

Disease	Infectious Agent	Transmission	Epidemiology	Clinical Presentation	Diagnosis	Treatment
Amebiasis	protozoan parasite <i>Entamoeba histolytica</i>	Food and Water	India, Indonesia, Mexico, or Thailand	Non-specific symptoms = cramps, watery or bloody diarrhea, and weight loss Complications = (extra intestinal disease) Amebic liver abscesses – fever RUQP, and No diarrhea	Microscopy cannot differentiate More specific tests such as EIA or PCR to confirm diagnosis	For symptomatic intestinal infection and extraintestinal disease, treatment with metronidazole or tinidazole followed by treatment with iodoquinol or paromomycin. Asymptomatic = iodoquinol or paromomycin
Brucellosis	gram-negative coccobacilli (bacteria)	Food and Water, also - consumption of unpasteurized dairy products, consumption of undercooked meat from infected animals, farming, very contagious – can be spread via inhalation too!	Mediterranean Basin, South and Central America, Eastern Europe, Asia, Africa, and the Middle East. *In these countries – it is in areas with farming and livestock**	Incubation period is LONG 2–4 weeks on average before symptoms Symptoms = nonspecific, including fever, muscle aches, fatigue, headache, and night sweats	Blood culture Diagnosis	Doxycycline, rifampin, and trimethoprim-sulfamethoxazole for a minimum of 6–8 weeks
Cholera	<i>Vibrio cholerae</i> O-group 1 or O-group 139	Food and Water	outbreak in 2010 in Haiti (after the earthquake) -- spread to surrounding areas	Watery diarrhea (RICE WATER STOOLS) in an afebrile person +/- Vomiting	Culture of a stool specimen or rectal swab	Rehydration!!! Antibiotics for moderate and severe cases. Zinc

			– Dominican Republic, Cuba			supplementation
Cryptosporidiosis	protozoan parasites	Food and Water	(Mexico, Asia, India, Latin America). contaminated drinking or recreational water, such as swimming pools.	Diarrhea, symptoms in 7-14 weeks - - lasting 2-3 weeks in healthy travellers (remitting-relapsing course) Extraintestinal cryptosporidiosis (liver, respiratory tract) - children + immunocompromised travellers ONLY	specific test for <i>Cryptosporidium</i> Multiple stool samples - - not much sensitivity ☹️	Most immunocompetent people will recover without treatment Wash hands with soap and water Boil an filter drinking water!
Cyclosporiasis	protozoan parasite	Food and Water	Summers and rainy seasons in Nepal	The most common symptom is watery diarrhea, (nausea and weight loss) if untreated lasts for several weeks – months	Specific test for cyclosporiasis	Septra – (Trimethoprim-sulfamethoxazole)
Giardiasis	protozoan parasite	Food and Water	Endemic worldwide Most commonly diagnosed pathogen in travelers seeking medical attention for a GI infection	gradual onset of 2–5 loose stools per day and gradually increasing fatigue, tends to resolve in 2-4 weeks Beaver Fever! – (hikers and campers)	3 stool samples over several days – presence of giardia cysts	Metronidazole
Hepatitis A	Virus	Food and Water	<ul style="list-style-type: none"> highly endemic 	The incubation period averages 28 days	Positive test for antibody to HAV	Treatment = Supportive care only

			<p>areas parts of Africa and Asia) - -</p> <ul style="list-style-type: none"> • Intermmediately endemic areas (such as Central and South America, Eastern Europe, and parts of Asia) • less endemic areas (such as the United States and Western Europe) 	<p>Abrupt onset of fever, malaise, anorexia, nausea, and abdominal discomfort, followed within a few days by jaundice</p>	<p>(anti-HAV) IgM in serum, detectable from 2 weeks before the onset of symptoms to approximately 6 months afterward.</p>	<p>Prevention - Vaccination or immune globulin (IG), food and water precautions, maintaining standards of hygiene and sanitation.</p> <p><u>Hepatitis A is among the most common vaccine-preventable infections acquired during travel!!!!</u></p>
Hepatitis E	Virus	Food and Water	<p>Waterborne outbreaks have occurred in South and Central Asia, tropical East Asia, Africa, and Central America</p>	<p>Very similar transmission and clinical presentation as HAV Pregnant are at higher risk of their HEV disease progressing to liver failure and death</p>	<p>Diagnosis confirmed by anti-HEV IgM and IgG in serum</p>	<p>Treatment is supportive No vaccine is available No drugs available to prevent infection Food and Water</p>

