AEROBES

Gram-Positive Cocci ****
Catalase Positive 2H2O2 >> 2H2O + O2
Staph aureus. Coagulase Positive: Fibrinogen>>Fibrin
Staph epidermidus. Coag Neg
Catalase Negative
Enterococcus faecalis. Grp D a or b hmltc. Amp,Meropenum
Enterococcus faecium. Amp
Strep agalactiae: Grp B Strep b hmltc. PEN, Amp
Strep bovis grp D, a hmltc. PEN
Strep pneumoniae. No Group, alpha hemolytic
Strep pyogenes. Grp A Strep, beta hemolytic. Cellulitis
Strep viridans: Strep anginosus/Strep mutans SBE.
Gram Positive Bacilli////Sporeforming, depends on carbon for energy.
Bacillus anthracis //// Box Cars. PEN, TX, quinolones
Bacillus cereus. Fried rice.
Corynebacterium diptheriae.
Corynebacterium jeikeium
Erysipelothrix rhusiopathiae: finger ulcers in fisherman & butchers
Gardnerella vaginalis. Metronidazole
Listeria monocytogenes (or gram variable;may look like H flu)
Acid Fast Organisms
Mycobacterium avium
Mycobacterium marinum. Fish tanks, fishing.
Mycobacterium tuburculosis
Mycobacterium leprae: Leprosy.
Nocardia species TMP/SMX

GRAM POSITIVE COCCI:

Gram Negative **diplococci** ** ** ** **
Moraxella catarrhalis (kidney shape**) Gent, Amox-Clav, Ceftriax
Neisseria gonorrhoeae ** ** **
Neiseria meningitidis. ** ** **PEN, quinolones, ceftriaxone
Gram Negative Rods ////
Enterobacteriaceae
Citrobacter species
Enterobacter aerogenes. Gent
Escherichia coli. Quinolones for UTI; 3rd gen ceph, gent
Klebsiella
Morganella morganii
Proteus Gent, 2-4th gen cephalosporin, quinolones
Providencia rettgeri
Pseudomonas. Pip-Tazo; ceftazidime or cefepime (4th gen)
Salmonella typhi. Typhoid Fvr. 14 day latency. GI infection.
Associated with water & food., salmon colored rash Amp.
Salmonella other species. DO NOT TREAT
Seratia marcescens. Gent, quinolones, 3rd gen ceph
Shigella Quinolones
Yersinia enterocolitica . Usually no antibiotic
Yersinia pestis causes Plague //// Streptomycin
Fermentive Non-Enterobacteriacae
Aeromonas
Chromobacterium
Eikenella: clenched fist contact. Ampicillin-sulbactam.
Plesiomonas
Pasteurella
Vibrio Cholerae: Cholera. Rods with flagellae.
Vibrio vulnificus.Seafood. Fish workers. skin. Diarrhea.

Gram Negative Coccobacilli */*/*/*/

Actinobacillus actinomycetemcomitans
Bartonella bacilliformis
Bartonella henselae
Bartonella quintana
Brucella: Abattoir workers. undulant fever, arthritis.
Bordetella species */*/*/*/ Pertussis. Erythromycin.
Calymatobacterium: Granuloma Inguinale. Painless.
Other Campylobacter species
Haemophilus influenza*/*/*/*/ Dangerous Stridor. No laryngoscopy. Amp, gent, azithro
H. ducreyi: School of fish. Chancroid. Painful. Azithro 1gm
Helicobacter pylori
Legionella Azythromycin, quinolones
Coxiella burneti: Abattoir workers. Q fever: flu, pneumonia, hepatitis. Doxy 100 bid x 14ds. endocarditis.
Chlamydiae
Chlamydia trachomatis.LGV.Painless. Co-gonorrhea. Tracho
Chlamydia penumoniae
Chlamydia psittaci. Birds,chickens. Flu,pneumonia,hepatitis
Rickettsiae
R. prowazekii: Typhus. SE U.S. Louse. MP rash on.trunk.
R. ricketsii. RMSF. Rash on wrists & ankles.
Ehrlichia chaffensis: Hum. monocytic ehrl. SE US. 1/3 rash..
Anaplasma phagocytophilum: Hum granulocytic ehrl. NE.
Mycoplasmas
Mycoplasma pneumoniae
Franciscella tularensis:*/*/*/*/ Glandular, typhoidal (Diarrhea), or pneumonic (hilar lymphadenopathy, lawn mowing on Martha's Vineyard. Streptomycin, erythro, quinolones)
Treponemataceae (spiral organisms) ~
Borrelia burgdorferi. Lyme. Doxy, Amoxi, ceftriaxone
Leptospira PEN
Treponema pallidum. PEN

Anaerobes-metronidazole.

Gram-Negative Bacilli ////
Bacteroides fragilis.//// pip-tazo, Meropenem. B lactamase
Other bacteroides
Fusobacterium
Prevotella
Gram-Negative Cocci ****
Veillonella species
Gram-Positive Bacilli ////
Clostridium botulinum //// 5 ds black tar heroin
Clostridium perfringen s //// gas gangrene; food poisoning
Clostridium tetani //// heroin addicts, lockjaw, resp failure.
Clostridium difficile //// Toxin A&B. Repeat testing.
Gram-Positive Cocci ****
Peptostreptococcus species
Gemella morbillorum
Peptococcus niger
Actinomyces israelii
Catalase converse hydrogen peroxide to water and oxygen.
Coagulase converse fibrinogen to fibrin to facilitate clotting of plasma.

Vector Pediculosis humanus or capitus (body or head louse)
Flying squirrels in So East U.S.
Acutely: Pentad Flu syndrome, rash, abdominal pain, hepatitis & confusion.
Rash: 65%: red m or m-p rash on trunk.
Confusion;, somnolence > 50%
^ bili, AST, ALT.
V Platelets
Typhus: etiology: Rickettsiae Prowazeckie

Chronic: Brill Zinser: mild similar to acute but occurs 10- 50 years later.
Serologic tests are available but uncertain as to accuracy.
Rx: Docycycline. 200 mg x 1 (Cure= 50%) or BID with increase in cure rate.

Severe inflammatory diarrhea with fever.
Contaminated water.
Increased temperature 1 to 3 weeks after drinking water.
2nd week: abdominal pain, faint macules on trunk and abdomen (salmon colored rash)
3rd week: H-S megaly. GI bleeding and perforation.
Blood & stool cultures; bone marrow.
V HCT, ^ AST, ALT (like viral hepatitis.)
Rx: Cipro: 500 mg BID x 7days.
Resistance: Use Azithromycin 1gram x 1, then 500 QD x 14 days.
Salmonella Typhi (Typhoid fever).

SYMPTOM COMPLEXES
H-S megaly
Babesiosis
S. Typhi.

ABDOMINAL ABSCESS
Anaerobic gram negative rod: Fusobacterium, Bacteroides fragilis.
Anaerobic gram positive rod: Clostridium perfringens
Aerobic: Acid Fast: Nocardia.

ARTHRITIS: Infectious arthritis.
Borrelia: Lyme disease
Brucella: undulant fever.
N. Meningitis.

BRONCHITIS:
H. Influenze: Aerobic gram positive coccobacillus.
Moraxella gram negative diplococcus.
Botulism: Clostridium Botulinum: Anaerobic gram positive rod.

ENDOCARDITIS
Str Viridans aerobic catalase negative gram positive
Str Bovis aerobic gram positive catalase negative group D alpha hemolytic (CA of GI tract in 50%).
Staph Aureus Aerobic catalase positive coagulase positive.
Coxiella Burnetti: Aerobic gram negative cocco-baccilus.
HACEK gram negative rods: Haemmophilus, Actinobacillus, Cardiobacgterium, Eikenella, Klingella.

CAP
Anaerobic gram negative coccobacilli:
Atypical: Legionnella, Chlamydia, Mycoplasma, Rickettsiae, Coxiella burnetti.
Strep Pneumonia
Staph Aureus
Aerobic Gram negative: Klebsiella
Bio terror bacteria: Bacillus Anthracis (aerobic gram positive box cars); Franciella Tularensis: Aerobic gram negative cocco-bacillus.
Yersinia Pestics: Aerobic gram negative rods.

COUGH: Bordetella Pertussis: Aerobic gram negative coccobaccilus.

LYMPHADENOPATHY: Bartonella henselae: gram negative cocco-baccilus.

MENINGITIS: N. Meningitis: gram negative diplococcus.
Strep Pneumonia: gram positive alpha hemolytic.
Listeria monocytogenes. Gram positive rod.

Mouth & ENT:
Herpes simplex infections of the oral cavity occur primarily in children. This can become dormant and then be reacitivated.
Herpangina also occurs in children and is caused by coxsackie virus type A.
Hand, foot & mouth disease: Coxsackie A & B virus infection in children and may involve CNS.
Ludwig's Angina is a bacterial infection of submandibular and/or sublingual spaces. It may require airway access. Rx is ampicillin sulbactam OR penicillin+metronidazole.
Actinomycosis: Anerobic gram positive cocci.
Pepto-streptococcus: Anaerobic gram positive cocci.
Internal jugular vein thrombophlebitis (AKA Lemierre's disease) occurs in the setting of an oropharyngeal infection and is caused by Fusobacterium necrophorum, an anaerobic gram negative rod.

OTITIS EXTERNA: Pseudomonas Aerobic gram negative rod.

OTITIS INTERNA: Haemophilus Influenz: Aerobic gram positive coccobaccilus.

PROSTATIS: Neisseria Gonorrhea (aerobic gram negative diplococcus) (E. Coli)
Chlamydia Aerobic gram negative coccobacillus.
E. Coi: Aerob ic gram negative rod.

PULMONARY:
M. tubercle bacilli.
M. Avium.

FINGER ULCERS: Fishermen, butchers:
Erysipelothrix rhusipathiae. Aerobic gram positive rod. Painful ulcer
Fisherman, cleaning fish tank: mycobacterium marinum. Nodule
Fisherman, alcoholic: vibrio vulnificus (systemic)

Erythema migrans: Lyme disease: gram negative Spirochete

Erythema: Rheumatic fever.

Skin red papules: Bacillary hemangiomatosis in HIV patients.
Skin: pain ulcers: gram negative Spirochetes. Treponema Pallidum.

CELLULITIS:
Staph Aureus
GAS formers: Strep Pyogenes: Strep pyogenes catalase negative gram positive GAS beta hemolytic.
Myofasciitis Necrotizing: Clostridia perfringes Anaerobic gram positive rod.
Fungal Candidiasis Skin lesions: Petechial type.
Erysipelas: Cellulitis with marked swelling: Beta hemolytic Strep.

Leprosy: M. Leprae: Acid fast.

Rash on wrists and ankles: Palms soles and trunk: M & M-P >> petechiae.

URETHRITIS
N. Gonorrhea Anaerobic gram negative diplococci
Chlamydia Aerobic gram negative coccobacillus

VACCINES: Strep Pneumoniae: aerobic gram positive cocci alpha hemolytic
Meningococcus: gram negative diplococcus.
H. Influenzae gram negative coccobacillus.

For meningococcal meningitis contacts (within 1 week of illness within 3 feet for more than 8 hours) get prophylaxis with rifampin (600 mg BID x 2 days or cipro 500 mg x1).
VAGINAL INFECTIONS March 28, 2006

Symptoms	Lab	Dx	Rx
Odiferous, serous discharge	clue cells	bacterial vaginosis (1)	metronidazole 500 BIDx 7ds
Pruritis	motile organisms	Trichomonas	ditto
White, cheesy	hyphae	Yeast	Fluconazole (Diflucan) 150 x 1.

(1) Gardnerella :aerobic gram positive rods.

PREVENTION OF AIDS INFECTIONS (From MKSAP 12)

Agent	Indication	Preventive Agent
PCP (parasite)	Any HIV patient with CD4<200 or any CD4 with h/o thrush or FUO for 2 weeks	TMP/SMX; Alt: Dapsone+pyrimethamine+folinic acid Alt #3: aerolized pentamidine (least effective)
Toxoplasma (parasite)	Toxo Ab plus CD4 < 100	As for PCP, except 3rd alternative doesn't work.
Histoplasma	Endemic areas (SE, Mid Atlantic, Central US)	Itraconazole
TB	PPD > 5mm	INH x 1yr; alt: pyrizinamide +rifampin x 2 mo's.
MAC	CD4 <50	Clarithromycin or azithromycin

CD4 > 200: Herpes Zoster, TB, CAP, Thrush.
CD4 < 200: PCP, HSV, esophogeal candidiasis.
CD < 50: Disseminated MAC, CMV, PML, cryptosporidiosis.

INFECTION CONTROL PRECAUTIONS October 18, 2005

Designation	Typical agents	Measure taken(1)
Airborne: evaporated droplet nuclei or dust particles	Measles; Pox viruses: small pox, chicken pox, shingles (disseminated) SARS TB.	Private room with negative pressure. Health care workers wear N95 respirator. Limit patient transport. Mask the patient when transported. Usually includes contact precautions.
Large droplets (coughing, sneezing, talking, suctioning)	Viruses: Adenovirus, rubella, influenza, mumps, parvovirus, Bacteria: H flu, diphtheria, meningococcal, pertussis, Strep pharyngitis and pneumonia. Pneumonic Plague	Patient in private room or with same infection or space between patients greater than 3 feet. Health care workers wear a mask. Limit patient transport. Mask the patient when transported.
Contact	C difficile E Coli 0157H7 Shigella diarrhea Vancomycin resistant enterococci MRSA infections Varicella, Hepatitis A	Private room or patient with same infection. Glove use. Gown use if patient has diarrhea, colostomy or open wound. Clean surfaces daily. Dedicate the use of equipment.
Standard		Wash hands after patient contact. Use gloves when touching blood, body fluids. Use mask for procedures likely to generate splashes or sprays. Handle equipment to prevent spread of infection.

(1) From Association for Professionals in Infection Control and Epidemiology, Inc.

