INFORMATION PAPER

DHA-IHD
18 February 2021

SUBJECT: Cholera Disease and Cholera Vaccine

1. Purpose. To describe cholera disease and vaccines to prevent it.

2. Facts.

    a. Microbiology. Cholera is an acute enteric infection caused by bacterium *Vibrio cholerae* O1 or O139 and is transmitted by the ingestion of fecal contaminated water or food containing the organism. Primarily linked to insufficient access to safe water and proper sanitation, its impact can be even more dramatic in areas where basic environmental infrastructures are disrupted or have been destroyed. Countries facing complex emergencies are particularly vulnerable to cholera outbreaks.

    b. Disease. The primary route of transmission is the fecal-oral route, eating contaminated food or drinking contaminated water. The disease is not likely to spread directly from one person to another; therefore, casual contact with an infected person is not a risk for becoming ill. The incubation period is approximately 12 hours to 5 days. The infection is often mild or without symptoms, but can sometimes be severe. Approximately one in 10 (5-10%) infected persons will have severe disease characterized by profuse watery diarrhea, vomiting, and leg cramps. In these people, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

    c. Epidemiology. Cholera is endemic in approximately 50 countries and has the potential to emerge in dramatic epidemics; most cases go unreported. Cholera is endemic in much of Africa and South America and Southeast Asia (few areas). Cholera emerged in Haiti, and has spread to other countries, including the Dominican Republic and Cuba. There are sporadic cases associated with travel to or from the Caribbean. An estimated 3-5 million cases and over 100,000 deaths occur each year around the world. In the United States, most cases occur among travelers to cholera-affected areas.

        (1) High risk groups include travelers visiting friends and relatives in cholera-affected areas, long term travelers, travelers who do not follow safe food and water precautions and personal hygiene measures, and healthcare workers and response workers with direct contact with body fluids from cholera patients.

(2) Populations who may be at higher risk of poor outcomes from cholera include travelers without ready access to rehydration therapy and medical care, and travelers with condition that carries increased risk of poor clinical outcomes from cholera to include blood type O, pregnancy, immunocompromising conditions, and cardiovascular disease and renal failure.

d. Vaccine. Single-dose Live Cholera Vaccine CVD 103-HgR. Trade name VAXCHORA. Manufacturer Pax Vax Bermuda Ltd. VAXCHORA is the only Cholera vaccine licensed for use in the United States.

(1) VAXCHORA is a vaccine indicated for active immunization against disease caused by *Vibrio cholerae* serogroup O1. VAXCHORA is approved for use in persons 2 through 64 years of age traveling to cholera-affected areas.

(2) VAXCHORA is a live attenuated single-dose oral cholera vaccine. It contains live attenuated cholera bacteria that replicate in the gastrointestinal tract of the recipient.

(3) Immune mechanisms conferring protection against cholera following receipt of VAXCHORA have not been determined. However, rises in serum vibriocidal antibody 10 days after vaccination with VAXCHORA were associated with protection in a human challenge study.

e. Precautions and Contraindications. The safety and effectiveness of VAXCHORA have not been established in immunocompromised individuals. The immunologic response to VAXCHORA may be diminished in immunocompromised individuals. Do not use in persons who have a history of severe allergic reaction (e.g., anaphylaxis) to any ingredient of VAXCHORA or to a previous dose of any cholera vaccine. VAXCHORA may be shed in the stool of recipients for at least 7 days. There is a potential for transmission of the vaccine strain to non-vaccinated close contacts.

(1) Administer VAXCHORA at least 10 days before beginning antimalarial prophylaxis with chloroquine.

(2) Avoid concomitant administration of VAXCHORA with systemic antibiotics (for example Doxycycline) since these agents may be active against the vaccine strain and prevent protective immune response.

(3) Do not administer VAXCHORA to patients who have received oral or parenteral antibiotics within 14 days prior to vaccination.

f. Immunization. Indicated for use in persons 2 through 64 years of age traveling to cholera-affected areas for active immunization against disease cause by Vibrio cholera serogroup.

