MY GOTO MEDKIT GUIDE

Treating Common Infections & Bioweapons

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TABLE OF CONTENTS

Intro

Our Emergency Medkit prescriptions are meant to give patients under the active care of a physician access to life saving antibiotics when local supplies may have run out.

They are not meant for self-diagnosis or treatment, but for physician-directed use at all times if at all possible, though it is understood that in certain extreme situations, emergency physician services may not be available.

Information is presented herein on common infectious diseases and their treatment protocols. This is meant to help patients familiarize themselves with the conditions and protocols and help answer common questions, but should not serve as a substitute to proper diagnosis, medical advice or treatment recommendations from a physician. It is not possible to adequately cover these topics in such a short space and even if it was, without direct, in-person instruction it is not possible to teach the necessary diagnostic skills and clinical judgment required for proper evaluation and management of any medical condition.

Alternatives to Antibiotics

The main alternative to antibiotic use is supportive care, allowing the immune system to fight off an infection on its own. This is recommended for mild, self-limited bacterial infections like paronychia (a cuticle infection).

Inappropriate Use

Antibiotics are frequently over-prescribed for viral infections and in some cases are not necessary for mild, self-limited bacterial infections either.

There is no good evidence that most people need antibiotics to treat: bronchitis (mostly viral), sinusitis (mostly viral), sore throat (including strep throat), middle ear infections, outer ear infections, or pink eye (mostly viral). Minor skin infections, like paronychia (infected cuticle/fingernail) will also often resolve on their own. Many mild UTIs resolve on their own with increased fluid intake, cranberry juice or high dose cranberry extract (e.g. D-mannose 500 mg, 5 times a day for 5 days).

However, in emergency situations without access to medical care, it may be safer to take an antibiotic than risk an out-of-control infection developing.

General Antibiotic Risks

Antibiotics can be lifesaving drugs, but their use and overuse is associated with many problems and diseases because of: unexpected adverse reactions, allergies, interactions with other drugs and foods, drug-disease interactions, negative effects on our bodies' healthy bacteria, etc.

All these issues are compounded by self-administration of antibiotics without proper physician guidance e.g. in certain emergency settings when there is no physician available, but medications are on hand.

General Adverse Effects

Prescription antibiotics, acid-suppressing drugs and steroids, along with some other medications that have antibiotic-like effects may reversibly or irreversibly kill some species of healthy bacteria which you may never recover, even if you take probiotics (which pass through your system in a couple weeks).

Healthy bacteria are involved in a number of ways in our immune system function, for example by directly blocking invading pathogens. They also help us maintain a healthy weight, and metabolize some nutrients and make some vitamins for us. Changes in healthy gut bacteria have been associated with chronic diseases like heart disease, obesity, dementia, Parkinson's disease, diabetes, allergies, asthma, inflammatory bowel disease and irritable bowel syndrome, to name just a few.

Aside from eliminating good bacteria, antibiotics also have direct negative effects on the mammalian immune system, which have been documented in a number of studies. In one study of mice infected with the flu virus, only a third survived if they had been given antibiotics soon before being infected, compared to 80% survival of those not treated with antibiotics. The mechanism was interference with the production of a protein by cells lining the lungs via alterations of genetic activity. In a similar study on West Nile virus infections in mice, again 80% of normal mice survived, but only 20% survived that had been exposed to antibiotics beforehand. Experiments on mice with dengue and Zika virus had similar results.

All antibiotics do have some rare severe side effects. For example fluoroquinolones like ciprofloxacin:

The combination drug Bactrim has been withdrawn from use in England, but not elsewhere, after reporter Brian Deer publicized deaths due to the drug:

Healthy Bacteria

Healthy bacteria in and on your body are an important part of your immune system and also help you maintain a normal healthy weight and metabolize some nutrients for you and make some vitamins for you that you can't make yourself. They are involved in maintaining bone density, they produce neurotransmitters and, steroid hormones, activate thyroid hormone and produce their own antibiotics to fight off invasive “bad bacteria” that can cause infections. They can also affect bile salt metabolism.

