# Global and National Trends in Vaccine Preventable Diseases

### Dr Brenda Corcoran National Immunisation Office







### 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)





### **Global picture**

#### 25 vaccine preventable diseases



Feidhmeannacht na Seirbhíse Sláinte Health Service Bacculive



### Pneumococcal disease - global

- Major cause of morbidity and mortality2005
  - •1.6 million deaths
  - 0.7 1 million in children < 5years
  - developing countries
  - children <2 years</li>

#### 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







### 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





### **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







### Globally each year

- ~7500 cases
- 5-10% fatal

### **Diphtheria**







### 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





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.

wePH Views Life&Style Entertainment Sports Tech Live BrandRa

France-Presse



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 76 cases in London in last 2 months
- Romania 130 cases this year



#### EU Measles notification rate 1 March 2015 – 29 Feb 2016







### **Measles - Ireland**



### THINK MEASLES

Children, teenagers, young adults and anyone who has missed their MMR vaccination can get measles.



## OTECT HEALTH

www.immunisation.ie

#### 38 cases to date in 2016





### 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



Reidhmeannacht na Seirbhíse Sláint Health Service Executive



### 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



#### Vaccination status (where known) by age group



Source: HPSC

### **Pertussis Ireland**

#### 2012

- Most < 5 years of age
- 48% unvaccinated

2016

122 cases to date



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

Tdap vaccine

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





ALTH &





#### • 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

\*\* to change to 16 weeks



An Australian mother has said she regrets refusing the whooping cough vaccination during pregnancy after she passed the potentially fatal infection to ber newborn baby





#### 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**



#### Not Vaccinated? No Kisses!

Get the adult whooping cough vaccine. www.VaccinateYourFamily.org



Whooping cough is deadly for babies





- 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









### Summary

Vaccines available to prevent
25 vaccine preventable diseases

✓ 2 million deaths preventedfrom 2000-2010

 ✓ High vaccine coverage and surveillance essential to prevent outbreaks



Global Vaccine Action Plan 2011–2020



The vision for the Decade of Vaccines (2011–2020) is of a world in which all individuals and communities enjoy lives free from vaccine-preventable diseases.

http://www.who.int/immunization/global\_vaccine\_action\_plan/GVAP\_doc\_2011\_2020/en



