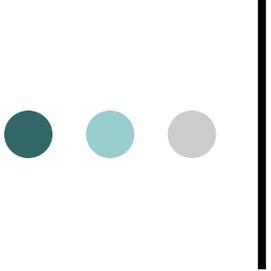


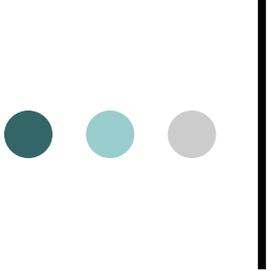


*Vibrio, Aeromonas,
Plesiomonas, &
Campylobacter*



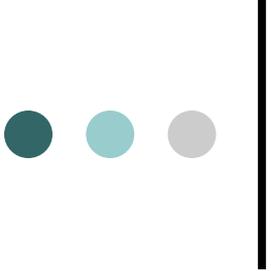
Vibrio species

- General characteristics
 - Gram negative rods with polar, sheathed flagella in broth but peritrichous, unsheathed flagella on solid media
 - Rods are “curved” in clinical specimens, but small, straight rods after culture
 - Facultatively anaerobic
 - Asporogenous



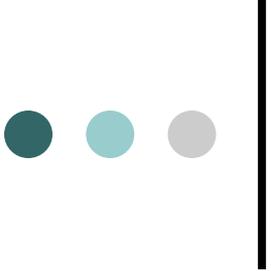
Vibrio species (cont'd)

- Most are oxidase positive and able to reduce nitrates to nitrites
- All are susceptible to vibriostatic compound O/129
- Most exhibit a mucoid “stringing” reaction when colonies mixed with sodium desoxycholate
- Except for *V. cholerae* and *V. mimicus*, all are halophilic (salt-loving)
- Some strains can be serotyped



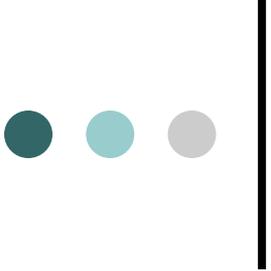
Vibrio species (cont'd)

- *Vibrio* species can be isolated from a variety of clinical specimens, including feces, wound, and blood
- Major species are *V. cholerae*, *V. parahaemolyticus*, *V. vulnificus*, and *V. alginolyticus*



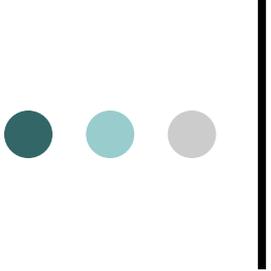
Vibrio species (cont'd)

- Best indicators of *Vibrio* infection is presence of recognized factors
 - Recent consumption of raw seafood (especially oysters)
 - Recent immigration or foreign travel
 - Gastroenteritis with cholera-like or rice-water stools
 - Accidental trauma during contact with fresh or marine water



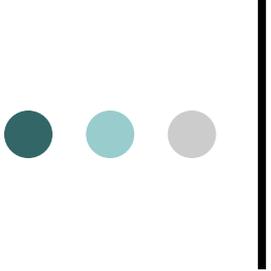
Vibrio cholerae

- *V. cholerae* O1 is causative agent of cholera
 - Also known as Asiatic cholera or epidemic cholera; particularly prevalent in India and Bangladesh
 - Also seen along the Gulf coast of the U.S.



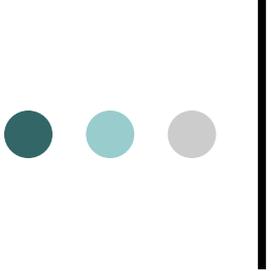
Vibrio cholerae (cont'd)

- Clinical Infection
 - Acute diarrheal disease
 - Spread through contaminated water, but also improperly preserved foods, including fish and seafood, milk, ice cream, and unpreserved meat
 - "Rice Water" stools
 - Caused by cholera toxin or cholera toxin B
 - Dehydration is usual cause of death



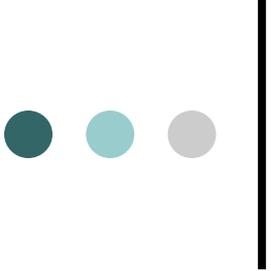
Vibrio parahaemolyticus

- Second most common *Vibrio* species involved in gastroenteritis
- "Summer diarrhea" in Japan
- Most cases traced to recent consumption of raw, improperly cooked, or recontaminated seafood, especially oysters