If you lose them to antibiotics, acid suppressants, steroids or painkillers, you could gain weight, develop micronutrient deficiencies and have lower immunity to infectious diseases. Long term alterations in healthy gut bacterial populations are associated with a host of chronic diseases including cancers, heart disease, obesity, diabetes, autism, depression, allergies, asthma, autoimmune diseases, IBD, MS, Rheumatoid arthritis, Liver disease, Lupus, Alzheimer’s dementia, and Parkinson's disease. We don't know if changes in healthy bacteria are part of the cause of these diseases, an effect of them, or both, but *the safest course of action is to minimize antibiotics and other drugs with antibiotic-like effects listed above, as much as possible, because current research suggests that you cannot always replace the important bacterial species you lose*.

Probiotic supplements contain just a handful of species, compared to thousands of species in a healthy human gut, so they are not meant to replace what is lost and they simply travel through your system in a couple weeks and do not remain in your gut long-term. Also, currently there are few if any probiotics designed for other areas of the body like the nose and sinuses or skin and upper airways.

Benefits of Antibiotics

In the pre-antibiotic era, bacterial infections were one of the leading causes of death, though the exact extent to which poor hygiene played a role in morbidity and mortality is unknown. The age of antibiotics coincided with the widespread implementation of good hygiene practices and aseptic surgical techniques. Simple hand washing prevented many post-surgical infections and deaths.

However, some infections like pneumonia can be transmitted even in hygienic surroundings and can be life threatening even in otherwise healthy patients. Also, many patients nowadays are at high risk of deterioration from what would otherwise be mild infections due to comorbid conditions that depress their immunity, most commonly diabetes.

Overall there are still many patients whose lives are saved in modern times by the judicious use of antibiotics.

Medkit Antibiotics

Amoxicillin/clavulanate 875mg/125mg (aka Augmentin)

Pregnancy Risk B (Appendix A): Generally considered safe, but may be some risk.
Breastfeeding: OK, may cause stomach upset in a breastfed baby.
Allergies: Avoid if history of penicillin allergy, caution if history of cephalosporin allergies, especially if severe.

A broad spectrum antibiotic commonly used to treat sinusitis, pneumonia (often combined with azithromycin), skin infections, especially secondary to bite wounds, skin abscess, tooth abscess and more.

Usual Dosing (unless otherwise specified): 1 tablet by mouth, twice daily, with or without food.

Usual Duration: usually a minimum of 7 days, but extended to 10 days for skin infections due to bite wounds, skin and tooth abscesses and may continue for 14 days if necessary.

Bite wound (single preferred agent): Prophylaxis: 3-5 days, Treatment: 5-14 days
COPD exacerbation: 5-7 days
Diabetic foot infection: 1-2 weeks
Ear infection/otitis media (middle ear): mild to moderate: 5-7 days, severe: 10 days
Intra-abdominal infection: 7-10 days
Peritonsillar abscess: 14 days
Pneumonia (with azithromycin or doxycycline): 5-14 days, normal vital signs before stopping.
Sinusitis: 5-7 days
Strep throat: 10 days
Tooth abscess: 7-14 days
Urinary tract infection: simple: 5-7 days, complicated: 10-14 days

Azithromycin 250 mg (aka Z-PAK/Zithromax)

Pregnancy Risk B (Appendix A): Generally considered safe, but may be some risk.
Breastfeeding: OK, may cause stomach upset in a breastfed baby.

Usual Dosing (unless otherwise specified): varies greatly (see below) taken with or without food, but food improves absorption and tolerability.

Usual Duration (unless otherwise specified): 3-5 days total

Cat scratch disease: 2 tabs taken once, then 1 tab daily for 4 more days
COPD exacerbation: 2 tabs on day 1, then 1 tab daily for 4 more days
Diarrhea: campylobacter, cholera, traveler's diarrhea: 4 tabs taken once. Shigella: 2 tabs, once daily for 3 days
Endocarditis prophylaxis before dental or invasive respiratory tract procedure (especially with artificial heart valves): 2 tabs taken once, 60 minutes prior to procedure.
Pertussis (whooping cough): 2 tabs on day 1, then 1 tab daily for another 4 days
Pneumonia (may combine with augmentin), sinusitis, strep throat: Two tabs on day 1, and 1 tab on days 2-5
Sexually transmitted infections:
    Cervical infection, chancroid, chlamydia: 4 tabs taken once
    Gonorrhea: 8 tabs taken once (alternative to doxycycline, but must be used in combination with IM gentamicin or oral gemifloxacin)
    Granuloma inguinale (donovanosis) 4 tabs weekly for 3 weeks and until resolution of lesions.
    Mycoplasma genitalium: 4 tabs on day 1, then 2 tabs daily for next 3 days
    Urethral infection: 4 tabs taken once, usually combined with doxycycline to cover gonorrhea
Streptococcus, group A (Strep Throat) (alternative agent for penicillin allergy): 2 tabs on day 1, then 1 tab daily for next 4 days
Traveler's diarrhea: Two tabs by mouth once daily for 3 days

