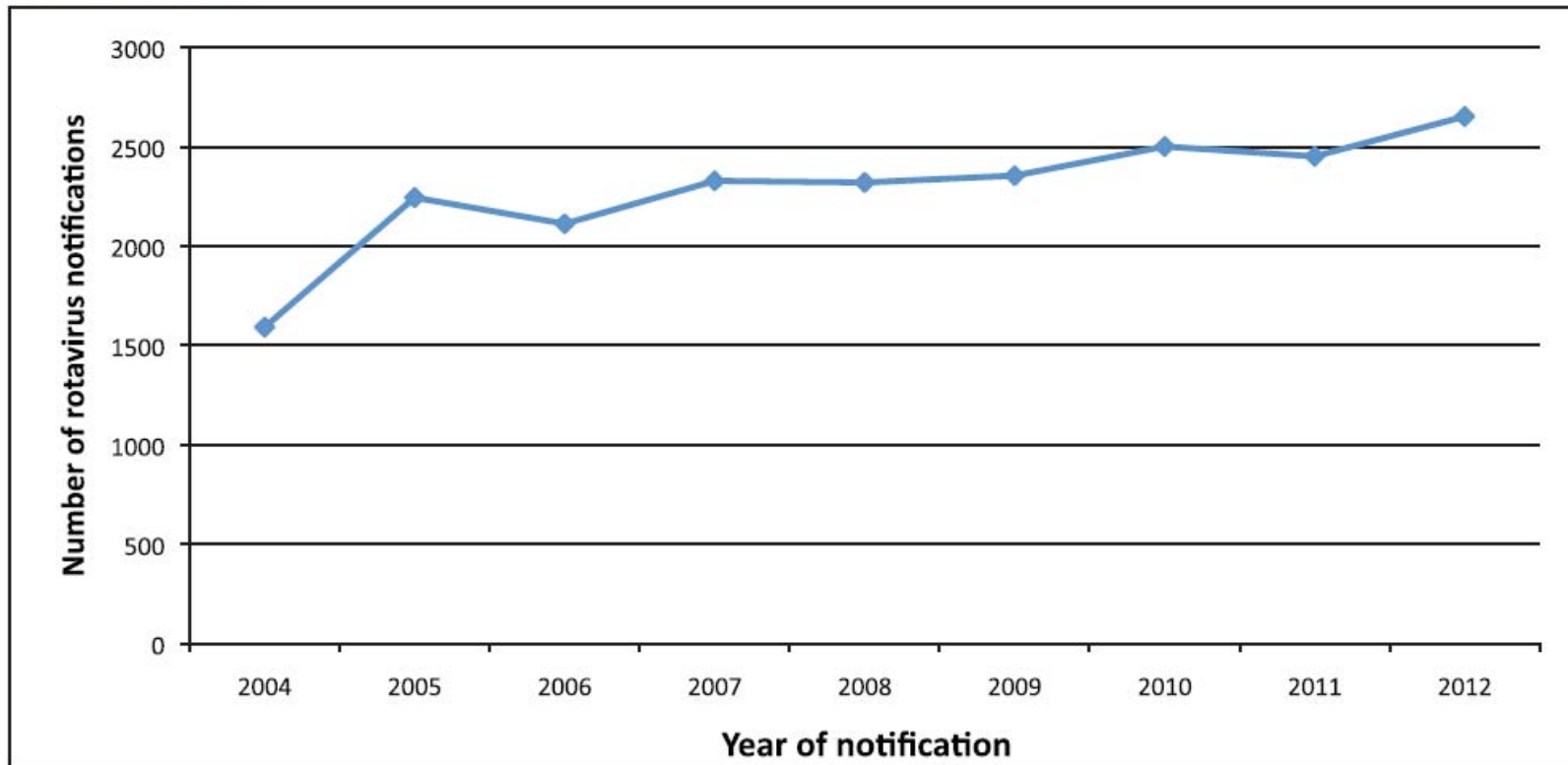
- Over 500,000 deaths /year
 - 85% in low income countries
- Over 2 million children hospitalised with dehydration
- 36% hospitalisations for diarrhoea in children <5 years



Rotavirus - Ireland

Figure 19.1. Number of cases of rotavirus by year, 2004 to 2012

(Source:HPSC)

