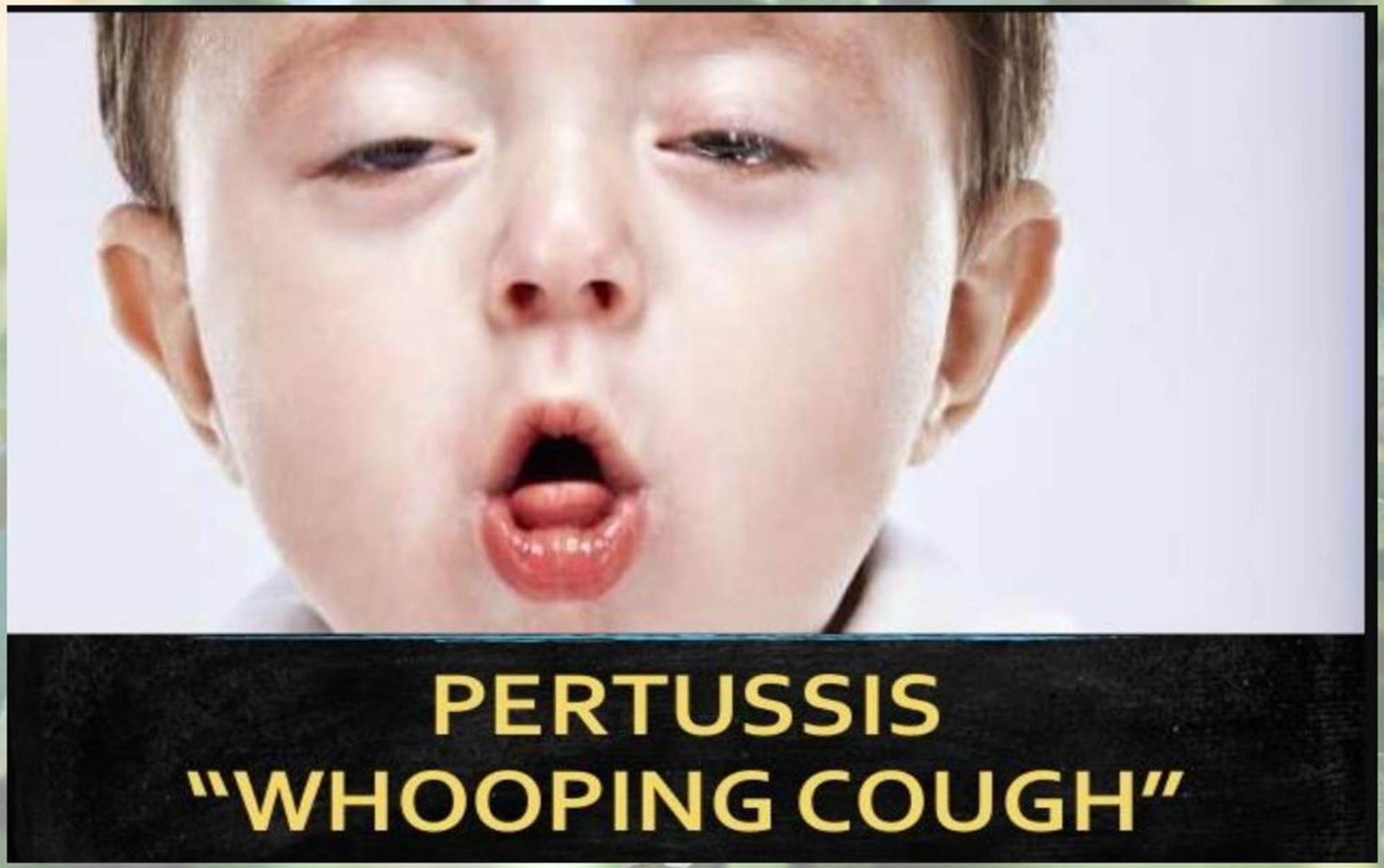
Pertussis


PERTUSSIS
"WHOOPING COUGH"

Pertussis, also known as whooping cough, is a highly contagious respiratory infection caused by the bacterium ***Bordetella pertussis***. Whooping cough is a disease of infants and pre-school children. The highest incidence found before the age of 5 years. Outbreaks occur periodically every 3-4 years.

Marked decline has occurred in incidence & mortality rates during the last four decades in communities with active immunization program, good nutrition and good medical care

Epidemiology

Pertussis is a recurring health concern worldwide, in both developed and developing countries. The World Health Organization (WHO) has reported that most pertussis cases occur in developed countries. In 2019, China had the highest number of pertussis cases globally, with 30,027 cases; Japan, Russia, Australia, and India followed with 16,845, 14,407, 12,021, and 11,875 cases, respectively. China also recorded the highest number of cases in the previous year (2018) with 22,057 cases.

