2nd lecture
(Gram +ve spore forming bacilli)

1- A housewife who lives on a small farm is brought to the emergency department complaining of double vision and difficulty talking. Within the past 2 hours, she noted a dry mouth and generalized weakness. Last night she served home-canned green beans as part of the meal. She tasted the beans before they were boiled. None of the other family members are ill. On examination, there is symmetrical descending paralysis of the cranial nerves, upper extremities, and trunk. The correct diagnosis is which one of the following?

(A) Tetanus

(B) Strychnine poisoning

(C) Botulism

(D) Morphine overdose

(E) Ricin intoxication

Answer: C

2- A food commonly associated with Bacillus cereus food posioning is

(A) Fried rice

(B) Baked potato

(C) Hot freshly steamed rice

(D) Green beans

(E) Honey

Answer: A

3- A 67-year-old man had surgery for a ruptured sigmoid colon diverticulum with an abscess. A repair was done, and the abscess was drained. He was treated with intravenous gentamicin and ampicillin. Ten days later and 4 days after being discharged from the hospital, the patient developed malaise, fever, and cramping abdominal pain. He had multiple episodes of diarrhea. His stool was positive for occult blood and the presence of polymorphonuclear cells. On sigmoidoscopy, the mucosa was erythematous and

appeared to be inflamed, and there were many raised white to yellowish plaques 4–8 mm in diameter. Which of the following is the likely cause of the patient's problem

(A) Staphylococcus aureus enterotoxin (B) Bacillus cereus toxin

(C) Clostridium difficile toxins

(D) Clostridium perfringens toxin

(E) Enterohemorrhagic Escherichia coli

Answer: C

4- Which of the following food items is most frequently associated with infant botulism?

(A) Corn syrup

(B) Canned infant formula

(C) Liquid multivitamins

(D) Honey

(E) Jarred baby food

Answer: D

5- All of the following statements regarding Clostridium perfringens are correct EXCEPT:

(A) It produces an enterotoxin.

(B) It produces a double zone of β -hemolysis when grown on blood agar.

(C) Some strains are aerotolerant.

(D) It is the most common cause of antibiotic-associated diarrhea.

(E) It can cause intravascular hemolysis.

Answer: D

3rd and 4th lectures
(Enteric gram -ve bacteria pt.1+2)

1- A 27-year-old woman is admitted to the hospital because of fever, with increasing anorexia, headache, weakness, and altered mental status of 2 days' duration. She works for an airline as a cabin attendant, flying between the Indian subcontinent and other places in Southeast Asia and the West Coast of the United States. Ten days before admission, she had a diarrheal illness that lasted for about 36 hours. She has been constipated for the past 3 days. Her temperature is 39°C, heart rate is 68 beats/ min, blood pressure is 120/80 mm Hg, and respirations are 18 breaths/min. She knows who she is and where she is but does not know the date. She is picking at the bedclothes. Rose spots are seen on her trunk. The remainder of the physical examination is normal. Blood cultures are done, and an intravenous line is placed. The most likely cause of her illness is

(A) Enterotoxigenic Escherichia coli (ETEC)

(B) Shigella sonnei

(C) Salmonella enterica subspecies enterica serotype Typhimurium (Salmonella Typhimurium)

(D) Salmonella enterica subspecies enterica serotype Typhi (Salmonella Typhi)

(E) Enteroinvasive Escherichia coli (EIEC)

Answer: D

2- Blood cultures from the patient in question 2 grow a non lactose-fermenting gram-negative bacillus. Which of the following is likely to be a constituent of this organism?