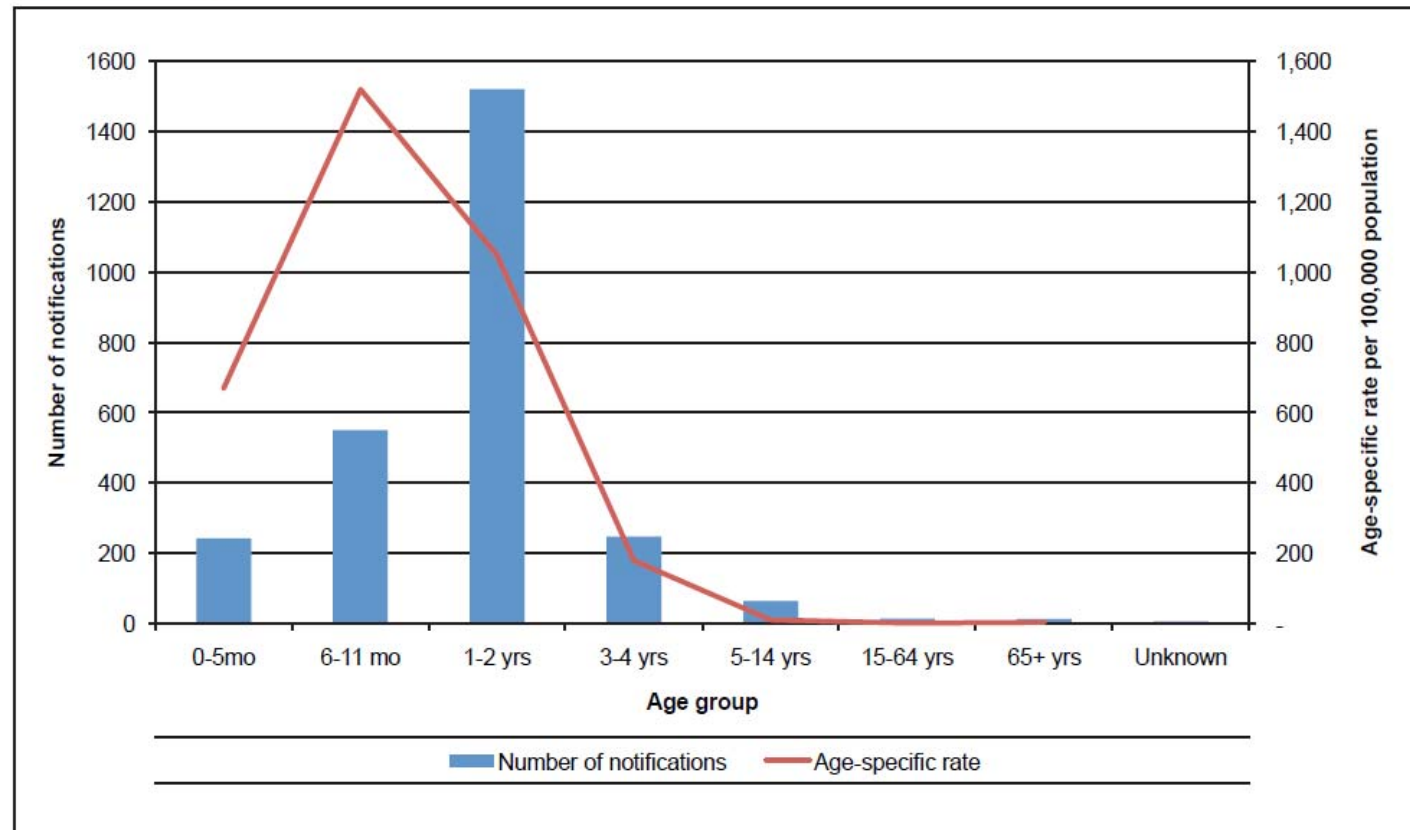


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Rotavirus - Ireland

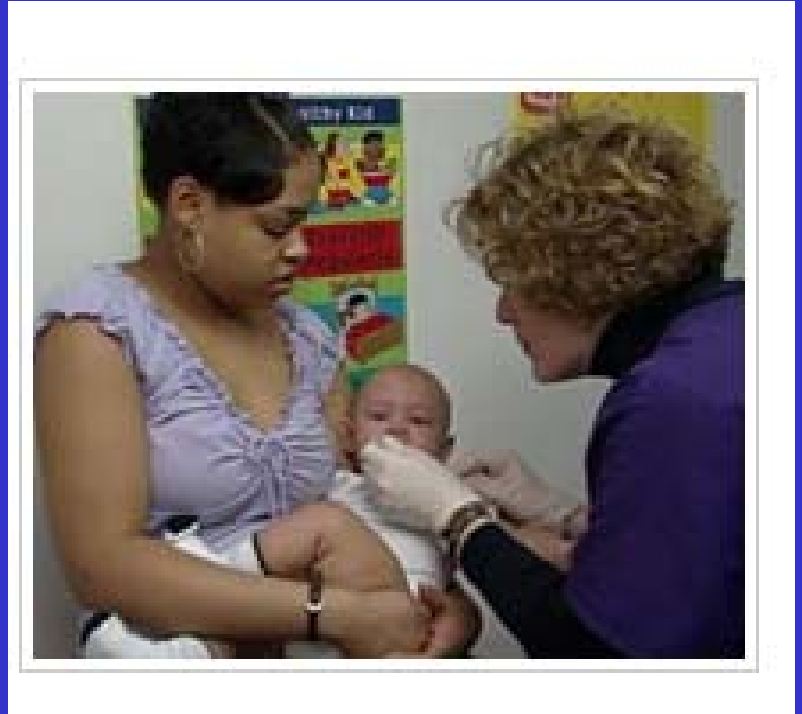
Figure 19.2. Number of Rotavirus Cases and Age specific rate by age group 2012

(Source:HPSC)



Rotavirus vaccine

- Recommended by WHO
- Implemented in USA, UK + 11 other EU countries
- Recommended by NIAC
- Live oral vaccine
- 2-3 doses at 2,4 or 2,4, 6 months
- Can be given at same time as other vaccines
- All doses by 8 months of age
- Small increase in intussusception (benefits >>>risks)
- Recent European study
 - vaccine effectiveness 68% to 98%
 - 65% to 84% reduction in rotavirus hospitalisations



Measles - global

2000-2013

Vaccination

- led to 75% drop in deaths
- prevented 15.6 million deaths

