- Describe the pathophysiology of influenza, pertussis and cholera.
- Explain the body substance isolation procedures that should be employed when treating the pati and cholera.
- List the signs and symptoms of influenza, pertussis and cholera.
- Discuss the management of the patient with suspected influenza, pertussis and cholera.

While they are often used synonymously, the terms infectious disease and communicable disease c meaning. A communicable disease is an infectious disease that is easily spread from one human to a communicable diseases are infectious diseases, but not all infectious diseases are communicable.

As EMTs and paramedics, we learn about many infectious and communicable diseases, some of w basis, like influenza, the common cold, croup or sexually transmitted diseases. Other infectious disea more obscure. This article discusses influenza, an infectious disease that occurs yearly and affects m community; pertussis, a disease that until fairly recently has been encountered infrequently, but is pre resurgence in the United States; and discuss cholera, an infectious disease that is not a problem in th conditions in other parts of the world and ease of travel make it increasingly likely that emergency car it in the field here at home.

Influenza

Influenza, commonly referred to as "the flu," is an acute, contagious respiratory illness caused by in influenza viruses. Symptoms can range from mild illness with fatigue to respiratory failure and death. recognized:

- Type A is associated with most epidemics and pandemics and most of the deaths from influenza
- Type B evolves slower than Type A, and results in regional or widespread epidemics every 2 to 3
- Type C is rare and associated with sporadic cases.

Identifying the type is the first step in naming the influenza virus, followed by the subtype, which is r surface protein located on the viral surface. The two broad classes of surface proteins are hemagglut (NA). There are 16 HA subtypes (designated H1-H16) and 9 NA subtypes (designated N1-N9). All of influenza A subtypes infect birds, but only those containing the H1, H2, H3 and N1 and N2 do so to a subtype is considered a candidate for a new sub-type for broad human infectivity, and, as a result, we upcoming influenza seasons.

Persons of all age groups are at risk of contracting the influenza virus, although rates of infection ar Risks for complications, hospitalization and death from influenza are higher among persons aged 65

and produces a new virus that bursts from the cell, destroying it. The virus then goes on to infect othe
same manner. Local and systemic effects result from the release of inflammatory mediators and inclu
fever. If the infection spreads further down the respiratory tree, abnormal lung sounds such as rhonch
auscultated. The most common cause of death from influenza is not the influenza virus itself, but add
bacterial pneumonia.

History and Clinical Exam Findings

signs can range from normal to warm to hot, depending on temperature. If the infection has spread to
sounds such as rhonchi or wheezing may be auscultated.

Prehospital Management of the Patient with Suspected Influenza

As with all infectious diseases, the first line of management is preventing the spread of infection to t
CDC recommends that all high-risk groups, which include healthcare personnel, receive the influenza
the healthcare provider should include gloves and a surgical mask. Place a surgical or some other ma
and nose to prevent the release of aerosolized droplets when they cough, sneeze or talk. The best wa
to prevent the spread of infection is by washing hands thoroughly after contact with a patient suspect
Additionally, clean all stretcher linen and ambulance surfaces after completion of the call with appropr
EPA-registered disinfectants or a bleach solution of 1 tablespoon of bleach in 1 quart (4 cups) of wate
disinfectant, add ¼ cup of bleach to 1 gallon (16 cups) of water.

Treatment of the patient with influenza is mostly supportive. There is no treatment for the influenza
allowed to run its course. Treatment includes ensuring proper ventilation and oxygenation and correct
deficits. If SpO_2 is below 95%, oxygen should be administered via the appropriate delivery device. If b
bag-mask ventilations should be provided. If the patient shows signs of dehydration, a distinct possibi
and limited fluid intake common to patients with influenza, initiate IV access and administer an isotoni
kg, or as local protocol requires.

Pertussis

Pertussis, also known as whooping cough, is a respiratory tract illness caused by the bacterium Bo
identified in the 16th century, when an epidemic swept through Paris, it was a significant cause of infa
mortality until introduction of the pertussis vaccine, which was combined with the diphtheria and tetan
Tdap vaccine) and made widely available in the United States in the 1940s. Pertussis literally means
hallmark of the disease.

Since the 1980s, there has been an increase in the number of cases of pertussis, especially among
and babies younger than 6 months. In 2009, there were nearly 17,000 reported cases in the U.S., inc

The incubation period for pertussis is typically about 3-12 days, and the disease progresses in three paroxysmal and convalescent.