			Food outbreaks occur in Japan, France from eating meat and “organ meats” Hong Kong and Singapore are endemic areas	Incubation is 2–9 weeks (mean 6 weeks) – longer than Hepatitis A One difference is that a wide range of neurologic manifestations have been associated with HEV.		precautions Food - eat only thoroughly cooked food (seafood, meat products) Water - avoid drinking unboiled or unchlorinated water
Naegleria	parasite (ameoba)	Food and Water Infects people by entering the body through the nose	warm freshwater around the world	rare but fatal brain infection	Clinically by exclusion– Post Mortem	Travelers should prevent water from entering the nose, when swimming in fresh water Also be careful of using tap water for sinus and nasal irrigation or rinsing.
Norovirus	RNA viruses	Food and Water VERY CONTAGIOUS	Can be spread through aerosols of vomitus and contaminated environmental surfaces and objects. Outbreaks occur in close quarters – Hospitals, Airplanes, Cruise	Short Incubation (24-48 hours) , Short Illness duration (recovery in 1-3 days) Acute onset of vomiting with nonbloody diarrhea, sometimes abdominal cramps and nausea	Generally diagnosed based on symptoms Diagnostic testing typically not used (due to availability) for travellers	Food Precautions – beware of “ready-to-eat” cold foods, such as sandwiches and salads. Raw shellfish, especially oysters. <u>Hand Hygiene – Soap and Water! – alcohol based sanitizer not effective against Norovirus</u> Isolate ill people on

			ships			Cruise ships Proper disinfection of toilets/bathrooms
Poliomyelitis	Poliovirus	Food and Water No Animal Reservoir	Afghanistan and Pakistan are states currently exporting polio- virus --- Vaccination must be ensured States infected with wild poliovirus but not currently exporting ; Cameroon, Equatorial Guinea, Nigeria, Somalia, and Iraq	Most infections are asymptomatic Symptomatic – fever, sore throat, headache, fatigue ---- acute flaccid paralysis of a single limb to quadriplegia, respiratory failure, and rarely, death.	Shedding in fecal specimens can be detected for up to 4 weeks after onset of illness Can be detected from oropharyngeal specimens during first 3-10 days of illness Detect with PCR Rarely detected in Blood and CSF	Treatment – supportive only Prevention = Vaccine (routine in childhood, and/or adult booster)
Typhoid and Paratyphoid Fever	bacterium <i>Salmonella</i> <i>enterica</i> serot ype Typhi.	Food and Water Transmission = consumption of water or food that has been contaminated by feces of an ill person or a chronic, asymptomatic carrier	Majority of cases in Southern Asia Other areas of risk include East and Southeast Asia, Africa, the Caribbean, and Central and South America	Gradually increasing fatigue and a fever that increases daily from low- grade to as high as 102°F–104°F (38°C– 40°C) by the third to fourth day of illness Headache, malaise, and anorexia are nearly universal and abdominal pain, diarrhea, or constipation are common	Fever is commonly lowest in the morning , reaching a peak in late afternoon or evening	Fluoroquinolones = empiric therapy FQ resistance (Indian Subcontinent, Africa) ---Injectable third- generation cephalosporins
African Tick	Bacteria	Tick	Sub-Saharan	red skin sore with a	Clinical	PO Doxycycline