2013

- 146,000 deaths
- 16 deaths every hour
- 95% in low income countries



Measles USA

Measles Cases and Outbreaks

January 1 to September 18, 2015*

189

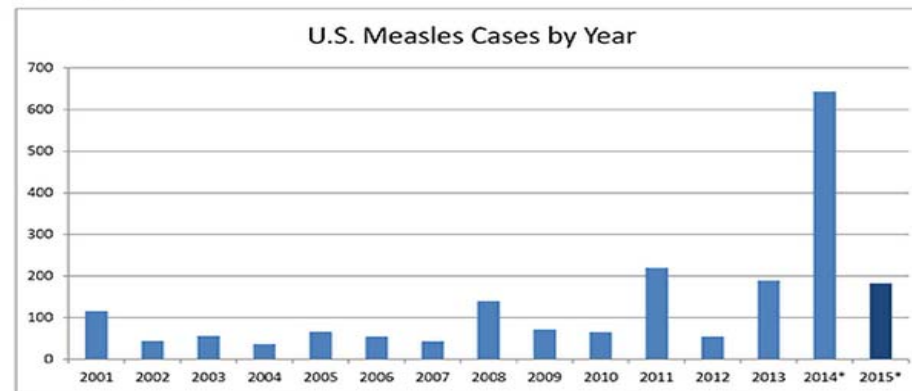
Cases

reported in 24 states and the District of Columbia: Alaska, Arizona, California, Colorado, Delaware, Florida, Georgia, Illinois, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, Nevada, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Utah, Virginia, Washington

5

Outbreaks

representing 80% of reported cases this year



*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases



Majority unvaccinated and many imported



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Reithmeannach na Seirbhíse Sláimé
Health Service Executive

