

<p>General</p> <ul style="list-style-type: none"> • Tick Born Infections (Lyme, Babesiosis, Ehrlichiosis, RMSF, Tularemia) <ul style="list-style-type: none"> ◦ Tx: Doxy w/ addition of other abx depending how sick ◦ remember co-infections are very common because similar vectors for many of them ◦ assess outdoor activity during certain times of year in certain endemic wooded areas but remember that often pts do not remember they had a bite • Zoonotic Infections (Tularemia, Leptospirosis, Q Fever, Brucellosis, Cat Scratch Fever, Psittacosis, Anthrax, Plague) <ul style="list-style-type: none"> ◦ Tx: Doxy w/ addition of other abx depending how sick ◦ Any infection naturally transmitted b/t animal and man • Travel Infections (Zoonotic & Tick Born Infections (above), Parasites, Viral Hemorrhagic Fevers, SARS, HPS, Traveler's Diarrhea) <ul style="list-style-type: none"> ◦ Travelling: http://wwwnc.cdc.gov/travel/, traveler's insurance, provide enough Rx meds • Bioterrorist Infections (Anthrax, Plague, Tularemia, Smallpox, Botulism, Viral Hemorrhagic Fevers, SARS, HPS) <ul style="list-style-type: none"> ◦ Can be aerosolized ◦ Consider if many healthy people present w/ Pulfm/GI/Derm Sx 			
Lyme Disease <i>Borrelia burgdorferi</i> (spirochete)	<ul style="list-style-type: none"> • Reservoir: white tailed deer • Vector: Ixodes tick • Geography: Upper Midwest, NW, and NE Coastal • Season: Summer/Fall 	<ul style="list-style-type: none"> • Early Dz (days to weeks) (~70%): Flu-Like Illness, Rheum Dz (oligo-arthritis esp of knee), Skin Dz (Erythema Chronicum Migrans = large target lesion at bite site that slowly grows) and when it disseminates hematogenously there is a flu-like illness • Disseminated Dz (wks-mos) (~40%): CV Dz (conduction disturbances, peri/myocarditis), CNS Dz ("NeuroBorreliosis" resulting in AMS, meningoencephalitis, mononeuritis multiplex, Bell's Palsy aka CN-itis) • Late Dz (mos) (~30%): Skin Dz (Acrodermatitis Chronica Atrophicans), CNS Dz ("post-lyme syndrome" = fatigue, memory/concentration problems, neuropathic pain, HA, etc ~FM but controversial) 	<ul style="list-style-type: none"> • Dx: PCR, Serology (NB check CNS serology if neuro Sx) then confirm w/ Western Blot as False + w/ other spirochetes • Px: Removal of tick w/in 72hrs may preclude infection!!!, Doxycycline x1 if given w/in 72hrs of tick exposure, NB Vaccine was made but withdrawn from market b/c of joint/neuro toxicity • Tx Early Dz: Doxycycline PO x21d (cannot just have flu like illness needs rash) • Tx Disseminated Dz: Ceftriaxone IV x21d • Tx Late Dz: in most cases when you think late Lyme Dz pts actually don't have Lyme Dz therefore don't Tx
Babesiosis <i>Babesia</i> spp. (RBC obligate intracellular parasite)	<ul style="list-style-type: none"> • Reservoir: deer/mouse • Vector: Ixodes tick, also seen from blood transfusions • Geography: NE • Season: Spring/Summer 	<ul style="list-style-type: none"> • S/S: malaria like illness • Complications: none except if asplenic/elderly/immunocompromised then can be fatal 2/2 hemolytic anemia 	<ul style="list-style-type: none"> • Dx: Blood Smear shows RBC Intracellular Merozoites (Maltese cross shaped), Serology, PCR • Tx: [Atovaquone + Azithromycin] or [Clindamycin + Quinine], exchange transfusion if parasitemia >10% or hemolytic anemia or SIRS
Ehrlichiosis & Anaplasmosis <i>Ehrlichia</i> & <i>Anaplasma</i> spp. (WBC obligate intracellular parasite)	<ul style="list-style-type: none"> • Reservoir: Deer • Vector/Geography: Human Monocytic Ehrlichiosis (HME) (South USA) Dermacentor or Amblyomma Tick, lives in Monocytes vs Human Granulocytic Anaplasmosis (HGA) (similar to Lyme) Ixodes Tick, lives in Neutrophils • Season: Spring/Summer 	<ul style="list-style-type: none"> • S/S: Rickettsial Symptoms w/o rash • Complications: AKI, liver dysfxn, rhabdo, ARDS, pancytopenia, death 	<ul style="list-style-type: none"> • Dx: Blood Smear shows WBC Intracellular Morulae (round shaped), Serology, PCR • Tx: Doxy