GENITAL ULCERS October 18, 2004

Disease	Penile ulcer	Nodes	Other	RX
Syphilis	Painless. Single, smooth firm borders, clean base, spontaneously heals.	Large, inguinal, painless	VDRL sens, not spec(1) FTA-Abs: Sens & Spec.	PEN, benzathene, IM 2.4 mU x1(2). Doxy 100 bid x 14ds.
LGV (chlamydia) (3)	Usually none; painless, small, shallow, heals spontaneously.	inguinal, matted nodes	Sysemic Sx's, Scarring. PCR in urine in men.	doxycycline 100 BID x 21 days
Granuloma Inguinale (Calymatobacterium)	Painless. Extensive, looks awful! Granulation tissue.	Lymphedema Elephantiasis	Endemic Africa, Caribbean	Ditto
Reactive arthritis	Painless ulcers in 30%		arthritis, uveitis	
Chancroid (Haemophilis Ducreyi)	Papules progressing to purulent, usually painful ulcers. Multiple. Irregular, not indurated, base has exudate.	In 50% Usually unilateral Often painful May suppurate.	Culture & gram stain Gram - rods School of Fish pattern. Dx by PCR	Ceftraixone 250 mg IM or Azythromycin 1 gm Orally single dose Cipro 500 BID x 3 days.
Herpes Simplex II	Grouped vesicles, red base, Painful	Usually not, but may be.	Fever, Incubation period 2-7ds, H,N,V. Serology.	Acyclovir 200 mg Q4HRS x 10 Ds. Valacyclovir 1gm BID x 10 ds.
Bechets	Painful			

Gonorrhea: Endocervical culture is positive in 80-90% in women. Most cases are asymptomatic, even with systemic involvement.

(1) Non-Treponemal tests (VDRL in serum and CSF and RPR in serum) are used to screen and to monitor therapy. Non-treponemal false positives (1% to 25%) occur in viral infections, malaria, SLE, RA, IVDU.. In successful Rx, VDRL declines 2+ dilutions and is≤1:8. FTA-Abs (treponemal) confirms a positive VDRL or RPR. FTA-Abs stays positive for life. 30% of patients with chancre can be sero negative and need retesting!! However, after 3 months the sensitivity for both the VDRL and the FTA-Abs approach 100%. Secondary Syphilis: m-p rash on soles & palms, ulcerations, condyloma lata, lypmhadenopathy, alopecia.

(2) 50% will have Jarisch-Hexheimer (bacterial like) reaction: ^ T, ^P, ^R, myalgias, ^ PMNs. Self-limiting.

Three other STDs genital warts (HPV), Trichomonas which, in pregnancy, can cause premature rupture of membranes and low birth weight infants, and molluscum contagiosum, which causes umbilicated lesions.

(3) Gonorrhea. With suspect case, treat empirically for both GC and chlamydia: GC: Cefexime 400 mg PO x1; or Ceftriaxone 125 mg i.m. x 1; or Cipro 500 PO x1 Chlamydia: Azithromycin 1gm PO x1; or doxy 100 BID x 7ds.

(4) Also remember other STDS: HIV, Hep B, Hep C

ADULT ACUTE PHARYNGITIS, FLU & COMMON COLD July 15, 2005

	Fever	myalgia	head ache	pharyngitis	Oral ulcers	Aden-opathy	conju-nctivits	rino-rrhea	cough	n,v,d	rash	spleen	peripheral n.	cns	heme	other	rx
beta hemolytic strep	fever			exudate		Ant cerv adenop			NO cough								PEN, erythro
Inf. Mono EBV(dna)	fever 85%		head ache	exudate 85%		post cerv adenop 100%			NO cough		rash 30%, if abcs 50%	spleen 55%	GBS optic neuritis	menin-gitis	v Hgb v pltlts ttp-hus	mono spot; EBV Viral Capsid Antigen (1)	? steroid
HIV (rna)	fever 96%	myalgia	head ache	exudate 70%	oral ulcers	adenop 75%				n,v,d 30%	rash 70%	spleen 30%	periph nerve 6%	CNS 6%		^AST,ALT v lymphs	HAART
HSV-1 (dna)	fever			exudate	oral ulcers						? blisters						
Mycopla-asma/chlamydia	fever			exudate					cough							pneumonia	erythro-mycin
Influenza A,B(rna)	Hi fever	myalgia	head ache	no to mild pharyngitis		cervical adenop			may cough							pneumonia	oseltamivir
common cold (2)	no to hi fever			no to mild pharyngitis		cervical adenop	conjunctivitis	rinorrhea	cough								
Bordetella Pertussis	feverlow grade						conjunctivitis		cough paroxysmal whoop	vomit post tussive						cough >2 wks ^lymphs	Erythro early

(1) Monospot; if negative and mono is strongly suspectted, do an EB viral capsid antigen (a more sensitive test).(

(2) Adenovirus, rhinovirus, or corona virus. Rhino and corona viruses are the most common cause of cough. SARS (corona virus): diagnosed after 2/1/03; T>38, cough, dysppnea, pneumonia, within 10 days contact with far East or person with SARS.

VACCINE RECOMMENDATIONS January 6, 2004 MKSAP XIII, Primary Care

	Infl	Pneum	Tet&D	M&M **	Rub ***	HepA (4)	HepB	Varic chcpx	Polio	Meni ngoc
All *		X	X,q10yr	X	X	X	X	X	X	
>50	X									
>65	X	X								
20-39							X			
Chron Dis	X	X								
Health Pers.	X						X	X		
pregn>13 wks	X									
immunosuppressed		X								
Asplenia		X								
residential care		X					X	X		
Born after 1956				X	X					
travellers						X (4)				
food hndlrs						X				
military						X		x		
drug users						X				
homosexuals						X	X			
promiscuous							X			
clot disorders						X	X			
adoptees						X				
child bearing age								x		
hemodialysis							X			
college frosh								x		X
Other						day care	Hshld cntct			
	Infl	Pneum	Tet&D	M&M	Rub	HepA	HepB	Varice	Polio	Meni ngo

*UPTODATE: “Immunization against hepatitis A and B, diphtheria, tetanus, pertussis, polio, measles, mumps, rubella, Hib, pneumococcus, and varicella-zoster virus (VZV) is considered the standard for the United States “

**Mumps & measles. Measles: URI,cough, Koplick spots on bucal mucosa (salt spots opposite molar teeth), m-p rash moving from head to toe.

***Rubella =German Measles. Lo grade T, lymph (post cerv & occip), m-p rash moving from head to toe, adults may have artrhitis.

All viruses pathogenic in humans are RNA viruses, except the following, which are DNA:
Herpes(Simplex, Zoster, EBV, CMV), HPV, Hepatitis B, Adenovirus, and Parvovirus (B19).

(4) “Hepatitis A is the most common vaccine-preventable disease of international travelers.” (MKSAP XIII).

EHRLICHIOSIS May 17, 2005

Organism	Ehrlichiosis chaffeensis	Anaplasma Phagocytophylum
designation	HME (human monocytic e.)	HGA (human granulocytic A.)
Geography	So Central, So E, Mid Atlantic	NE, upper MidWest, Northern CA.
Reservoir	Deer	Deer, Mouse
Vehicle	Lone Star Tick (Amblyomma Americanum)	Deer Tick (Ioxides Scapularis) (agent for Lyme arthritis and Babesiosis)
Rash	1/3	rare
tick bite	2/3	2/3
Detectable morulae in buffy coat	minority of patients	60% to 85% of patients
Mortality	2 to 5%	7 to 10%

CM's:

>North Carolina OR for the other bug: New England

>Incubation period of 1 to 2 weeks. **Tick** history in 80%.

>Fever and a **Flu-like syndrome** and n,v,d, abd pain (minority with GI sx's)

>Rash in 1/3 of HME patients: M, M-P, or petechial, associated with thrombocytopenia.

>Meningismus, clonus, and mental status changes occur in a minority.

>Complications: Seizure, coma, respiratory, and renal failure.

Lab:

v Lymphocytes followed by ^ lymphocytes

v Platelets

^ AST, ALT in most; usually range from "mild to severe".

Severe cases: Jaundice, v Hgb, ^LDH, v haptoglobin, hemoglobinuria (intravascular hemolysis)

^ Creatinine

Diagnosis: Ehrlichiosis (2 to 26% co-infection with Lyme)

Ddx: Lyme (without rash or may co-exist with rash!) Rocky Mountain Spotted Fever.

Ehrlichiosis has been called "spotless" RMSF.

Other differential diagnoses: TTP, Hepatitis A, hematologic malignancy, cholangitis, and CAP.

There may be co-existing Lyme disease.

Diagnostic confirmation: 1) Clinical: Geographic location, tick bite, flu-like syndrome, and lymphopenia and/or thrombocytopenia are sufficient to treat. 2) Buffy coat exam for morulae, 3) indirect flourescent antibody specific for HME and HGA (first detectable 2 to 3 weeks post infection), 4) PCR (sensitive & specific).

Rx: Doxycycline, 100 mg PO BID.

Infection does not lead to immunity.

Case
*Deer Tick.
If tick is attached less than 24 hours, do not treat!
If tick is attached 24 - 72 hours in an endemic area, prophylax with doxycycline 200 mg X 1.
Stage 1: 2 days to 1 month: EM rash in 80% but only 30% have central clearing. Also flu-like illness with HA, arthralgias, fever, splenomegaly, hepatitis (occasional mild ^ in AST, ALT), iritis, testicular swelling. Use ELISA and confirm with Western Blot.
Stage 2 (early disseminated): 1 month to several months: Asymmetric oligoarthritis (especially the knees) in 60%. Neuro: encephalitis, meningitis, peripheral neuropathy (bilateral bell's palsy). CSF leukocytosis (lymphs) 100 cells/uL.. Cardiac: 1 st degree and higher heart block. ELISA is 95% sensitive after 1 month.
Stage 3 (late disease): Arthritis: >1 year following infection: chronic mono-articular arthritis. Particularly knees. 25,000 wbcs /uL. PCR 85% sensitive. Neuroborreliosis can occur and has high rate of seropositivity.
Stage 4: years: encephalopathy: memory, mood, sleep abnormalities=post Lyme syndrome (not treatable).
Post Lyme Disease syndrome has severe fatigue and is seropositive but does not respond to antibiotics in 3 RCTs. "Chronic Lyme Disease" is a misnomer and indicates symptoms but no seropositivity. (NEJM 2007;357: 1422).

Dx: LYME: Borrelia Burgdorferi
Causes of false positive Lyme serology: SLE, RA, RMSF, Syphilis, Leptospirosis.
Case
*Deer Tick
*Incubation 1-4 weeks.
*Flu syndrome, meningmus, MS changes, drenching nite sweats.
*HS megaly, jaundice.
(In immunodeficient or those with splenectomy, there can be massive hemolysis, shock, death, DIC, acute tubular necrosis (ATN) and ARDS)
*Lab: v Hgb, ^ retics, v platelets. ^ LDH, v haptoglobin, ^ AST, ALT, bili.
Blood smear: + in up to 84% on repeat exams for intra-erythrocytic parasite.
PCR has higher sensitivity.
Serology is >90% sensitive and specific.
Dx: **BABESIOSIS**
Rx: Atovaquone and Azithromycin regimen is 1st choice. Quinine and clindamycin regimen has hi side effect rate (70%).

Case:
In the South East and South West. E.G.: North Carolina and Arkansas
Lone Star Tick borne.
Flu syndrome (fever, myalgias, malaise) with vomiting and **rash** which first is on **ankles and wrists** and spreads to palms, soles and trunk. Only 10% have no rash.
Lab: **v WBC and v platelets**. (like Ehrlichiosis!) Increased LFTS and hyponatremia.
Diagnose by skin biopsy for organisms by direct immuno fluorescence(s&s=70 and 100%).
[Serology positive after 7 days (sens = 95%)]
Complications: encephalitis (CSF: increased monocytes), ARDS, arrhythmias, coagulaopathies, GI bleeding, and skin necrosis.

Rocky Mountain Spotted Fever: Rickettsia rickettsii
Rx: Doxycycline (also for Lyme and Ehrlichiosis) or chloramphenicol within 5 days of symptoms.

Case
Summer and Fall in South-Mid West: Arkansas, Missouri, Oklahoma. Incubation 3-5 days.
Vectors: ticks, mosquitos, horseflies, handling of animals, ingestion of water or inadquately cooked meat, cat scratches, animal bites.
Highly virulent: only 5 to 50 organisms needed.
Ulceroglandular: painful skin ulcer with tender lymph nodes of cervical and occipital chains.
Oculoglandular: photophobia, incr tearing, lid edema, conjunctial ulcers, papules, and lymphadenopathy.
Pharyngeal: Severe sore throat with exudative pharyngitis, tonsilitis, and cervical, para-parotid, and retro-pharyngeal lymphadenopathy
Typhoidal: profuse watery diarrhea.
Pneumonic: Fever, cough, infiltrate.
Meningitis: May occur.
Diagnosis: increased wbc, esr, and confirm with serology.
Dx: Tularemia, Rabbit fever, deer fly fever. Franciscella tularensis (gm -ve coccobacillus).
Rx: Streptomycin 15mg/kg unless there is menignitis. Gent, tetracycline, chloramphenicol, fluoroquinolones for 14 days.

Case:
17 y.o. man with exposure to standing water from mud biking or hiker. Exposure = rat urine.
Latent period = 1 week.
Flu - like illness, faint rash on torso, aseptic meningitis, respiratory failure, renal failure, and jaundice; there can be rhabdomyolysis, hemolysis, and shock.
Dx is by serology. Culture may take weeks
Leptospirosis: Leptospires, spirochetes, persist in the renal tubules of animal reservoirs.
Ddx = Hantavirus, Ehrlichiosis, acute hepatitis, HIV, drug eruption, Eastern Equine encephalitis.
RX: Penicillin, amoxicillin, erythromycin or doxycycline.
Weil's syndrome, occurs in the minority, is characterized by severe jaundice from hemolysis+ acute renal failure + respiratory failure + conjunctival suffusion, a classic physical finding, followed by rhabdomyolysis, ARDS and shock. (**See NEJM 2005;352:1914)**.