Measles USA 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



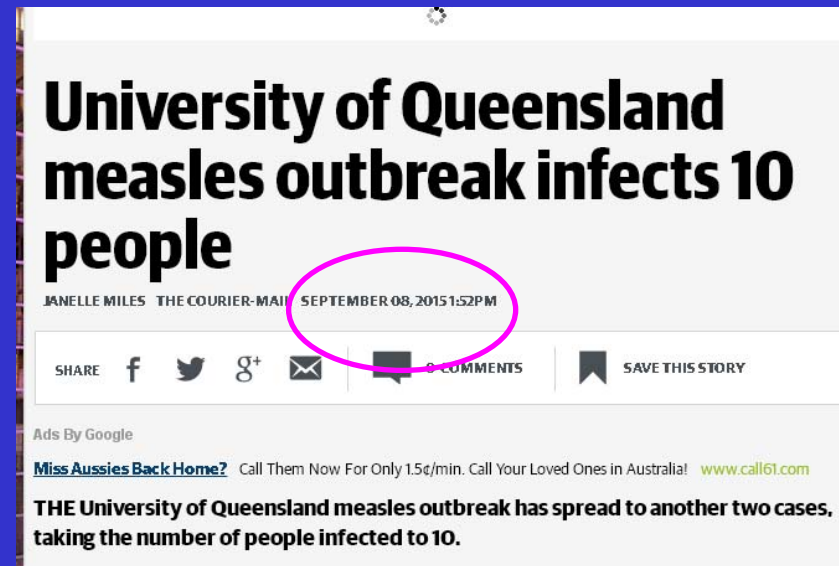
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Measles EU

