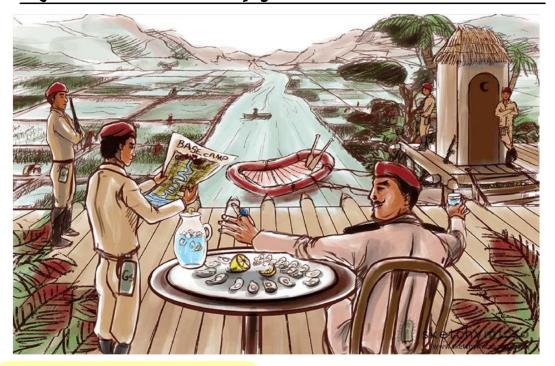


Lec 1 : Vibrios, Campylobacters, Helicobacter



Vibrio Cholera - Colonel Cholera's Base Camp

- 1. Mustache COMMA SHAPED Gram Negative Curved rod Enteric Tract Bacilli
- 2. BASE in BASE cAMP Prefers to grow in alkaline media
- 3. Blue Ring Oxidase Positive Grows on TCBS agar
- 4. Lemon Grows in alkaline environments, ACID LABILE Dies with acid
- 5. Rice Patties Causes Profuse watery diarrhea "Rice Water" stool
- 6. Outhouse dumping directly into the river Cholera is transmitted fecal oral due to poor sanitation that gets into food and is not an invasive infection
- 7. River walls are mucosal wall and the water is the intestinal lumen Found in the intestines and is found in the intestinal mucosae
- 8. Raft that is attached to the shore Attaches to the mucosa by fimbriae that attach to ganglioside receptors in the intestinal wall.
- 9. Then releases cholera toxin Main Virulence Factor AB type toxin
 - a. BASE cAMP map Upregulates production of $G\alpha s$ cAMP by binding to and increasing activating adenylate cyclase.
 - b. GS grenade Then it will activate the GS pathway. Activates GS, upregulates cAMP, Produces watery diarrhea through an efflux if Cl and H2O

10. Treatment

- a. Drinking some water Oral rehydration therapy with electrolytes
- 11. Vibrio Vulnificus and paraliticus
 - a. Oysters Can contaminate seafood, especially oysters.
 - b. Vibrio V. causes Acute Gastroenteritis
 - c. Vibrio P. Causes fulminating septicemia leading to death. Marked edema and necrosis



Campylobacter Jejuni - Camping Guy and the bears – guy and bears = Guillen Barre

- 1. Mustache is curved or comma shaped Gram Negative Spiral / Curved Rod Bacilli Enteric
- 2. Campy medium or **Skirrow Agar**
- 3. Microaerophilic
- 4. Camp Fire Prefers warm environments around 42 deg Celsius, thermophile (Special Incubator)
- 5. Chicken being cooked Main reservoir is intestinal tract of poultry and transmission is fecal oral / also contaminated water supplies or ingestion of raw milk
- 6. Red Stools Bloody Stools and diarrhea
- 7. Blue Ring Oxidase Positive
- 8. Bear cub invading the cooler Can get Bacteremia, INVASIVE
 - a. Laughing and slapping his knee Reactive arthritis, riders syndrome
- 9. Bears being tripped by the sausage links on his ankle Can cause <u>Guillen barre syndrome</u> due to an autoimmune response damaging myelin of peripheral nerves leading to an <u>ascending paralysis</u> will start at the feet then ascend.

10. Pathogenesis

 a. Bacteria Colonize intestinal Mucosa and attach to epithelial cells then replicate intracellularly causing an acute PMN response, edema of the mucosa and ulcerations.
Presenting with acute enteritis and diarrhea