Bite Fever			Africa (SOUTH AFRICA) and the West Indies	dark center	presentation, history of tick exposure	
Chikungunya	Virus	Aedes Mosquito, Contact also possible	<i>in North, Central, South America, and Caribbean) – “outbreaks”</i>	Fever, JOINT PAIN, Rash	clinical presentation, places and dates of travel, and activities	Symptom management only – rest, fluids, and analgesics
Dengue	Virus	Aedes Mosquito, Contact also possible (greater than CNV)	a risk in urban and residential areas - Latin America, the Caribbean, and Southeast Asia, Sudan, Kenya, Tanzania, Yemen, India, Nepal	3 phases: Febrile, Critical, and Convalescent Begins abruptly after an incubation period of 5–7 days Fever typically lasts 2–7 days and can be biphasic. Other symptoms during this phase may include; headache, muscle/joint/bone pain, maculopapular rash, minor hemorrhagic manifestations (bloody nose, bleeding gums, positive tourniquet test)	WHO Classification Febrile , Traveled to or lives in a dengue-endemic area, Plus 2 or more “clinical findings” <i>Clinical Findings = nausea, vomiting, rash, aches and pains, leukopenia, positive tourniquet test (marker of thrombocytopenia), leukopenia</i> Severe Dengue Dengue with any of the following symptoms: severe plasma leakage leading to shock or fluid accumulation leading to	No specific antiviral agents exist for dengue Symptomatic relief – hydration Avoid aspirin, NSAIDS – due to anticoagulant properties (blood thinning) Close observation and monitoring (early supportive care for shock is important)

					respiratory distress, severe bleeding, severe organ impairment (elevated transaminases > 1000 IU/L)	
Encephalitis, Japanese	RNA virus	Infected Culex Mosquito	Most of Asia and parts of the western Pacific Rural agricultural areas, often associated with rice cultivation and flood irrigation.	Mostly asymptomatic Sudden onset of fever, headache, and vomiting. Mental status changes, focal neurologic deficits, generalized weakness, and movement disorders (parkinsonian syndrome) may develop over the next few days. (5-15 days incubation) Seizures are common, especially among children.	Evidence of a neurologic infection (such as encephalitis, meningitis, or acute flaccid paralysis) who has recently traveled to or resided in an endemic country in Asia or the western Pacific <i>*Laboratory Testing can differentiate between JE, Dengue, and WNV*</i>	No Treatment – Supportive care only
Encephalitis, Tick-borne	RNA virus	Ixodes Tick, Unpasteurized dairy products	Europe to Asia (Western Siberia*)	Biphasic Presentation – with neurological manifestations	Clinical presentation, history of tickbite in endemic area	Supportive care only, vaccine available for prevention
Filariasis	Nematodes	Aedes, Culex,	Sub-Saharan	Mostly asymptomatic,	Epidemiological	Diethylcarba

(e.g. Loa Loa, Bancroftian, Onchocerciasis)		Anopheles, and Mansonia mosquitoes, black flies (onchocerciasis)	Africa, Egypt, southern Asia, the western Pacific Islands, the northeastern coast of Brazil, Guyana, Haiti, and the Dominican Republic.	Elephantiasis, Tropical pulmonary eosinophilia, blindness (onchocerciasis)	risk, symptoms, microscopic detection of microfilariae on blood film	mazine, - for onchocerciasis - 1 dose of ivermectin followed by 6 weeks of doxycycline
Hemorrhagic Fevers	<p>RNA viruses</p> <ul style="list-style-type: none"> -Ebola -Marburg -Lassa Fever -Rift Valley Fever - Crimean Congo Fever 	<p>Each virus is associated with 1 or more nonhuman host or vector</p> <p>Livestock via slaughter or consumption of raw meat from infected animals or unpasteurized milk (CCHF, RVF)</p> <p>Bushmeat, likely via slaughter or consumption of infected animals (Ebola, Marburg viruses)</p> <p>Rodent (Lassa Fever,</p>	<p>Ebola = West Africa Marburg = Africa – specifically caves Lassa Fever = worldwide, including Europe, Asia, Africa, and the Americas Rift-Valley Fever = Sub-Saharan Africa CCHF = Africa and Asia, highly endemic in Afghanistan, Iran, Pakistan, and Turkey) Hantavirus = Chile and Argentina (Andes)</p>	<p>Abrupt onset of fever, myalgias, followed in severe forms by coagulopathy with a petechial rash, ecchymoses. sometimes overt bleeding</p>	<p>Clinical Presentation</p> <p>Laboratory abnormalities- elevations in liver enzymes, initial drop in white blood cell count, and thrombocytopenia .</p> <p>abrupt onset of fever, myalgias, followed in severe forms by coagulopathy with a petechial rash or ecchymoses and sometimes overt bleeding</p> <p>Renal failure</p>	<p>Ribavirin (given IV) for Lassa fever, and potentially CCHF</p>