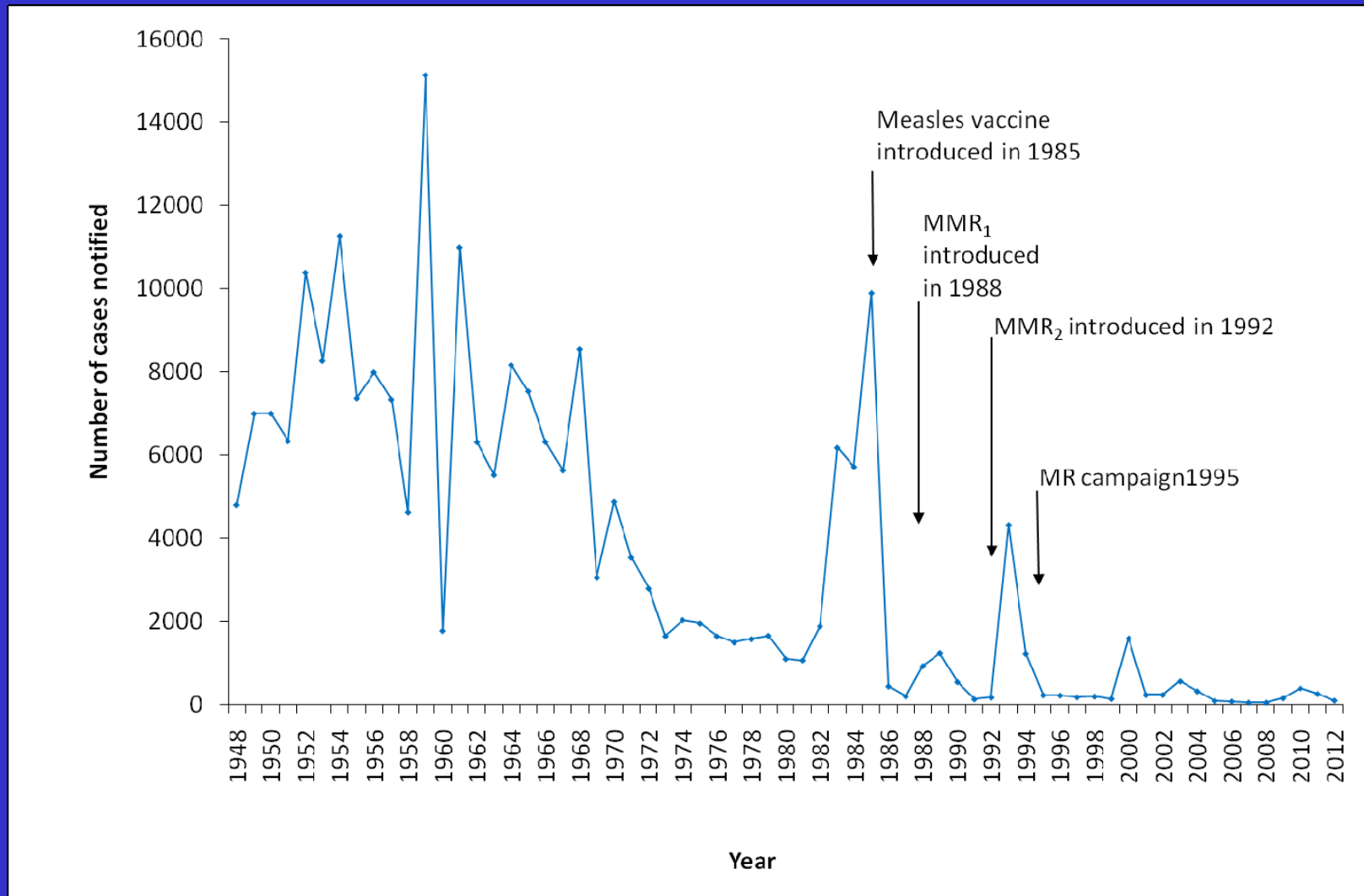
August 2014 – July 2015

- 4352 cases reported
- 30 countries
- Germany, France, Italy and Austria
- Majority of cases not vaccinated (75%)
- 1 death and 9 cases of encephalitis



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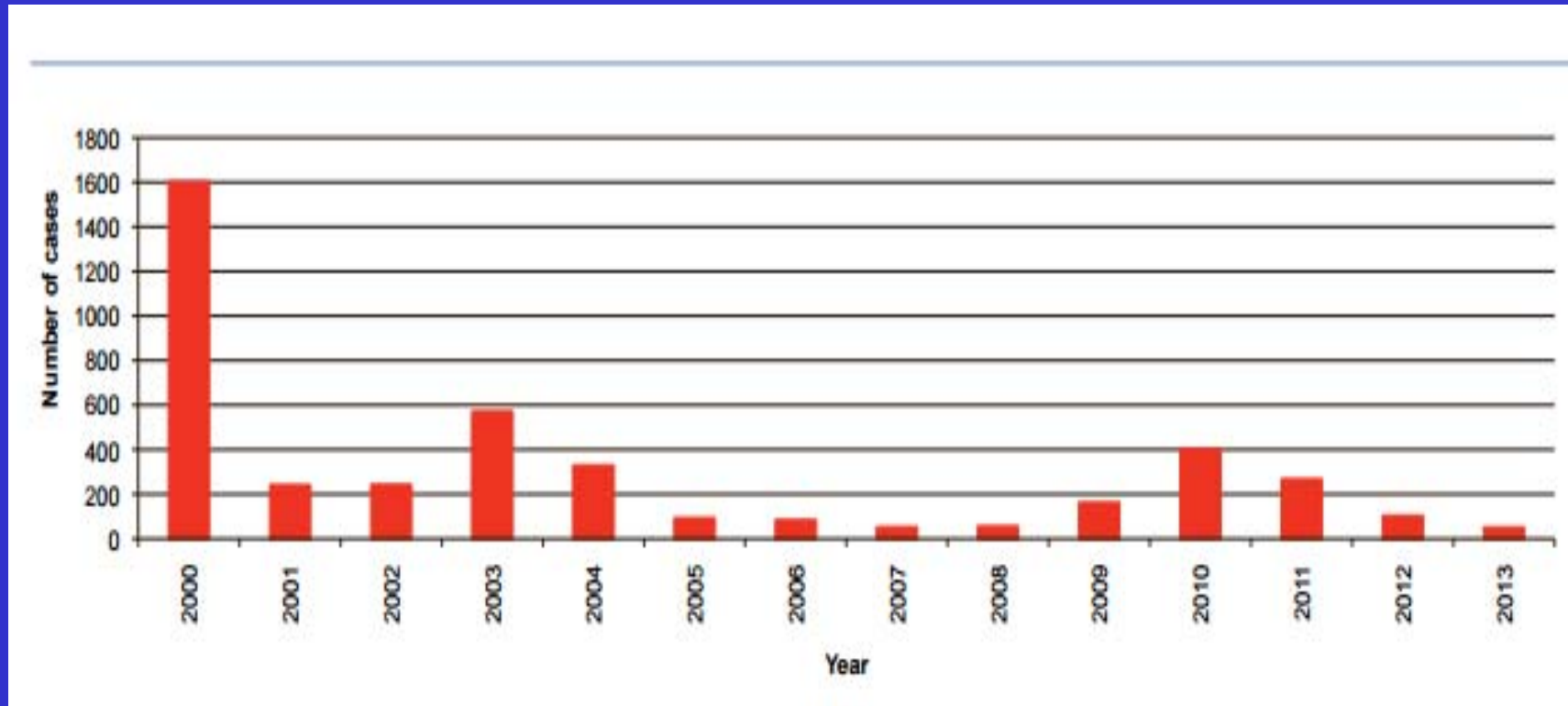
Measles - Ireland



