Pertussis Update

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Pertussis

- Caused by bacterium *Bordetella pertussis*
- Highly communicable, with secondary attack rate of 80% among susceptible household contacts
- Transmission most commonly through respiratory route through contact with respiratory droplets
- Incubation period 7-10 days (range 4-21 days)
- Infectious within 21 days after cough onset (if untreated)
- Diagnostic tests include PCR and culture

Stages of Illness

- **Catarrhal stage (1-2 weeks)**

  Coryza, sneezing, mild occasional cough

- **Paroxysmal (1-6 weeks)**

  Cough becomes more severe, occurs in burst of numerous rapid coughs, often accompanied by whoop and post-tussive vomiting at end of paroxysm. Appear well between attacks. Often worse at night.

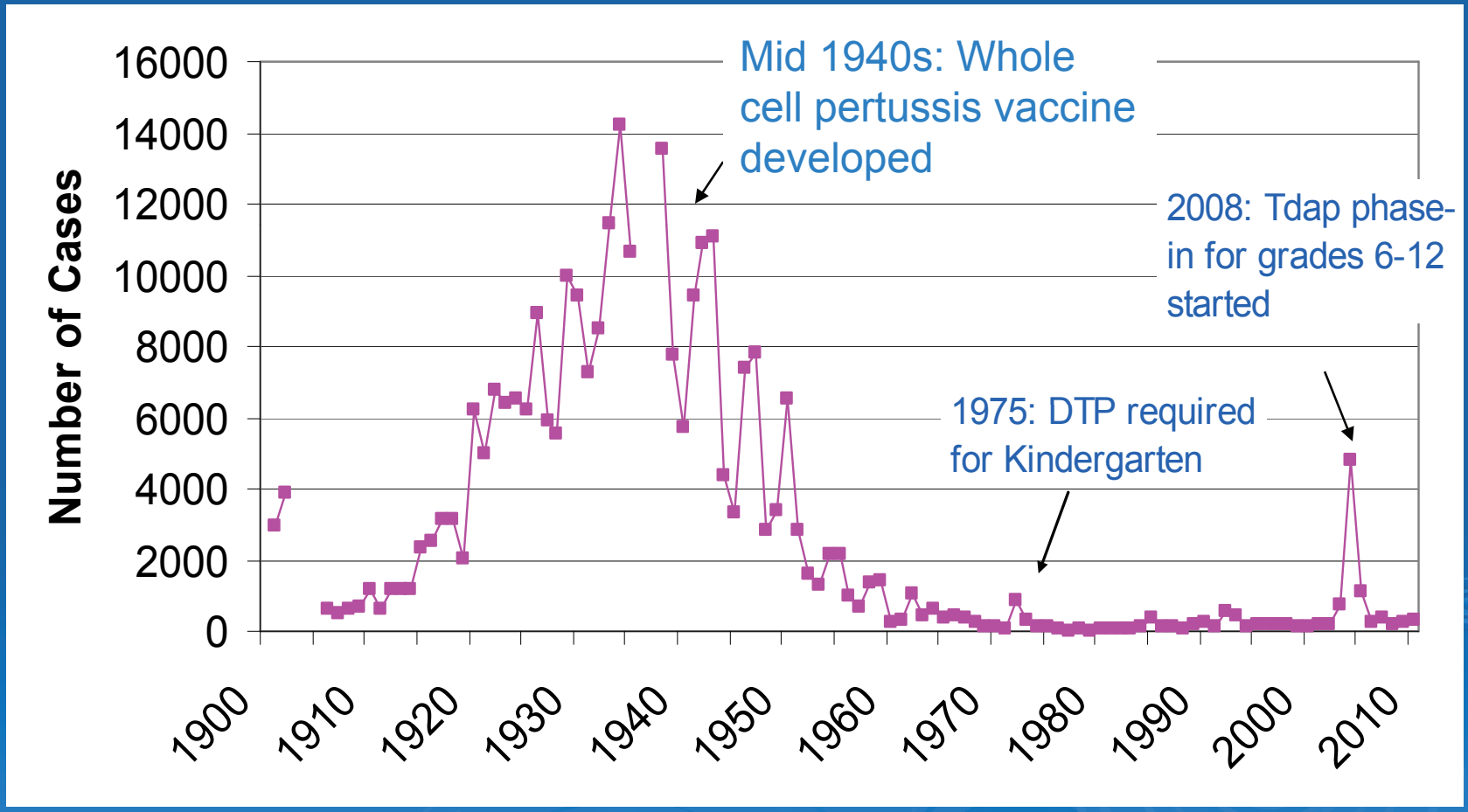
- **Convalescent (weeks to months)**

  Gradual recovery, may have paroxysms occur with subsequent respiratory infections for many months afterwards