Cephalexin 500 mg (aka Keflex)

Pregnancy Risk B (Appendix A): Generally considered safe and is commonly used in pregnancy for UTIs and other indications.
Breastfeeding: OK, less than 1% is secreted into breast milk. Like most antibiotics, may cause stomach upset in breastfed infants.

Usual dose (unless otherwise specified): 250 - 500 mg 4 times daily
Usual duration (unless otherwise specified): 7 days

Skin infections: 500mg 4 times daily for 5-7 days
Strep throat (group A): 500mg twice daily for 10 days
Urinary tract infection: 250-500mg every 6 hours for 5-7 days

Ciprofloxacin 500 mg (aka Cipro)

FDA BLACK BOX warning:

Serious adverse reactions:

Fluoroquinolones have been associated with disabling and potentially irreversible serious adverse reactions that have occurred together, including: tendinopathy and tendon rupture, peripheral neuropathy, and CNS effects. Discontinue ciprofloxacin immediately and avoid the use of fluoroquinolones in patients who experience any of these serious adverse reactions. Because fluoroquinolones have been associated with serious adverse reactions, reserve ciprofloxacin for use in patients who have no alternative treatment options for the following indications: acute exacerbation of chronic bronchitis, acute sinusitis, and acute uncomplicated cystitis.

Exacerbation of myasthenia gravis:

Fluoroquinolones may exacerbate muscle weakness in patients with myasthenia gravis. Avoid ciprofloxacin in patients with known history of myasthenia gravis.

Pregnancy Risk B (Appendix A): Generally considered safe, but may be some risk.
Breastfeeding: OK, may cause stomach upset in a breastfed baby.

Usual Dosing (unless otherwise specified): 1 tablet twice daily, with or without food.

Usual Duration:

Anthrax Exposure **(bioweapon)**: post exposure prophylaxis: 60 days
Bite Wound Prophylaxis or Treatment (with metronidazole): Prophylaxis: 3-5 days, Treatment: 10-14 days
Cat Scratch Disease: 7-10 days
Cholera: 2 tabs taken once
Plague Exposure **(bioweapon)**: 14 days minimum and until at least 2 days after fever resolves
Prostatitis: 4-6 weeks
Traveler's Diarrhea and Shigella: 3 days
Salmonella Diarrhea: 3-14 days
Tularemia **(bioweapon)**: 14 days
Typhoid fever: 7-10 days
UTI simple: 3 days
UTI Complicated: 5-7 days

Doxycycline 100 mg

Pregnancy Risk B (Appendix A): Generally considered safe, but may be some risk.
Breastfeeding: OK, may cause stomach upset in a breastfed baby

Usual Dosing (unless otherwise specified): 1 tablet twice daily, best absorption is without food

Usual Duration:

Actinomycosis: 2-12 months depending on severity
Anaplasmosis and ehrlichiosis: 10 days and at least 3 days after fever resolves
Anthrax Exposure **(bioweapon)**: 60 days
Bartonella: with HIV: 3 months, without HIV: 4 weeks
Bite wound (with metronidazole): Prophylaxis: 3-5 days, Treatment: 10-14 days
Brucellosis: 3-6 months
Cholera: 3 tabs taken once
COPD exacerbation: 7 days
Endocarditis prophylaxis (before dental or invasive respiratory tract procedures, especially if artificial heart valves): take once, 30-60 minutes before procedure
Hidradenitis suppurativa: shortest effective duration, but may be used indefinitely once or twice daily
Lyme disease: Prophylaxis: 2 tabs once. Treatment: 10-21 days (ILADS guidelines recommend 21 days minimum), unless with arthritis, in which case 28 days
Malaria: Prophylaxis: 1 tab daily, starting 2 days prior to travel to endemic area, continue throughout travel in endemic area and for 4 more weeks after leaving endemic area, Treatment: 1 tab twice daily for 7 days, but also need quinine or primaquine depending on species.
Otitis media, acute (middle ear infection): mild to moderate: 5 - 7 days, severe: 10 days
Plague **(bioweapon)**: 2 tabs taken together on day 1, then 1 tab twice daily for 10-14 days and at least 2 days after fever resolves
Pneumonia: 5 days minimum, but continued until vital signs normalize (heart rate, blood pressure, temp, breathing rate). Often used in combination with other antibiotics like augmentin (replaces azithromycin).
Sinusitis: 5-7 days
Rocky Mountain Spotted Fever: 5-7 days and at least 3 days after fever resolves. Severe disease may require a longer course.
Sexually transmitted diseases:
    Cervicitis, Chlamydia, post sexual assault Prophylaxis: 7 days
    Gonorrhea: 7 days
    Granuloma inguinale (donovanosis): 3 weeks and until lesions resolve