		<p>hantaviruses) via inhalation of or contact with materials contaminated with rodent excreta</p> <p>Other reservoir species, such as bats (Ebola, Marburg viruses)</p> <p>Vectorborne transmission also occurs via mosquito (RVF virus) or tick (CCHF)</p> <p>Person-to-person transmission of some viruses can result in large human outbreaks. (Ebola, Marburg , Lassa Fever, CCHF virus)</p>			<p>(HFRS) – Hantavirus</p> <p>Hearing loss, anasarca and shock in newborns (Lassa fever),</p>	
Leishmaniasis	Protozoa parasites	<p>Infected female phlebotomine sand fly</p>	<p>Cutaneous - Majority of cases in Latin America, including Costa Rica)</p>	<p>Cutaneous = skin lesions (open or closed sores)</p> <p>Visceral = fever, weight loss, hepatosplenomegaly</p>	<p>Cutaneous - chronic (nonhealing) skin lesions who have been in areas where</p>	<p>Cutaneous = miltefosine (oral) , liposomal amphotericin B (parenteral) , Pentostam</p>

			Visceral - Most (>90%) of the world's cases of VL occur in the Indian subcontinent (India and Bangladesh; also Nepal),	(especially splenomegaly), and pancytopenia (anemia, leukopenia, and thrombocytopenia	leishmaniasis is found (South and Central America) Visceral – higher incidence in immunocompromised travellers	Visceral = Individual Therapy on a case-by-case basis - Liposomal amphotericin B (drug of choice in the US)
Lyme	Bacteria	Ixodes Tick	Europe (Central and Eastern), Asia, North America (northeastern and north-central United States)	Red, expanding rash, accompanied by symptoms of fatigue, fever, headache	EM rash with a history of recent travel to an endemic area (with or without history of tick bite)	Oral doxycycline/ intravenous ceftriaxone.
Malaria	protozoan parasites	Vector bite of an infective female <i>Anopheles</i> mosquito	High Risk = West Africa and Oceania (ie guam, Papua New Guinea, not Australia) Moderate Risk = other parts of Africa, South Asia, and South America Low Risk = Mexico, Central America, and other parts of Asia	Fever and influenza-like symptoms, including chills, headache, myalgias, and malaise Uncomplicated disease = anemia and jaundice. Severe disease = seizures, mental confusion, kidney failure, acute respiratory distress syndrome, coma, and possibly death	Smear microscopy Determine the species of malaria parasite, identify the parasite life-cycle stages present, and quantify the parasitemia	For complete list of treatment options see slide 24 in Malaria Lecture Patients who have severe <i>P. falciparum</i> malaria or who cannot take oral medications should be given the treatment by continuous intravenous infusion Drugs used in treatment are active

						against the parasite forms in the blood (the form that causes disease) Primaquine is active against the dormant parasite liver forms
Plague Three Types Bubonic, Pneumonic, Septicemic	Gram negative bacteria	Infected rodent fleas handling infected animal tissues, inhalation of infectious droplets from cats or dogs with plague,	Endemic in rural areas in central and southern Africa (especially eastern Democratic Republic of Congo, northwestern Uganda, and Madagascar)	Bubonic (most common)— <i>tender lymph nodes</i> , Pneumonic- <i>overwhelming pneumonia, cough</i> , Septicemic- <i>hemorrhagic or thrombotic phenomena</i>	Clinical presentation and Short incubation period (1-6 days)	Parenteral antibiotic therapy with streptomycin or gentamicin PO options – First Line = Levofloxacin, Second-line agents include doxycycline, tetracycline, and chloramphenicol.
Trypanosomiasis, African	Protozoa parasite	Infected tsetse fly	Rural sub-Saharan Africa	Bites are characteristically painful , and a chancre may develop at the bite location. Clinical Presentation differs between <i>T. b. rhodesiense</i> and <i>T. b. gambiense</i>	Clinical presentation, history of exposure in endemic area	A course of antitrypanosomal therapy (nifurtimox, benznidazole)
Trypanosomiasis, American, (Chagas Disease)	Protozoa Parasite	feces of an infected triatomine insect (reduviid bug)	Mexico, Central, and South America	Chagoma at the site of infection; (edema of the eyelid and ocular tissues). Most infected people	parasites are only detectable in the blood during the ACUTE PHASE ONLY (7-60 days)	antitrypanosomal therapy (nifurtimox, benznidazole) is always recommended