Rocky Mountain Spotted Fever (RMSF) <i>Rickettsia</i> spp. (Endothelial obligate intracellular parasite)	<ul style="list-style-type: none"> • Reservoir: Dog • Vector: Dermacentor or Amblyomma Tick • Geography: any wooded areas in NE, SE, NW BUT ACTUALLY NOT IN THE ROCKY MOUNTAINS • Season: Spring/Summer • NB cases are developing outside usual epidemiologic vectors/areas/season 	<ul style="list-style-type: none"> • S/S: rash (peripheral including palms/soles blanching erythematous 5mm macules w/ edema → 6-18hrs later centripetal spread to arms/legs then trunk then neck/face → 2-4d later turn into nonblanching purpuric lesions), F, chills, myalgias esp of the calf, N/V, ab pain, D, prostration, frontal HA, AMS, photophobia, periorbital edema, cough, cardiac arrhythmia esp bradycardia, thrombocytopenia, hyponatremia, elevated CPK, increased LFTs • Complications: gangrene of extremities, MOF, death from myocarditis (3%) 	<ul style="list-style-type: none"> • Dx: IFA (Indirect immuno Fluorescence Assay), CF (Complement Fixation), ELISA, LA (Latex-Agglutination), IHA (Indirect Hemagglutination), Skin Bx showing necrotizing vasculitis, Weil-Felix Test (cross-linking of <i>Rickettsia rickettsii</i> Abs and <i>Proteus vulgaris</i> Abs) • Tx: Doxy or Chloramphenicol (if CNS problems b/c can penetrate BBB)
Tularemia <i>Francisella tularensis</i> (GNR)	<ul style="list-style-type: none"> • Reservoir: farm animal esp rabbits • Vector: Tick Bite or contamination of anything that is edible or that can be inhaled • Geography: World-Wide but esp South USA 	<ul style="list-style-type: none"> • S/S: rapid onset of constitutional symptoms and variable organ disease depending on which organ infected with purple ulcer w/ central eschar at bite site w/ LAD, pneumonia if inhaled, systemic dz if ingested • Complications: variable depending on which organs are involved 	<ul style="list-style-type: none"> • Dx: Culture, Serology • Tx: Doxy
Leptospirosis	<ul style="list-style-type: none"> • Reservoir: any wild/domestic 	<ul style="list-style-type: none"> • 1st Septic Leptospiremic Phase: F, GI problems, HA, 	<ul style="list-style-type: none"> • Dx: Dark Field Microscopy, Culture,

<i>Leptospira interrogans</i> (spirochete)	<ul style="list-style-type: none"> mammal esp rat (specifically in the renal tubules) Vector: contamination of water by urine from the reservoir that then enters via abrasions or mucosa Geography: worldwide but esp in the tropics NB most common zoonotic dz in the world but esp in Hawaii 	<ul style="list-style-type: none"> conjunctival injection, calf myalgia, pretibial rash lasting 7d then 2nd Defervescent: no symptoms lasting 5d then 3rd Immune Leptospiruric Phase: F, HSM, uveitis/chorioretinitis, conjunctival suffusion (brownish exudates), pretibial palpable purpura, LAD, meningitis, renal/liver impairment Complications: the overall dz varies from a self-limited dz with Sx above to a potentially fatal dz with RF+LF+Hemorrhage (Wiel's Syndrome), hemorrhagic pneumonitis to ARDS, myocarditis, meningitis, and dangerous hemorrhage w/ death up to 35% 	<p>Serology, 1st Phase: + Blood/CSF, 3rd Phase: + Urine</p> <ul style="list-style-type: none"> Tx: Doxy ± PenG
Q Fever <i>Coxiella burnetii</i> (GNR)	<ul style="list-style-type: none"> Reservoir: mild producing farm animals and cats Vector: contamination of anything that can be inhaled (common story is a rancher or abattoir (slaughterhouse) who inhales the bacteria) Geography: World-Wide but esp in California if in US 	<ul style="list-style-type: none"> S/S: constitutional symptoms (common cause of FUO), Atypical PNA, HSM, hepatitis, hematuria, thrombocytosis Complications: culture negative IE, large vessel emboli, phlebitis, various other organ involvement 	<ul style="list-style-type: none"> Dx: Serology Tx: Doxy ± Rifampin