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Measles - Ireland



Source: HPSC

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Measles Ireland

- 7 cases to date in 2015

Students told to get MMR jab as campus hit with measles

15 cases in 2014



Pertussis - global

Every year

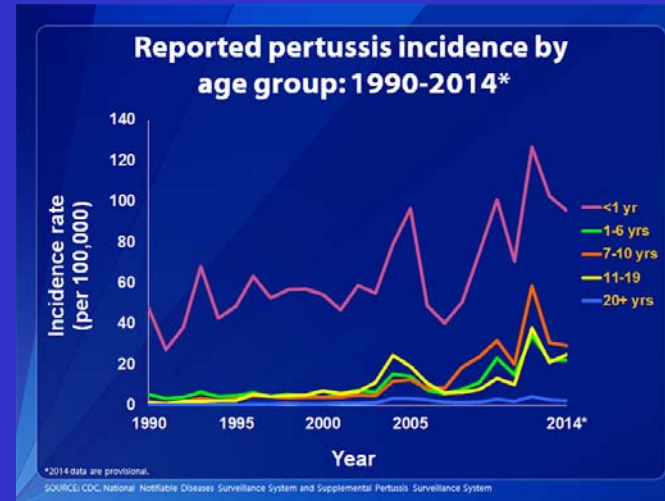
- 16 million pertussis cases
- 195,000 pertussis deaths in children
 - Most in unvaccinated or incompletely vaccinated young infants.
- Recent increases in many developed countries
 - Australia 2009-2011
 - US 2010 – 2012
 - UK 2011- 2012
 - New Zealand 2012 - 2013