Case
Rodent (rat) exposure in rural areas from hiking.
Viral prodrome progresses to respiratory failure within a week. Mortality in those with respiratory failure is 30 to 40%; patients who survive the first 48 hours of the fulminant illness generally recover without serious sequelae.
CXR: bilateral pulmonary edema and pleural effusions.
Low platelet count and atypical lymphocytes on blood smear.
IgM testing of acute-phase serum, which may be positive during the prodrome, is best for making a specific diagnosis.
Dx: Hantavirus pulmonary syndrome is a rodent-borne hemorrhagic fever caused by a member of the Bunyaviridae. (Other hemorrhagic fevers include Ebola, Lassa fever, Rift Valley fever, yellow fever, and Dengue.)
DDX in respiratory failure includes rickettsial disease, leptospirosis, plague, tularemia, sepsis.

Meningitis

	Syndrome	WBC	Differential	Protein mg/dL	Glucose as % of serum	Staining etc
Bacteria	meningitis	1,000-10,000	PMNs	100-1,000	< 30%	+ in 70% (1)
Viral & other aseptic (2)	meningitis, encephalitis	10 - 1,000	Lymphs	50-200	nl	PCR of virus
TB or fungal	chronic meningitis	100 - 1,000	"	100-500	<30%	Crypto Ag.(4)
Carcinoma (3)	meningitis	> 5			<50%	
Normal	Normal	<5		14-45	50%-80%	Negative

(1) Strep pneumonia and Nisseria meningitidis have latex fixation on CSF positive in 80% and 50% respectively.
For empiric treatment of meningitis in adults up to 60 years old use ceftriaxone and vancomycin (for Strep pneumoniae).
For those > 60 y.o., and with alcoholism, cover listeria and add ampicillin.
(2) Most common viral causes are the Enteroviruses (late Summer & early Fall: Coxsackie, Echo & Polio) and Herpes Zoster (winter), and Herpes Simplex (with genital lesions; 85% of genital HSV2 has meningeal signs).
Bacterial causes of "aseptic meningitis": Borrelia, Leptospirosis, RMSF, TB, & parameningeal encephalitis.
Most common drug cause is ibuprofen. (Other sulfa drugs have been seen.)
Autoimmune aseptic meningitis is rare but has been seen with SLE, Bechets, and sarcoid.
(3) Lymphoma, leukemia, and various carcinomas.
(4) TB gives + culture in 25% - 85%; Cropytococcus gives + culture in 95%.

Case:
Southwestern United States and Mexico.
Fever, malaise, diffuse arthralgias, cough without hemoptysis, and chest discomfort, erythema nodosum and erythema multiforme.
CXR: hilar adenopathy and small pleural effusions.
Serologic tests of blood possibly positive but sometimes requires 8 weeks.
Lab: Culture of fungus.
Dx: Coccidioides immitis.

Case:
>Dental cleaning (typical of this organism)
>SBE clinically.
>Vegetations on Echo in 85%
>Culture negative (initially)
>Cultures are positive after 1 week, but in rare cases it may take up to 1 month
Dx: HACEK organisms (Haemophilus spp., Actinobacillus actinomycetemcomitans, Cardiobacterium hominus, Eikenella corrodens, and Kingella kingae)
Haemophilus species account for > 50% of HACEK endocarditis. (Rx with ceftriaxone).
Antibiotics are highly successful, even in prosthetic valve endocarditis (no surgery required).

Brain abscess from a contiguous otitis media requires ceftriaxone and metronidazole. The latter to cover enterobacteriaceae. (enterbacter, pseudomonas, e coli, salmonella, shigella, Yesinia.

CNS MASS LESIONS IN AIDS July 8, 2005

Disease	CM's	MRI	Diagnosis	Rx	Preventive
Toxoplas-mosis	CD4 < 100, HA, szrs, v cognition, focal signs	Multiple Ring enhancing lesions. Basal ganglia & cortex	CSF: Anti-IgG sens 99%+. Begin empiric Rx, if the patient is not on bactrim, is sero +, and MRI is typical.	Pyrimethamine (w/ folinic a) Sulfadiazine. No steroids unless herniated.	TMP/SMX
Syphilitis Gummas	Meningitis Optic neuritis Stroke (vasculitis)	Multiple enhancing lesions in cortex and subcortex.	CSF VDRL S&S:30% & 95%		PEN G 4 M units i.v. q4hrs x 14 days
Bacterial abscess	focal lesions	Single or multiple lesions. Ring enhancing late.	Surgical drainage: Staph, Strep, Salmonella, nocardia, listeria, TB, peptostreptococcus, fusobacterium, bacteroides	Surgical drainage and antibiotics	
HIV encephalitis	Triad of subortical dementia: Memory V, psychomotor V, Movement disorder.	Subcortical & peri-ventricular enhancing lesions. Symmetric. Poorly demarcated.			
CMV neurologic disease(2)	CD4<50/uL. Dementia and Focal signs are more common than in HIV. Can cause retinitis, myelitis, polyneuropathy	Scattered diffuse micronodules. Ventricular enlargement and peri-ventricular inflammation. Meningeal enhancement.	CMV DNA by PCR in CSF	Gancyclovir or Foscarnet (no RCTs)	
PMFLE(1)(JC virus, a papova virus reactivated from childhood in 90% of us.)	Rapid focal deficits, motor, visual, ataxia, aphasia, and cognitive impairment	Patchy hypodense lesions in subcortical white matter, bilateral, asymmetric, well-demarcated. **Non-enhancing(3)**	PCR for JC virus sens 80% Spec > 91%		
Lymphoma	CD4<100 Mental v. Seizures Focal motor Sgs	Enchancing single or multiple lesions of corpus collosum, periventricles, or peri-ependymal areas. >4cm diam.	EBV DNA by PCR on CSF; however, sensitivity and specificity vary, and a brain biopsy is required.	RT + Steroids but little change in survival of 1-3 months. HAART does prolong survival if organism is sensitive.	

(1)Progressive multifocal leukoencephalopathy; PMLFE is the only non enhancing lesion on this list.

DX BY LOCALE:

Cortex: Toxoplasmosis, Syphilis

Subcortex: Syphilis, HIV, PMFLE

Corpus collosum: lymphoma.

Peri-ventricular: HIV, CMV, lymphoma

Basal ganglia: Toxoplasmosis

Increased ventricular size: CMV.

Symptoms	Agent	Response
(1) Skin lesions (intense itching then vesicular then eschar & non-pitting edema OR Flu followed by Pneumonia with shock and **wide mediastinum** (in 1/2)& **pl. effusion(2/3)**	Anthrax. Sporulating, Gram+Rod. Box cars. ELISA or PCR. (Wool Sorters Disease... exposure to yarn and animal hide processing.)	Use bleach. No p-p transmission Rx: cipro+rifampin+vancomycin Post exposure Cipro or Doxy x 60ds. (Ann Int Med 2006;144:270)
(1) (2) Bubonic: Fever, painful nodes. Septicemic: Fever, no nodes. Pneumonia: Severe & **hemoptysis**. & pleural effusion.	Plague. Y. Pestis.Gm-Rod. South West via Fleas in cats, rabbits, squirrel. ELISA; Ag test:100%S&S.	Droplet precautions; contact for buboes Streptomycin, Doxycycline OR TMP/SMX
(1) Tick-borne: Ulceroglandular Glandular Typhoidal (i.e., sepsis) Flu & pharyngitis then **pleuropneumonitis**. And hilar adenopathy.	Tularemia. Grm - Cocco baccilus Dx: via serology So West: Rabbit Hunting. Ticks in landscaping.	Streptomycin. No person to person trasmission. (Tetracycline is less effective)
Cough, dyspnea, nausea, myalgias, then pulmonary edema. (Looks like pneumonia.)	Ricin, inhaled. Ddx: bacterial pneumonia.	None
Dyspnea, SOB, ARDS. Skin burns. Latency is 2 hrs to 2 days. Primary airway lesion is necrosis of mucosa. Late bone marrow suppression occurs 7-21 days post exposure.	Mustard Gas, chlorine, phosgene	Leave area, decontaminate.
(1) *Descending flacid paralysis, pupillary dilation, palsies of Cr N 3,4 & 6, ptosis, diploplia, dysarthria, dysphagia. (3) *respiratory failure *Urinary retention & constipation *Latency: 12-36 hours (up to 1 week)	Clostridium botulinum, anaerobic gram + rod, Foodborne, or bio-aerosol. ELISA. Ddx: Guillain Barre (acute inflammatory demyelinating poly N), which causes ascending paralysis.	Anti-toxin. Enemas or cathartics if no ileus. Supportive.
Cholinergiccrisis:DUMBBBEL:Defecate,urin-ate,miosis, bronchorrehea, bradycardia,broncho-spasm, emesis, lacrimation. Nicotinic block: Convulsions, apnea, flaccid paralysis. Skin contact gives localized sweating and nausea. (4)	Sarin & VX, vapor or skin contact. Acteyl cholinesterase inhibitors leading to excess acetyl choline and cholinergic crisis.	IV Atropine (the muscarinic problem.) IV Pralidoxime (for the nicotinic diaphragm weakness) Treat surfaces with bleach and water. Benzodiazepines for Seizures.
*Bitter almond odor; *Metabolic acidosis *ENT irritation. *Increased HR, Decreased BP, *Bradycardia, coma, respiratory failure. *Neurologic symptoms	Cyanide. Prevents intracellular O2 use by blocking electron transport in mitochondria.	IV sodium nitrite, followed by sodium thiosulfate.
*Bleeding, liver & kidney failure (localized tissue necrosis if injected).	Ricin, ingested or injected. ? Water supply.	None
(1) (2) Incubation period 7-10 days, flu like symptoms, then diarrhea, vomiting, abdominal pain, diarrhea, cough, and chest pain. Maculopapular rash with purpura on day 6. Leukopenia and thrombocytopenia.	Viral hemorrhagic fevers: Ebola and Marburg. Diagnosis: ELISA and PCR.	Aerosol, fluid, and fomite precautions. Supportive
(1)(2). LP 7-10 days. **Cold then** rash, then pustules of face, arms, palms & soles. **Crops Simultaneous** in any 1 area. Spares the trunk. Scabs in 12 days vs chicken pox in 5 days.	Small Pox. DNA pox virus ELISA positive 8 days post inf'n. Also PCR.	Aerosol precautions Vaccine if <3 days post exposure.
Hrs to ds post exposure: N,V,D. Latent phase 2-6 weeks. if 1 Gy, sx's mild; if 1-4 Gy: bone marrow x 3 weeks. 4-8Gy: GI sx's, diarrhea, hemorrhage & sepsis. > 9Gy: death.	Radiation. Gamma and X-rays.	Wipe test to determine internal and external contamination. Remove clothing & decontaminate. Health care workers not at risk from clothing..

(1) Category A Bioterror Agent: 2 viral and 4 bacterial (2) Person to person aerosol or droplet transmission. Aerosol prophylaxis involves N95 respirators and negative pressure rooms. Droplet precautions use standard masks. (3) Ocular complaints may be minimal or the sole manifestation of Botulism. (4) Following the cholinergic crisis there can be a) the "Intermediate Syndrome" in 25% with a latency of 1-4 days, characterized by weakness of proximal limbs, neck flexors, cranial nerves and respiratory muscles, and b) Delayed Neurotoxicity (e.g., with malathion) with a latency of 1-3 weeks, characterized by painful symmetric polyneuropathy and an ascending symmetric motor weakness (Like GBS!)

Marine Toxins

Toxin associated disease	Location	Fish affected	Symptoms
Ciguatera	Most originate in tropics/ subtropics	More than 400 species; predominantly reef dwelling tropical fish such as barracuda, moray eel, amberjack, grouper, mackerel, parrot fish, red snapper	Gastroenteritis, neurologic, cardiovascular, fatigue and malaise
Scombroid	Worldwide	Most commonly tuna, mackerel, skip-jack, bonito, mahi mahi, bluefish, amberjack	Resemble allergic reaction with flushing, rash, palpitations, tachycardia
Paralytic shellfish poisoning	Primarily temperate climates, northeast and northwest coasts in United States	Most commonly bivalve molusks such as clams, oysters, and mussels	Neurologic - can progress to paralysis and respiratory failure
Neurotoxic shellfish poisoning	Southeast coast of United States, Gulf of Mexico, northern Spain, eastern Mediterranean, Japan, New Zealand	Shellfish	Gastrointestinal, neurologic, pulmonary
Diarrheic shellfish poisoning	Worldwide; major outbreaks in Japan, Scandinavia, France, Spain, Chile, Uruguay, Nova Scotia	Shellfish	Gastroenteritis
Pufferfish (Tetrodotoxin)	Most commonly in Japan; rare cases in United States	Pufferfish (Fugu)	Neurologic - can progress to paralysis and respiratory failure
Amnesic shellfish	First recognized off the coast of Prince Edward Island, Canada	Shellfish	Gastroenteritis, neurologic
Possible Estuary-Associated Syndrome (PEAS)	Has been found in the Tar-Pamlico and Neuse River estuaries of North Carolina and in the Pocomoke River on Maryland's eastern shore	Various	Respiratory and eye irritation, neurocognitive

Ciguatera is an algae-derived neurotoxin consumed by tropical fish. Onset is 3 to 6 hours post prandially with neurologic symptoms at 3 to 72 hours post prandially.
Scombroid poisoning is from histamine formed when histidine is broken down by bacterial overgrowth in improperly stored fish. Onset is less than an hour. Give anti-histamines.
Paralytic shellfish poisoning is from **"red tide"** algae-derived neurotoxin taken up by shellfish in North American Coastal fish. Onset is within an hour with death within 2 to 12 hours without ventilatory support.

There are two types of necrotizing fasciitis:
Type 1: Mixed anaerobic, occurs in diabetics, vascular disease, etc. Putrid odor. Requires Clindamycin and Ampillin/Sulbactam.
Type 2: Group A Streptococcus. (GAS). Occurs in healthy patients. Clindamycin..