				<p>never develop symptoms but remain infected throughout their lives. Chronic Chagas disease usually affects the heart</p>		
West Nile	RNA Virus	Mosquito		<p>Less than 1% of people who are infected will develop a serious neurologic illness such as encephalitis or meningitis</p>	<p>Clinical presentation = 1 in 5 people who are infected will develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash (fatigue can last weeks-months)</p>	<p>No vaccine or specific antiviral treatments for West Nile virus infection are available. Over-the-counter pain relievers can be used to reduce fever and relieve some symptoms</p>
Yellow Fever	RN A virus	Vector – Aedes or Haemegoggus Mosquito	<p>Sub-Saharan Africa Tropical South America In Africa urban yellow fever occurs Country Requirements</p>	<p>Most cases = asymptomatic Initial presentation presents as a non-specific influenza-like illness (fever, chills, headache, muscle aches) The Toxic or Serious form of the disease = Hepatorenal dysfunction Jaundice, Hemorrhagic symptoms, eventually shock and multi-organ</p>	<p>Patients clinical features Places and dates of travel Vaccination status Activities Lab Serologic Testing</p>	<p>Patients clinical features Places and dates of travel Vaccination status Activities Lab Serologic Testing YF-VAX (Sanofi Pasteur)</p>

				failure		
Zika	RNA virus	Bite of an infected Aedes mosquito	Africa, Asia, Pacific Islands	Non-specific symptoms fever, rash, and arthralgia, difficult to make a differential diagnosis! Presents similar to Dengue and Chikungunya	Unlike in dengue infection, ***No changes in blood count in Zika infection***	No specific antiviral treatment available Symptom management only – rest, fluids, antipyretics and analgesics
Diphtheria	Bacterial infection	Contact Person-Person	Endemic in many countries in Asia, the South Pacific, the Middle East, and Eastern Europe and in Haiti and the Dominican Republic; large outbreaks in Indonesia, Thailand, and Laos have occurred recently	Respiratory (pseudomembrane) vs cutaneous diphtheria (tropical countries)	Clinical, exposure history	Treatment = Equine diphtheria antitoxin (DAT) and antibiotics (penicillin, erythromycin) for treatment and prophylaxis All travelers should be up-to-date with diphtheria toxoid vaccine before departure
Hepatitis B***	Virus	Contact Person-Person	Higher risk in countries where prevalence of chronic HBV infection is high or intermediate Highest Risk in West Africa	Incubation LONG = 90 days (range, 60–150 days) malaise, fatigue, anorexia, nausea, vomiting, abdominal pain, and jaundice	Please see slides 22-26 of Diseases Associated with Person to Person Contact	Treatment = No medications to treat ACUTE Chronic Hepatitis B Antiviral drugs are approved and available to treat chronic hepatitis B Vaccine

Hepatitis C	Virus	Contact Person- Person	Travel Risk is Low Highest prevalence in Egypt	Same symptom cluster as Hepatitis B	Postive for HCV antibodies	Ledipasvir- Sofosbuvir – genotype 1 Ombitasvir- Paritaprevir plus Ritonavir-Dasabuvir with or without Ribavirin – genotype 1 Sofosbuvir plus Ribavirin – Genotype 1,2,3 No vaccine available
Influenza	Virus	Contact Person- Person	Year-round circulation - In temperate regions, influenza typically circulates at higher levels during colder winter months: October to May in the Northern Hemisphere and April to September in the Southern Hemisphere.	Flulike symptoms – Fever muscle, aches, fatigue	Clinical diagnosis	Influenza Vaccine! Revaccination is not recommended in people before summer travel who already were vaccinated during the preceding fall
Measles	Virus	Contact Person- Person	Travelers may be exposed to the	Generalized maculopapular rash	Clinically – rash, fever, no	All travellers should be up-to-date on