(1) Dosage and Schedule. VAXCHORA is a suspension for oral administration. Administer VAXCHORA a minimum of 10 days before potential exposure. Before reconstitution, each dose of VAXCHORA is supplied as a foil packet of buffer and an accompanying foil packet of the active component (lyophilized V. cholerae CVD 103-HgR). After reconstitution, a single dose of VAXCHORA is 100 milliliters (mL).

(2) Preparation, Reconstitution, and Administration. Prepare and administer VAXCHORA in a healthcare setting equipped to dispose of medical waste. NOTE: If the packets are reconstituted in the improper order, the vaccine must be discarded.

a. Reconstitution should be completed within 15 minutes of removing the carton from the refrigerator. Locate the 2 packets: the buffer component (Packet 1) and the active component (Packet 2).

b. Pour 100 mL of cold or room temperature (41ºF-72ºF; 5ºC-22ºC) purified bottled water into a clean, disposable cup. Do not use tap water, non-purified bottled water, other beverages, or other liquids.

c. Use scissors to cut the top off the buffer component packet (Packet 1).

d. Empty buffer component (Packet 1) contents into cup. Effervescence will occur.

e. Using a disposable stirrer, stir until the buffer component (Packet 1) completely dissolves.

f. Use scissors to cut the top off the active component packet (Packet 2).

g. Empty the active component packet (Packet 2) contents (lyophilized V.cholerae CVD 103-HgR) into the cup containing the buffer solution.

h. Stir for at least 30 seconds and until active component (Packet 2) disperses to form a slightly cloudy suspension that may contain some white particulates. The active component may not dissolve completely.

i. VAXCHORA must be consumed within 15 minutes of reconstitution. The recipient should drink the full contents of the cup at once. Some residue may remain in the cup and should be discarded with the cup.

j. Administer a single oral dose of VAXCHORA a minimum of 10 days before potential exposure to cholera; avoid eating or drinking for 60 minutes before or after dose of VAXCHORA.

g. Adverse Events. The most common adverse reactions were tiredness, headache abdominal pain, nausea/vomiting, lack of appetite and diarrhea. Any clinically significant or unexpected adverse event that occurs after administration of VAXCHORA Cholera vaccine should be reported to Vaccine Adverse Events Reporting System (VAERS).

h. DoD Policy. Use VAXCHORA Cholera vaccine in accordance with recommendations of the Advisory Committee on Immunization Practices (ACIP). Cholera vaccine is not a force health protection requirement for any combatant command.

i. Spillage. Inactivate any spilled vaccine and clean any non-disposable equipment used in the preparation of VAXCHORA with 70% isopropyl alcohol or 10% bleach solution.

j. Disposal. Dispose of the cup, packets and stirrer into a hazardous waste container according to standard procedures for medical waste.

(1) Do not pour unused vaccine product down drains.

k. Special Considerations. Remind travelers that VAXCHORA vaccine is not 100% effective, and cholera could still occur after ingestion of contaminated food or water. Vaccinated individuals should continue to take personal protective measures against exposure to cholera and should be cautioned that vaccination is not a substitute for careful selection of food and drink. Inform recipients of the potential for shedding 7-14 days following vaccination with VAXCHORA. Vaccine recipients should wash their hands thoroughly after using the bathroom and before preparing or handling food.

(1) It should be noted that the symptom complex of vomiting/nausea, abdominal pain and diarrhea may result in an etiological differential diagnosis challenge (wild type origin versus vaccine induced origin), if the vaccine (VAXCHORA) is initially administered in areas of potential exposure for cholera.

3. References.

a. Center for Disease Control and Prevention. June 2016. Advisory Committee on Immunization Practices (ACIP) Meeting-Cholera Vaccine. https://www.youtube.com/watch?v=07PRZw2mS-s

b. Center for Disease Control and Prevention Yellow Book: http://wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/cholera

c. U. S. Food and Drug Administration. Vaccine Blood and Biologics. Approved Products. VAXCHORA: https://www.fda.gov/vaccines-blood-biologics/vaccines/vaxchora

d. Multiple resources (e.g., product insert, Vaccine Information Statements) assembled by the Immunization Healthcare Division: www.health.mil/cholera

South Atlantic Region Vaccine Safety Hub
Approved: Deputy Chief, Immunization Healthcare Division
877-438-8222 (DSN 761-4245), option 1