A 38 yo man from Missouri presented with fever and left chest pain. He had diminished breath sounds in the left lung base and CXR disclosed a left pleural effusion and a 3.5 cm nodule in the left lower lobe. The following structure was seen on microscopic examine of the pleural fluid.

How did he acquire the infection?
A. Intimate personal contact with a Vietnamese woman
B. Mosquito bite
C. Ingestion of undercooked crayfish at the annual village crab boil
D. Ingestion of undercooked pork
E. Swimming in a pond on his farm

A 28 yo medical student returned from a mission trip to the Republic of Congo. Three days after arrival she developed high fever and chills. She had noted flu like symptoms with headache, nausea and diarrhea for two days previously. During her trip, she developed low grade fever, nausea and rash and stopped taking the atovaqoine/proguanil preventive medication. Concerned about toxicity, she used an alternative repellent in place of DEET. On exam she was toxic appearing. Temperature was 41°C. She had no rash or adenopathy. Her spleen was palpable. Hemoglobin was 9.5. Blood smear is shown below.

What would you prescribe for treatment (entire regimen)?
A. Chloroquine
B. Doxycycline
C. Clindamycin
D. Artemether/lumefantrine
E. Mefloquine
Ten months after returning from Kenya, a 56 yo German traveler comes with a complaint of a painful red nodule on his left upper chest wall, just below the shoulder and a second nodule on the right lower abdominal wall. He noticed both lesions about two weeks previously. What brought him in however was his observation of a curving thread-like structure on the medial side of his right eye which, after noting mild eye discomfort, he saw in the mirror while shaving.

Aside from what may be diagnosed clinically, what test might confirm the diagnosis?

A. Microscopic analysis of a Geimsa stained blood smear.
B. Blood culture
C. Stool for ova and parasite test
D. Sticky side out Scotch tape to the skin nodule
E. Swab culture of the bulbar conjunctiva

How is this condition transmitted?

A. Ingestion of unsafe water
B. Standing in the community water supply while drawing water
C. Bite of an *aedes* mosquito
D. Walking barefoot in moist soil
E. Bite of a *Chrysops* fly

Match the following with the structure shown.

A. *Entamoeba histolytica*
B. *Giardia lamblia*
C. *Cryptosporidium parvum*
D. *Trypanosoma cruzi*
E. *Plasmodium vivax*
While on an ISI trip, you visited a village in rural Brazil along the
Amazon. A mother brought in her five year old son because of a
protrusion from his anus. He had had diarrhea for the past two
months. He appeared listless and malnourished. Abdomen was
tender to deep palpation. His rectal mucosa was protruding from
the anus and there were thread like structures about 1.0 cm in
length imbedded in and protruding from the mucosa.

Which of the following would be seen in the stool?

A 32 yo Japanese woman comes to clinic complaining of
weakness, with numbness in her feet. She has been healthy but
has the interesting dietary history of consuming sushi several
nights a week. On exam she is pale appearing, afebrile with
normal blood pressure. She has no rash or adenopathy. Tongue
is smooth. She has diminished vibratory sense and a mildly
ataxic gait. Hemoglobin is 6.2 with MCV of 115. There are
hypersegmented PMNs reported in the peripheral smear.

Which infection may be associated with this condition?

Three weeks into a backpacking trip in the Mount Hood area of
Oregon, a 19 yo college student developed diarrhea. He
typically passed three to four loose, foul smelling stools each
day. The diarrhea was accompanied by crampy abdominal pain.
He was able to maintain hydration and eat. He did not recall
fever. He cut short his trip noting 9 pound weight loss on
return. His physician ordered stool studies.

What is the most likely diagnosis?

A 32 yo Japanese woman comes to clinic complaining of
weakness, with numbness in her feet. She has been healthy but
has the interesting dietary history of consuming sushi several
nights a week. On exam she is pale appearing, afebrile with
normal blood pressure. She has no rash or adenopathy. Tongue
is smooth. She has diminished vibratory sense and a mildly
ataxic gait. Hemoglobin is 6.2 with MCV of 115. There are
hypersegmented PMNs reported in the peripheral smear.

