FUNDAMENTALS:

• Chain of Transmission; Cholera, as any other infectious agent, may be broken by breaking any of the six links in the chain of transmission.

- **Infectious Agent:** Vibrio cholerae Subgroup O1 and 0139
- **Susceptible Host**
- **Route of Entry:** Oral
- **Mode of Transmission:** Ingestion of contaminated food or water
- **Reservoir:** Water Borne Human
- **Route of Exit:** Feces
DEFINITION AND SYMPTOMS:

- An acute bacterial (vibrio cholerae) enteric disease characterized in its severe form by sudden onset profuse painless watery stools (rice-water stool), nausea, and profuse vomiting early in the course of illness.

- If untreated; rapid dehydration, acidosis, circulatory collapse, hypoglycemia in children, renal failure, and death.

- In most cases the infection is asymptomatic or has mild diarrhea.
INCUBATION PERIOD AND COMMUNICABILITY:

• Cholera contamination may begin within a few hours up to 5 days after exposure. Typically within 2-3 days of exposure.

• The patient is still communicable if the stools are positive which is usually a few days after recovery.

• Note: Cholera may transition to a “carrier” state and persist for several months.
OCCURRENCE AND SUSCEPTIBILITY:

• Cholera is one of the oldest and most understood epidemic diseases.
• Epidemics and pandemics are strongly linked to the consumption of unsafe water, poor hygiene, poor sanitation, and crowded living conditions.
• Typical settings for Cholera are periurban slum, where basic infrastructure is missing, (I.E. plumbing).
• Outbreaks of Cholera have been know to be seasonal in Asia and Africa.
• Man-made or natural disasters such as complex emergencies and floods resulting in population movements and overcrowding refugee camps are conductive to Cholera outbreaks.
• Persons with blood group O are more prone more significantly than other blood groups.
Due to places where cholera exist laboratory diagnosis and antibiotic sensitivity may be lacking so primary the clinical case definition proposed by WHO (World Health Organization) is:

- **Disease unknown in area:** severe dehydration or death from acute watery diarrhea in patient aged 5 or more.
- **Endemic Cholera:** acute watery diarrhea with or without vomiting in patient aged 5 or more.
- **Epidemic Cholera:** acute watery diarrhea with or without vomiting in any patient.
DIAGNOSIS WITH LABORATORY:

- Diagnosis is done by isolation of the Vibrio cholerae bacteria from feces.
- TCBS agar is the most common standard culture medium, which Vibrio cholerae grows well in.
- For quick clinical purposes a presumptive diagnosis can be made by darkfield or phase microscopic visualization of the vibrios moving like “shooting stars” inhibited by preservative-free, serotype-specific antiserum.
- In epidemics, once laboratory confirmation and antibiotic sensitivity complete, all subsequent cases do not need to be confirmed.
A Cholera outbreak may be caused by a number of specific bacteria strains. The laboratory will identify the specific dominate strain causing the outbreak, but any of the following strains may cause a Cholera outbreak.
TREATMENT, ADULT:

• FIRST AND FOREMOST: **REHYDRATION.** (Supportive care)

• Secondary treatment may include the use of antibiotics, but the use of antibiotics is more for symptom relief and conserving resources.

• First Line Adult Antibiotics:
  • Tetracycline 500mg PO QID x 3 days.

• Second line/Alternative Adult Antibiotics:
  • Doxycycline 300mg PO x 1.
  • Tetracycline-resistant: Furazolidone 100mg PO QID x 3 days.
  • Tetracycline-resistant: Erythromycin 250mg PO QID x 3 days.
  • Ciprofloxacin 250mg PO QD x 3 days.
TREATMENT, CHILDREN:

• FIRST AND FOREMOST: **REHYDRATION**. (Supportive care)

• Secondary treatment may include the use of antibiotics, but the use of antibiotics is more for symptom relief and conserving resources.

• First line Children Antibiotics:
  • Tetracycline 12.5mg/kg PO QID x 3 days.

• Second line Children Antibiotics:
  • Tetracycline-resistant: Furazolidone 1.25mg/kg PO QID x 3 days.
  • Tetracycline-resistant: Erythromycin 30mg/kg PO QID x 3 days.
METHODS OF CONTROL:

• First PREVENTION: Oral Cholera Vaccine, there are 2 available.

• In hospital setting: Isolation with enteric precautions for severely ill. Terminal cleaning after hospitalization.

• Concurrent disinfections: of feces and vomit, of linens and articles used by the patient using heat, carbonic acid, or other disinfectant.

• Feces does not need to be pre-treated if being disposed of in a modern and adequate sewage disposal system, feces can be discharged directly into the sewers without preliminary disinfection.
METHODS OF CONTROL:

• Surveillance of persons who shared food and drink with the cholera patient for 5 days from last exposure.

• For those who may have come into contact with the cholera patient but do not show signs they may be given prophylaxis dosing.

• Treat only those who may have been contaminated, do not treat whole communities – wasteful and leads to drug resistance.
PROPHYLAXIS DOSING:

• Adults:
  • Tetracycline 500mg by mouth 4 times a day for 3 days.
  • Doxycycline 300mg by mouth, one dose.
  • Suspect Tetracycline-resistant strain: Furazolidone 100mg by mouth 4 times a day for 3 days.
  • Or Erythromycin 250mg by mouth 4 times a day for 3 days.

• Children:
  • Tetracycline 50mg/kg/day in 4 divided doses by mouth for 3 days.
  • Doxycycline 6mg/kg once by mouth.
  • Suspect Tetracycline-resistant strain: Furazolidone 1.25mg/kg by mouth 4 times a day for 3 days.
  • Of Erythromycin 40mg/kg/day divided into 4 doses by mouth for 3 days.
Cholera is one of the 3 diseases requiring notification under the International Health Regulations. (Class 1 documentation) The other two are Yellow Fever and Plague.

In 2002, the fatality rate over all was 3.2%, but in areas in South Africa the fatality rate there alone was 30-40% with a question of how accurately the information is reported, often thought underreported and/or poor surveillance systems.
TERMINOLOGY:

• Endemic; regularly found among particular people or in a certain area.
• Enteric precautions; avoidance of any contact with bodily fluids of a patient due to pathogens, for Cholera specifically FECES and EMESIS.
• Epidemic; a widespread occurrence of an infectious disease in a community at a particular time.
• Pandemic; is an epidemic infectious disease that has spread through human populations across a large region. I.E. multiple continents or even worldwide.
• Periurban; relating to an area immediately surrounding a city or town <154,000 people.