		Very CONTAGIOUS	virus in almost any country they visit, particularly those Outside the Western Hemisphere	lasting ≥ 3 days Temperature of $\geq 101^{\circ}\text{F}$ (38.3°C) Cough, rhinitis, or conjunctivitis	vaccination history	their MMR vaccine Treatment = vitamin A supplementation for children
Meningococcal Disease	Infectious Agent = <i>Neisseria meningitidis</i> (gram negative bacteria) A, B, C, W, X, and Y	Contact Person-Person	Found worldwide Highest incidence is in the "meningitis belt" of sub-Saharan Africa The Hajj pilgrimage to Saudi Arabia has also been associated with outbreaks of meningococcal disease in returning pilgrims and their contacts. See slide 59 in diseases associated with person to person contact	<ul style="list-style-type: none"> 1–10 days after exposure and presents as meningitis in $\geq 50\%$ of cases Headache, fever, and stiffness of the neck, sometimes accompanied by nausea, vomiting, photophobia, or altered mental status 	Medical emergency must be treated A lumbar puncture should be done to examine the cerebrospinal fluid (CSF) and perform a Gram stain Treat empirically using 3 rd generation Cephalosporin	<ul style="list-style-type: none"> Vaccine! Cover all disease serotypes Requirement for Hajj Pilgrimage Boost every 5 years with Menactra (MenACWY) - - If patient remains at increased risk (see slide 63 for more information)
Mumps	Virus	Contact Person-Person	Endemic in many countries throughout the	Parotitis (swelling of the parotid salivary gland)	Clinically, history of Vaccination	Treatment = supportive care Up-to-date on MMR

			world – including industrialized countries			vaccine
Pertussis	Gram-Negative Bacteria	Contact Person-Person	Pertussis is endemic worldwide, even in areas with high vaccination rates	runny nose, fever, and mild cough. This is then followed by weeks of severe coughing fits. Following a fit of coughing, a high-pitched whoop sound or gasp may occur as the person breathes in	Symptoms, History of vaccination	<ul style="list-style-type: none"> • Treatment Macrolide antibiotics (azithromycin) administered <3 weeks after cough onset can limit transmission to others. • Prevention = TDAP vaccine!
Pneumococcal Disease	Bacteria (Gram positive strep pneumonia)	Contact Person-Person	Prevalence is higher in developing than in industrialized countries.	Sudden onset of fever and malaise, cough, pleuritic chest pain, or purulent or blood-tinged sputum Elderly patients = altered mental status	Diagnosis = sputum specimen contains gram-positive diplococci High white blood cell counts should indicate bacterial infection.	Prevention via up-to-date pneumococcal vaccination
Rubella	Virus	Contact Person-Person	Africa (HIGH) , the Eastern Mediterranean, and Southeast Asia regions.	Transmission from mother to fetus can also occur Highest risk of congenital rubella	Clinical Presentation, Pregnancy, Hx of vaccination	Ensure travellers are up to date on MMR vaccine Especially women of child-bearing age

				<p>syndrome (CRS) if infection occurs in the first trimester. Fever</p>		
Sexually Transmitted Infections	Viral (ie HPV, HIV), Bacterial (gonorrhoea)	Contact Person-Person	Worldwide Some STDs are more prevalent in developing countries or in specific regions (gonorrhea with treatment failure and decreased susceptibility to cephalosporins in Asia)	STIs are often asymptomatic, however can result in serious and long-term complications	Clinical presentation Frequency of infection Antimicrobial resistance patterns Assessing risk for men who have sex with men Anyone who seeks evaluation for STIs, or is diagnosed with an STI, should be screened for HIV infection	<p>Accurate risk assessment Education counseling Early identification of asymptomatic infection Effective treatment of patients and their sex partners.</p> <p>Correct and consistent use of the male latex condom can reduce the risk of STI's</p> <p>Two HPV vaccines are available (quadrivalent, and bivalent) (Cervarix = 16, 18 , Gardasil = 6,11,16,18)</p>
Tuberculosis	<i>Mycobacterium tuberculosis (acid fast bacterium)</i>	Contact Person-Person	Worldwide Countries of high incidence = Asia , Sub-saharan Africa, South Africa = highest	<p>Only TB of the lung is infectious - - must be active = RARE</p> <p>Most TB is "walled off" – and patient is non-</p>	Usual TB treatment is with isoniazid, rifampin, ethambutol, and pyrazinamide for 2 months,	<ul style="list-style-type: none"> • 2-step tuberculin skin test (TST) • Single interferon-γ