Lyphogranuloma venereum: 21 days
Pelvic inflammatory disease (with metronidazole): 14 days
Rectal infection: 7 days
Syphilis, early (primary, secondary, early latent): 14 days
Syphilis, late (late latent): 28 days
Urethritis: 7 days

Skin infections (including MRSA): 5-14 days
Impetigo or ecthyma if MRSA suspected: 7 days
Tetanus (alternative): 7-10 days
Tularemia **(bioweapon)**: 14 days

Metronidazole 500 mg (aka Flagyl)

ALERT: US Boxed Warning
Carcinogenic:
Metronidazole has been shown to be carcinogenic in mice and rats. Unnecessary use of the drug should be avoided. Its use should be reserved for the conditions for which this drug is indicated.

Pregnancy Risk B (Appendix A):

Metronidazole crosses the placenta.

Cleft lip, with or without cleft palate, has been reported following first trimester exposure to metronidazole; however, most studies have not shown an increased risk of congenital anomalies or other adverse events to the fetus following maternal use during pregnancy. Because metronidazole was carcinogenic in some animal species, concern has been raised whether metronidazole should be used during pregnancy. Available studies have not shown an increased risk of infant cancer following metronidazole exposure during pregnancy; however, the ability to detect a signal for this may have been limited.

Bacterial vaginosis and vaginal trichomoniasis are associated with adverse pregnancy outcomes (such as premature rupture of membranes, preterm delivery) and metronidazole is recommended for the treatment of symptomatic pregnant patients. The CDC's recommended twice-daily dose of oral metronidazole for the treatment of bacterial vaginosis is the same for nonpregnant and pregnant patients; a three times daily regimen has also been used. Treatment of pregnant patients with asymptomatic bacterial vaginitis who are at high risk for preterm delivery has had mixed results. The CDC recommends the single oral dose regimen for the treatment of vaginal trichomoniasis for both pregnant and non-pregnant patients. Although use of oral metronidazole for vaginal trichomoniasis during the first trimester is contraindicated by the manufacturer, available guidelines note treatment can be given at any stage of pregnancy (CDC [Workowski 2021]).

Metronidazole may also be used for the treatment of giardiasis in pregnant patients (some sources recommend second and third trimester administration only) (Gardner 2001; HHS [OI adult 2020]) and symptomatic amebiasis during pregnancy (HHS [OI adult 2020]; Li 1996). Short courses may be used for the treatment of pouchitis or perianal disease in pregnant patients with inflammatory bowel disease; not recommended for planned maintenance therapy (Mahadevan 2019). The use of other agents is preferred when treatment is needed for Clostridioides difficile during

pregnancy (ACG [Kelly 2021]). Consult current recommendations for appropriate use in pregnant patients.

Breastfeeding: Potentially dangerous, there have been reports of diarrhea, thrush and perianal fungal infections. If required, best to withhold breastfeeding for 12-24 hours after a single dose.

Usual Dosing (unless otherwise specified): varies from 2-4 times daily (see below), taken with food to decrease stomach upset.

WARNINGS:
NO ALCOHOL during or after treatment for 3 days. Do not use if you have taken disulfiram within 2 weeks. Do not use products containing propylene glycol while on metronidazole.

Propylene glycol is a compound commonly found in many household products, especially carbonated drinks, cosmetics, hair products, and others.