Case
>Highly contagious RNA virus characterized by cough, coryza, high fever (to 105F), a maculo-papular rash that begins on the hairline and spreads down the body to trunk, palms and soles and **becomes confluent** as it spreads downward.
>Pathognomonic **Koplik spots** are white-blue lesions with erythematous halo on the buccal mucosa occurring within 2 days. There can be lymphadenopathy and splenomegaly.
>Complications are bronchitis, pneumonia, encepthalitis with seizures and coma, gastroenteritis,

and hepatitis. The lab may show lymphopenia.
>From sputum, multinucleated giant cells with inclusion bodies.
>Diagnosis is confirmed by detection of measles antigen in respiratory secretions or by serum IgM positive 1 to 2 days after rash.
>Persons born before 1957 are considered immune. A vaccine was developed in 1963.
Dx=Rubeola (measles):
Subacute sclerosing panencephalitis (SSPE) is a very rare complication of measles encephalitis and is generally found only in children who have acquired the illness before 2 years of age.
Rx = vitamin A decreases mortality among infected children and in immunodeficient.

Case
>Contagious by droplet transmission, the RNA virus, after an 18 day incubation, causes rash, fever, and lymphadenopathy; M-P Rash starts on face and spreads to body, but is **non-confluent**.
>In adult women, there can be arthritis of the fingers, wrists, and knees.
>Congenital rubella causes heart defects, cataracts, and deafness.
>A vaccine was developed in 1969.
Rubella (German Measles):

Case
CA, FL, TX, VA. Zoonosis. Abattoir workers, veterinarian. Ingestion, inhalation.
Flu-like sx's– 8 week form.
Undulant fever, arthritis, orchi-epididdidmitis – undulant form. < 1 year.
Chronic fatigue, depression, arthritis. > 1 year.
Sequella: hepatitis, peripheral arthritis, spondylitis, anemia, leukopenia, thrombocytopenia, meningitis, uveitis, optic neuritis, papilledema, endocarditis.
DX: PCR-ELISA has S&S of 95%.
Brucellosis: Gram negative coccobacillus.
Rx: Doxycycline + Streptomycin or Rifampin

Case
Nova Scotia, Spain, Switzerland
Zoonosis – Abattoir workers, veterinarian. Infected air from animals. Exposure to placenta.
T 104-5, flu, cough, confusion, GI sx's, CP
>40% get pneumonia.
> ^ AST, ALT hepatitis. Granulomatous on liver biopsy.
Chronic: 1- 20 years. Endocarditis.
Lab: Serology.
Dx: Q Fever: Coxiella burnetti. Gram negative cocco-bacillus.
Ddx disseminated TB, histo, crypto, brucellosis, lymphoma, CMV & EBV
Rx: Doxycycline.

Case
Bird or chicken exposure
Flu onset
Pleural friction rub
Mild proteinuria
Increased AST, ALT in ½ of cases
Uncommon to rare: Cold agglutinins with hemolysis, encephalitis, reactive arthritis, endocarditis, and **EN and erythema multiforme**
Serology has limited sensitivity
Dx: Chlamydia psittaci
Rx: Doxycycline 100 BID –> rapid clinical response

Infections with Erythema Nodosum or Erythema Multiforme:
Coccidoides mycosis: EN & EM.
Chlamydia Psittacosis: EN & EM
Mycoplasma pneumonia: EM.

Case:
Child or very small adult.
Western U.S.. Rocky Moutain Wood tick or Dog Tick.
CM's Ascending unilateral paralysis, v DTRs, Respiratory paralysis, bulbar, ocular, laryngeal, pharyngeal, dysphagia, drooling, diploplia.
Lab: Normal !!
Dx: Tick Paralysis (via Toxin, possibly effecting Na channels). Ddx: AIDPN, botulism, myasthenia gravis, shellfish poisoning.

Case
>Aquired by bite of Aedes aegypti, with two subsequent bites by different strains, leading to cross reactivity, activation of complement and cytokines, endothelial dysfunction, and thrombocytopenia.
>Mexico, Northern South Americas, Subsaharan Africa, India, Malasia, and Northern Australia.
Incubation: Always within 14 days (highly sensitive).
Sudden fever, HA, myalgias, Lymphadenopathy, vesicles on palate
Day 4 to 7 confluent Maculopapular rash with islands.
Day 5 to 7 devervescence
Day 7 Abdominal pain, vomiting, decreased consciousness, hypothermia, and greatest danger of hemorrhagic leak and shock
>Severe drop in platelets and leukopenia and rapid rise in HCT (>20%).
>Increased LFTs.
>Studies: ELISA
The leukopenia (< 5,000) and positive tourniquet test (20 petechia /Sq2 when tourniquet held 5 minutes between systolic and diastolic) have the highest sensitivity.
>IgM ELISA or paired serology
Dx=Dengue Hemorrhagic Fever, a Flavivirus (NEJM 2005; 353: 924).
Ddx: Malaria, typhoid fever, leptospirosis, West Nile encephalitis, SARS, measles, rubella, HIV, EBV and rickettsiae.
RX: Fluids with Ringers Lactate of NS, No nSAIDS or ASA.
A vaccine is in development.

Bacteria treated with Ciprofloxacin 500 mg BID x 3 days or TMP/SMX 800 mg BID x 3 days.
For 3 days:
Shigella;
E Coli: enterotoxigenic, pathogenic, or invasive
Aeromonas/ Pleisomonas
For 7 days:
Isospora
Cyclospora

Seen with mycoplasma pneumonia– erythema multiforme below

Bacterium treated with erythromycin 500 mg BID x 5 days:

Campylobacter

Bacteria treated with doxycycline 300 mg 1 dose:

Vibrio cholerae

Agents treated with metronidazole 750 mg TID x 10 days:

C. difficile
Giardia
E histolytica

No Treatment (unless severe, > 50 y.o., or with comorbidity):

E Coli- entero hemorrhagic
Salmonella -- non Typhi species. Yersinia

>Empiric treatment Cipro 500 BID x 1-5 days for **Moderate to severe traveller's diarrhea or Febrile community acquired diarrhea**/
>Nosocomial diarrhea pending C diff results: Metronidazole 500 TID for10 days/
>Persistent diarrhea with suspicion of giardia: as for C diff.
(NEJM 2004;350:44.)

Acute diarrhea points from the NEJM article in 2004:
>Bloody diarrhea, meats, sprouts, TTP-HUS: Ecoli O157 H7 >> obtain Shiga toxin, do not give antibiotics or anti motility agents.
>SS disease, severe arteriosclerosis, intravascular prosthesis, or immuno compromised: think Salmonella.
>AIDS think CMV, microsporidia, TB
>SE Asia diarrhea: quinolone resistance.
>Inflammatory diarrhea can be confused with inflammatory bowel disease: Think Campylobacter, Salmonella, Shigella, entamoeba histolytica.
>Inflammatory diarrhea is diagnosed by lactoferrin: sensitivity is 92% and specificity is 79%.
>Giardia, cryptosporidium, and Norwalk virus are watery non-inflammatory diarrheas. The two former are diagnosed by enzymatic assays. Norwalk virus is diagnosed by PCR.
>Avoid loperamide in shigellosis, E Coli O157 H7, and C difficile.
>Diarrhea lasting beyond 7 days implies giardia or cryptosporidium.
>Recurrent giardia implies IgA deficiency.
>Undercooked sea food implies Norwalk virus or Vibrio fulnificans
>Bismuth subsalicylate 2 tabs 4 x/day decreased traveler's diarrhea by 50%, but gives a black tongue and stool.

What constitutes CMV prophylaxis and when is it given? None is effective.

Varicella pneumonia, particularly in pregnant women, as a potentially lethal condition. Give iv acyclovir 10mg/kg TID, even in pregnant women, because of hi mortality rate

Rate of infectivity on needle stick.

Roushmedicine.com

RULE OF 3s:
Hep B 30% — least lethal
Hep C 3%
HIV 0.3% — most lethal

Harrison's e medicine
Case:
>Healthy adult.
>Risk factor: cut in the skin, dermatitis, or superficial fungal infection (e.g., athlete's foot).
>Sudden onset of fever and pain in leg; the foot and leg are fiery red with rapid spreading and a tender inguinal lymphadenopathy.
Dx: S. pyogenes group A b-hemolytic streptococci Cellulitis. = GAS >> Erysipelas
Staphylococcus aureus is usually more focal and likely to produce furuncles, or abscesses.
Anaerobic cellulitis is more often associated with underlying diabetes.

Cellulitis RX:
1st gen cephalosporin: cephalexin (Keflex) orally or cefazolin 1 to 2 gm iv q8h
Treat 10-14 days.
For Pen allergic, use clindamycin or levofloxacin (5 day course is as good as 10 days).
Identify tinea pedis and treat (source of infection) particularly in recurrent.
Uncommon complication is strep toxic shock syndrome.

Most common causes of C diff diarrhea are: Clindamycin (absolute risk up to 20%), Ampicillin, Amoxicillin, Cephaloporins.

Harrison's Access Medicine
Rheumatic fever: Ongoing prophylaxis is currently recommended for patients who have had recurrent disease, have rheumatic heart disease, or work in occupations that have a high risk for reexposure to Group A streptococcal infection.

Discontinuation of PCP prophylaxis has been evaluated in several trials and shown to be safe when a patient has achieved a CD4 count higher than 200 for 3 months.

Infection of the jaw or necrotizing pneumonia in an alcoholic: anaerobic, gram-positive bacillus branching at acute angles with sulfur granules: Actinomyces israelii. Give a Long course of PEN therapy.

Case:
>Caribbean and Africa and among the Aboriginal population of Australia.
>Painless genital ulcer (history of subcutaneous nodule)
>Genital swelling resembling lymphedema and pseudoelephantiasis.
> Scraping: intracellular bodies within mononuclear cells on smear confirms Dx.
>(= Donovan bodies). Granuloma inguinale or Donovanosis, gram-negative intracellular organism Calymmatobacterium granulomatis.
It has never been grown on solid media.
Rx: azithromycin, doxycycline, trimethoprim-sulfamethoxazole, and chloramphenicol.

Case:
>Common food source
>Multiple cases of vomiting and watery diarrhea.
>Identified by PCR.
Dx: Norwalk virus, an RNA virus causing 30% of nonbacterial diarrheal outbreaks. (Campylobacter, salmonella, shigella, and E. coli present with fecal leukocytes and systemic manifestations.)

Risk factors for ventilator associated pneumonia: Flat position (raise to more than 45-degrees), stress ulcer prophylaxis, and ventilator circuitry changes

The best way to determine if a catheter-related bloodstream infection is present is to demonstrate the same species of microorganisms from two separate peripheral blood cultures and from a semiquantitative culture from the catheter tip.

Case:
Immunocompromised or patient with sarcoid, asthma or cystic fibrosis.
Acute onset of intermittent wheezing, bilateral pulmonary infiltrates, brownish sputum. He becomes sick very rapidly.
Occasionally spits up a cup of blood.
CXR: with an upper lobe mass in a pre-existing cavity or bulla. The characteristic "crescent sign" is usually seen.
Peripheral eosinophilia. IgE (often).
Dx by serum antibodies or skin testing.
DX =Invasive aspergillosis typically occurs in immunocompromised patients and presents as rapidly progressive pulmonary infiltrates. Infection progresses by direct extension across tissue planes. Cavitation may occur.
Rx=Surgery. Anti-fungals with a long course of amphoptericin B may be effective, but usually requires restoration of immunocompetence.
Allergic bronchopulmonary aspergillosis is a separate entity.

Bacillus cereus:
Chinese restaurant. 5 hour incubation period.
Crampy diffuse abdominal pain and vomiting.
Toxin-mediated disease. Frying before serving may not destroy the preformed toxin.
Self-limited.

Cases:
Diarrhea from
Latin America >> Enterotoxigenic E. coli is responsible for 50% of traveler's diarrhea in Latin America, Entamoeba histolytica and Vibrio cholerae account for smaller percentages.
Asia >> Campylobacter
Russia >> Giardia is associated with contaminated water supply.

Case:
Acute fever and severe pleuritic chest pain.
A focal pleural friction rub.
Normal WBC and CXR.
Self-limited.

Pleurodynia (Bornholm disease) (usually caused by Coxsackie B):

Enteroviruses (coxsackievirus,echovirus, poliovirus, and human enterovirus 68-71) cause up to 90% of cases of aseptic meningitis and are most common in late summer and early fall.
Resolves within 1 week. Mumps occurs in winter months.
PCR of CSF can diagnose enteroviruses, HSV, VZ, EBV & CMV..

Case:
Malaise then fever, sore throat, and vesicular rash on palms and in his oropharynx Trunk is spared. Vesicles form bullae and rapidly ulcerate.
Enteroviruses (Coxsackie A, less commonly Coxsackie B and enterovirus 71)=Hand-foot-and-mouth disease:

Bartonella henselae (cat-scratch disease and peliosis hepatis) or B. bacilliformis (Oroya fever and veruga peruana).
Rx Bartonella with Azithromycin x 5 days. Kaposi's sarcoma (KS) looks similar clinically and pathologically with prominent angiogenesis.
Bartonella is detected by serologic tests.
Also, bacillary angiomatosis has bacilli on Warthin-Starry silver stain.
Rx: skin involvement only: oral azithromycin or doxycycline. Systemic: intravenous antibiotics.

Lactic acidosis is a class effect of the nucleoside analogue reverse transcriptase inhibitors, which include didanosine, zidovudine, and lamivudine.
Hypersensitivity rash: Abacavir is another nucleoside analogue reverse transcriptase inhibitor
Vivid dreams and nightmares: Efavirenz
Abdominal cramps, malaise, sweats, and anxiety 2ndary to methadone withdrawal: Efavirenz.
Lipodystrophy. Nelfinavir and indinavir, protease inhibitors, Increase fluids in >1.5 L daily.

Tuboovarian abscess (TOA) is a common complication of pelvic inflammatory disease (PID) and is usually due to anaerobic infection (Bacteroides fragilis).
Neisseria and chlamydial infections are the most common cause of PID.
Clostridium septicum is thought to be the primary pathogen of neutropenic enterocolitis.