11. Treatment

a. Supportive Care



Helicobacter Pylori: The helicopter Pilot

- 1. Red Helicopter Curved Gram Negative rod
- 2. Mustache that is comma shaped Helical slender curved rod Shape found in pylorus of the stomach
- 3. Not a rare infection.
- 4. Helicopters are motile Motile by way of flagella
- 5. **Ammonia bottle Urease positive MAJOR VIRULENCE FACTOR** allows to reduce the acidity of the stomach and allows Helicobacter to survive there.
- 6. Can be tested with Urea breath test, radioactive urea that is broken down and exhaled as CO2 and NH3 by urease positive organisms.
- 7. Blue ring Oxidase Positive all curved rods are oxidase positive
- 8. Bullet holes in helicopter, Gas pump w/duodenum Causes 95% of all duodenal ulcers
- 9. Crab Mechanism of Chronic infection causes increased acid infection. At risk of developing gastric adenocarcinoma
- 10. Tissues that are thrown in garbage Patient can develop lymphoma of mucous associated lymphoid tissue.
- 11. Treatment
 - a. Gas Pump with duodenum and H+ Bomb Proton Pump Inhibitor
 - b. Amoxicillin ammo
 - c. Crow w/ Keep Clear Macrolide Clarithromycin
- 12. Transmission
 - a. Fecal Oral or Oral

Lec 2 : Brucellae , Leptospira



Leptospirosis: The Surfers Oasis

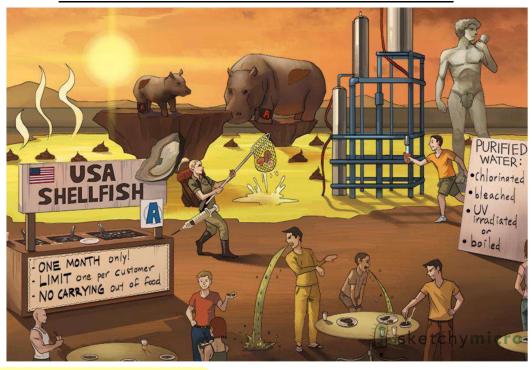
- 1. Question mark on the board Spirochetes may be question marked shaped
- 2. Surfing in the water Water sports,
- 3. Yellow tide water contaminated with animal urine'
- 4. Surfer rubbing his eyes, rose colored sunglasses and dripping wet Fever and conjunctival suffusion redness around the eyes without the puss
- 5. Hawaii Tropical regions
- 6. Water
- 7. Whale Weil's disease
- 8. Inner tubes that look like RBC's travels in blood stream
- 9. Rubber dingy shaped like a kidney Renal dysfunction
- 10. Yellow suit jaundice from live damage



Bruce Farms - Brucella

- 1. Bruce farms red to remember it is Gram neg
- 2. Farm animal is the reservoir cows and pigs, goats, veterinarian, slaughterhouse worker, or rancher.
- 3. Milk Bucket on the ground Indirect contact with milk or cheese products that unpasteurized
- 4. Open Cage on Barn house Facultative intracellular can live inside or outside of host cells
- 5. Symptoms fever, chills, and anorexia initially.
- 6. Undulating hills Undulant fever
- 7. Markings on the cow Can travel through multiple endothelial organs leading to enlargement of spleen, liver and lymph nodes.
- 8. Fish Bones Osteomyelitis chronic infection
- 9. Wheel -Treatment tetracycline, doxycycline
- 10. Rifle Along with rifampin for primary treatment blocks oxidative bursts
- 11. Cage in the background Infect macrophages
- 12. Large amounts of catalase and superoxide dismutase to protect from respiratory burst
- 13. Urease and H2S positive
- 14. Require cO2 to grow

Lec 3 + 4 Viral hepatitis



Hep A – Hungry Hungry Hep A hippos

- 1. Sun w/ pos sign and orange hue Pos SS RNA virus
- 2. Statue of David Naked RNA virus
- 3. Hepatitis hippotitus
- 4. Hippo w/ A tag Hepatitis A
- 5. Baby Hippo Pico
- 6. Brown liver spot affects liver
- 7. Feces and bubbling acid Acid stable, allowed to be transmitted fecal oral
- 8. Giant purification machine how to eliminate HEP A
- 9. Sign what is needed to kill HEP A during the purification process
- 10. Contaminated water is a source in DEVELOPING countries
- 11. Shellfish snack bar can be transmitted from shellfish in contaminated sources. Pulled from poop contaminated pond
- 12. Large backpack- common in travelers in endemic areas
- 13. Clinically silent w/o jaundice usually
- 14. Tables where everyone is puking
 - a. Bright yellow outfit jaundice
 - b. Puking vomiting
 - c. Child w/o yellow less likely to have jaundice
 - d. Extinguishing cigarette smoking aversion
- 15. Sign on shellfish stand treatment one month duration, self-limiting, no carrier state or chronic state
- 16. Tranquilizer gun inactivated vaccine because tranquilizers inactivate animals



Hepatitis B - "Hep B Love"

6.