			<p>incidence (cases per 100,000)</p> <p>MDR highest in Asia</p>	<p>infectious</p> <p>Bovine TB (<i>M. bovis</i>) is a risk in travelers who consume unpasteurized dairy products in countries where <i>M. bovis</i> in cattle is common.</p> <p>Mexico is a common place of infection for travelers.</p>	<p>followed by isoniazid and rifampin for an additional 4 months)</p> <p>MDR TB treatment is more difficult, requiring 4–6 drugs for 18–24 months</p>	<p>release assay (IGRA)</p> <ul style="list-style-type: none"> • Predeparture test result followed by a single TST or IGRA repeated 8–10 weeks after returning from travel.
Varicella	Herpesvirus	Contact Person-Person	<p>Varicella occurs worldwide</p> <p>Temperate climates, varicella tends to be a childhood disease, with peak incidence among preschool and school-aged children</p> <p>Tropical climates, the highest incidence was described in the driest, coolest months; overall, infection tends to be acquired later in childhood,</p>	<p>After primary infection as varicella (chickenpox), the virus remains dormant in the sensory-nerve ganglia and can reactivate at a later time, causing herpes zoster (shingles).</p>	<p>Clinically, History of exposure, vaccination</p>	<p>Vaccination, Varicella or Zostavax depending on age</p> <p>Treatment is oral acyclovir in “complicated” cases (people aged >12 years, chronic conditions)</p>

			resulting in higher susceptibility among adults than in temperate climates			
Cutaneous Larva Migrans	Larval stages of dog and cat hookworms	Contact - Environment	Skin contact with contaminated soil or sand (Being Barefoot on beaches) Epidemiology = Caribbean, Africa, Asia, and South America. Beaches where domestic animals may roam are a common source of infection.	<ul style="list-style-type: none"> • Serpiginous (snake-like), erythematous (red) track appears in the skin • intense itchiness and mild swelling • Usual locations are the foot and buttocks 	Diagnosed on the basis of characteristic skin lesions Infection usually resolves on its own ; migrating larvae usually die after 5–6 weeks	Albendazole = medication of choice therapeutically interchangeable antiparasitic agent, mebendazole (Vermox)
Legionella	Gram-negative bacteria of the genus <i>Legionella</i>	Contact - Environment	Found world-wide but more often on developed countries Cruise ships, hotels, and resorts.	<ul style="list-style-type: none"> • Legionnaires Disease (5%) – pneumonia-like illness requires hospitalization and can be fatal in 10%–15% of cases • Pontiac Fever (95%) - presents as an influenzalike 	Isolation of <i>Legionella</i> from respiratory secretions, lung tissue - - then compared to environmental isolates <i>Note that Legionella cannot be isolated in</i>	Treatment - “Empirically treat the pneumonia” Fluoroquinolones or Macrolides for 3 weeks Pontiac Fever - - - - antibiotics have no benefit.