PID:
IV regimens: cefoxitin 2gm Q6hrs plus doxycycline 100mg Q12 hours OR
clindamycin 900mg Q8hr plus gentamycin 2mg/kg

Outpatient regimens: Ceftriaxone 250mg IM plus doxycycline 100 mg BID x 14 days
(This latter dose corresponds to the GC/chlamydia treatment of ceftriaxone 125 mg IM plus doxycycline 100mg BID x 7 days.

Brain abscess is a serious complication of extensive dental work with damage to the oral mucosal barrier. Symptoms are usually vague, with headache the most likely symptom. Fever is variable.
Proper culture of brain abcesses usually reveals anaerobic bacteria, with peptostreptococci followed by fusobacterium and Bacteroides species.

Brain abscess from a contiguous otitis media requires ceftriaxone and metronidazole. The latter to cover enterobacteriaceae (enterbacter, pseudomonas, e coli, salmonella, shigella, Yesinia.
In toxic shock syndrome, clindamycin has been shown to reduce toxin production by strep and

staph. Vancomycin should also be given to treat for possible MRSA)

Kaposi's sarcoma is due to Human Herpes Virus-8 (HHV-8) which is sexually transmitted and has raised lesions on skin, extremities, oropharynx and tracheobonchial mucosa and may have hemoptysis or GI bleeding. It is rarely fatal except in cases of pulmonary involvement.
HHV-8 infection also causes:
A) multicentric Castleman's disease, angiofollicular lymphoid hyperplasia, usually presents with fevers, diffuse lymphadenopathy, and hepatosplenomegaly. Hyaline vascular or plasma cell variants.
B) Primary effusion lymphoma is a body cavity–based lymphoma of B cell origin. Clinical manifestations include fevers, malaise, and the presence of pleural effusions, although it may present with pericardial effusion or ascites as well.

Community acquired bacterial meningitis is usually Strep pneumoniae and Neisseria meningitides.

Case
>Prevalent in 10% in Subsaharan Africa, Mali, Niger, and Burkina Faso; also in the Middle East.
>Patches on buccal mucosa, on nipples, lymphadenopathy, and periostitis with deformities of bone and cartilage.
Dx=Endemic Syphilis (not sexually transmitted). (Yaws and Pinta are related Treponemes that also cause skin lesions.)
Rx: Penicillin

Live oral polio vaccine is contraindicated in those with immunosuppressed household contacts.

Antibiotics with activity against Legionella pneumophila are doxycycline, macrolides, and fluoroquinolones.

What vaccines?
Annual influenza vaccine is recommended for patients with chronic illness, close contacts with patients with chronic illness, and anyone over 50 years old.
Hepatitis B vaccine is recommended for any patient with risk factors for clinical, occupational, behavioral, or travel acquisition.
Hepatitis A vaccine is recommended for the same patients as hepatitis B vaccine plus those with chronic liver disease or coagulopathy.
Pneumococcal vaccine is recommended for those 65+ and those with chronic illness.
Live oral polio vaccine is contraindicated in those with immunosuppressed household contacts.

Case
AIDS at risk
Lives in Memphis
Fever, SOB, dry cough, weight loss.
Hepatomegaly
lymphocytosis
Dx: Disseminated Histoplasmosis

Case
>HIV or other immunosuppressed.

>Exposure to birds or chickens or in MidWest.
>Malaise, fever, cough, and shortness of breath.
>Hypoxemia.
>Hepatomegaly, and diffuse lymphadenopathy.
>Small erythematous papules on the upper extremities.
>Leukopenia, thrombocytopenia.
> Very high lactate dehydrogenase, e.g., 4,250 U/dL.
>Chest radiography shows bilateral diffuse reticulonodular infiltrates.
>Microscopic evaluation of bronchiolar lavage reveals multiple organisms in the cytoplasm of alveolar macrophages.
>Antigen detection in serum or blood indicates diagnosis, but cultures are still required.
>Cultures of skin, sputum, bone marrow, mucosal lesions, bronchoalveolar lavage, or liver
>Blood cultures require 15 mL of blood.
Dx=Disseminated histoplasmosis:
>Immunosuppressed: amphotericin B x 10-12 weeks and then lifelong itraconazole suppression.
>Immunocompetent patient, if stable: observation.

Birds or chickens: Psittacosis, histoplasmosis.

Case:
>Immunosuppressed, low back pain, no fever.
>ESR or CRP elevated.
Radiographs of the lumbar spine demonstrate irregular erosions in the end plates.
Dx: osteomyelitis..
Use the CRP to follow success of Rx.

Case: 60 yo man with DM-1. Probe goes to bone. Right foot metatarsal ulcer draining E Coli and Enterococcus faecalis. Osteomyelitis, What should treatment cover? Strategy: Bone Biopsy (Q24, MKSAP 14); Lipsky BA. Clin Infectious Dis 2004;39:885-910.

Stem cell transplants: Give low dose acyclovir to prevent H. Zoster.

Case:
>Elderly, altered mental status, out door exposure, visual hallucinations
>Fever, myoclonic jerks, hyperreflexia, and flaccid paralysis.
CSF: WBCs:15 cells/L with 100% lymphocytes, protein 100 mg/dL, glucose of 80 mg/dL. Gram stain negative.
DDX: West Nile virus.
Diagnosis by CSF IgM antibodies.

Sinusitis is treated with amoxicillin for Strep pneumoniae and H. Influenzae.

The diagnosis of C. difficile–associated diarrhea (CDAD) requires a combination of the appropriate clinical circumstances and demonstration of either toxin A or toxin B in the stool, toxin producing C. difficile on stool culture, or pseudomembranes in the colon. Not all strains of C. difficile produce toxin, and so the diagnosis requires the demonstration of a toxin-producing strain. The sensitivity of assays for C. difficile toxins A and B is not high, and **so repeated testing is necessary to rule out the disease in symptomatic patients. Pseudomembranes are seen in approximately 50% of patients with CDAD.** Pseudomembranous colitis usually

involves the entire colon but spares the small bowel.
Patients colonized with C. difficile have a decreased risk of developing CDAD.
Rx: Oral therapy with vancomycin or metronidazole for 10 to 14 days. Success is 95%.
The diarrhea generally responds in 2 to 4 days.
If there is a paralytic ileus, give vancomycin per rectum and orally.

Hepatitis C: After serology PCR confirms the diagnsosis and permits assessment of response to therapy.

Standard human immune serum globulin (non-specific antibody) is for hepatitis A (pre- and post exposure), hepatitis C, and measles post exposure in immunocompromised.

Bat Bite in an area where there has been rabies (a rhabdo virus).
>Incubation period is 3 weeks to 3 months = 20 to 90 days (range: 4 days to years).
>Send the head of wild animal for rabies exam by fluorescent antibody stain for antigen.
>For a healthy dog or cat bite, confine the animal and observed for 10 days. If healthy, no harm.
>Postexposure therapy clean wound with a 20% soap.
>Tetanus toxoid plus antibiotics.
>Passive immunization with antirabies antiserum
>Antirabies vaccine in five 1-mL doses given intramuscularly, over a 28-day period.
>Antiserum alone or vaccine alone has higher failure than combined treatment.
>Vaccinate when travelling to countries where rabies is endemic in domestic animals.

Imipenem is given intravenously because of its instability in gastric acid.
Cilastatin inhibits an enzyme in the kidney that destroys imipenem.

Caspofungin is used for candidemia. Active against azole resistant Candida except for C. parapsilosis. Toxicity is low except for possible hepatotoxicity.

Campylobacter: remember the 3 B's: Bloody diarrhea, IBD, and Guillan Barrre.
>Illness within 2 to 4 days after exposure to the organism in undercooked meat or water.
>This is a **bloody diarrhea** with fecal leukocytes.
>Biopsy specimen of bowel is indistinguishable from **Crohn's disease and ulcerative colitis.**
>Diarrheal illness is usually self-limited, but lasts more than 1 week, and recurs in 5 to 10% of untreated patients. Again, this could cause confusion with Crohns's or U.C.
>May have constitutional symptoms,
>Complications include pancreatitis, cystitis, arthritis, meningitis, and **Guillain-Barré syndrome** (30% of GBS have prior Campylobacter infection; 0.1% of Campylobactor>GBS).
>Symptoms of Campylobacter enteritis resemble those of Salmonella, Shigella, and Yersinia; all of these agents cause fever and the presence of fecal leukocytes.
>Campylobacter is a far more common cause of a recurrent relapsing diarrheal illness that could be pathologically confused with inflammatory bowel disease than are Yersinia, Salmonella, Shigella, and enteropathogenic E. coli.

Case:
Immunosupressed:
CXR: single or multiple nodules, lung masses (with or without cavitation), reticulonodular infiltrates, interstitial infiltrates, lobar consolidation, subpleural plaques, and pleural effusions.
Bronchial lavage: Acid Fast organisms.

DX: nocardiosis. DDx= lung abscess, tuberculosis, invasive fungal disease, or malignancy

Case:
Immunosuppressed, including diabetes:
Soil exposure.
Malaise, fever, anorexia, productive cough.
Abscesses of lung and brain: CXR: nodule with central cavitation. CT of brain: abscess
Sputum: long, crooked, branching, beaded gram-positive filaments. Acid Fast.
Consider possible disseminated infection in brain, skin, kidneys, bone, and muscle
Slow growth in culture
Dx: Nocardia:
Rx: Sulfisoxazole.

In a man with sepsis from UTI, relieve possible obstruction with straight cath.

Case:
>COPD or bronchiectasis
>Symptoms which worsen or are refractory to bronchodilators.
>CT: Small nodules (and bronchiectasis or COPD).
>Transbronchial biopsy: acid fact organisms.
Dx= Nontuberculous mycobacterium (NTM).
Criteria: 1) clinical syndrome, 2) CT or CXR abnormalities, 3) Positive histopathology on lung biopsy.
These criteria are waived if M. Kansasii is recovered. (Culture is sufficient.)
For M Avium (especially M. intracellulare), rx is Clarithromycin, ethambutol, and rifabutin.
For M. Kansasii Rx is rifampin, isoniazid, and ethambutol for at least 18 months.

Case: 52 yo woman with 2 month h/o SOB, cough. Has obstructive pattern on PFTs.
Dx: M Avium hypersensitivity pneumonitis. (Q 8 MKSAP 14)

Bronchiectasis: Bacteria include Strep, Staph, H Flu, pseudomonas.
Case:
Immunocompromised: Diabetes, HIV, etc.
>Low grade fever.
>Painful dusky nasal turbinate
>Oropharynx: numerous necrotic eschars.
>Possibly a necrotizing pneumonia.
>Biopsy shows hyphae
Mucormycosis: Rhizopus, Rhizomucor, and Cunninghamella.
Other sites of infection include pulmonary, gastrointestinal, and cutaneous.
Prognosis is poor, with a mortality rate up to 50% for localized disease even with appropriate therapy.
Rx: Intravenous amphotericin B
Surgical debridement

Case:
Candidemia may lead to seeding of other organs. Where do you look?
Retinal lesions: Among nonneutropenic patients up to 10% develop retinal lesions, which may be bilateral with small white retinal exudates and may progress to retinal detachment, vitreous

abscess, or extension into the anterior chamber of the eye.
Abdominal abscess occur in patients after severe neutropenia.
Fungal endocarditis occurs in I.V. drug users.

Case:
>Ventilator patient in ICU.
>Cystic fibrosis or sickle cell.
>Necrotizing pneumonia.
Dx: Burkholdia. cepacia portends a rapid decline and poor prognosis.
Rx: Trimethoprim-sulfamethoxazole (TMP/SMX)

Case:
Syphilis.
Treatment.
One to 2 hours after first dose: Fever, chills head ache, myalgias
Resolves in 1-2 days.
Dx: Jarisch-Herxheimer reaction.

Case
16 y.o.
Fever
Sore throat
dysphagia
respiratory distress with stridor
Hemophilus influenza
RX: Do NOT manipulate the throat or take a throat culture
Guard airway
Call ENT or anesthesia
Start ceftriaxone

Case
Healthy adult
dog bite
7 days later:
Hi fever, rash, renal failure with 3+ proteinuria, shock.
HI white count with left shift
Thrombocytopenia: <100,000 is by definition.
AST 500, ^ CPK, ^ Creatinine
DX: Toxic shock syndrome due to Staph aureus (in other patients, it is group D streptococcus.)
Rx: Treat shock; treat with anti-staph/strep drug.

When on INH, the AST/ALT can increase 2 x with symptoms and 5x normal without symptoms before INH is discontinued. Repeat LFTs every 3 months.
Only do LFTs if HIV, liver disease, drinks alcohol, is pregnant, or immediately post partum.

Use oral fluconazole for yeast cystitis

In HIV patients, 65% of patients who receive trimethoprim-sulfamethoxazole develop an

erythematous morbilliform pruritic eruption. Anaphylaxis is rare.
HIV patients also have higher rates of anti- cardiolipin antibody and fibromyalgia.

HIV elisa test has an S&S of >99.5% and 99%.
ELISA negative: HIV is ruled out for the time being but should be repeated if there is concern.
ELISA positive: Western Blot is used to confirm.
If Western Blot is indeterminate, the PCR test is used (very high sensitivity).
If PCR test is negative, repeat the Western Blot in one month. If negative, HIV is ruled out.

HIV1:
Non-infective fluids: Tears, nasal secretions, saliva, sweat, urine and feces.
In HIV1 deep kissing has not been reported as a means of transmission.
Infective fluids: Blood, vaginal fluid, semen, CSF, Peritoneal, pleural and pericardial fluids.

A sign of gonococcal infection in women is mucopurulent discharge and/or vaginal pruritis from cervix... regardless of type. It can be a yellowish discharge that is otherwise innocuous.

Patients with HIV treated for pneumocystis can develop hyperkalemia because TMP/SMX blocks tubular potassium secretion.

The following interfere with ciprofloxacin absorption: sucralfate, calcium, aluminum, and magnesium antacids. Theophylline toxicity will result when given with ciprofloxacin.

Pyrazinamide, INH, and rifampin can cause hepatitis
Pyrazinamide will increase the serum uric acid but usually not cause gout.
Ethambutol causes an optic neuritis with changes in color.
Pyrazinamide and ethambutol cause a rash.