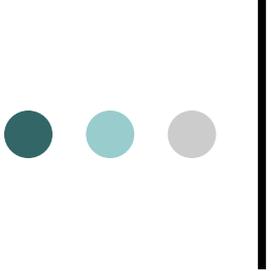
Vibrio parahaemolyticus (cont'd)

- Gastrointestinal symptoms are generally self-limiting; watery diarrhea, moderate cramps or vomiting



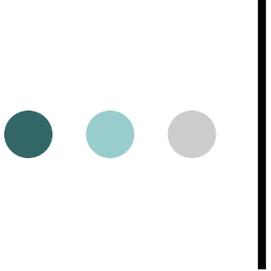
Vibrio vulnificus

- Found in marine environments along all coasts in the U.S.
- Two categories of infections
 - Primary septicemia following consumption of contaminated shellfish, especially raw oysters; patients with liver dysfunction that results in increased levels of iron are predisposed
 - Wound infections following traumatic aquatic wound



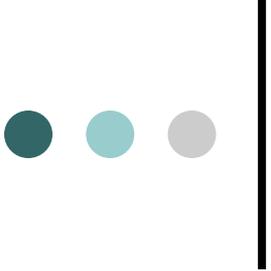
Aeromonas

- Ubiquitous oxidase-positive, glucose-fermenting, motile, not curved gram-negative rods widely distributed in fresh and salt water environments
- Isolated from produce and meat sources



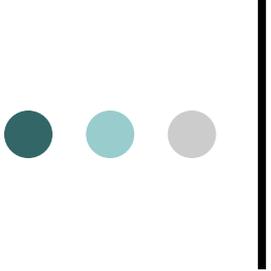
Aeromonas (cont'd)

- *Aeromonas* gastroenteritis usually results from consumption of contaminated seafood, especially raw oysters or clams; illness usually self-limiting, except in very young and old populations
- Wound infections usually from *A. hydrophilia* resulting from traumatic water-related wound



Plesiomonas

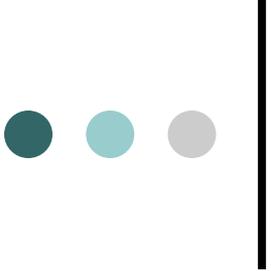
- Single species is *P. shigelloides*
- Oxidase-positive, glucose fermenting, facultatively anaerobic gram negative motile rods
- Primarily causes gastroenteritis resulting from consumption of uncooked oysters or shrimp
- Also causes bacteremia or meningitis in immunocompromised after animal exposure



Campylobacter and Campylobacter-like species

- *Campylobacter*

- Non-spore-forming, curved, gram-negative rods, showing an S-shaped ("seagull-wing") appearance
- Exhibit "darting" motility
- Require selective media and microaerophilic environment for growth



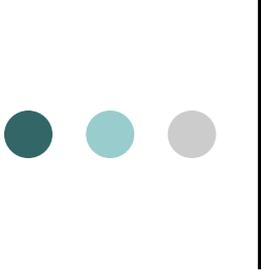
Campylobacter species (cont'd)

- Most common cause of bacterial gastroenteritis worldwide is *Campylobacter jejuni*
- *Campylobacter* infections attributed to direct contact with animals and indirectly through consumption of contaminated water and dairy products and improperly cooked poultry
- *Campylobacter* may also be transmitted sexually



Campylobacter species (cont'd)

- Curved, gram-negative rods appearing as long spirals, S shapes, or seagull-wing shapes; stains poorly, so safranin counterstaining should be extended to 2 to 3 minutes
- Cultured on Campy plates at 42 degrees C in microaerophilic and capnophilic environment
- Darting motility in hanging drop, oxidase positive, and catalase positive



Helicobacter pylori

- Strongly associated with gastric and duodenal ulcers; low grade inflammatory process
- The organism does not invade the gastric epithelium, but the host immune antibody response causes inflammation
- Can be cultured, but it is so strongly urease positive that presumptive identification often made from biopsy specimen by testing for urease production
- ¹⁴C-labeled urea breath test