



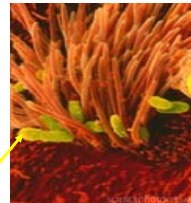
Pertussis Surveillance in Massachusetts: Increasing number of cases in the era of Tdap use

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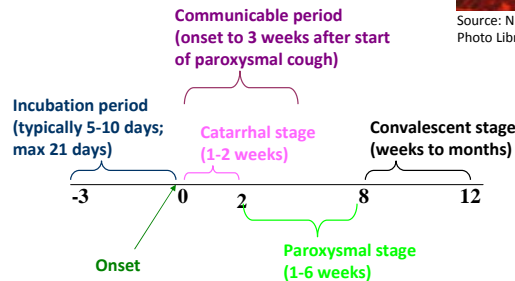
Background

- Humans are the only reservoir for *B. pertussis*
- Transmitted by coughing or sneezing
- Attach to cilia of upper respiratory system
- Release toxins which damage cilia
- Coughing is reaction to damaged cilia



B. pertussis

Source: NIBSC/ Science Photo Library



Rise in Pertussis

- Pertussis numbers rose nationwide in 2012 due to many contributing factors:
 - Incomplete Tdap coverage in adolescents and adults
 - Pertussis vaccine not 100% effective in preventing disease (efficacy 80-85%)
 - Waning of immunity following infection and vaccination
 - Changing epidemiology of pertussis due to quicker waning of immunity after acellular vaccination (DTaP and Tdap)
 - Improved diagnostics and increased awareness by providers

Infant Pertussis

- Young infants at highest risk of complications and mortality
- Atypical Symptoms:
 - Catarrhal stage and cough may be minimal or absent
 - Apnea (sometimes with seizures)
 - Sneezing
 - Gagging, choking, vomiting
 - Whoop infrequent
- Cough illness among close contacts
- Presumptive treatment should begin immediately



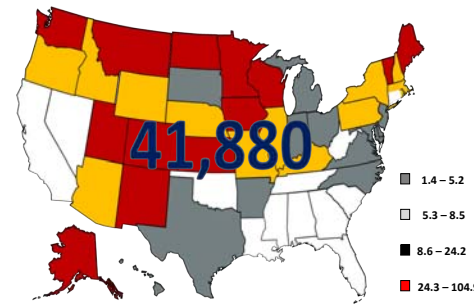
Source: Shot of Prevention, Brady passed away at just 2 months from pertussis

Pertussis in the United States and MA

- As of January 10, 2013, 49 states and Washington, D.C. reported increases in disease in 2012 compared with 2011
- 15 pertussis-related infant deaths nationally in 2012
- First infant death in MA in 10 yrs

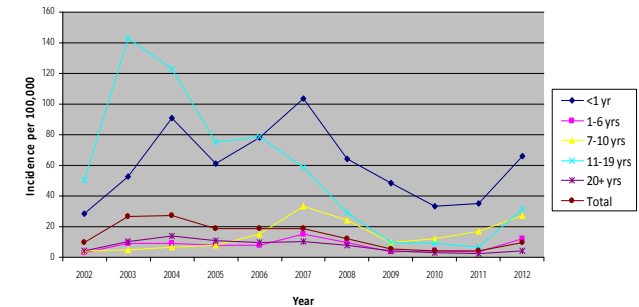
State	2011 Pertussis	2012 Pertussis	% Increase
Vermont	94	645	586%
Minnesota	661	4,485	579%
Wisconsin	1,192	6,332	431%
Washington	965	4,894	407%
Colorado	416	1,517	265%
Massachusetts	273	653	139%

Annual Incidence by State, 2012*
2012 Incidence = 13.4

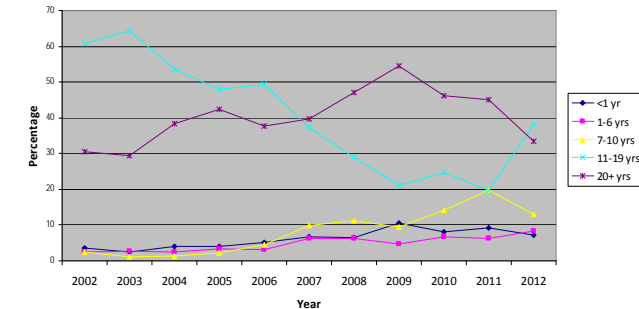


*2012 data are provisional.
Source: CDC National Notifiable Disease Surveillance System, 2012
2011 Census data used for population estimates; Incidence is per 100,000 population

Pertussis Incidence by Age Group (MA), 2002 - 2012



Percent of Pertussis Cases by Age Group (MA), 2002 - 2012



Tdap Now Recommended with Every Pregnancy

Rationale

- Maternal antibodies from women immunized before pregnancy waned quickly (Healy 2013 CID).
 - Maternal antibodies short lived
 - Vaccination in one pregnancy unlikely high enough to provide passive protection to infants in subsequent pregnancies.
- Tdap vaccination rates very low
 - 78% - Adolescents (2011)
 - 12.2% - Adults (2011)
 - 2.6% - Women vaccinated during pregnancy (April 2012)

Recommendation

- Providers of prenatal care should implement systematic Tdap vaccination programs.
- A dose of Tdap should be given during **each** pregnancy, regardless of the patient's prior history of receiving Tdap.
- Optimal timing for Tdap is **between 27 and 36 weeks** gestation.
 - This maximizes maternal antibody response and passive antibody transfer to infant, but Tdap may be given at any time during pregnancy.
- If Tdap not administered during pregnancy, administer immediately postpartum.