Which infection may be associated with this condition?
A 35 yo man has recently immigrated from Mali. He has AIDS and failed treatment with the only triple ART available in his country. CD4+ count was 8 and HIV RNA level was 396,000 copies/dL. Four months after arrival he developed diarrhea and abdominal pain and two weeks later he developed a high fever followed by confusion and he was brought to the ED. He passed a loose stool on the gurney. On exam T 40.5°C, BP 85/50, R 36/min. He was confused and combative. He was coughing and had very coarse breath sounds. Abdomen was distended and tender. He was admitted to the ICU, developed respiratory failure and was placed on ventilator. Blood cultures the following morning were growing gram negative rods. That afternoon the nurse received a call that there were larvae noted on gram stain of a sample of respiratory secretions in the mini-BAL sample obtained from his trachea.
What is the likely diagnosis?

A. Strongyloides stercoralis
B. Hookworm
C. Enterobius vermicularis
D. Ascaris lumbricoides
E. Taenia solium

While working in a mission clinic in northern India, you examine a 47 yo woman with diarrhea. She has been ill for six days and complains of severe lower abdominal pain along with very frequent small volume stools containing blood and pus. She has no appetite and believes she is losing weight. On exam temperature is 38.9°C, BP is 105/70 dropping to 90/56 on standing. Positive findings include severe abdominal tenderness with guarding but no rebound and no mass. Wet mount of the stool contains motile protozoa.

What is the most likely diagnosis?

A. Trichomonas vaginalis
B. Entamoeba histolytica
C. Giardia duodenalis
D. Vibrio cholerae
E. Cryptosporidium parvum

A young Mom calls in a panic. Her 2 yo daughter had been scratching in the perianal and perineal area for the last several days. The morning of the call she noted tiny white ribbon-like structures when changing the child’s diaper. The 5 year old is also scratching.

What test would you order to diagnosis what you suspect is causing the children’s problem?

A. Stool culture
B. Stool for ova and parasite
C. Scotch tape application to perianal area
D. Serology for Enterobius vermicularis
E. Biopsy of the perianal skin
How did these children acquire the infection?
A. Accidental ingestion of raccoon feces while playing in backyard
B. Drinking water from clear stream while family was vacationing in Yosemite
C. Accidental ingestion of ova while sleeping in a bed they shared
D. Walking barefoot on damp ground
E. Ingestion of undercooked lamb

Match the following with the structure shown.
A. Entamoeba histolytica
B. Giardia lamblia
C. Cryptosporidium parvum
D. Trypanosoma cruzi
E. Plasmodium vivax

A 12 yo boy is brought to ED by ambulance with rapid development of fever and profound mental status changes. He and several friends had been swimming in a brackish pond along the coast three days earlier. On exam temperature is 39.8°C. He is barely arousable to painful stimuli. Lumbar puncture discloses motile protozoa.

How did the organism gain access to the CNS?
A. Ingestion of the pond water
B. Contact with infected frogs at the pond
C. Penetration of the cribriform plate while swimming
D. Bite of a small fly
E. Penetration of skin while swimming in the pond
What is the organism?

A. Naegleria fowleri
B. Microsporidium
C. Giardia duodenalis
D. Balamuthia
E. Acathamoeba

Two years after returning from the peace corps where she spent two years along the shore of Lake Victoria working on agricultural projects, a 35 yo woman presents with burning on urination, frequency and blood in the urine. Urinalysis shows the following.

What would you prescribe to treat this infestation?

A. Albendazole
B. Metronidazole
C. Ciprofloxacin
D. Ivermectin
E. Praziquantel

What malignant disorder is this condition associated with?

