Pertussis
Status and Protection
What is Pertussis

- “Whooping Cough”
- “100 Day Cough”
- Acute infectious disease caused by the bacterium *Bordetella pertussis*
- Outbreaks first described in 16th century
- Organism first isolated in 1906
Pertussis

- Highly contagious
- Estimated over 200,000 deaths worldwide
- Human disease
- Transmission primarily by respiratory route
- May increase in summer and fall
- Incubation period 7–10 days, rarely up to 42 days.
Primarily a toxin-mediated disease. The bacteria attach to the cilia of the respiratory epithelial cells, produce toxins that paralyze the cilia, and cause inflammation of the respiratory tract, which interferes with the clearing of pulmonary secretions.
Clinical Course

- Catarrhal Stage
  - 1–2 weeks
- Paroxysmal cough stage
  - 1–6 weeks
- Convalescence
  - Weeks to months
Signs and Symptoms

- **Stage 1** – Catarrhal Stage – 1–2 weeks
  - Runny nose
  - Low-grade fever
  - Mild, occasional cough
  - Apnea (infants)

- **Stage 2** – Paroxysmal Stage – 1–6 weeks
  - Paroxysms of many rapid coughs followed by a high-pitched “whoop”
  - Vomiting
  - Exhaustion

- **Stage 3** – Convalescent Stage – weeks/months
  - Slow recovery
  - Gradually less severe and less common
  - Susceptible to other respiratory illnesses
Diagnosis

- Based on HISTORY
- Culture is the gold standard
  - Difficult to culture
- PCR
  - Increased sensitivity and faster
  - Should be “in addition to” not replace culture
- Serologic testing
  - For those who present late in course
  - Cannot differentiate between disease and vaccine
Treatment

- Supportive
- Antibiotics may be helpful if early in disease
- Antibiotics for ALL close contacts, regardless of age and vaccination status
- Complete immunization for contacts
- Post-exposure efficacy of Tdap is unknown
Complications

- **Infants and Children**
  - Serious and sometimes life threatening
  - Under 1 year of age, 57% require hospitalization
    - 23% pneumonia
    - 1.6% convulsions
    - 67% apnea
    - 0.4% encephalopathy
    - 1.6% will die

- **Teens and Adults**
  - Less than 5% require hospitalization
    - 33% weight loss
    - 28% loss of bladder control
    - 6% passing out
    - 4% rib fractures from severe coughing
Status

USA
- 2005 Peak of 25,000
- 2010 Peak of 27,000
  - Incidence of 9/100,000
    - California outbreak / population
- 2011
  - Incidence of 5/100,000
- 2012
  - As of 7/12/2012
    - > 17,000 cases
    - Rate of 5.24/100,000

Colorado
- 2005
  - Outbreak
    - 1383 cases
- 2010
  - 538 cases
- 2011
  - 416 cases
- 2012
  - As of 7/29/2012
    - > 700 cases
    - Rate of 12.1/100,000
Reported Pertussis Cases by Week of Report, Colorado
1/1/2012 – 9/8/2012* vs. 5 Year Monthly Average (2007–2011)

*Current data are provisional 9/18/2012. Numbers may change as case investigations are completed.

Source: Colorado Department of Public Health and Environment
<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>Number of Cases</th>
<th>Percent of Cases</th>
<th>Rate per 100,000 population</th>
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</thead>
<tbody>
<tr>
<td>&lt;6 months</td>
<td>53</td>
<td>6.2</td>
<td>149.9</td>
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<tr>
<td>6 - 11 months</td>
<td>32</td>
<td>3.8</td>
<td>90.5</td>
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<tr>
<td>1 - 6</td>
<td>173</td>
<td>20.4</td>
<td>40.0</td>
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<tr>
<td>7 - 10</td>
<td>149</td>
<td>17.6</td>
<td>53.9</td>
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<tr>
<td>11 - 14</td>
<td>208</td>
<td>24.5</td>
<td>79.7</td>
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<tr>
<td>15 - 18</td>
<td>71</td>
<td>8.4</td>
<td>25.4</td>
</tr>
<tr>
<td>19 - 39</td>
<td>72</td>
<td>8.5</td>
<td>4.7</td>
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<tr>
<td>40 - 64</td>
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<tr>
<td>65+</td>
<td>10</td>
<td>1.2</td>
<td>1.9</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>849</td>
<td>100.0</td>
<td>16.7</td>
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*Current data are provisional as of 9/18/2012. Numbers may change as case investigations are completed.
## Reported Pertussis Cases by County
### Most Recent Reporting Week and Cumulative Since 1/1/2012*