After China, the number of cases was as follows: the USA (15,609), India (13,208), Germany (12,907), and Australia (12,555). In Indonesia, the WHO reported a relatively low number of pertussis cases, with only 27 cases in 2019 and 40 cases in 2018. However, in 2017, 2014, 2013, and several years ago, Indonesia had more than 1,000 cases .

Occurrence

Pertussis occurs worldwide.

Reservoir

Pertussis is a human disease. No animal or insect source or vector is known to exist. Adolescents, adults, and older school-age children are an important reservoir for *B. pertussis* and are often the source of infection for infants.

Transmission:

- Person-to-person through respiratory droplets or contact with airborne droplets
- Exposure to fomites

Temporal Pattern

Pertussis has no distinct seasonal pattern, but it may increase in the summer and fall.

Incubation period

6-20 days

Communicability

Pertussis is highly communicable, Persons with pertussis are infectious from the beginning of the catarrhal stage through the third week after the onset of paroxysms or until 5 days after the start of effective antimicrobial treatment.

Symptoms

Catarrhal stage: Insidious onset, similar to the common cold((runny nose), sneezing, low-grade fever),this stage last 1-2 weeks.

Paroxysmal phase : cough becomes more severe and frequent and eventually paroxysmal where five or more forceful coughs occur in a single episode; this phase usually lasts for 1-2 months or longer.

Complications

- Respiratory (bronchitis, otitis media , bronchopneumonia, pneumothorax) Subcojuctival hemorrhage epistaxis CNS (convulsion, encephalitis)

- Young infants at highest risk

diagnosis

The diagnosis of pertussis is based on a clinical history of signs and symptoms, as well as a variety of laboratory tests (e.g., culture, polymerase chain reaction [PCR], and serology).

Management

The medical management of pertussis patients is primarily supportive

Recommended antibiotics are azithromycin, clarithromycin, and erythromycin. Trimethoprim-sulfamethoxazole can also be used.

Prevention

The most important way to prevent pertussis is through complete immunization . The vaccine for pertussis is usually given in combination with diphtheria and tetanus (often in combination also with poliomyelitis, Haemophilus influenzae and hepatitis B).

Preventive antibiotics, also known as postexposure antimicrobial prophylaxis (PEP), are medicines given to someone that has been exposed to a harmful bacteria in order to help prevent them from getting sick.

For people exposed to whooping cough, CDC recommends preventive antibiotics only if they:

- Live with the person who has been diagnosed with whooping cough.
- Are at increased risk for serious disease (e.g., babies, people with certain medical conditions) or will have close contact with someone who is at increased risk for serious disease (e.g., women in their third trimester of pregnancy, people who work with or care for high risk individuals).

Vaccination

Two kinds of vaccines are used today to help protect against whooping cough, both of which also provide protection against other diseases:

- Diphtheria, tetanus, and pertussis (DTaP) vaccines
- Tetanus, diphtheria, and pertussis (Tdap) vaccines

Babies and children younger than 7 years old receive DTaP, while older children and adults receive Tdap.

Age to receive the vaccine: **One dose** of DTaP at each of the following ages:

2 months (1st dose), 4 months (2nd dose), 6 months (3rd dose), 15-18 months (4th dose), 4-6 years (5th dose).

Tdap given as a booster is:

- around 11 or 12 years
- every 10 years

Diphtheria

Diphtheria is a serious infection caused by strains of bacteria called *Corynebacterium diphtheriae* that make toxin. It can lead to difficulty breathing, heart rhythm problems, and even death.

The most common form of the disease affects the throat and the tonsils. Other forms can cause skin infections.

Global Epidemiology

In 2017, a total of 8,819 cases of diphtheria were reported worldwide, the most since 2004. However, recent diphtheria epidemiology has not been well described.

As national diphtheria–tetanus–pertussis (DTP) 3 coverage increased, the proportion of case-patients <15 years of age decreased, indicating increased protection of young children.

In countries with higher case counts, 66% of case-patients were unvaccinated and 63% were <15 years of age. In countries with sporadic cases, 32% of case-patients were unvaccinated and 66% were >15 years of age, consistent with waning vaccine immunity.

Diphtheria remains endemic in countries with low routine immunization coverage.