Complications

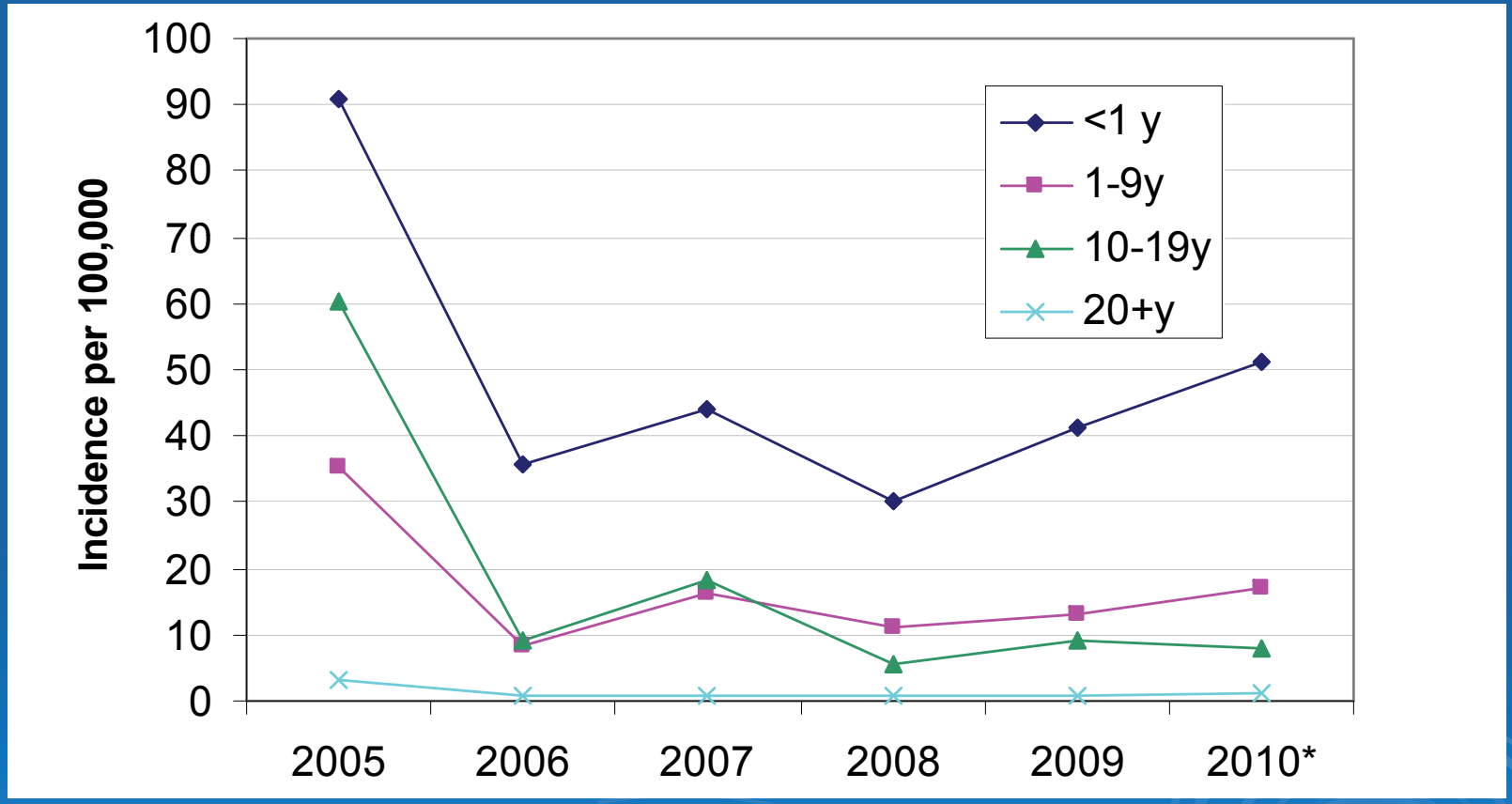
- Young infants are at highest risk for complications
  - Secondary bacterial pneumonia
  - Seizures and encephalopathy
  - Death, particularly in children <3 months of age
- Nationally, there were 82 deaths due to pertussis from 2004 to 2006, and children <3 months of age accounted for 69 (84%) of these deaths

Pertussis, Wisconsin 1900-2010*



*2010 YTD

Incidence of Pertussis Cases by Age Group, WI 2005-2010



*YTD as of 11.15.10, preliminary data

Clinical Presentation of Pertussis Cases, WI, 2009-2010*

	All Cases	Infants < 1 year
Paroxysms	94%	87%
Whoop	36%	37%
Post-tussive Vomiting	49%	72%
Apnea	40%	41%
Hospitalization	7%	29%
	n=198	n=54

*Confirmed and probable cases, collected between July 2009-May 2010 for all cases, 7.1.09-11.12.10 for infants

Wisconsin Infant Cases

Age

- 41 (76%) were less than 6 months of age

Hospitalization (n=14)

- Hospitalized an average of 4 days (range 1-7 days)
- No deaths

Vaccination Status

- 16 (30%) were too young to be immunized
- 26 (48%) were appropriately immunized for age
- 12 (22%) were under immunized
  - 8 (67%) not vaccinated due to parental refusal, or philosophical or religious exemptions

Cases from 7.1.09-11.12.10, n=54

Cocooning

Cocooning is the immunization of family members and close contacts of the newborn to prevent the transmission of disease.