Case
Young patient
mental confusion
low grade fever
weight loss
diarrhea with abdominal pain
arthropathies
skin hyperpigmentation
leukocytosis
frontal lobe lesion
PAS positive foamy macrophages
Dx: Whipple's disease: Trophermyma whippleii infection Rx: TMP/SMX

ACUTE PYELONEPHRITIS NOTES:
Great majority have fever.
80% have 100,000 CFU/cc
BCs in 15%
No imaging required
Pelvic exam to r/o vaginitis, herpes, cervicitis, PID, pregnancy (DO PREGNANCY TEST !!), Culture for Gonorrhea and Chlamydia.

U. Nitrites have S of 35- 80% and does not detect Strep enterococcus or Staph.

E. Coli in up to 85% and Staph in 15%

Criteria for hospitalization: *uncertainty of DX. *Can't take PO meds. *Compliance. *Hi Fever.

Fluoroquinolones and gentamycin achieve higher tissue levels than beta lactams. TMP/SMX has 30% resistant organisms.

Give Cipro 500 BID or any other quinolone x 14 days.

For recurrences, do susceptibility testing. If bacteria are susceptible, then do CT.

For C. Diff infection, the usual treatment is metronidazole 500 mg TID or Vancomycin 125 mg **PO** QID, both x 10-14 days. If still symptomatic, retreat.

Hepatitis B scenarios

HBSAg	HBSAgAb	HbcAb	Enzymes	Possibilities
Pos	Neg	Neg	Increased	Acute and active infection, no immune response
Neg	Pos	Neg	NL	Immunized Or Remote infection
Pos	Neg	Pos	NL	Prior infection, Inactive
Pos	Neg	Pos	Increased	Acute infection OR Chronic Hepatitis B infection
Pos	Pos	Neg	NL	Carrier without infection
Neg	Pos	Pos	NL	Remote infection
Neg	Neg	Pos	NL or Incr	Window disease OR Remote infection OR False Positive
Pos	Pos	Pos	Increased	More than 1 Hepatitis B infection. E.G. IV drug user or renal dialysis patient with both acute and chronic infection.

Immune thrombocytopenia is very common in HIV infected patients. DO NOT use corticosteroids (contraindicated in HIV). Begin HAART therapy.

Case
Sea water work.
Scratch on arm 2 weeks prior to exam.
Not bullous.
Patient is not an alcoholic
Dx: M Marinum. In an alcoholic and bullous skin lesion, it would be Vibrio vulnificus.

Treat red cell aplasia associated with parvovirus B 19 with IVIG.

Ingestion of alcohol with certain cephalosporins causes an antabuse like reaction with facial flushing. These are cefotetan (2nd gen), cefamandole, cefoperazone(3rd gen), cefmetazole,

moxalactam.

Recurrent Salmonella typhymurium or Streptococcus pneumoniae can be CM of AIDS.

Case
Pharyngitis positive for Strep
Rx with PEN VK for 10 days.
Asymptomatic. A Repeat culture was positive.
What should you do?
Ans: Nothing. This is a common scenario and repeat therapy will not accomplish anything.

The following antibiotics cause increased anticoagulation in those on warfarin: cephalosporins, INH, and TMP/SMX.

In TB,
*sputum cultures may remain positive for weeks after effective therapy.
*in untreated cavitary TB, most patients will have positive sputum smears.
*In HIV, after successful therapy, there is no need for chronic suppression.
*Life long risk for TB in patients with PPD + HIV negative patients is less than 10%.

For TB infectivity, criteria to declare non-infective require a) clinical improvement, and b) 3 negative AFB stains of sputum. Initiation of a 4 drug regimen is, by itself, insufficient. Likewise it is impractical to rely on no growth in cultures to provide a point at which the patient is declared to be infective.
Even if sputum positive, patients who are beginning therapy may be discharged to home if a) household contacts have been previously exposed and b) they are not infants and if they are immunocompetent.

Household contacts require evaluation and, where necessary, treatment.

The patient may not return to work until there are 3 negative sputum stains for AFB.

Case(s)
>Confusion and seizures and then Coma with a history of fluctuating fever OR
>Severe diarrhea OR
>ARDS OR
>Acute renal failure with massive hemolysis with profound anemia and pulmonary edema.
Dx=Plasmodium Falciparum (note: Dengue has an <u>increase</u> in hematocrit instead of anemia.)
(black water fever)

Case
>Chronic fluctuating fever
>Marked splenomegaly
>nephrotic syndrome
Dx = P. malaria
Because there is no extraerythrocytic phase in P. malariae infections, treatment with primaquine is unnecessary.

P. ovale is relatively benign.

To Prophylax against chloroquine resistant malaria, there are three regimens:
Daily Malarone (Atovaquone and proguanil)
Daily doxycycline
Weekly mefloquin. However, the last cannot be given in psychiatric or seizure patients.

In contrast to public perception regarding leprosy, the M. Leprae is not highly contagious, afflicting fewer than 5% of household contacts.
It is not easily cultivated on artificial media in part because of its very slow growth rate.
Palpable nerves are found in all stages of the disease.
Polar tuberculoid leprosy is among the milder forms of the disease and is associated with very few organisms on biopsy specimens.

Ddx of PID: Appendicitis, torsion of ovary, hemorrhagic ovarian cyst, endometriosis.

Among the four human malaria parasites, only P. vivax and P. ovale have chronic intrahepatic stages that require treatment with primaquine to prevent relapse.

Pyrogens are TNF alpha, TNF beta, interleukin alpha, interleukin beta, and interleukin 6.

Ticks: Tick paralysis (Wood or Dog), RMSF (R. rickettsii, Lone Star), Lyme (Deer), Babesiosis (deer), erhlichiosis (deer), tularemia (F. tularensis)
Inhalation: C. burnetii is an inhaled agent (some possibility of tick transmission).
Mouse mite: R. akari, the agent of rickettsial pox
Body louse: R. prowazekii

R prowazeckii: Typhus, humans infected thru body lice feces; recurs years after primary sx's.
R conorii: tache noire, an eschar.
R typhi: Scrub typhus; rodent reservoir transmitted by flea, truncal rash, moderate symptoms. In G6PD deficiency, scrub typhus can be fatal with hemolysis and renal failure. Rx with doxy.)
R akari: mouse reservoir, papulovesicular rash, self-limited illness

Acute urethral syndrome= acute dysuria and pyuria but negative culture. May be caused by chlamydia, S. saprophyticus and E. coli and herpes simplex virus. Fever, although rare, suggests an upper urinary tract process.

Azoles (e..g, itraconazole, fluconazole) are fungicidal. Amphoptericin B and nystatin are fungistatic.

Case:
Flu
Atypical pneumonia
Fibrocavitary disease occurs in only about 1%.
Disseminated disease in immuno-suppressed and pregnant women.
Ddx: coccidioidomycosis should be included.

External otitis has multiple organisms: S epidermidis, S aureus, pseudomonas, and candida (in 8%): Rx: Cortisporin OTIC: Polymyxin B, Neomycin, acid PH =3, and hydrocortisone.

AIDS has increased risk for Hodgkin's disease.

CD4 lymphopenia occurs as the result of multiple mechanisms: direct HIV toxicity, apoptosis, autoimmune destruction, syncytia formation, and impaired regeneration.

Multiple cell lines are potential targets of HIV, especially CD4 lymphocytes, tissue macrophages, Langerhans' cells, and microglial CNS cells. CD8 lymphocytes do not express the receptor for HIV gp120, an outer membrane protein.

Case:
10 y.o. boy from Lousiana, Texas, North Central, or Eastern Seaboard.
Fever, HA, Vomiting, somnolence, seizure
IgM ELISA is positive
Mosquito
Dx = LaCrosse virus = California encephalitis
Rx: Supportive. 15% will have some short or long term sequelae.

Mosquito vector: Malaria, Dengue, West Nile, LaCrosse virus.

Arthropodborne encephalitis viruses occur in summer and early fall.
Low Mortality Western equine encephalitis and California encephalitis.
High Mortality Eastern equine encephalitis (up to 50% from horses and exotic birds) and St. Louis encephalitis (up to 30%).

Cutaneous ulcers:
Biopsy with special stains for acid-fast bacilli, fungi, and other likely organisms is appropriate.

Chicago area farmer with soil contact has five large violaceous plaques on the face and hands; perihilar mass on CXR. Blastomyces dermatitidis

Textile worker with 2x 2-cm painless blade eschar over the left wrist.
Dx: Bacillus anthracis

SLE patient on steroids or a Diabetic with multiple brownish raised lesion about 2 x 2 cm diameter and a lower lobe pulmonary infiltrate and multiple ring-enhancing lesions on brain CT.
Dx: Nocardia asteroides.

Renal transplant recipient with painful erythematous nodules involving the left lower extremity.
Dx: Mycobacterium chelonae

A gardener with nodular lymphangitis involving the right dorsal hand and forearm.
Sporothrix schenckii

Causes of FUO:
Collagen Vascular: ESR, RF, ANA
Neoplasm: Abdominal CT, CXR
Infection: **PPD**, Blood cultures, urine culture. If these are negative, a bone scan.
Drug reactions: Surreptitious fever.

Immunizations to consider for international travel.

Hep A vaccine
IG for Hep A
Meningococcus
Rabies
Typhoid
Yellow fever
Malaria

Case:
Africa
Biphasic illness
Flu like syndrome
remission for 1 to 2 days
Jaundice, renal failure, and GI hemorrhage
AST 1,000, ALT 350.
Thrombocytopenia
^PT due to v in clotting factors.
Dx: Yellow fever. Ddx: malaria.
Rx: Symptomatic
Vaccine available.

AIDS in Developed countries: HIV 1
AIDS like illness restricted to West Africa, India and rarely Western Europe: HIV-2.
Tropical paraparesis and adult T cell leukemia or lymphoma: HTLV 1.

Case: Epidemiology: Coastal salt water and brackish estuaries.
Fecal exposure through contaminated water and foods. Shellfish in Texas.
Increased rates in summer and Fall. There is no animal resevoir.
Pathogenesis: 24-48 hour incubation period. Cholera is blocked by acidity. Organism attaches to cell wall and produces cholera toxin, which blocks the GI absorption of sodium and increases the GI secretion of Chloride, leading to osmotic water diarrhea.
CM's Painless water diarrhea, gray, cloudy, mucous, no blood. "Rice water" stool. Vomiting. Shock and death.
Initially, mortality is 30% then less than 1%.
At time of thirst, there is 3- 5% loss of body weight, At hypotension 5-8% BW, and oliguria, pulselessness, and coma, there is >10% loss of body weight.
Increase Na, Cl. Decreased HC03 (< 15), K. Ph 7.2. Anion gap due to lactate.
Dx: Vibrio cholera.
Diagnosis: Screen with oxidase positive testing. Darkfield microscopy. Looking for gram negative rod with flagellae. Motile. Grow on thiosulfate-citrate-bile salt-sucrose. Serotype Inaba or Ogawa. Ddx: Non-inflammatory diarrhea: E Coli, Bacillus cereus, Staph, Clostridium perfringens, cyclospora, cryptosporidium, Rota virus, Norwalk-like virus. (Inflammatory diarrheas are Salmonella typi, Campylobacter, Shiggella, Vibrio para haemolyticus, C difficile, Yersinia, Entamoeba histolytica.)
RX: I.V. Ringer's Lactate: N, K, Cl, HC03: 130, 4, 109, 28. Stool matches this except more K in stool. Therefore, must give PO KCL.
Replace ½ of loss in 1st hour, then remaining loss within 4 hours. Then give PO replacement.
Ab'cs probably shorten course: 9+ age group: TX 2GM, Doxycycline 300 mg, Cipro 1 gm, Erythromycin 1 GM in 3 doses /day for 3 days. < 9: Furazolidone or TMP/SMX.

Herpes and Treatment

Genital HS	Oral acyclovir
Recurrent HS	Yes
Prophylax HS	Yes
Herpes Zoster, immunosuppressed	Oral acyclovir 400 5x/day x 10 ds
Herpes Zoster, elderly	ditto
Herpes Zoster chicken pox	Ditto but only if in an adult.
Herpes Zoster in pregnant patient	IV acyclovir (pneumonia can be fatal.
Herpes keratitis	Acyclovir gels, ganciclovir or trifluorothymidine
Herpes retinal necrosis in HIV infection (rare). Severe visual loss. Retinal detachment & optic neuropathy.	IV acyclovir

CMV retinitis (the most common ocular disorder in AIDS) has floaters and photopsia (flashing lights) and loss of central vision and has yellow-white, fluffy granular retinal lesions. Serum Ab is not helpful.
Immune reconstitution uveitis: floaters or photophobia. Often follows CMV retinitis.

Infections post transplant:

Infection	0-1 mo	1.5 mo	1-4 mo's	2-6 mo's	4+ mo's
Usual nosocomial pneumonias & legionella	x				
Herpes Zoster		x			
CMV, Hepatitis B			x		
PCP, Toxoplasmosis			x		
Strongyloides			x		
mycobacterium, nocardia, fungi			x		
Varicella zoster, EBV, HepC				x	
Cryptococcal meningitis					x

HIV infects:
Helper T cells >> fungal, viral and protozoal infections
Glial cells >> encephalitis, peripheral neuropathy
GI epithelial cells >> Diarrhea, wasting enteropathy.
Marrow progenitor cells >> anemia, thrombocytopenia.

ELISA = Enzyme linked Immunosorbent Assay: Detects HIV Antibody as a screen.

Western Blot: Confirmatory: detects 2 to 4 different types of antibody on one Blot. We are looking for antibody to both glycoprotein 41 and 24.

PCR quantifies the number of copies of RNA; can be used to detect intracellular infection at less than 1 month, when number of copies exceeds 2,000.

Retina Roth Spots* Retinal hemorrhage SBE

Roushmedicine.com

Palms, finger tips soles	Osler nodes*	0.5 CM tender nodules	SBE
Digits	Splinter hemorrages	Splinters in fingers	SBE
Palms	Janeway lesions		ABE

*Roth Spots and Osler nodes are immunologic phenomena.