*Why killer
infection
whooping
cough
is back*

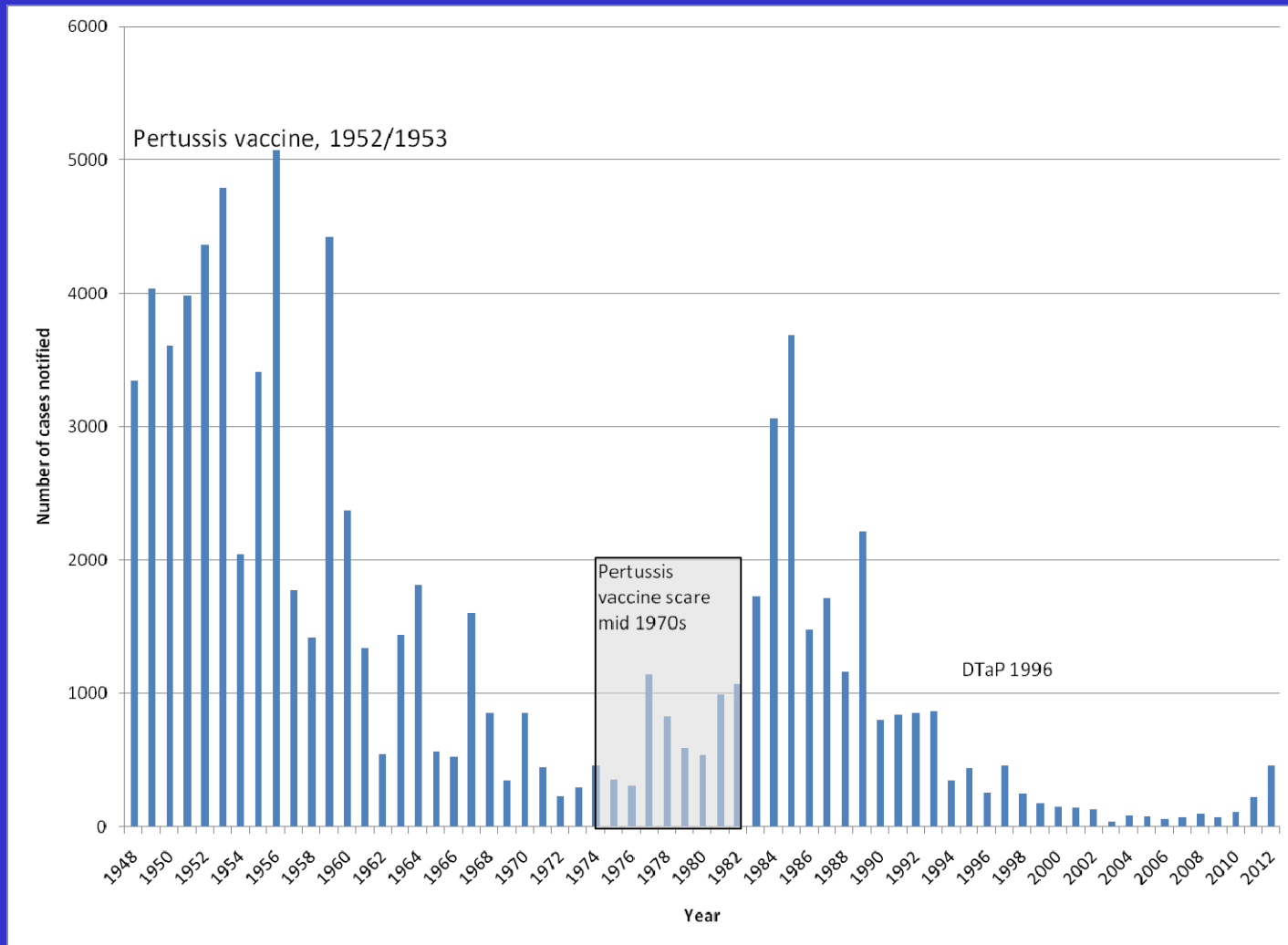


Pertussis

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



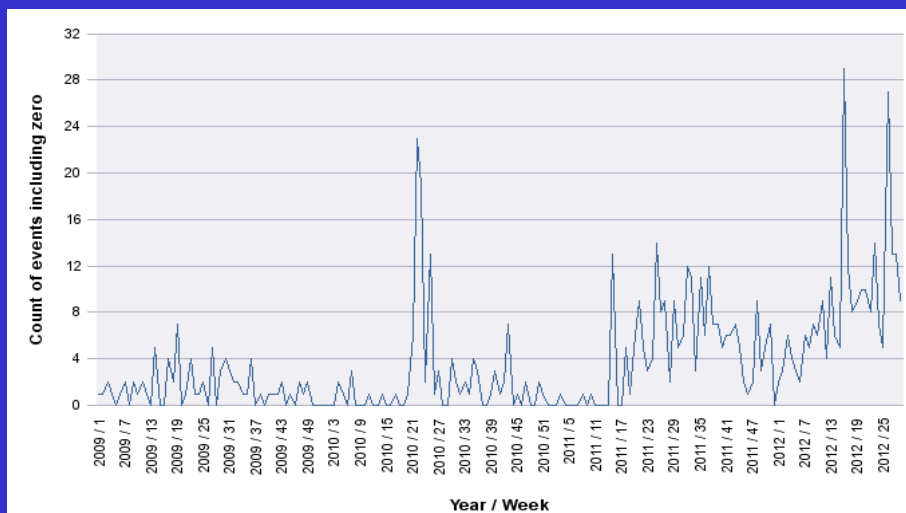
Pertussis - Ireland



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Number of pertussis cases notified by week
2009-2012 (up to week 29), Ireland