Propylene glycol is a diol alcohol, so it is sometimes listed on products as 1,2-propanediol or propane 1,2-diol. It also shows up on some ingredients listings as E1520, methyl ethyl glycol, trimethyl glycol or 1,2-dihydroxypropane.

Usual Duration (unless otherwise specified): varies, but usually 5 - 10 days (see below)
Amebiasis: 1-1.5 tabs every 8 hours for 7-10 days
Bacterial vaginosis: 500 mg twice daily for 7 days
Balantidiasis: 1.5 tabs every 8 hours for 5 days
Bite wound (alternative to amoxicillin/clavulanate and must be used with doxycycline or ciprofloxacin): 1 tab every 8 hours. Prophylaxis: for 3-5 days, Treatment: 5-14 days
Clostridium difficile (C Diff) diarrhea: 1 tab 3 times daily for 10-14 days
Crohn's disease: 1 tab 2-4 times daily for 1-3 months
Dientamoeba fragilis: 1-1.5 tabs 3 times daily for 10 days
Giardiasis: 1 tab twice daily for 5-7 days
Intra-abdominal infection (with amoxicillin/clavulanate): 1 tab every 8 hours for 7-10 days
Trichomoniasis: 500 mg twice daily for 7 days

Common Infections

Diarrhea

Definitions

Diarrhea: Loose or watery stool, usually 3 or more times within 24 hours.

Invasive diarrhea or dysentery: loose stools with visible blood or mucus rather than just water.

Acute diarrhea: 2 weeks or less
Persistent diarrhea: between 14 and 30 days
Chronic diarrhea: more than 30 days

Severe diarrhea: 4 or more stools per 24 hours for 3 or more days. 6 or more stools in any 24 hour period, signs of dehydration, severe abdominal pain, need for hospitalization.

Intro

While diarrhea is one of the top 10 causes of death worldwide, this is almost entirely in resource-poor, third world settings. Almost all mild cases of diarrhea in first world countries, especially in resource-rich settings, are self-limited viral infections, food poisoning, or adverse reactions to medications (including antibiotics). All of these usually resolve soon enough on their own and maintaining adequate hydration is the most important intervention.

Severe diarrhea with 4 or more stools per 24 hours for 3 or more days was caused by a bacterial infection in 87% of cases, according to one study.

Risk Factors

Poor hygiene, undercooked food

Treatment

As long as illness is not severe, usually several days are allowed to pass without any specific treatment beyond ensuring adequate fluid intake, which is of the utmost importance and best carried out with an oral rehydration solution, which improves absorption of water. It's best to avoid fatty foods and anything that upsets the stomach. Dairy products are often difficult to digest due to secondary lactose malabsorption, which can last for weeks to months after a diarrheal illness.

Oral Rehydration Solutions (ORS)

In the third world, this simple homemade solution means the difference between life and death. It should be sipped throughout the day, rather than guzzled down, and can be taken with or without additional plain water.

Drip Drop ORS is the only over-the-counter electrolyte replacement solution which is ideally formulated for rehydration in diarrhea.

However, it is easy enough to make ORS at home:

The simplest recipe is the following mixed together:

7 tsps of sugar
½ tsp salt
1 liter water
fresh squeezed lemon to taste.

Another good recipe:

½ tsp table salt or sea salt
1 tsp baking soda (not baking powder!)
8 tsp sugar
8 ounces 100% orange juice
water (filtered is preferred)

Mix ingredients then add enough water to make 1 liter total.

Diagnostic testing

If possible, stool testing and culture is usually recommended if diarrhea is severe, bloody, there is fever, age 70 or above, heart disease, immunocompromise,

inflammatory bowel disease, pregnancy, symptoms over a week, or a recent outbreak.

Diarrhea that does not resolve within 1-2 weeks, or is unresponsive to antibiotics is best worked up with stool testing if possible, as it may not be infectious, but due to some other inflammatory disease.

Antibiotic Therapy

Usually in outpatient settings, culture results are not available and in some cases antibiotics are chosen based on their likelihood to work, especially if diarrhea is severe, prolonged or occurs in a high risk patient.