A. Squamous cell carcinoma of the uterine cervix
B. Squamous cell carcinoma of the urinary bladder
C. Urothelial carcinoma of the urinary bladder
D. Diffuse large B-cell lymphoma
E. Hepatocellular carcinoma
A 55 yo bird watcher returns from a trip to Ecuador. One week after arrival he developed a papular lesion on the back of his hand. Over the next week the papule grew and ulcerated. He denied fever or other systemic symptoms. It is now three weeks later with no signs of healing.

How would you make the diagnosis?

A. Thick blood smear  
B. Blood culture  
C. Stool for ova and parasites  
D. Serology for T. cruzi  
E. Biopsy of the skin lesion

On the day of returning from a three week holiday to Democratic Republic of the Congo, a 62 yo man presented with sudden onset of high fever. He was treated for falciparum malaria, but careful review of blood smears, at first called positive, disclosed no malaria parasites. He had been on two jungle trips including gorilla watching. He wore short-sleeved shirts and shorts but used insect repellant on the excursions. He remained febrile and developed progressive frontal headache, vertigo, nausea and joint pain. On exam he had temperature of 102.6°F. There was a nearly healed 12 mm lesion that resembled a chancre on the right back just above the iliac crest. In addition there were two distinct, non-tender lesions over both tibiae. Review of the blood smears revealed C-shaped flagellated organisms with a prominent nucleus.

What is the likely diagnosis?

A. Plasmodium malariae malaria  
B. Trypanosoma brucei rhodesiense  
C. Trypanosoma brucei gambiense  
D. Toxoplasma gondii  
E. Trypanosoma cruzi
What is the recommended treatment?

A. Atovaquone/proguanil
B. Suramin
C. Eflornithine
D. Pentamidine
E. Melarsoprol

A 35 yo man employed in agriculture from Nigeria presents to the medical facility with redness of his eyes, blurring of vision and mild discomfort and itching in the skin of the thighs and upper arms. He is accompanied by his father who is blind. He works among the brush on the banks of a river which provides irrigation for his subsistence corn. On exam the both conjunctivae are very injected. Patchy areas of skin on both thighs and the upper arms are erythematous and indurated.

How would you diagnose his infection?

A. Microscopic analysis of a thin blood smear
B. Microscopic analysis of a thick blood smear
C. Obtain a small piece of the indurated skin from either arm with a scissors and examine for organisms.
D. Serological test for antibodies to the organism.
E. Allow an uninfected insect to feed on him and detect the infection in the insect.

How would you treat this infection?

A. Doxycycline followed by ivermectin
B. Diethyl carbamazipine
C. Praziquantel
D. Pentamidine
E. Suramin

Describe the successful campaigns to eliminate this infection from Africa and Central America
Four weeks after returning from a vacation in Martha’s Vineyard, a 30 yo man is admitted with sudden onset confusion, high fever, chills and hypotension. Past history is significant for an automobile accident complicated by splenic rupture requiring splenectomy. The lab calls the ED physician stating that very unusual structures (shown below) were noted on reviewing the blood smear.

What is the treatment for this condition?

A. Clindamycin/quinine  
B. Tetracycline  
C. Artemether/lumefantrine  
D. Choroquine  
E. Atovaquone/azithromycin

A 27 yo attorney returned from two years in the Peace Corps in Angola. She was helping entrepreneurs start small businesses in that country. She had no symptoms. Three months after returning to Chicago, she calls saying she passed a brownish worm with her stool that resembled an earth worm. She brings it in for you to examine.

How did she acquire this worm?

A. Cercarial forms penetrated her skin while wading in a river in Angola  
B. A fly bite  
C. Filariform larvae penetrated the skin of her foot when she was walking through brush in her flipflops.  
D. A mosquito bite  
E. She ingested ova in contaminated food

What is the name of the worm?

A. Ascaris lumbricoides  
B. Trichuris trichiura  
C. Strongyloides stercorlis  
D. Ancylostoma duodenale  
E. Trichinella spiralis
Would you treat her? With what?