<table>
<thead>
<tr>
<th>County</th>
<th>Current Week Reported Cases 9/2/2012-9/8/2012</th>
<th>Cumulative Reported Cases 1/1/2012-9/8/2012</th>
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<tbody>
<tr>
<td>Adams</td>
<td>6</td>
<td>135</td>
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<tr>
<td>Arapahoe</td>
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<td>30</td>
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<td>Gilpin</td>
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<td>Prowers</td>
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<tr>
<td>Teller</td>
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<td>3</td>
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<tr>
<td>Weld</td>
<td>3</td>
<td>57</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>45</strong></td>
<td><strong>849</strong></td>
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</table>

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Prevention

- IMMUNIZE
  - Mothers
  - Potential Mothers
  - Babies

- IMMUNIZE
  - Fathers
  - Siblings
  - Aunts/Uncles
  - Friends
  - Grandparents
  - Daycare Providers

- Immune response to the vaccine peaks two weeks after administration
Vaccines

- **Dtap**
  - Children 6 weeks through 6 years
  - Usual schedule is 2, 4, 6, and 15–18 months and booster at 4–6 yrs of age

- **Tdap**
  - Children 7–10 years of age who have not completed Dtamp series.
  - Single dose age 11
Tdap and Pregnancy

- MMWR October 21, 2011
- Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine (Tdap) in Pregnant Women and Persons Who Have or Anticipate Having Close Contact with an Infant Aged < 12 months—Advisory Committee on Immunization Practices (ACIP), 2011
- http://www.cdc.gov/mmwr
Guidance for Use

- Maternal Vaccination
  - Administer Tdap during pregnancy, preferably during the third or late second trimester (after 20 weeks gestation). If not administered during pregnancy, Tdap should be administered immediately postpartum.

- Cocooning
  - Adolescents and adults who have or anticipate having close contact with an infant aged <12 months should receive a single dose of Tdap to protect against pertussis if they have not previously received Tdap. Ideally ... at least 2 weeks before beginning close contact with the infant.
Breastfeeding is not a contraindication for receiving Tdap vaccine. Mothers can pass antibodies they’ve made in response to the Tdap shot to their infants. This may be especially important for infants younger than 6 months of age, who have no other way of receiving antibodies, since they are not fully protected until their third dose of DTaP vaccine at 6 months of age.
Cocooning

- One of the BEST strategies to prevent infant pertussis mortality.
- CDPHE has efforts to assist LPHAs with this project.
- Talk with your local LPHA
- Have a champion at your birthing facility to assist with policy changes
  - Difficulties include billing for services, family is not the patient, etc.
**Immunization During and After Pregnancy**

### During pregnancy

*Did you know that a mother's immunity is passed along to her baby during pregnancy? This will protect the baby from some diseases during the first few months of life until the baby can get vaccinated.*

**Flu Vaccine**
- It is safe, and very important, for pregnant women to receive the inactivated flu vaccine.

**Tdap Vaccine**
- The adult tetanus, diphtheria and pertussis vaccine (Tdap) should be given after 20 weeks gestational age if you have not already received the vaccine. This will help prevent pertussis in you and your infant.