Phase 1, the initial phase, occurs after the incubation period and is characterized by common upper symptoms, including rhinorrhea, congestion, sneezing, tearing and low-grade (100.4°F-102.2°F) fever two weeks, and its end is usually heralded by the onset of a dry cough.

coughing does not indicate ongoing or recurrent infection with pertussis.

Major complications associated with pertussis include development of severe pneumonia, central n seizures (secondary to hypoxia) and otitis media. In addition, complications resulting from frequent, fo pneumothorax, pneumomediastinum and diaphragmatic rupture can occur.[7]

History and Clinical Exam Findings

Patients with pertussis, or more likely their caregivers, will often describe a 1- to 2-week history of U progress to a dry cough, which will increase in frequency and evolve into the characteristic coughing "whooping" sound. In addition, the caregiver may describe, or the clinician may observe, episodes of excessive, thick respiratory secretions and salivation; lacrimation; and protrusion of the tongue during addition, post-tussive emesis (forceful coughing followed by vomiting or apnea) may occur.[7]

Inquire about the patient's immunization status, as children who are not immunized are at significan the disease.

Prehospital Management of the Patient with Suspected Pertussis

All patients with suspected pertussis should be transported to an emergency department for evalua perceived severity of the disease, as significant complications can develop quickly, especially in the v suspected pertussis and severe paroxysms will most likely be hospitalized, as will children under age Neonates with suspected pertussis will most likely be admitted to an intensive care unit, as apnea an complications can occur without warning.

It is recommended that all prehospital care providers receive a Tdap booster vaccine and wear app transmission of the disease via aerosolized droplets. At a minimum, gloves, a surgical mask and eye Keep the patient as comfortable as possible and not agitated. If signs of hypoxia are present, adminis appropriate delivery method that results in as little patient agitation as possible, with a goal SpO_2 grea patient's breathing is inadequate, assist ventilation with a bag-valve mask to ensure adequate minute as necessary; it may be required after paroxysms. Intravenous fluid replacement can be provided to p dehydration. Administer 10-20 ml/kg boluses of isotonic crystalloid solution for patients with signs of h

On November 17, a woman living in Florida was diagnosed with cholera after traveling to Haiti to vis
were expected to emerge in Florida, because the state has around 241,000 Haitian-born residents, m
from Haiti and have done so with increased frequency since last January's earthquake.11 In addition
to visit family members, large numbers of non-Haitians are traveling to Haiti to lend assistance to the
and risk bringing the disease back to their home locations when they return. As of December 18, 201
Health had confirmed five cases of cholera in the state. Four of the five patients were hospitalized, inc

(102-104) are required to produce disease. The naturally acidic environment of the stomach is the bo
against becoming infected with cholera. Use of proton pump inhibitors, antacids and histamine recept
acidity, increases the risk of cholera infection and predisposes the patient to a more serious course of

Once colonized in the small intestine, V. cholerae produces an enterotoxin (protein toxin released b
promotes a shift of fluid and electrolytes out of the bloodstream into the small intestine. The large inte
sensitive to the enterotoxin and can absorb fluid in a normal fashion. However, the large intestine can
volumes of fluid produced upstream in the small intestine, resulting in severe diarrhea and electrolyte

History and Clinical Exam Findings

Patients infected with V. cholerae will typically exhibit symptoms 24 to 48 hours after inoculation. Mo
results in a subclinical course, with patients presenting as relatively asymptomatic with mild diarrhea t
indistinguishable from other causes of gastroenteritis. However, an estimated 5% of infected patients
gravis, the most severe form of cholera that is characterized by profuse, painless, watery diarrhea; vo
and signs and symptoms of dehydration.

The diarrhea of cholera is unique in that it is profuse, has what is described as a fishy odor, and has
An untreated adult with cholera can produce 10-20 liters of diarrhea per day, leading to rapid and prof
electrolyte imbalance and death.13 Vomiting can also contribute to water and gastric acid losses, lead
disturbances. Signs of dehydration include excessive thirst, hypotension, tachycardia, dry mucous me
fatigue. Profound, life-threatening dehydration is characterized by sunken fontanels in children, sunke
oliguria, somnolence and coma.

It is important to identify those persons at risk for cholera infection, and a good history can help lead
Inquire about recent travel, especially international travel and travel to areas with a high risk of or acti
Also ask if the patient has been in contact with persons who have traveled to those areas or anyone w
gastrointestinal complaints.

Cholera can often be diagnosed or placed high on the list of differential diagnoses based on the cor
travel history and physical examination. Once clinically suspected, treatment can be started immediat

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