For patients with fever or dysentery (bloody or mucus filled diarrhea), the preferred antibiotic is:

Azithromycin 500 mg once daily for 3 days

If antibiotics are indicated due to severe, prolonged or high risk diarrhea and there is no fever or dysentery, then the preferred course is:

Ciprofloxacin 500mg twice daily for 3-5 days

Traveler's Diarrhea

Intro

Diarrhea that develops in patients from resource-rich settings who travel to resource-limited regions can be caused by a variety of bacterial, viral or parasitic organisms, but acute cases are usually bacterial.

Prevention can be had with Bismuth subsalicylate 30ml or 2 tabs taken 4 times daily with meals. Salicylate toxicity is a potential complication, particularly for pregnant women and anyone who is also on aspirin. Lactobacillus probiotics have also been shown to be effective at prevention.

Treatment is not usually recommended unless diarrhea is severe, in which case treatment options include azithromycin 1000mg taken once or ciprofloxacin 500 mg twice daily for 3 days.

Clostridium difficile

Severe diarrhea after recent antibiotic therapy is suspicious for Clostridium difficile infection and treatment is with:

Metronidazole 500 mg three times daily for 10-14 days.

Cholera

For patients with profuse watery diarrhea and potential exposure to cholera, eg. in the setting of an epidemic, or travel to an endemic region, treatment options include one time doses of:

Doxycycline 300 mg, ciprofloxacin 1000 mg or azithromycin 1000 mg.

Listeria

Listeria outbreaks usually do not require treatment in those younger than 65 who are not pregnant or immunocompromised. If treatment is indicated and listeria is suspected due to an outbreak or exposure to foods with high risk of listeria contamination (raw milk, soft cheeses made with raw milk, smoked seafood, store made salads, unwashed fruits and vegetables, raw or lightly cooked sprouts, improperly reheated hot dogs, lunch meats, cold cuts, fermented or dry sausage, and poultry), then treatment can be had with:

Amoxicillin 875 mg twice daily for 7 days.

Campylobacter

Associated with exposure to poultry or animal products.

Azithromycin 1000 mg taken once.

Salmonella

Associated with exposure to animals (poultry, turtles, petting zoos).

Ciprofloxacin 500mg twice daily for 3-14 days

Shigella

Associated with work in daycare centers.

Azithromycin 500mg once daily for 3 days

Parasites

Amoebic dysentery can be treated with metronidazole 500mg every 8 hours for 7 to 10 days.

Giardiasis can be treated with metronidazole 500mg twice daily for 5-7 days.

Ear Infections

Definitions

Otitis media - middle ear infection on the far side of the eardrum.

Otitis externa aka swimmer's ear - outer ear canal infection often caused by swimming, or water trapped in the canal.

Intro

Ear infections are common, especially in children and in adults who had frequent ear infections as children. Outer ear infections often resolve on their own, but can be treated with over-the-counter acetic acid ear drops and rarely require prescription antibiotic drops and do not need oral antibiotics.

Middle ear infections are the most common reason for antibiotic prescriptions in children, but for decades it has been known that they resolve on their own without complications in nearly all cases, and antibiotics are not recommended. Studies in children have shown that antibiotics provide no benefit other than a 6% chance of less pain within 2 - 7 days. What this means is that many ear infections are viral and even the bacterial ones get better on their own with no complications without an antibiotic.

However there are no adequate studies in adults, so the progression of an untreated middle ear infection in adults may very well differ greatly. In practice, most physicians treat adults early and aggressively with antibiotics for middle ear infections.

Ear pain can be misdiagnosed as an ear infection, especially if the eardrum is not examined. Ear pain is commonly caused by eustachian tube dysfunction, referred pain from sensitive teeth or cavities, and temporomandibular joint disorders (TMJ).

The eustachian tube is a canal leading from the middle ear to the nose and helps equalize pressure in the middle ear. It is often blocked by a stuffy or runny nose, which can lead to a clogged or painful ear. This can be treated with over-the-counter steroid nose sprays using the following technique.

While standing up, bend over at the waist 90 degrees so your face is looking directly at the floor and your nostrils are pointed at the wall behind you. Holding this position, point the steroid nose spray up into your nostril in the direction of the ceiling. Spray

into the nose, hold the nose shut and gently blow out against your closed nose as if trying to pop your ears open. The ears may or may not pop, depending on how clogged your eustachian tubes are, but don't force it. Do this twice a day until symptoms resolve.

Vigorous exercise, if possible, can also help open up a clogged ear.