				illness, with fever, headache, and muscle aches, but no signs of pneumonia. Milder than legionnaires disease, shorter incubation period (72 hours vs 4-14 days)	<i>people who have Pontiac fever</i>	
Leptospirosis	aerobic bacteria in the genus <i>Leptospira</i>	Contact - Environment	Worldwide distribution Higher incidence in tropical climates, especially after heavy rainfall or flooding due to hurricanes.	<ul style="list-style-type: none"> • Acute Phase • Immune (second phase) • Weil Disease (Severe Phase) 	<p>7 days in length Acute febrile illness with symptoms including headache, chills, myalgia, nausea, diarrhea, abdominal pain</p> <p>Immune phase - Antibody production and the presence of leptospire in the urine.</p> <p>Weil Disease - Severe form = occurs in 5%–10% of patients with</p>	<p>Diagnosis – based on clinical presentation and blood test</p> <p>Treatment – Doxycycline (treat promptly and empirically) Intravenous penicillin is a drug of choice for patients with severe leptospirosis (weil disease)</p> <p>Chemoprophylaxis:</p> <p>Doxycycline (200 mg orally, weekly), 1–2 days before and continuing through the period of exposure.</p>

					leptospirosis Jaundice, renal failure, hemorrhage (especially pulmonary), cardiac arrhythmias, pneumonitis, and hemodynamic collapse.	
Schistosomiasis	helminth (worm) parasites of the genus <i>Schistosoma</i>	Contact - Environment	<i>S. haematobium</i> = urinary <i>Schistosoma mansoni</i> = liver-intestinal <i>S. japonicum</i> = liver-intestinal <i>Schistosoma mansoni</i> and <i>S. haematobium</i> are distributed throughout Africa <i>S. japonicum</i> is found in Indonesia and parts of China and Southeast Asia	Penetration - via cercariae - rash that develops within hours or up to a week after contaminated water exposures. Acute (14–84 days) - fever, headache, myalgia, diarrhea, and respiratory symptoms. (elevated eosinophils, splenomegaly) Chronic – can be asymptomatic for years	microscopic identification of parasite eggs in stool (<i>S. mansoni</i> or <i>S. japonicum</i>) or urine (<i>S. haematobium</i>).	Referral to Infectious Disease or Tropical Medicine Specialist Praziquantel is effective against adult forms of the parasite Avoid wading, swimming, or other contact with freshwater in disease-endemic countries
Tetanus	<i>Clostridium</i>	Contact –	Epidemiology =	Acute symptoms	Diagnosis is made	Muscle relaxants

	<i>tetani</i> , gram positive bacteria	Environment	Worldwide more common in rural and agricultural regions – areas where contact with soil/animal excrement are common	typically include muscle rigidity and spasms, often in the jaw and neck.	clinically No laboratory tests available	Debridement of wound Metronidazole Booster dose during adolescence, and at 10-year intervals thereafter during adulthood. For heavily contaminated wounds, a booster dose may be given if more than 5 years have elapsed since the last dose.
Herpes B Virus	<i>Macacine herpesvirus</i> (an alphaherpesvirus)	Contact –Bites	South East Asia – habitat of Macaque monkeys More of an issue in laboratory settings	Localized neurologic symptoms (pain, numbness, itching) near the wound site Flu-like aches and pains Fever and chills Infection can result in acute ascending encephalomyelitis, resulting in death or severe neurologic impairment	Diagnosis = following protocol Type and physical condition of the implicated animal Thoroughness and timeliness of wound cleansing procedure Nature of the wound Exposure to materials that have come into contact with macaque	Treatment based on presence or absence of CNS symptoms – see slide 50 of “Diseases Associated with Bites/Stings)

Rabies	Virus	Contact –Bites	<p>Rabies is found on all continents, except Antarctica</p> <p>Hotspots = CHINA, INDIA, NEPAL</p>	<p>a nonspecific, prodromal phase with fever and vague symptoms to an acute, progressive encephalitis.</p> <p>The neurologic phase may be characterized by anxiety, paresis, paralysis, and other signs of encephalitis (see slide 57)</p>	<p>Patient with a compatible history and a classic clinical presentation</p> <p>Key is EXPOSURE HISTORY</p>	<p>Case fatality 100% Milwaukee Protocol</p> <p>Prevention</p> <ul style="list-style-type: none"> • Education about risks and the need to avoid bites from mammals • Knowing how to prevent rabies after a bite • Being able to obtain Post-exposure prophylaxis PEP - - - - which may involve urgent international travel to where PEP is available. • Pre-exposure

						immunization • Wound Management