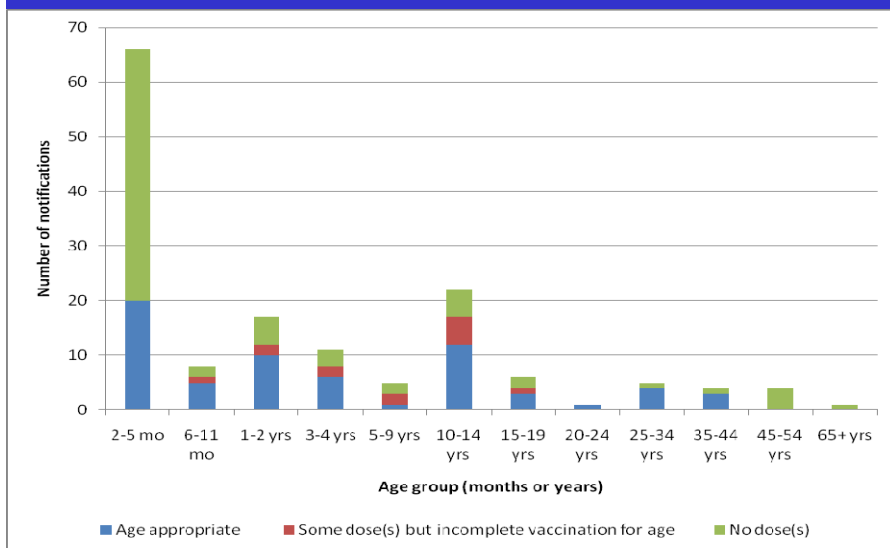
Pertussis Ireland

2012

- Most < 5 years of age
- 48% unvaccinated

92 cases to date in in 2015
(only 49 cases in same period in 2014)

Vaccination status (where known) by age group



Publication: Irish Independent Health & Living
 Date: Monday, August 25, 2014
 Page: 2
 Extract: 1 of 1
 Circulation: 121,120
 Author: Eilish O'Regan
 Headline: Whooping cough rates on the rise

Whooping cough rates on the rise

www.immunisation.ie

Source: HPSC



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

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

for children born on or after 1st July 2015

Appointment for your child's next visit?

Next Appointment

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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

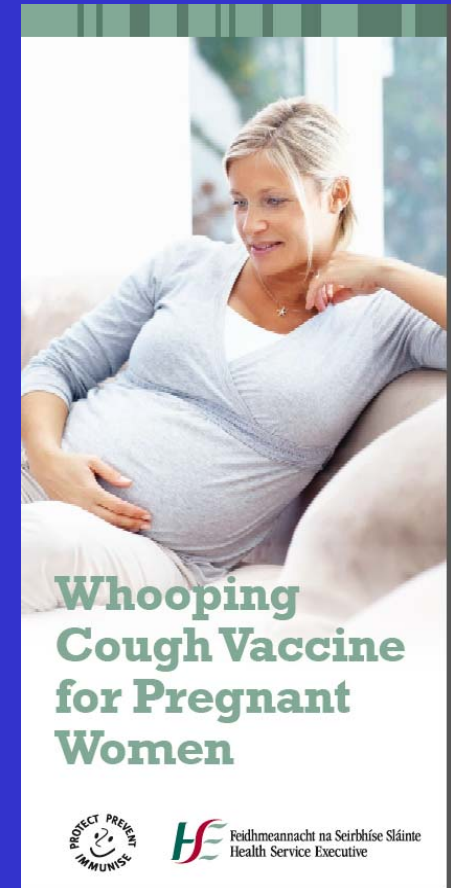


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Pertussis vaccination

- **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

Food & Drink ▾ | Motoring ▾ | Health & Wellbeing ▾ | Family ▾ | Home & Garden ▾ | City Cycling

Wednesday 30 September 2015

Life Newsletter

 Life Mothers & Babies

Pregnant women are urged to get whooping cough jab

PUBLISHED
04/09/2015 | 08:20

SHARE

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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



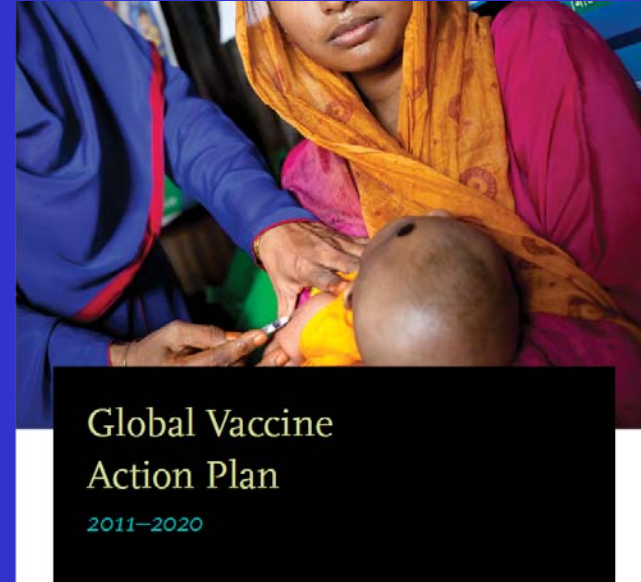
***Vaccine from HSE National
Cold Chain Service***

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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



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