

Vibrio cholera

Highly motile, **gram-negative**, curved or comma-shaped rods with a single polar flagellum.

Grows in **salt and fresh water**.

Only O1 and O139 are toxigenic.

Enterotoxin → **secretory** diarrhea (non-invasive).

Transmitted by fecal-oral route (Contaminated food or water).

Common in India, Sub-Saharan Africa, Southern Asia.

Infectious Dose

10^6 - 10^{11} colony-forming units.

This **high dose** is needed because it's going to face many obstacles trying to reach & penetrate intestinal mucosa.

People Most at Risk

People with ↓ **gastric acid** levels.

Children.

Blood types: O >> B > A > AB

Cholera toxin

Inactivates GTPase function of G-protein coupled receptors in intestinal cells.

G proteins stuck in "On" position → 100 fold ↑ in cAMP

Activation of ion channels (cl) → Ions flow out (Na) & water follows.

Symptoms

2-3 days after eating contaminated food/water

75% asymptomatic

20% mild disease

2-5% severe

Vomiting, Cramps, Watery diarrhea (1L/hour).

No treatment, death in 18 hrs - days.

Cholera Gravis

More severe death in hrs.

Diagnosis

↓ skin turgor.

Sunken eyes, cheeks.

No urine.

Dry mucous membranes.

Watery diarrhea consists of

No RBC, proteins (**or WBC**) not invasive. electrolytes.

vibrio cholera (10^7 vibrios/mL).

Culture: Plate on Thiosulphate bile salt sucrose (TCBS) agar → **Yellow** colonies.

Gram Stain: Red, curved rods of bacteria.

Treatment

1. **Rehydration** by: oral or I.V using:

Ringer's Lactate, Saline, Sugar & water.

2. Antimicrobial.

Prevention

Disrupt fecal-oral transmission.

Water sanitation.

Water treatment.

Vaccines: **IgA** prevent it's attachment to the mucus.