Risk Factors

Young age, prior ear infections, upper respiratory infection.

Symptoms

Earache, reduced hearing, clogged or full ear, discharge from ear canal, fever, chills.

Diagnosis

Commonly used criteria for diagnosing of middle ear infections in adults in the absence of direct visualization of the ear drum:

Recent onset within 48 hours of pain in the ear, fever, sore throat or decreased hearing.
Occuring after a viral upper respiratory infection or seasonal nasal allergy exacerbation.
No similar symptoms within the previous 12 months.
No other likely cause based on prior health history.

Red Flags

Pain, tenderness or swelling of the bony prominence behind the ear (mastoid), confusion, signs of systemic infection: high fever, low blood pressure, dizziness, rapid heart rate.

Treatment

Antibiotics

Even though in most cases middle ear infections resolve on their own within a week, some patients get frequent middle ear infections and nothing but an antibiotic gets rid of them. If it is determined that antibiotics are required, the first line is:

Amoxicillin/clavulanate 875mg/125mg twice daily for 5-7 days for mild to moderate infections and 10 days for severe infections.

For those allergic to amoxicillin or if it is unavailable, the alternatives are:

Doxycycline 100mg twice daily for 5-7 days for mild to moderate infections and 10 days for severe ones.

Azithromycin 500mg on day 1, then 250 mg daily for the next 4 days.

Cephalexin 500mg 4 times a day for 7 days can also be tried as a last resort.

Bite Wounds

Intro

Bite wounds, whether from animals like dogs and cats, or humans (includes injuries to a hand from punching a human in the face and cutting the striking fist on their teeth) are extremely dirty and filled with multiple species of harmful bacteria. The most important intervention is to thoroughly wash out the wound, removing all debris and saliva and then to decontaminate the wound with a disinfectant like betadine or hydrogen peroxide. Thorough cleaning is often difficult to impossible to carry out without minor surgical interventions, especially in the case of puncture wounds from long sharp teeth. In every case it is imperative to be seen by a professional who can properly clean out the wound, dress it and advise on treatment.

Bites are tetanus-prone wounds; tetanus vaccination status must be determined and a tetanus booster shot and tetanus immune globulin given if indicated.

Risk Factors

Bad judgment, annoying nearby animals and humans.

Red Flags

Suspicion of rabies (go to ER immediately for rabies immune globulin), deep puncture wounds. Confusion, low blood pressure, dizziness, rapid heart beat, temp > 100.4, uncontrolled bleeding, loss of skin sensation around the wound, loss of function, bone injury, pain out of proportion to injury, streaks of red, facial injury, especially near eyes.

Possible Symptoms

Open wound with or without pain, swelling, redness, pus discharge.

Cat Scratch Disease: infection caused by bartonella henselae which is spread by the scratch ***or bite*** of a cat. Generally mild, usually occurs in children and young adults.

Symptoms: in the area of scratch or bite: redness, swelling, tender enlarged glands developing 2 weeks after the injury. Glandular swelling is the trademark of this illness. However, older patients are more likely to have non-specific symptoms like lack of energy and fever and may not remember a cat attack. Occasionally, patients exhibit a diffuse spotty rash with tiny bumps, or nodules and bruising. Some patients

may have stomach pain and weight loss due to involvement of the liver or spleen. There may be eye involvement with visual changes and internal eye inflammation. Neurological symptoms may develop including confusion seizures, loss of sensation on one side, and this can progress to coma. Some may have muscle and joint pain.

Antibiotics

Treatment can be prescribed for infected or uninfected wounds (to prevent infection).

Infected wounds

Infected wounds will often show signs of infection including swelling, redness, warmth, pus discharge and patients may have fevers or chills. It is imperative that all infected wounds be evaluated by a surgeon for debridement (cleanout) as there are likely trapped bacteria beneath the surface and there may be a pocket of pus, which is difficult if not impossible to treat with oral antibiotics alone, and may require surgical drainage.

Preferred treatment is with a single agent that covers all likely organisms:

Amoxicillin/clavulanate 875mg/125mg twice daily for 5-14 days

Alternative regimen is two antibiotics:

Either:
Doxycycline 100mg twice daily OR ciprofloxacin 500mg twice daily for 10-14 days, PLUS

Metronidazole 500mg every 8 hours for 5-14 days.

