

# Pertussis Case Summary

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## Background

**Etiology:** Pertussis, commonly known as whooping cough, is a highly contagious respiratory illness caused by the bacterium *Bordetella pertussis*. The bacteria attach to the cilia of the respiratory epithelial cells, produce toxins that paralyze the cilia, and cause inflammation of the respiratory tract.

**Epidemiology:** Pertussis can affect individuals of all ages but is particularly severe in infants and young children. Despite vaccine coverage, periodic outbreaks still occur, and the incidence has been increasing in many countries. The resurgence is attributed to waning immunity, vaccine hesitancy, and the faster-waning immunity provided by acellular pertussis vaccines compared to whole-cell vaccines.

**Transmission:** Transmission occurs primarily through airborne droplets from the cough or sneeze of an infected person. The incubation period is typically 7-10 days but can range from 4-21 days. Individuals are most contagious during the catarrhal stage and the first two weeks after the onset of cough in the paroxysmal stage.

## Case Details

**Demographics:** Typically seen in infants and young children, though adolescents and adults can also be affected, especially those with waning immunity or without an up-to-date vaccination history.

**Symptoms:** The disease progresses through three stages:

1. *Catarrhal Stage:* Resembling a common cold, it includes mild cough, runny nose, and occasionally, low-grade fever. Lasts 1-2 weeks.
2. *Paroxysmal Stage:* Characterized by severe, spasmodic coughing fits ending in a characteristic 'whooping' sound. Vomiting and exhaustion are common after coughing fits. This stage lasts 1-6 weeks but can extend up to 10 weeks.
3. *Convalescent Stage:* Gradual recovery with decreasing cough severity and frequency, lasting from weeks to months.

**Testing:** Diagnosis includes clinical assessment supported by laboratory tests like:

- **PCR testing** from nasal or throat swabs
- **Culture** for *Bordetella pertussis* (gold standard but takes longer)
- **Serological tests** in certain cases but less commonly used

### **Subsequent Cases**

In scenarios where pertussis is identified, public health response includes identifying and managing potential subsequent cases, especially in settings like schools or daycare centers where the spread can be rapid. Contact tracing and prophylactic antibiotic administration contribute to containment.

### **Learning Objectives**

1. Understand the etiology and epidemiology of pertussis to better educate patients and the community.
2. Recognize the clinical presentation and stages of pertussis for prompt identification and management.
3. Learn the diagnostic methods and interpret lab results accurately to confirm cases.
4. Implement effective prevention strategies, including vaccination schedules and public health policies.
5. Develop communication strategies to minimize vaccine hesitancy and optimize community health outcomes.

### **Actions and Outcomes**

#### **Actions:**

- Educate the public on the importance of vaccination, including booster doses for children, adolescents, and adults.
- Initiate prompt treatment with antibiotics like azithromycin or clarithromycin to reduce disease severity and transmission.
- Facilitate infection control measures in public settings and inform contacts about the need for prophylactic treatment.
- Collaborate with local health departments for efficient outbreak management and reporting.

#### **Outcomes:**

- Decreased incidence and severity of pertussis cases through timely intervention and vaccine adherence.
- Improved public awareness and compliance with vaccination recommendations.
- Efficient containment of outbreaks and reduced transmission rates.

### **Reflection**

The importance of continuing education for public health nurses cannot be overstated, especially with re-emerging diseases like pertussis. Reflect on the critical roles that vaccination, early detection, and public education play in

controlling the spread of pertussis. Evaluate past responses to identify areas for improvement and consider integrating new strategies or technologies to enhance disease management efforts.

### **Discussion Questions**

1. What are some challenges in diagnosing pertussis, particularly in older children and adults?
2. How can public health campaigns be designed to address vaccine hesitancy specifically related to pertussis?
3. What measures can be taken to manage and prevent outbreaks in settings such as schools and daycare centers?
4. Consider the impact of waning immunity from the acellular pertussis vaccine; what strategies could be implemented to mitigate this issue?
5. How can we improve the collaboration between healthcare providers, public health officials, and the community in managing pertussis?

This detailed case summary offers comprehensive insights for the education and empowerment of public health nurses in managing pertussis effectively.