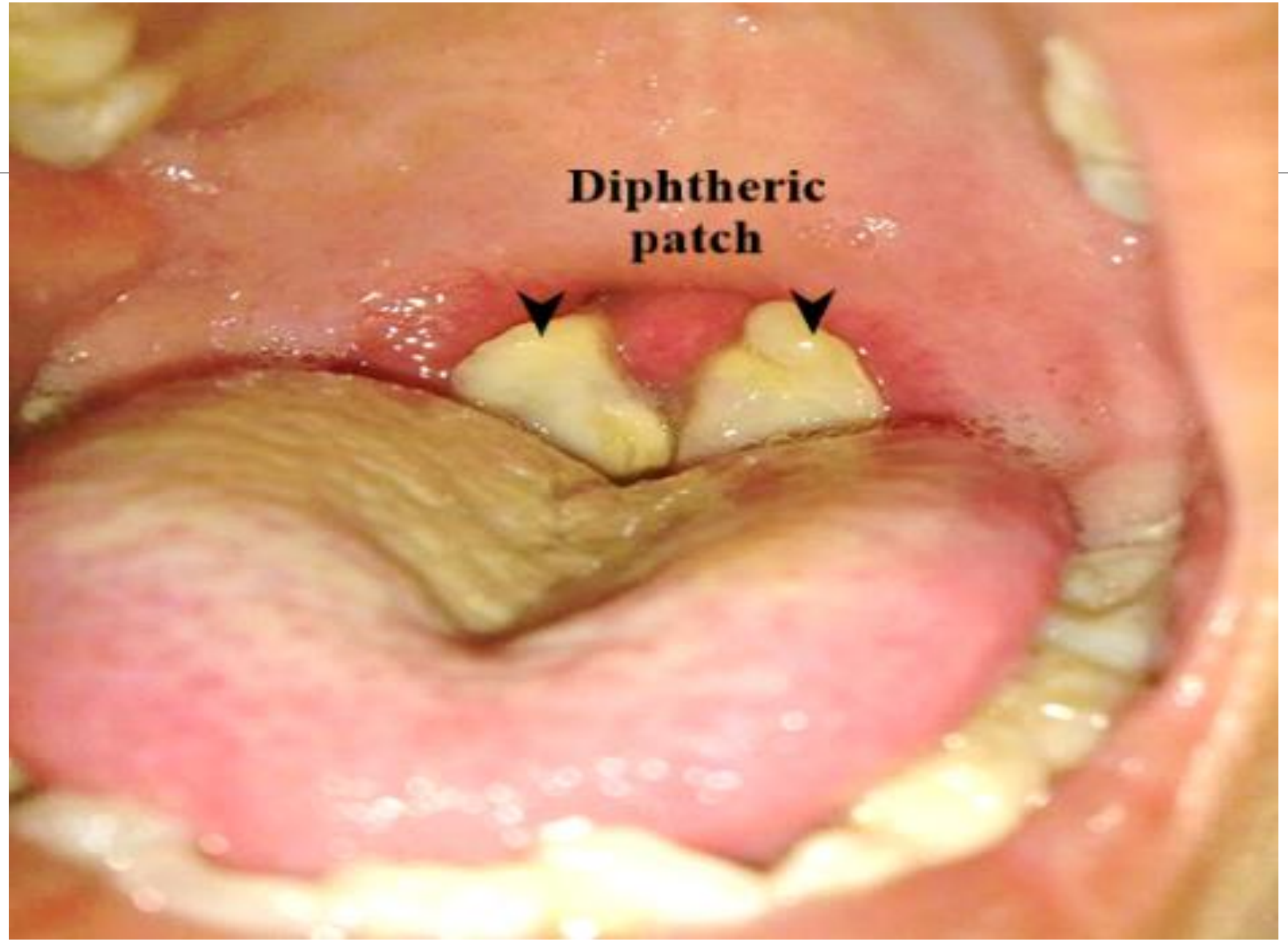
Spread to others

Diphtheria spreads easily between people by direct contact or through the air though respiratory droplets, like from coughing or sneezing. It may also be spread by contaminated clothing and objects.

Signs and Symptoms

The incubation period of diphtheria is usually **2–5** days

The hallmark of **respiratory diphtheria** is the presence of a tough, grayish-white pseudomembrane over the tonsils, nasopharynx, or larynx. The pseudomembrane is strongly adherent to the underlying tissue and attempts to dislodge it usually result in bleeding.


Diphtheric
patch

Cutaneous infections caused by toxin-producing strains of C. diphtheriae are usually mild, typically consisting of indistinct sores or shallow ulcers.

Diagnosis

Clinical diagnosis of diphtheria usually relies on the presence of a greyish membrane covering the throat.

A lab culture of material from the throat membrane confirms the diagnosis.

Also can take a tissue sample from an infected wound and have it tested in a lab to check for the type of diphtheria that affects the skin (cutaneous diphtheria).

Treatment

The treatment of diphtheria aims to neutralize the circulating toxin and eliminate the diphtheria bacterium. In order to prevent complications and death, patients with suspected diphtheria should be isolated and treated with antibiotics and diphtheria antitoxin. Antibiotics should also be given to close contacts.

An infected patient, if not treated, can die following complications affecting the heart, central nervous system and respiratory system.

Prevention

Diphtheria is preventable through active immunization. Effective control of the disease can be ensured through high population immunity by providing three doses of diphtheria-containing vaccine to all children below one year of age.

CDC recommends that close contacts of someone with diphtheria receive antibiotics to prevent them from getting sick.

Babies and children younger than 7 years old receive DTaP, while older children and adults receive Tdap and Td. Td is also used for anyone who should not receive pertussis-containing vaccines.


Thank you!!!