(A) O antigen 157, H antigen 7 (O157:H7)

(B) Vi antigen (capsule; virulence antigen)

(C) O antigen 139 (O139)

(D) Urease

(E) K1 (capsular type 1)

Answer: B

3- An 18-year-old student has abdominal cramps and diarrhea. A selective agar plate is inoculated and grows suspicious gram negative rods. Triple sugar iron agar is used to identify the isolates as salmonellae or shigellae. A result suggesting one of these two pathogens would be

(A) Production of urease

(B) Motility in the medium

(C) Inability to ferment lactose and sucrose

(D) Fermentation of glucose

(E) Production of gas in the medium

Answer: B

*Salmonella are motile while shigella are not so we use this feature to differentiate between them

4- An uncommon serotype of Salmonella enterica subspecies enterica was found by laboratories in the health departments of adjacent states. The isolates were all from a small geographic area on either side of the border between the states, suggesting a common source for the isolates. (All of the isolates were from otherwise healthy young adults who smoked marijuana; the same Salmonella was isolated from a specimen of the marijuana.) By what method did the public health laboratories determine that these isolates were the same?

(A) Capsular (K antigen) typing

(B) O antigen and H antigen typing

(C) DNA sequencing

(D) Sugar fermentation pattern determination

(E) Decarboxylase reaction pattern determination

Answer: B

5- A 4-year-old boy from Kansas City who recently started a ing preschool and after-school daycare is brought to his pediatrician for a diarrheal illness characterized by fever to 38.2°C, severe lower abdominal pain, and initially watery diarrhea. His mother became concerned because the stools are now blood tinged 24 hours into the illness, and the child appears quite ill. The mother reports that two other children who attend the same after-school daycare have recently had diarrheal disease, one of whom likewise had bloody stools. Which of the following is the most likely pathogen causing the illness in these children?

(A) An enterotoxigenic strain of Escherichia coli

(B) Salmonella enterica subspecies enterica serotype Typhi (Salmonella Typhi)

(C) Shigella sonnei

(D) Edwardsiella tarda

(E) Klebsiella oxytoca

Answer: C

6- A 5-year-old girl attended a birthday party at a local fast food restaurant. About 48 hours later, she developed cramping abdominal pain and a low-grade fever and had five episodes of loose, bloody stools. She is taken to a local emergency department the next evening because the diarrhea has continued, and she now appears pale and lethargic. On presentation, she has a temperature of 38°C, and she is hypotensive and tachycardic. The abdominal examination reveals tenderness in the lower quadrants. Laboratory work is remarkable for a serum creatinine of 2.0 mg/dL, a serum hemoglobin of 8.0 mg/dL, thrombocytopenia, and evidence of hemolysis. What is the most likely pathogen causing this child's illness?

(A) Escherichia coli O157:H7

(B) Salmonella enterica subspecies enterica serotype Typhimurium

(C) Enteropathogenic Escherichia coli

(D) Edwardsiella tarda

(E) Plesiomonas shigelloides

Answer: A

*hemolysis and thrombocytopenia are signs of HUS (hemolytic uremic syndrome) which is a complication of shigella toxin producing E. Coli (STEC) and the most common serotype causing STEC is O157:H7

7- Which of the following test methods is the least sensitive procedure for diagnosis of colitis caused by Shiga toxin–producing Escherichia coli?

(A) Culture on sorbitol MacConkey agar

(B) Toxin testing using an enzyme immunoassay

(C) Cell culture cytotoxin assay using Vero cells

(D) Polymerase chain reaction for detection of the genes that encode Shiga toxin

Answer: A

* remember STEC **do not** ferment sorbitol, the doctor said he won't ask us about this but it's good to know this info

8- An HIV-positive man recently traveled to the Caribbean for a 2-week vacation. He developed acute watery diarrhea and abdominal pain without fever during the second week of his vacation. Three weeks later, he is seen in clinic for persistent symptoms, and he is concerned because he is beginning to lose weight. Given this history, you suspect:

(A) Enteroinvasive Escherichia coli

(B) Salmonella typhi

(C) Enteropathogenic Escherichia coli

(D) Shigella flexneri

(E) Enteroaggregative Escherichia coli

Answer: E

Since he is an HIV patient the first thing should come to your mind is Enteroaggregative E. Coli

9- Heat-labile toxin of ETEC acts by which of the following mechanisms?

(A) Attachment and effacement

(B) Activation of adenylyl cyclase

(C) Aggregative adherence

(D) Ribosomal dysfunction

(E) None of the above

Answer: B

10- Long-term carriage and shedding is most likely to occur after gastrointestinal infection with which of the following species?