### After pregnancy

*It is safe for a woman to receive vaccines right after giving birth, even while she is breastfeeding.*

- If you have not been vaccinated for tetanus, diphtheria and pertussis (Tdap) should do so right after delivery. Vaccination protects you and your infant.
- If you are not immune to measles, mumps and rubella and/or varicella (chicken pox), you should be vaccinated before leaving the hospital.
- If you did not receive a flu shot during pregnancy, you should receive it now to protect infant.
- Caregivers and household members, including siblings, of infants should be vaccinated against Influenza and Pertussis (DTap, Tdap) to prevent spread of these diseases to the young infant.

*Call us today for more information.*

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**Las Vacunas Durante y Después del Embarazo**

### Durante el Embarazo

*¿Sabía Ud. que la inmunidad de la madre es pasada a su bebé al largo del embarazo? Esto protegerá al bebé de algunas enfermedades durante los primeros meses de vida hasta que el bebé sea vacunado.*

**La Vacuna contra la Influenza**
- Es segura, y muy importante para las mujeres embarazadas, reciba la vacuna inactiva contra la influenza.

**La Vacuna Tdap**
- La vacuna para adultos contra el tétano, difteria y tos ferina (Tdap) debe ser dada después de las 20 semanas de gestación, si es que no ha recibido la vacuna todavía. Esta vacuna les ayudará a prevenir la tos ferina a Ud. y a su infante.

### Después del embarazo

*Es seguro para la mujer recibir vacunas inmediatamente después del embarazo, incluso cuando lactando.*

- Si no ha recibido la vacuna contra el tétano, difteria y tos ferina (Tdap) asegúrese de hacerlo después del parto. Las vacunas los protege a ti y a tu infante.
- Si no tiene inmunidad contra las paperas, sarampión, rubeola y/o varicela, Ud. debería ser vacunada antes de dejar el hospital.
- Si Ud. no recibió la vacuna contra la influenza durante su embarazo, debería recibirla ahora para proteger a su infante.
- Todos los miembros de la familia y personas responsables del cuidado de infantes, incluyendo familiares, deberían ser vacunados contra la influenza y la tos ferina (DTap, Tdap) para prevenir la propagación de estas enfermedades en infantes jóvenes.

*Liémanos hoy para más información.*
DROP-IN IMMUNIZATION CLINICS

Every Thursday
9:00 am—4:00 pm
(clinic will not be held on September 13, 2012)
(Spanish Interpreters available from 2pm-4pm)

All ages
Steamboat Springs VNA
940 Central Park Drive, Suite 101

- All routine (non-travel) vaccinations will be offered (sorry, travel immunization appointments will need to be made separately)
- VNA will accept Insurance, CHP+, Medicare, Medicaid, cash or check. Please present your card at the clinic.
- Vaccinations for children under age 19 will not exceed $14 per vaccine. No child will be refused an immunization due to an inability to pay a fee.
- Colorado State School Law requires certain vaccines for students in K-12 grades. Additional vaccinations are recommended for children by the Centers for Disease Control and Prevention. Talk to your doctor or a Public Health Nurse at the VNA about what is recommended for your child.
Whooping Cough Outbreak. Vaccinate To Protect.

Who Needs Whooping Cough Vaccines?
- Pregnant women
- Infants and young children
- Preteens and teens
- Adults of all ages

Whooping cough is most deadly for infants.
Get vaccinated. Protect yourself. Protect babies.

Talk to your doctor and visit: www.cdc.gov/pertussis
http://youtu.be/RCNZKSyMLCE
Resources – Thanks

- [www.cdc.gov/pertussis](http://www.cdc.gov/pertussis)
- [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)
- [www.colorado.gov/cs/satellite/cdphe-dceed/cbon/1251611026285](http://www.colorado.gov/cs/satellite/cdphe-dceed/cbon/1251611026285)
- Pink Book – Epidemiology and Prevention of Vaccine-Preventable Diseases. 12th Edition
Questions?

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  Olathe, CO  81425
  866-896-1586

  303-692-2650

  Thank you!