A. Pentamidine  
B. Albendazole  
C. Praziquantel  
D. Diethyl carbamazipine plus doxycycline  
E. Nifurtimox

Describe the passage of the worm in humans once acquired.

A 45 yo man is referred to the Heart Failure service with refractory systolic heart failure. After extensive work up and LVAD placement, he undergoes orthotopic heart transplantation. The donor was a 28 yo man from Ecuador who was killed in a motorcycle accident. Post operatively he develops fever, arrhythmia and worsening heart function. An endocardial biopsy is performed. The pathologist notes the following

What is the diagnosis?

A. Malaria  
B. Toxoplasmosis  
C. Babesiosis  
D. Histoplasmosis  
E. Trypanosomiasis

A 55 yo man recently immigrated from India presents with a six month history of fever, weakness, loss of appetite, weight loss and abdominal distension. On exam he is febrile and cachectic appearing. He has diffuse lymphadenopathy, enlargement of the liver and massive enlargement of his spleen. Lab studies include hemoglobin of 8.5, WBC of 2.1 and platelets of 44,000. Globulin is very high. Lymphnode biopsy shows amsatigotes within mononuclear cells.

You suspect??

A. Visceral leishmaniasis  
B. Malaria  
C. Toxoplasmosis  
D. Amoebiasis  
E. Cysticercosis
A 56 yo Romanian immigrant comes in complaining of fever, headache and severe muscle cramps for two days. He recalled having abdominal pain and diarrhea two weeks earlier. When a food history was taken he recalled sampling home made sausage as he was preparing it for a holiday feast a few days before the diarrhea began. On exam T was 38.9°C and pulse was 116 and irregular. He has no rash but periorbital edema bilaterally. His upper arms, thighs and calves were very tender when squeezed. CBC disclosed a white blood count of 18,000 with 15% eosinophils.

How would you make the diagnosis?

A. Blood culture  
B. Stool ova and parasite examination  
C. Urine culture  
D. Muscle biopsy  
E. Chest x-ray

A 55 yo Puerto Rican man presents with progressive increase in abdominal girth for the past year. He has history of an undiagnosed liver ailment for at least five years. On exam he is afebrile and thin. He is jaundiced. He has tense ascites, RUQ tenderness, mild hepatic enlargement and a large spleen. He has only mild elevation of alkaline phosphatase and normal aminotransferases . Albumin is 3.4 and INR is normal.

Stool exam is negative but rectal biopsy shows the following structure.

What is the diagnosis?

A. Opisthorchis sinensis  
B. Hookworm  
C. Paragonimus westermani  
D. Schistosoma mansoni  
E. Shistosoma haematobium

A 32 yo man with AIDS who was lost to follow up and stopped his ART presented to ED with fever and a progressive, severe, unrelenting headache for five days. His mental status was normal, but he had weakness of his left arm and leg. Serum cryptococcal antigen level was negative. CT scan with contrast disclosed four ring-enhancing lesions in the cerebrum with a large one in the right parietal lobe. Before being lost to follow up, he was followed in your institution’s HIV practice. 

Reviewing the records from four years previously, which of those test results would be helpful in determining the cause of his current problem?

A. CD4+ T-cell count at time of original presentation  
B. Hepatitis B surface antigen  
C. RPR  
D. Toxoplasmosis IgG level  
E. Stool O&P test
A 19 yo woman presents with a one week history of profuse vaginal discharge. She has a history of 15 lifetime partners and established a relationship with a 42 yo man in the neighborhood 3 weeks prior to presentation. Speculum examination discloses a green/gray frothy discharge that pools in the vaginal vault.