Infant relies on herd immunity until s/he is old enough to develop own immunity through vaccination.

Recommended in 2001 by the Global Pertussis Initiative.

Tdap Cocooning Efforts

- DPH will be sending a letter to hospitals and birthing centers highlighting need to protect newborns by offering Tdap to post-partum mothers, family members of the newborn, and health care workers
  - Includes standing order templates
  - HCW vaccination declination form

Tdap Vaccine Availability

- DPH intends to provide Tdap vaccine to hospitals and birthing centers for post-partum women and close family/household members of the newborn
- VFC providers may immediately order vaccine for individuals in these groups who are <19 years of age
- Health care institutions will need to privately purchase vaccine for their health care workers

New ACIP Recommendations

Pertussis-Containing Vaccines

- DTaP (pediatric)
  - Approved for children 6 weeks through 6 years
- Tdap (adolescent and adults)
  - Approved for persons 10 through 64 years (Boostrix) and 11 through 64 years (Adacel)

ACIP Meeting

- Advisory Committee on Immunization Practices met on October 27-28, 2010
- Included 3 votes on the use of Tdap
  - Interval between Td and Tdap
  - Allowing vaccination of individuals ≥65 years
  - Allowing vaccination of individuals 7-10 years who are not fully vaccinated for pertussis

Removal of Interval Language

- The 2005 ACIP statement included language about the interval between Td and Tdap :
  - Intervals <10 years since the last Td may be used
  - Benefits of an interval <10 years generally outweight risk for local and systemic reactions
  - Cites Canadian study that supported an interval down to 2 years.

Reasons for Changing the Language

- Additional data available
- Language was confusing
- Interval perceived as a barrier to vaccination
- Individual provider makes risk assessment

Td/Tdap Interval

- **Adolescents or adults who have not received a dose of Tdap or for whom vaccine status is unknown should be immunized as soon as feasible. Tdap can be administered regardless of interval since the last tetanus or diphtheria containing vaccine.**

NOTE: Please check ACIP statement, once published, for final language

Use of Tdap in Adults ≥65 years

2005 ACIP statement indicated that Tdap is not licensed for use among adults ≥65 years of age, and adults aged ≥65 years should receive a dose of Td every 10 years.

Use of Tdap in Adults ≥ 65 years

Rationale for change

- Reduce transmission to infants
- No demonstrated increased risk of severe local reactions or serious adverse events

Tdap in Adults Aged ≥ 65 years

- **Adults ages 65 years and older who have or who anticipate having close contact with an infant ages less than12 months (e.g., grandparents, child-care providers, and HCP) and who have not previously received Tdap should receive a single dose of Tdap to protect against pertussis and reduce the likelihood of transmission of pertussis to infants ages less than 12 months.**

- **For adults ages 65 years and older, a single dose of Tdap vaccine may be given in place of a tetanus and diphtheria toxoids (Td) vaccine, in persons who have not previously received Tdap.**

NOTE: Please check ACIP statement ,when published, for final language

Use of Tdap in Under-Vaccinated Children Aged 7 through 10 years

2005 ACIP Statement indicates neither Tdap vaccine is licensed for use in children < 10 years of age

Should use Td in this age group, and vaccinate with Tdap according to routine recommendations once they become adolescents (11-18 years)

Use of Tdap in Under-Vaccinated Children Aged 7 through 10 years

Rationale for change:

- Provide protection from pertussis to children

- No demonstrated increased risk of severe local or systemic adverse events

Use of Tdap in Children 7-10 years

- **Children ages 7 through 10 years who are not fully immunized against pertussis* and for whom no contraindication to pertussis vaccine exists should receive a single dose of Tdap to provide protection against pertussis.**

*Refers to childhood schedule

Please check ACIP statement, when published, for final language

Use of Tdap in Children 7-10 years

- **Children ages 7 through 10 years who have never been vaccinated against tetanus, diphtheria, or pertussis, or who have unknown vaccination status, should receive a series of three vaccinations containing tetanus and diphtheria toxoids. The preferred schedule is a single dose of Tdap, followed by a dose of Td >4 weeks after Tdap ….**

Recommendations

- The use of Tdap in individuals aged 7-10 years and 65+ years are off-label recommendations
- These recommendations will be published in the MMWR as Notice to Readers, likely mid to late December 2010.
- ACIP routine child and adults schedules will be published in Feb. 2011

Next Steps for DPH

- Will finalize our Tdap cocooning letter to include information from the new ACIP recommendations
- Will update Policy and Procedures documents
- Make changes in the WIR to accommodate these recommendations

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Questions?

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Disease images from CDC Public Health Image Library

California Pertussis Outbreak

- As of Oct. 27, 2010 over 5,900 cases of pertussis reported
- 77% of hospitalized cases were infants < 6 months of age
- 10 deaths reported in infants <2 months of age and 9 were Hispanic
- Majority of cases in adolescents have been in 10-11 year olds
- Did not have school Tdap requirement- but now will have one starting in Fall 2011 for grades 7-12