SBE:
Major criteria: 1. 2+ve bld cultures or +ve seriology or a single culture for coxiella burneti.
2. Echo: New mass, abscess or dehiscence or new valvular regurgitation.

Minor criteria: 1. High risk condition (e.g., IVDU). 2. T>100.4. 3. Vascular phenomena:Janeway lesions, splinters, arterial emboli. 4. Immunologic: Roth spots, Osler nodes, Rheumatoid factor, glomerulonephritis. 5. One positive blood culture.

Diagnosis: 2 major criteria OR 1 major + 3 minor criteria OR 5 minor criteria.

Case
Gradual onset, dyspnea, SOB.
^ LDH.
CXR: Segmental infiltrates, pneumothorax, pleural effusions, cysts and nodules
HRCT: **Ground glass appearance** has a S&S of 100% and 89%.
Dx: Pneumocystis
Rx: I.V. TMP 20mg/kd/d in 3 divided doses x 21 days + I.V. SMX 100mg/kg/d in 3 divided doses x 21 days
OR
Oral TPM/SMX-DS x 21 days
Alternative = Primaquine & clindamycin
Steroids are given for pO2<60 or A-a > 45. 40 mg BID x 5ds, 40 mg QD x 5 ds, 20mg QD x 11 ds.

ID MKSAP 13 update
30 y.o. pet lover 7 to 19 days previously worked with chimps, prairie dogs and African rats.
Macular>papular>vesicular rash on face and arms, all of same vintage and low grade fever.
Lympadenopathy.
Dx: Monkeybox
Ddx: Smallpox.
Rx: Large droplets and contact precautions.

Case
35 y.o. woman
ulceronodular chronic draining abscess
Had cosmetic surgery, waxing, pedicure and foot bath recently.
Dx: Atypical mycobacterium: fortuitum, chelonae, abscessa.
Acid fast stain
Ddx: Staph, leshmaniasis, anthrax, fungi, herpes simplex.
Rx: Clarithromycin

Case
45 y.o. man had abdominal surgery 3 weeks ago. (Had blood transfusion!!!!!!!!!!!!)

Fever, mental confusion, and lower extremity paralysis
Dx: West Nile encephalitis.

Case
HA, myalgias and Temp=104.
H/O travel to far East.
Then cough and fluffy infiltrates in lower lung progressing to all lung fields.
V platelets and WBCs; ^ AST, ALT, CK.
Dx: SARS.
Rx: Contact, droplet precautions.

HIV time course: From the date of exposure to HIV1, symptoms develop in 2 to 4 weeks, 50% have a seroconversion in 63 days, and 95% seroconvert in 6 months.

Screening test for HIV 1 and 2 has s & s of 99%+. Swab between gums. Read in 40 minutes. OraQuick Advance Rapid antibody HIV « test. Must confirm with ELISA. Will not detect acute infection reliably.

HIV 2 infection in the U.S. is quite rare: 0.006%= 6/100,000 cases.

New guidelines for initiating HIV Rx: Symptoms or CD4 < 350/uL or >100,000/ml viral copies.

For HIV prophylaxis, give the three drug regimen within 3 days for 3 to 5 days.

AIDS HISTORY
In the U.S., kaposi's sarcoma occurred in elderly men of Jewish or Mediterranean descent.
1930s and 1940s: Probably the first HIV infection in humans in Africa from Chimpanzees. The disease spreads to the Caribbean.
In 1965, Howard Temin described the first retrovirus.
In 1970, Howard Temin and David Baltimore discovered the reverse transcriptase enzyme used by retroviruses to encode the viral code into host DNA.
In 1974, Robert Gallo discovered the first retrovirus infecting humans.
In the June 4, 1981 issue of MMWR, the CDC reported 5 cases in homosexual men of pneumocystis
carinii with either prior or current CMV infection and candidiasis.
A year later this became known as Acquired immune deficiency syndrome.
In 1982, IV drug users were reported as having AIDs.
In 1983, female sex partners were reported as having AIDS.
In 1984, Luc Montanier in Paris isolated the HIV1 virus.
In 1984 most clinical scientists accepted this virus as the cause of AIDS.
In 1987 AZT was introduced, but it had little effect on longevity.
Introduced in 1996, HAART combinations demonstrated high efficacy in controlling HIV1.

Meningococcal vaccines do not cover NMeningococcus type B.

Case:
DM 2 patient with sinusitis being treated.
Sweating, muttering incoherently, tachycardia.
NL EKG.

Dx: Hypoglycemia due to gatifloxacin. Caused by ^ insulin secretion.

The treatable causes of acute bronchitis are influenza, pertussis, chlamydia & mycoplasma (see NEJM).

For containing SARS, basic hospital isolation terminated the epidemic. Aerosol precautions were not necessary.

Case
50 y.o. gardener.
Skin lesion: nodular or suppurative
Dx: Sporothrix schenkii

Work up of Community Acquired Pneumonia (CAP):
>Sputum for PMNs, GS & Culture
>Blood cultures
>Strep Pneumoniae: Urinary Ag (S & S: 80% & 90%)
>Mycoplasma: Serum for Complement Fixation (Hi sensitivity)
>Chlamydia: Nasopharyngeal swab culture.
>Legionella: Urinary Ag (S & S: 90% & >90%).
All three atypical pneumonias can be treated with Azithromycin.

CRITERIA FOR ENDOCARDITIS: 2 Major OR 1 Major and 3 Minor OR 5 Minor:
Major: 1. Valve vegetation. 2. New regurg Murmur. 2. 2+ BCs for Typical org'ms OR (2+ Pos B.Cultures 12 hrs apart OR 3 consecutive B.C's 1 hr apart, OR C. Burnetti (Ab or 1B.C.)
Minor: 1)Abnormal endocardium or IVDU. 2) B Culture(s) not meeting major criterion. 3)T≥ 38C(100.4F). 4)Immunologic: R.F., Osler's nodes, Roth Spots, Glomerulonephritis. 5)Embolic phenomenon: arterial CVA, septic PE, mycotic aneurysm, IC hemorrhage, or Janeway lesions.

Trachoma: Chlamydia Trachomatis infection with folliculitis and blindness. Poor hygiene. Rx=azithromycin.

Protozoa	Sporozoa	Toxoplasma	HIV brain lesion–ring enhancing lesion
		cyclospora (1)	Acid fast, non-inflammatory diarrhea and (1) cryptosporidium or isospora.
		Plasmodium	Malaria
		Pneumocystis	HIV pneumonia
		Babesia	intra-cellular hematologic – tick born, no rash.
	Ameba	E histolytica	liver abscess; inflammatory diarrhea
	Flagellates	Giardia	Watery, non-inflammatory diarrhea
		Trichomonas	GU infection
		Leishmania	Sand fly. Skin lesion; Visceral leishmaniasis with marked s-megaly. **BX or ELISA**
		Trypanosomes	T Cruzi causes esophogeal and cardiac disease
Helminths	Nemat-	Pinworm	Enterobiasis. Prurits ani. Scotch tape test
give	helminths=	Trichuris trichiuria	Whipworm. Colitis. Growth & cognitive delays. Examine stool for eggs. In soil.
eosino-philia	Round-worms	Ascaris lumbricoides The BIG WORM!	>1 foot long. Rural South (2%). Asia (73%), So America. Pneumonitis+eos (Loeffler's syn), N,V,malabsorption syndrome, intestinal obstruction, biliary colic (India), pancreatitis (India). Dx by Stool micro and **imaging worms**.
		Filiariasis	Lymphedema, fever, chyluria.
		Necator americanus =hookworm.	Itchy feet. N,V,D, Abd pain, Anemia. Stool for eggs. (Ancylostoma duodenale is in the Middle and Far East.). In the soil.
		Trichinella	U.S.,China,Mex,Central Europe. Pork. N,V,D>>myalgias.**ELISA >90% S&S**
		Strongyloides	U.S. rural. Tropics. Can complete life cycle in humans. Hyperinfection in immunocompromised. Waxing & waning GI (peptic ulcer; colitis), pulmonary (cough, dyspnea, wheezing, hemoptysis) and skin symptoms (red raised tracks on buttocks). **ELISA >90% S&S**. Stool sens=75%.
		Onchocerciasis	Africa, Arabia, C America. Black fly vector when 12 mo's of exposure. Severe papulo-nodular dermatitis with severe pruritis on buttocks, waist, & shoulders. "River blindness" due to sclerosing keratitis. Dx: Skin snip, slit lamp, and, if negative, reaction to Diethylcarbamazine
		Angiostrongylus cantonensis	Rat lung worm. Caribbean. . Snails, prawns, crabs. Eosinophilic meningitis.
	Platyhelminths Cestodes= tapeworms	Tapeworm: Taenia solium. "The Pork tapeworm."	Cysticercosis. C, So America, MidEast,: under cooked pork. Neurocysticercosis: seizures. GI: n,v,crawling in anus. **Dx=Enzyme linked immunoblot assay: S&S=95%+**. Eggs or proglotids in feces.
		Fish tapeworm	Europe, Japan. B 12 deficiency. Eggs in stool
		Dwarf tapeworm	4% of children in SE US. Middle East. Abd pain, D, pruritis ani. Stool exam for eggs.
		Echinococcus tapeworm	All developing continents. Liver abscess (classic cysts within a cyst). Chronic cough. Anaphylaxis. **Dx=Imaging+Serology.**
	Platyhelminths	Shistosomiasis	Asia, Middle East, Africa. Liver, bladder abnormalities. Eggs in stool.
	Trematodes=	Intestinal flukes	Asia. GI symptoms. Eggs in stool
	Flukes	Liver flukes	China, Japan. Clonorchis (etc). GI symptoms, hepatomegaly. Eggs in stool.
		Lung fluke: para-gonomiasis	C & So America, Africa, Far East. Initially GI sx's, then lung sx's. Then chronic stage in GI tract (abd pain, diarrhea) or cerebrum (meningitis, focal signs). Eggs in stool. **ELISA S&S is >90%.**.

Manifestation	Parasite
Skin: itchy feet>>>>>>>>>>>>>>>>>> Exposed areas, ulcer, raised margin>>>> On buttocks, red raised tracks>>>>>>>> On buttocks & waist, papular dermatitis>	Necator americanus (hookworm) Cutaneous Leishmaniasis Strongyloides Onchocerciacis
Blindness	Onchocerciasis
Pruritis ani	Pinworm, Taenia solium (pork tapeworm), Dwarf tapeworm
Colitis	Entamoeba histolytica, trichuris trichuria (whip worm), strongyloides
Other GI symptoms, N,V,D, abdominal pain	Giardia, cryptosporidium, ascariasis (big tapeworm: intestinal obstruction), necator americanus (hookworm), trichenella (early), strongyloides (peptic ulcer)
Pancreatitis and biliary colic	Ascaris lumbricoides (The Big Tapeworm)
Splenomegaly and hepatomegaly	Malaria, visceral leishmeniasis (splenomegaly only), shistosomiasis, liver flukes
Pulmonary symptoms	Ascaris lumbricoides (big tapeworm), echinococcosis tapeworm (chronic cough), strongyloides round worm, paragonomiasis (bloody pleural effusion)
Meningitis – eosinophilic	Angiostrongylus cantonensis. Food borne

The top infections (NEJM 2007;357:1019) worldwide are ascariasis (4.2B), Trichuriasis (3.2B), Hookworm (3.2B), Schisto (0.8B), Filariasis (1.3B), Trachoma (0.6B), Leishmaniasis (0.35B).
Case:
>Africa or Asia.
>Water exposure: e.g., swimming or wading
>Incubation 1 - 2 months..
>Fever
>lymphadenopathy of axillary, cervical, and femoral regions.
>Splenomegaly.
>Leukocytosis. 50% eosinophils.
>Serology may be helpful
Dx: Katayama fever caused by infection with Schistosoma mansoni.
>Rx: Praziquantel
>May progress to neurologic complications.

Mebendazole for ascariasis, hookworm, trichinosis, and visceral larval migrans;
Thiabendazole for strongyloides.
Metronidazole for amebiasis, giardiasis, and trichomoniasis;

Massive hepatosplenomegaly and pancytopenia without eosinophilia in an Indian woman.
Dx: Leishmania donovani (Kalazar)

Seizures in a Mexican man has calcified intravascular and intracerebral lesions.
Taenia solium (neurocystercosis)

A mononucleosis-like illness in an otherwise healthy 15-year-old girl. In HIV patient, a single ring enhancing brain lesion in the cortex or basal ganglia.

Roushmedicine.com

Dx: Toxoplasma

Steroid dependent ashmatic with abdominal pain, E. coli bacteremia, and respiratory failure
Strongyloides stercalis.

Chronic dermatitis and progressive blindness in a 45-year-old man from West Africa.
Onchocerca volvulus.

Pruritis ani: "Scotch tape" test. Clear cellophane tape around a tongue depressor, sticky side up, sample the perianal area in AM before bathing; Obtain multiple specimens; store in refrigerator.
Pin Worm: Enterobius vermicularis.
Rx is mebendazole 100 mg PO x 1 and repeat in 2 weeks. Treat the entire family.

Iranian man with a 3 to 4-cm painful ulceration with heaped-up borders over the left shoulder
Leishmania tropica,

Case:
Child
Pica of earth contaminated by puppies and cats
Fever, hepatomegaly, pulmonary symptoms, eosinophilia
Toxocara canis

Case:
Perianal pruritis.
Tape positive.
Dx: E. vermicularis (pinworm)

Case
Asia (majority), Africa, So America
Transient pulmonary symptoms
Constipation, bowel obstruction, eosinophila
Dx: Ascaris lumbricoides is the largest human nematode, reaching a length of up to 35 cm.
It is the most common human helminthic infection.
Rx: Mebendazole

Case:
Adult Greek woman
Rural origins around livestock and dogs
CC: Fever, pruritus, and urticaria and possible anaphylaxis OR
RUQ pain OR
Cough, chest pain.
CT: daughter cysts within larger cysts and eggshell calcification in the wall of the cyst .
Serology: Non-specific. Sensitivity is 70-85%.
Aspiration (careful) gives specific diagnosis.
Dx= Echinococcosis.
DDx: bacterial or amebic liver abscess, hepatoma, or hemangioma
Rx= Albendazole is not sufficiently effective to be used as monotherapy. Surgery is indicated for

such a space- occupying lesion, although the risks of anaphylaxis and dissemination of infectious scolices may be minimized by instilling ethanol into the cyst cavit

Case
Diarrhea, bloody, inflammatory
Liver abscess (don't perform aspiration). No classic cysts.
Sero testing S&S is 85%.
Stool testing has poor sensitivity.
Dx: Entamoeba histolytica. DDX: any of the inflammatory diarrheas; bacteria, echinococcosis.
Rx: metronidazole 750 TID x 10 days.