What test would you do to make the diagnosis?
A. Microscopic analysis of a sample of the discharge suspended in a drop of saline
B. Blood culture
C. Gonococcal/chlamydia PCR test
D. Microscopic analysis of a sample of the discharge suspended in a drop of potassium hydroxide.
E. RPR

What treatment would you prescribe?
A. Ceftriaxone 250 mg IM
B. Azithromycin 1.0 gram as a single dose
C. Metronidazole 2.0 gram as a single dose
D. Doxycycline 100 mg BID for seven days
E. Benzathine penicillin G 2.4 million units as a single dose

On evaluation in a mission clinic, a five year old girl from a rural village in Bolivia is noted to be pale and listless. Parents say this has gradually worsened over the last six months. Physical examination does not show any significant findings. CBC discloses a hemoglobin of 8.2 and MCV is 72 and MCHC is 28.

What parasite might be responsible for her clinical picture?
A. Taenia solium
B. Hookworm
C. Ascaris lumbricoides
D. Trichinella spiralis
E. Enterobius vermicularis
How would you make the diagnosis?

A. Serology  
B. Examination of blood smear for parasites  
C. Muscle biopsy  
D. Look for ova in stool sample  
E. Look for larvae in stool sample

While vacationing in northern Wisconsin in July, all the members of your family note the appearance of intensely pruritic papules after swimming in a fresh water lake. The younger children who spent hours in the water were most affected.

What is the cause of this itching?

A. Neglaria fowleri  
B. Giardia lamblia  
C. Campylobacter jejuni  
D. Shistosomiasis  
E. Dwarf tapeworm

A 59 yo woman from Chad complained of a very painful sore on her left medial ankle. About three weeks earlier she had noted a red bump that rapidly developed into a blister which subsequently fractured forming the painful ulcer. She then noted a very thin, thread like structure hanging out of the ulcer. On exam there was a 13 mm punched out-appearing ulcer with a 2-3 mm rim of erythema. There was fluid present in the ulcer and a white thread that looked like a worm. How did she acquire this worm?

A. She was bitten on the ankle by a chrysops fly  
B. She was bitten by a mosquito  
C. A larval form of the worm entered her skin while she was washing clothes while standing in the village well  
D. She drank water from a well containing an infected copepod  
E. Direct contact with her husband's similar lesion
A 52 yo man from India is admitted to your hospital with abdominal distension. He has history of chronic lower leg and scrotal edema which followed an episode of “cellulitis” involving both thighs starting at the inguinal ligament and extending nearly to the knees. On exam he was not febrile. The skin of the anterior thighs was thickened and hyperpigmented but not tender. Both lower legs were very swollen—three to four times normal diameter and the skin is very thickened, almost nodular, and much browner than his uninvolved skin. The abdomen is markedly distended with a positive fluid wave. A sample of the abdominal fluid was obtained by paracentesis and had a milky appearance. How did he acquire this infection?

A. Ingestion of poorly cooked pork
B. Ingestion of raw fish
C. Ingestion of contaminated water
D. Through sexual intercourse with an infected partner
E. Bite of a mosquito

How would you treat this infection?

A. Diethyl carbamazepine, ivermectin and albendazole
B. Mebendazole
C. Praziquantel
D. Pentamidine
E. Artemether and lumefantrine
A 56 yo Laotian immigrant presents with right upper quadrant abdominal pain and fever for two weeks. He has been in the US for seven years. On exam he is afebrile and has RUQ tenderness. WBC is 11.5 with 12% eosinophils. Ultrasound discloses a dilated biliary duct. Stool O&P test is ordered and discloses the following:

**What is the diagnosis?**

A. Clonorchis sinensis  
B. 
C. Echinococcus granulosis  
D. Hymenolepsis nana  
E. Paragonimus westermani

**How did he acquire this infection?**

A. Walking barefoot on moist ground containing invective filariform larvae  
B. Drinking water contaminated with ova  
C. Bite of a sandfly  
D. Ingestion of poorly cooked pork  
E. Ingestion of undercooked fish