- HEp B hippy Hippo Van Causes Hepatitis 1.
- 2. Hippy dome "hippy pad" - Hepadnavirus family
- 3. Blue Hues - DS DNA Virus
- 4. Hippys in garb - Enveloped virus
- Hippy's inside and outside of the dome Replicates in the nucleus 5. and outside of it "far out" Circular stand of hippies and one area is not complete - Circular
- and partially double stranded DNA, and becomes fully double stranded during replication 7. Reverso transcriuptum book w/ fortune teller - Goes from SS DNA
- to SS RNA then to DS DNA, because it contains its own reverse transcriptase
- Hippie w/ sex drugs and rick and roll sign Spread via sex and 8.
- 9. Mother pushing baby w/ red shirt – vertical transmission when blood during child birth
- 10. Tiki Torches Torch infection
- 11. Cookie sharing, baby w/ larger part Hep B only about 5-10% develop into chronic infection in adults, newborns will be about 90-95% chance of development
- 12. Hippy lady w/ beads on a string Most common disorders w/ rash and arthritis, and poly arteritis nodosa (beads on a string appearance)
- Body covered with henna rash, purpuric 13.
- 14. Kneeling arthralgia
- 15. Bead boxes shaped like kidneys Kidneys are damaged by polyarteritis nodosa
- 16. 2 big knots on this string - Membranous, and membranoproliferative glomerulonephritis (3 strings "tram track" appearance)
- 17. Clinical picture diagnose what stage its in
- ALT Balloon ALT is rising in acute HEP B infection 18.
- Baby w/ deflated ball initial phase of HBV infection, serum ALT will be normal in neonates

- 20. Lines in rainbow represent titer levels during course of infection

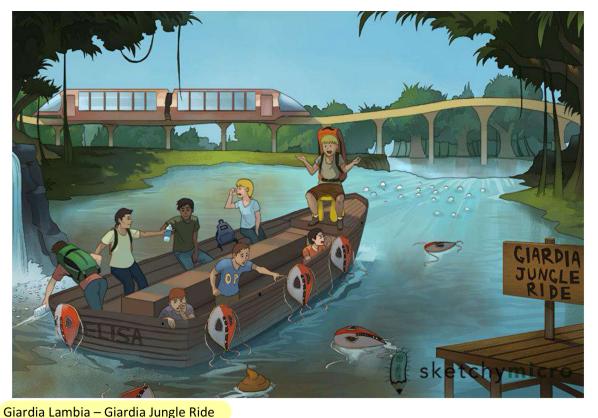
 - S = Hep B Surface antigen 1st one (leads to ground glass appearance)
 - E = Hep B E antigen (has not been enough time to create antibodies) spikey things look like antigen hanging off of a virus
 - d. Flat tire – these two above are during the symptomatic
 - C on the window = Anti-HEP B Core antibody is positive in the window period,
 - f. E = anti Hep B E antibody - means low infectivity
 - S w/ blue curve wrapped around the syringe = Anti Hep B Surface g. antibody – indicates recovery – this is the value that is checked for immunization, and will be the only one that is positive
 - h. Immunized people will be not be positive for HEP B Core, or HEP B E antibodies.
- Magical tarot card table made of stone and card Long term sequelle of long term infections – Liver cancer (hepatocellular carcinoma)
- 22. Children in orange, wearing flowy hippy garb, moon necklace, circular headband - HEP D (Circular RNA NEG, Enveloped) needs HEP B surface antigen to cause infection
- 23. Hippy mom adding hippy flair to children need HEP B Sag to become infection
- 24. Holding hands – co infection
- Kid on shoulders Superinfection when Hep D is transmitted on 25. top of existing hep B infection
- 26. Grimacing dad – Hep D (kid on shoulder) post infection has worse outcomes
- 27. Make peace (Lamb) not war (She elf) Treatment Lamivudine and NRTI's
- Twisted hippy van antennae Interferon Alpha can be used Keys to hippy van - Ig w/ HEP B vaccine to neonates who are at risk
- 29. Ground glass appearance on histology