(A) Escherichia coli O157:H7

(B) Shigella dysenteriae

(C) Vibrio cholerae

(D) Campylobacter jejuni

(E) Salmonella typhi

Answer: E

11- Bacteremia associated with a gastrointestinal infection is most likely to occur with which of the following?

(A) Salmonella typhi

(B) Vibrio cholerae

(C) Shigella boydii

(D) Vibrio parahaemolyticus

Answer: A

12- All of the following statements regarding the epidemiology of infections caused by Yersinia enterocolitica are correct except

(A) Most human infections are caused by serotype O:1.

(B) Humans acquire the infection from ingestion of food or drinks contaminated by animals or animal products.

(C) Person-to-person spread is quite common.

(D) A large inoculum is required to cause infection.

(E) Infection is more prevalent in persons with histocompatibility antigen HLA-B27.

Answer: C

13- Optimum recovery of Yersinia enterocolitica from the stools of patients with gastroenteritis requires which of the following specialized media?

(A) Cefsulodin-irgasan-novobiocin agar

(B) Xylose-lysine decarboxylase agar

(C) Hektoen-enteric agar

(D) Regan-Lowe medium

(E) MacConkey agar

Answer: A

5th lecture
(Vibrios, Campylobacters, Helicobacter)

1- A family of four persons ate a meal that included undercooked chicken. Within 3 days, three members developed an illness characterized by fever, headache, myalgia, and malaise. Two of the patients had concomitant diarrhea and abdominal pain. The third person developed diarrhea after the systemic symptoms had cleared. Stool cultures grew Campylobacter jejuni. Which of the following culture conditions was most likely used to isolate C jejuni?

(A) Thiosulfate-citrate-bile-sucrose medium incubated at 37°C in 5% oxygen and 10% CO 2

(B) Salmonella-Shigella selective medium incubated at 37 °C in ambient air

(C) MacConkey agar and Hektoen enteric agar incubated at 42°C in 5% oxygen and 10% CO 2

(D) 5% sheep blood agar incubated at 37 °C in ambient air

(E) A medium containing vancomycin, polymyxin B, and trimethoprim incubated at 42°C in 5% oxygen and 10% CO2

Answer: E

2- A patient presents to the emergency department with non bloody diarrhea for 12 hours. The patient lives in Washington, DC, and has not recently traveled out of the area. Which one of the following is *unlikely* to be the cause of your patient's diarrhea?

(A) Salmonella typhimurium

(B) Campylobacter jejuni

(C) Shigella sonnei

(D) Vibrio cholerae

(E) Escherichia coli

Answer: D

3- An 18-year-old woman in rural Bangladesh develops profuse (8 L/d) diarrhea. She has no symptoms other than the diarrhea and the manifestations of the fluid and electrolyte loss caused by the diarrhea. The most likely cause of her diarrhea is

(A) Campylobacter jejuni

(B) Enterotoxigenic Escherichia coli

(C) Salmonella typhimurium

(D) Vibrio cholerae

(E) Shigella dysenteriae

Answer: D

4- The Vibrio cholerae factor responsible for diarrhea is a toxin that

(A) Blocks EF-2

(B) Yields increased intracellular levels of cAMP

(C) Cleaves SNARE

(D) Blocks EF-1-dependent binding of amino-acyl-tRNA to ribosomes

(E) Cleaves VAMP

Answer: B

5- In September 1854, a severe epidemic of cholera occurred in the Soho/Golden Square area of London. Dr. John Snow, a father of epidemiology, studied the epidemic and helped stop it by which of the following actions?

(A) Banning the sale of apples at the local markets

(B) Removing the handle of the Broad Street water pump

(C) Stopping the sale of shellfish imported from Normandy

(D) Pasteurizing milk

(E) Promoted washing vegetables that were consumed raw

Answer: B

You don't have to memorize history to answer this question just from knowing that v. cholera is one of the most contaminants of **surface water** you can easily predict the right answer :)

6- A 45-year-old man develops a gastric ulcer that can be visualized on a contrast medium–enhanced radiograph of his stomach. A biopsy specimen is taken from the gastric mucosa at the site of the ulcer. A presumptive diagnosis can be reached most rapidly by inoculating part of the specimen on which of the following?