Brucellosis <i>Brucella</i> spp. (GNR)	<ul style="list-style-type: none"> Reservoir: milk producing animals (NB sign of infection in animals is recurrent abortion) Vector: ingesting unpasteurized milk/cheese or raw meat (usually goat milk/cheese from Mexico, Greece, Italy, France) NB lab personal can acquire after aerosolization Geography: World-Wide but in US primarily Texas/California 	<ul style="list-style-type: none"> S/S: IT IS MORE PROTEAN THAN SYPHILIS OR TUBERCULOSIS thus any organ can be involved but classically presents as FUO w/ other non-specific Sx w/ the most common sites of localization being sacroiliac osteo, epididymoorchitis, meningitis, endocarditis, hepatic abscess Complications: MOF 	<ul style="list-style-type: none"> Dx: Serology, Culture (very slow growing becoming + in 1-4wks, you have to call the lab and tell them that you are suspecting Brucellosis and therefore to use special biphasic media and to keep a long time and to take extra precautionary measures when handling tissue/blood) Tx: Doxy ± Gent
Cat Scratch Disease <i>Bartonella henselae</i> (GNR)	<ul style="list-style-type: none"> Reservoir: flea infested cat Vector: scratch/bite Geography: World Wide 	<ul style="list-style-type: none"> S/S: papulopustular rash followed by lymphadenitis w/ mild constitutional symptoms Complications: Bacillary Angiomatosis (vascular skin lesions), Endocarditis, Oroya Fever (different species, high fever and hemolytic anemia and verruga peruana aka purple skin lesion, seen mainly in Andes Mountains), CNS, Peliosis Hepatitis 	<ul style="list-style-type: none"> Dx: Serology, Bx, BCx, PCR Tx: Doxy
Psittacosis <i>Chamydia psittaci</i> (GNR)	<ul style="list-style-type: none"> Reservoir: Birds Vector: Inhalation of Bird parts therefore seen in anyone working w/ poultry or birds Geography: World-Wide 	<ul style="list-style-type: none"> S/S: Atypical PNA w/ Horder's Spots (face rash) Complications: epistaxis, phlebitis, culture negative IE, hepatitis 	<ul style="list-style-type: none"> Dx: Serology Tx: Doxy
Anthrax <i>Bacillus anthracis</i> (GPR)	<ul style="list-style-type: none"> Reservoir: any herbivore Vector: herbivore products Geography: World Wide 	<ul style="list-style-type: none"> S/S: "Inhalation Anthrax" (inhale spore: flu-like illness followed by hemorrhagic mediastinitis w/ characteristic widened mediastinum and bilateral bloody pleural effusions followed by ARDS (terrorist event)) vs "Cutaneous Anthrax" (contact spore: painless lesion/ulcer that then turns into a black eschar with regional painful LAD and induration (farmer)) vs "GI Anthrax" (ingest spore: cervical LAD, oropharynx black eschars, N/V, ab pain, bloody D) Complications: death esp if inhalational 	<ul style="list-style-type: none"> Dx: Culture, Serology Tx: Doxy ± Vanc/Rifampin
Plague <i>Yersinia pestis</i> (Macrophage obligate intracellular parasite)	<ul style="list-style-type: none"> Reservoir: farm rodents Vector: Flea Bite or contamination of anything that can be inhaled by animal parts Geography: World-Wide 	<ul style="list-style-type: none"> S/S: "Bubonic Plague" (flea bite resulting in suppurative lymphadenitis aka "bubo", prostration, intense thirst, GI Sx, etc) vs "Pneumonic Plague" (inhalation of bacteria resulting in pneumonia w/ profuse watery blood tinged sputum, encephalopathy, etc, very contagious hence can be used as a bioterrorist agent) Complications: hemorrhagic necrosis of various organs followed by death aka "Black Death" which is 100% if unTx and 5% if Tx 	<ul style="list-style-type: none"> Dx: Culture, Serology of Bubo, Sputum, Serum Tx: Doxy