**What malignant disorder is associated with this condition?**

A. Gastric carcinoma  
B. Diffuse large B-cell lymphoma  
C. Squamous carcinoma of the urinary bladder  
D. Cholangiocarcinoma  
E. Pancreatic carcinoma
A 3 yo boy is brought to the North Riverside Center for Health after telling Mom that he had pain in the belly. She has also noticed that he is unable to see and recognize familiar people at a distance that she and the other children have no difficulty with. Over the past 10 months, the family have been training a mixed breed puppy they obtained from the rescue clinic. Neither the boy nor any member of the family have traveled outside of metropolitan Chicago for the past four years. On exam he is in mild distress. He is afebrile. He has right upper quadrant tenderness with the liver edge palpated 2 cm below the right costal margin in the mid-clavicular line. He is seen the same day by the eye doctor who noted an irregularly-shaped, small, white lesion lateral to the optic disc in the right eye. The CBC disclosed a normal white blood count but with 22% eosinophils. Liver tests disclose minimal elevation of aminotransferases and an elevated alkaline phophatase.

What is the diagnosis?

A. Hookworm infection  
B. Visceral larva migrans  
C. Onchocera volvulus infection  
D. Loa loa  
E. Strongyloides stercoralis infection

A 32 yo male immigrant from the Ivory Coast presents with a complaint of abdominal pain and a sense that something is crawling about his perianal area. The pain is relatively recent but the crawling sensation has been noted from time to time for the last three weeks. His vital signs are normal, physical examination is without any positive findings and CBC, liver and renal function tests are normal. You send him out with reassurance but one week later he calls stating that he passed a stool which contained a long white ribbon like structure. He brings in a sample disclosing a segmented flat worm which in one of the segments you can identify a uterus containing 24 lateral branches.

What is the diagnosis?

A. Cysticercosis  
B. Dwarf tapeworm  
C. Echinococcus  
D. Beef tapeworm  
E. Liver fluke
A 28 yo woman presents to ED after having had a grand mal seizure at home. Her family came from Mexico four years earlier. She had been in good health. She has no past history and exam including neurological is unremarkable. CT scan discloses three 1-2 cm cystic lesions in the brain which are lucent in the center. Follow up MRI shows a small pea-sized structure within one of the cysts in the left parietal lobe.

How did she acquire the infection?

A. Ingestion of human fecal contaminated food contaminated with Taenia solium ova  
B. Ingestion of undercooked beef  
C. Ingestion of undercooked pork  
D. Hand-to-mouth after handling her sheep dog  
E. Bite of a sandfly

An 85 yo man is noted to have incidental hepatomegaly by his primary care physician, after complaining of constipation. A CT scan discloses a 10 cm fluid-filled cyst with two smaller cystic structures within it, in the right lobe of the liver. The patient is a retired electrician and immigrated at the age of 22 from northern Turkey with his family. You suspect echinococcus.

How would you diagnosis this infection?

A. Stool for ova and parasite exam  
B. Blood culture  
C. Echinococcal serology  
D. Examination of thin blood smear  
E. Liver function testing

In addition to aspiration or surgical removal, what medications are used to treat this infection?

A. Praziquantel  
B. Diethyl carbamazepine  
C. Ivermectin  
D. Corticosteroids  
E. Albendazole
A 23 yo man with HIV infection presents to clinic with severe watery diarrhea present for six weeks. He had been lost to follow up for six years. He was unable to obtain his antiretroviral therapy for the last three and one half years after having an undetectable viral load on treatment. He complains of abdominal pain and up to 20 watery stools per day without pus or blood. On exam he is cachectic. He is afebrile, pulse is 96 and BP is 90/60 with drop to systolic of 75 on standing. He has no rash or jaundice. There is no lymphadenopathy. Abdomen is slightly distended but no fluid wave is noted. Bowel sounds are increased. There is moderate tenderness to deep palpation in both upper quadrants. Stool studies disclose very small, round, acid fast cysts.

What do you suspect?
A. Cryptosporidium parvum
B. Entamoeba histolytica
C. Vibrio cholerae
D. Strongyloides stercoralis
E. Hookworm