(A) A medium used to detect urease incubated at 37°C

(B) A medium containing vancomycin, polymyxin B, and trimethoprim incubated at 42°C

(C) MacConkey agar medium incubated at 37 °C

(D) Thiosulfate-citrate-bile-sucrose medium incubated at 42°C

(E) Blood agar medium incubated at 37°C

Answer: A

7- During the El Niño years in the mid- to late 1990s, the waters of Puget Sound between Washington State and British Columbia warmed considerably. During this time, many people who ate clams and oysters from these waters became ill with a disease characterized by explosive diarrhea and moderately severe abdominal cramps. The diarrhea was usually watery, but in some patients, it was bloody. The diarrhea usually had an onset within 24 hours after eating the shellfish. Stool cultures typically yielded a pathogenic gram-negative bacillus. The microorganism of concern in this setting is

(A) Enterotoxigenic Escherichia coli

(B) Vibrio cholerae

(C) Enterohemorrhagic Escherichia coli

(D) Vibrio parahaemolyticus

(E) Shigella dysenteriae

Answer: D

6th lecture
(The Brucellae, Leptospira and Mycobacterium of the GIT)

1- A 68-year-old woman was diagnosed with Brucella species infection, after that additional history was obtained. Approximately 4 weeks before the onset of her symptoms, the patient had traveled to countries in the Mediterranean area. She had a particular fondness for one food product that was the probable vehicle for her infection. The product most likely was

(A) Bananas

(B) Unpasteurized goat's cheese

(C) Rare hamburger

(D) Fresh orange juice

(E) Green tea

Answer: B

* in the book this question was related to the one previous to it but since the previous one is not related to what we took in the lecture I didn't add it and this question was edited "a little bit" so you can get it without going back to the previous one :)

2- Which of the following animals is the source of Leptospira interrogans?
(A) Alligators

(B) Ducks

(C) Frogs

(D) Catfish

(E) Swine

Answer: E

3- A 27-year-old medical resident was admitted to the hospital because of sudden onset of fever to 39°C and headache. Two weeks previously, he had vacationed in rural Oregon, where he had frequently gone swimming in an irrigation canal that bordered land where cows were pastured. Blood tests done shortly after admission indicated renal function abnormality and elevated bilirubin and other liver function test results. Routine blood, urine, and CSF culture results were negative. Leptospirosis is suspected. Which of the following would be most likely to confirm this diagnosis?

(A) Testing acute and convalescent phase sera using the RPR test

(B) Culture of urine on human diploid fibroblast cells

(C) Testing serum by dark-field examination for the presence of leptospires

(D) Testing acute and convalescent phase sera for anti-leptospiral antibodies

(E) Culture of CSF on blood and chocolate agar

(F) Gram stain of CSF and blood

Answer: D

Remember "The diagnosis of leptospirosis in most cases is confirmed serologically"

4- Which of the following organisms principally infects the liver and kidneys?

(A) Leptospira interrogans

(B) Staphylococcus aureus

(C) Escherichia coli

(D) Enterococcus faecalis

(E) Treponema pallidum

Answer: A

5- A 31-year-old Asian woman is admitted to the hospital with a 7-week history of increasing malaise, myalgia, nonproductive cough, and shortness of breath. She has daily fevers of 38–39°C and a recent 5-kg weight loss. She had a negative chest radiograph when she entered the United States 7 years ago. The patient's grandmother died of tuberculosis when the patient was an infant. A current chest radiograph is normal; results of other tests show a decreased hematocrit and liver function test

abnormalities. Liver and bone marrow biopsies show granulomas with giant cells and acid-fast bacilli. She is probably infected with

(A) Mycobacterium leprae

(B) Mycobacterium fortuitum

(C) Mycobacterium ulcerans

(D) Mycobacterium gordonae

(E) Mycobacterium tuberculosis

Answer: E

Collected by: Sara Haroon
Good luck to y'all :)