Case:
CM's:
>Rural
>Abdominal pain, n, d.
Then myalgias, fever, periorbital edema, myalgias..
Rare: Myocarditis, encephalitis, and pneumonitis are but potentially life-threatening.
Eosinophilia and an elevated IgE leveL
Dx= Trichinosis.

For helminthic infection obtain a minimum of three samples because of the cyclic nature of parasitic shedding.

Case
>Bangladesh, India, Nepal, Sudan, and Brazil.
>Ulcers of skin, resolving spontaneously OR
>Fevers and abdominal swelling, early satiety, and weight loss.
>Massive splenomegaly. The liver is not palpable.
>Transmitted by the bite of the sandfly in the majority of cases.
>Pancytopenia
>hypergammaglobulinemia
>hypoalbuminemia. A
>Splenic aspiration demonstrates the organism histologically: sensitivity of 98%
>L. donovani complex generally is associated with visceral leishmaniasis.
>high mortality
>Spleen aspirate (>90% sens), bone marrow asp (>70% sens), or ELISA (>90% S&S).
Dx=Cutaneous leishmaniasis:
Dx=Visceral leishmaniasis (Kal-azar) (protozoa):
DDX: Plasmodium Malariae
>Sodium antimonial glutamate can be indicated in certain situations.

Case
30 y.o. man presents with cellulitis, which is treated with cephalexin but his cellulitis worsens and he is admitted and begun on i.v. vancomycin with subsequent reddening of neck, pruritis, chest pain, muscle spasms and drop in BP to 100/60. Vancomycin is discontinued. What is the approach?
Dx: "Red man syndrome" due to Vancomycin. Usually not life threatening.
Rx: Pre-treat with benadryl and give slow i.v. infusion.

Case
20 y.o.: CC: diarrhea. PMH: recurrent pneumonia.
Dx
Diarrhea is due to Giardiasis which is due to common variable immunodeficiency.
Question: what advice do you give the patient? Answer: NO live vaccines, such as those for mumps, rubella, or polio; and, no IVIG with IgA testing.

How do nasal turbinates look in allergic rhinitis? Answer: pale and boggy nasal turbinates.

Case
25 y.o. woman
Cough with foul smelling sputum, intermittent fevers, ronchi, splenomegaly.
History of Diarrhea with giardia 3 years ago.
May have intestinal neoplasms, atrophic gastritis, Coombs + hemolytic anemia, ITP.
CXR: tram tracking bronchial thinkening.
Dx: Common variable immunodeficiency.
Test: Low IgG and IgA
Rx: IgG monthly.

Case
23 y.o. man.
Perennial nasal congestions, post nasal discharge.
Nasal secretions: copious eosinophils.
Dx: Allergic rhinitis.
Test: skin testing.

Case
30 y.o. woman
Frequent URIs with heavy sputum production.
Wheezing, eczema, intermittent diarrhea.
Dx: IgA deficiency.
Rx: Avoid serum or whole blood products (severe anaphylaxis). IgA infusion doesn't help.

Case
A 24-yo woman... immunocompetent.
SOB, wheezing, during summer & fall.
Albuterol 1-2 x/d
Sinus drainage, H and E stain shows mucin, necrotic debris, and eosinophils.
A silver stain show hyphae.
Skin testing: positive for Alternaria alternata.
Dx: Allergic Fungal Sinusitis
Rx: Polyp removal and systemic steroids for 2 - 4 weeks.

Case
A 24-yo woman... immunocompromised..
SOB, wheezing, during summer & fall.
Albuterol 1-2 x/d
Biopsy: silver stain show invasion with hyphae.
Dx: Invasive allergic fungal sinusitis.

Rx: Surgical debridement and amphoptericin.

Case
Mild or no asthma, fever, malaise, sputum has brown mucous plugs.
Lab: Highly sensitive (but not specific findings) transitory lung infiltrates and eosinophilia.
CXR: Tram lines (bronchiectasis), parallel lines, ring shadows, or gloved finger shadows, perihilar infiltrates.
CT: Upper lobe bronchiectasis. (sensitivity of bronchiectasis is < 50%.)
PFTs: v FEV1. Late stage has restrictive disease with v VC.
Dx: Allergic bronchopulmonary aspergillosis. Minimal criteria (note the absence of transbronchial biopsy!!): 1)Hx asthma, 2)central bronchiectasis, 3) IgE > 1mg/ml, 4)^ in IgE and IgG specific to Aspergillus, 5)Immediate skin test + for A. fumigatus.
DDx: Asthma, cystic fibrosis, eosinophilia syndromes (e.g., Churg Strauss, eosinophilic pneumonia, ascariasis (Loeffler's syndrome), crack cocaine abuse, autoimmune diseases including RA, PA, and sarcoidosis.)
Rx: Steroids, 30 to 60 mg/d x 2 weeks, with taper over « year. Monitor with serial IgE (aim for a 35% decrease). If relapse, add itraconazole.

Case
45 y.o. woman with HA, pain on neck anteroflexion, low grade fever.
Medications: Ibuprofen for SLE
DX: drug-induced aseptic meningitis.

Antibiotics for pseudomonas:
ceftazidime (fortaz, 3rd gen)
cefepime (maxipime, 4th gen
Piperacillin-tazobactim (Zosyn)
levofloxacin (levaquin)

Interleukins and TNFs mediate presenting of the bact/virus Antigen to macrophage to Ag presentation to T cells to B cell stimulation and prod'n of Ab.

SYPHILIS
The most common indication (and perhaps the only indication) for desensitization to penicillin is for the treatment of neurosyphilis.

Early syphilis: (Stages occurring within one year):
Primary syphilis: The chancre. Usually painless. Incubation period is 3 weeks (range 3 to 90 days).
Secondary syphilis: Occurs in 25%. Occurs 2 to 8 weeks after the chancre and usually resolves spontaneously:
*After 1 month, rash of any type except non vesicular.
*alopecia, synovitis, uveitis, lymphadenopathy, nephritis, neurosyphylis, synovitis, GI infiltration (confused with lymphoma), hepatitis.
*Neurosyphilis.
Early latent syphilis: Asymptomatic but positive serology.

The importance of early syphilis (less than one year, without neurologic syphilis) is that, with the exception of neurosyphilis, it is all treated with Pencillin G 2.4 million units IM once. (Or

doxycycline 100 BID x 2 weeks).

Late syphilis (greater than one year) is manifested by either 1) granulomas of bone and skin, 2) cardiovascular pathology (aortitis), or 3) neurosyphilis (paresis or tabes dorsalis).

The first 2 conditions – granulomas of bone and skin (gumma) and aortitis – are treated by Pen G 2.4 million units IM weekly for 3 weeks. Or DOXY 100 BID x 4 weeks.

Neurosyphilis is treated by penicillin G 4 million unites every 4 hours iv for 2 weeks. OR ceftriazone 2 gm IV once daily for 2 weeks. (Give ceftriaxone to a patient with a mild penicillin allergy; otherwise, desensitize the patient and give him pen G.)

Case (MKSAP 14, Q 52):
40 yo man with AIDS has a 2 week h/o/ HA and mental status changes. LP: 40 WBCs with 80% lymphs and a positive CSF VDRL.
Dx: neurosyphilis. Rx: pen G 4 million units Q 4 hours x 14 days.

Penicillin desensitization: The only indication seems to be as an indication for treatment of neurosyphilis. Rule out penicillin allergy by intracutaneous prick. If this is negative, do an intradermal injection. If still negative, this rules out penicillin allergy. Desensitize a patient by increasing oral doses of penicillin beginning with a very small dose.

In toxic shock syndrome, clindamycin has been shown to reduce toxin production by strep and staph. Vancomycin should also be given to treat for possible MRSA

Amebic abscess is suggested by high titer of entamoeba histolytica.

In immunosuppressed patients, reactivation of herpes virus 6 can cause hepatitis and encephalitis (Q 57) and reactivation of polyomavirus BK can cause nephropathy (Q 64).

Variant CJD patients are younger and have psychiatric symptoms, and prominent sensory findings, MRI changes in the thalamus rather than basal ganglia and putamen.

	Etiology/%	AGe	
Sporadic	85%	68	*Akinetic mutism *pyramidal & extrapyramidal *myoclonus *Visual changes & ataxia CSF: 14-3-3 protein periodic sharp waves on EKG
Genetic	15% (AD)	40-50	ditto
Variant	<1%Meat from cows	Young	Painful paresthesias, ataxia, myoclonus, chorea/dystonia, psychiatric.
Iatrogentic	<1%Iatrogenic	Young	

Variant meat from cows. Younger (age 28) pain. Thalamus. Prominent psych sx's.
Iatrogenic < 1%. Age 28. Basal ganglia, putamen.
Sporadic 85% mean age is 68. Basal ganglia, putamen.

Genetic 15% Autsomoal dominant. 100% penetrance. 40 to 50y.o. live several years. Basal Ganglia,
putamen.
(including fatal familial insomnia.)

In transplant recipients, cryptococcal infections occur and are treated with flucytosine and amphoptericin B lipid formulation.
Yeast infections:
Candida Albicans >> Fluconazole
Candida, other species >> caspofungin
Aspergillus
Cryptococcus >> Flucytosine and amphoptericin B lipid.

Human Bites: (3rd gen cephalosporin plus metronidazole) OR ampicillin-sulbactam.
Animal bites: Amoxicillin-clavulanate OR (doxycycline or TMP/SMX) + (metronidazole or clinda)

HIV screening & diagnosis:

ELISA + ->>>>>> WB+ >>>>>>Diagnosed as HIV.
| \
| \
| \ WB-indeterminate >>>>>>> WB at 3 and 6 months.
|
|
| WB (-) >>>> Asymptomatic/no exposures >>>>> no further diagnostics
|
|
| Symptoms or recent exposure >>>>>>> Repeat WB.

YEAST AND MOLD INFECTIONS AND TREATMENTS

	Triazoles	amphoptericin	echinocandins	flucytosine
Candida	(fluconazole) Topical clotrimazole for candida esophagitis		micafungin	
Aspergillus	Voriconazole		Micafungin	
Cryptococcus		++		++
histoplasmosis	itraconazole	(initially)		
Coccidiomycosis		+ (initially)		+
Blastomycosis	itraconazole			

Anti-viral side effects:
Acyclovir i.v.: acute renal insufficiency
Gancicyclovir: neutropenia (30%) and thrombocytopenia.
Foscarnet: renal failure (reversible); v Ca, V Mg, ^Phosphates.

Abacavir: hypersensitivity reaction: rash, fever, nausea, vomiting, myalgia, SOB.
SDV: vPMNs, myositis, hepatitis.
DDI: pancreatitis
D4T: lipodystrophy.
Nevirapine: Rash
PPIs: fat distribution.
Indinavir: kidney stones.

Acute diarrhea work up:
Meals sprouts: Bloody diarhea: HUS-TTP, E Coli 0157, h7.
SS disease, severe aortic stenosis, intravascular prosthesi: HIV, AIDS
Avoid loperamide in E Coli 0157 H7 and C difficile.
Treatment to prevent traveller's diarrhea: 2 tabs QID (black tongue and black stool, constipation.)

For C Diff paralytic iloleus, give vancomycen per rectum and orally and IV metronidazole (Q9, MKSAP 14)

Avian flu: Oseltamavir works if given within 5 days of onset (NEJM 2008; 358:261).

INFECTIOUS CAUSES OF DIARRHEA:
DIARRHEA September 23, 2005
ACUTE Symptoms < 2 weeks
<u><**12hours**</u>: Ciguatera: reef fish, Neurotoxic shellfish: Gulf of Mexico, Shellfish.
E Coli (beef, salad dressing); Bacillus cereus poisoning:1-6 hrs
Staph aureus (1-8 hrs pp) Ham, poultry, pastries, salads, potato salad.
<u>8-36 hours</u>: Clostridia perfringens: beef, gravy;. Fried rice pork. Clostridia: buffet pathogen; Vibrio parahaemolyticus: most common cause of sea-food (raw osysters).
<u>> 24 hours</u>
<u>Non-inflammatory, high water volume diarrhea:</u>
Staph Aureus and Bacillus cereus (both with pre-formed toxin)
E. Coli---enterotoxigenic
Listeria: milk, icecream, poulching.
Vibrio cholerae; Vibrio fulnificus: Raw oysters in a person with liver failure.
Franciscella tularensis (tick vector; South-Mid West: Arkansas, Missouri, Oklahoma)
Parasitic: Giardia (belching, abdominal pain, ELISA: S & S = 92% and 98%!!) Cryptosporidia (difficult to treat), microsporidia, Isospora (acid fast)
Viral: Norwalk virus & Rota virus
<u>Inflammatory, smaller volume diarrhea:</u>
Viral: CMV
Parasitic: Entamoeba histolytica, strongyloides, Trichuris Tricuria (Whipworm)
E. Coli (O157:H7>>Shiga Toxin) enterohemorrhagic or enterinvasive
Clostridium difficile
Salmonella – dairy, raw eggs, sickle cell anemia. Even if 2 wks, do NOT treat unless immunocompromised or elderly.
Campylobacter – 3 B's: Bloody diarrhea, mimics IBD, and is associated with Guillain Barre syndrome. 2-10 ds pp.
Shigella: egg salad
Yersinia – rash, joint pain, abdominal pain. 30% of appendicitis. Pork, tofu.