Hepatitis C - the Hep Sea

- 1. Sun w/ pos sign and orange hue POS sense RNA Virus
- 2. Togas Enveloped
- 3. Flavorful Hep C Fruit punch Hep C
- 4. Yellow hippo jaundice hippo w/ ear tag
- 5. Common mode of transmission
 - a. Blood water Exposure to infected blood
 - Blood transfusions in 70's 90's.
 - ii. Needle in ear IV Drug use
 - iii. Placental, sex, and breast feeding transmission
- 6. Multicolor tent Variation of antigenic structure
- Sign that is misspelled and no viewing 3-5 Virion coated exonuclease lacks proofreading capacity in the 3'-5' so the RNA is prone to frequent mutations
- 8. Liver shaped mud patch inflammation of the liver
- 9. Yellow hippo jaundice
- 10. 60-80 sign 60-80% of HEP C will become chronic
- 11. Washed up piece of dead coral Lymphocytes infiltrate portal tract killing hepatocytes, leading to fibrosis and cirrhosis,
- 12. Crab Or liver can go into a frenzy and become malignant leading to hepatocellular carcinoma
- 13. ALT in the Sea Acute infection RNA is in serum in the 1st 6 months, ALT is up rising and falling
- 14. Salt precipitating on shore 5 sided like IgM molecules HEP C is associated with cryoglobulins that precipitate out in colder temp that contain IgM
- 15. Hippo ribs and walkie talkie alpha antenna Treated with ribavirin w/ interferon Alpha
- 16. Meat cleaver Polymerase inhibitor protease inhibitor used for treatment

Lec 5 common protozoal infection



rdia Lambia – Giardia Jungie Ride

- 1. Poop in water and bubbles Amongst travelers or campers drinking unfiltered or unpurified water that contains cysts of giardia from feces
- 2. Backpacking backpacks remind of backpackers and campers
- 3. Campers holding noses Bloating, flatulence, and foul smelling diarrhea
- 4. Yellow stool Steatorrhea (fatty diarrhea) due to excessive mucus production that impairs absorption of intestine (A,D,E,K will be deficient)
- 5. Shields on the boat Trophozoite form that is flagellated
- 6. Shields in the water and OP guy pointing at the water Attach but do not invade intestinal wall, so only cause diarrhea. If found in stool they are diagnostic
- 7. Elisa stool antigen to detect
- Metra Treat with metronidazole



Cryptosporidium – Tales from the Crypt

- 1. Brown water Aids patients Cryptosporidium causes profound diarrhea
- 2. Immunocompromised cane HIV Population
- 3. Red poncho and cowboy hat Unicellular partially **acid fast** creating oocytes released fecally and absorbed orally
- 4. Bubbles infectious cysts that get passed through watery stool
- 5. Gems scattered in water (amethyst) acid fast and under staining looks like amethyst in water
- 6. Small Broken pipe in background Cysts contain 4 motile sporozoites that will attach to small intestinal wall and cause damage.
- 7. Knitted sock nitazoxanide treatment in immunocompetent
- 8. Water dripping out of sock oocysts can be removed via filtration
- 9. Spirit crow spiromycin txt (not FDA approved in US)



Entamoeba histolytica - Entering the Historical Dig

- 1. Red stool Bloody Diarrhea
- 2. Do not enter historical site Entamoeba Histolytica
- 3. Liver shape –
- 4. 2 main life cycle stages
 - a. Bubbles in a puddle Cyst form ingested from contaminated water
 - Men drinking water holding hands gay men get disease from anal oral transmission
 - Liver shape dig site and hole in right side of liver Right lobe is most common involved site of amoebic liver abscess
 - Map is a ct scan of liver and a man holding his right upper quadrant RUQ pain w/ enlarged and tender lover
 - ii. Anchovy paste truck Abscess described as having "anchovy" paste consistency
- 5. Sewer pipe w/ out pouches like haustra to represent the colon Causes intestinal amebiasis
- 6. Rust spots Can cause ulcerations along the colon
- 7. Erlenmeyer flasks Flask shaped ulcers
- 8. Red stools bloody stool
- 9. Puddle w/ floating red cups Stool O&P looking for cysts or trophozoites, stool will contain trophozoites that contain endocytosed RBC's
- 10. Flask in colon An elisa antigen test or serology
- 11. Metra Metronidazole
- 12. Drugs that work in lumen of intestine
 - a. Pair of mice near metro Paramycin
 - **b.** Sign labeled queen iodos tomb lodoquinol