Uninfected Wounds

Preventive antibiotic treatment is recommended for wounds that: require stitching or gluing together, wounds on the hands, face or genitalia, wounds near a bone or joint, wounds near areas with diminished blood or lymph flow like vascular grafts, any deep wound or puncture wound (especially cat bites), wounds associated with a crush injury and some physicians also recommend preventive therapy for wounds older than 8 hours when first evaluated and cleaned.

Preferred antibiotic regimens are the same as for infected wounds, except the duration of treatment is only 3-5 days, assuming the wounds do not later begin to show signs of infection.

Cat Scratch Disease

Only glandular (lymph node) swelling:

Preferred:

Azithromycin 500 mg on day 1, then 250 mg daily for the next 4 days

Alternative if unable to take above:

Ciprofloxacin 500 mg twice daily for 7-10 days

With other symptoms:

Liver and Spleen Disease / Fever

Consult a physician in person. Treatment is usually with azithromycin PLUS rifampin, though a small case series of 3 adults with liver and spleen involvement was successful using:

Azithromycin 500mg daily for 5 days

Neurological and Eye Disease

Consult a physician in person. Treatment is usually with doxycyline or azithromycin PLUS rifampin, total treatment duration is 4-6 weeks. With neuroretinitis, steroids are often added.

Bronchitis

Intro

Bronchitis is one of the most frequently diagnosed infections in the US and one of the most inappropriately treated.

Bronchitis refers to a bronchial or upper respiratory infection aka chest cold in patients without chronic lung disease like COPD or emphysema. It's usually a viral infection and studies show that across the population, antibiotics make little to no difference to the course of the illness. On average it lasts 12-18 days, with or without an antibiotic. The only patients who tend to get bacterial bronchitis that responds to treatment with antibiotics are those with underlying COPD and emphysema in which case they are generally diagnosed with COPD exacerbation rather than simple bronchitis.

Whooping cough is one cause of bronchitis which is bacterial (bordetella pertussis) and treatable with antibiotics to stop spread (rather than speed up recovery, which usually doesn't happen). It is characterized by a typical "whoop" sound in between coughs on breathing in, and vomiting after coughing. Since vaccination against pertussis began, most cases occur in adolescents and adults, with the highest percentage (32%) between the ages of 11-19.

Possible Symptoms

Cough with or without mucus, which may be clear or colored, fever, chills.

Note: Cough can be due to a number of problems and is not always infectious. It is frequently caused by ACE inhibitor medications, post nasal drip (which can be viral like a cold, post-viral or allergic), silent acid reflux, cough variant asthma, or what's called a "post-infectious" cough – basically a lingering cough after a chest infection that might last a couple months and then goes away in its own good time, regardless of interventions.

Red Flags

Lasts longer than 21 days, improves then worsens again, fever over 102F, chest pain (other than a pulled muscle), especially on breathing in, severe coughing, exposure to tuberculosis (TB), coughing up blood, colored mucus, smoker, trouble breathing, immunocompromised, unable to catch breath.

Risk Factors

Close quarters, older age, lung disease.

Treatment

Raw (especially manuka) honey taken without heating it in tea is as helpful for cough as cough medicine. Also licorice root tea.

Fisherman's Friend is an over-the-counter cough drop that has multiple effective ingredients in it, including licorice and menthol.

Licorice root is effective for some coughs, especially those due to post-nasal drip irritating the throat. You can find licorice twigs on Amazon, sometimes called licorice sticks. You cut off a small piece, chew it up to soften it and then stick it in the side of your mouth between gum and cheek and let the saliva mix with the licorice sap. You can keep it there all day and all night, replacing the twig every few hours once the sweetness goes away. This is especially helpful for a cough triggered by post-nasal drip.

Acupressure (and acupuncture) is effective for coughing and you can find acupressure points online.

Rest
This gives the body a chance to fight off an infection. Avoid direct contact with other people as much as possible to help prevent spreading the infection. Cough or sneeze into a tissue and immediately dispose of it (if a tissue isn't available, cough or sneeze into the inside of your elbow, not your hands) Wash your hands thoroughly and frequently with soap and water. A cool-mist humidifier may help keep the mucous membranes moist and less irritated. Clean the humidifier daily according to the manufacturer's directions to prevent growth of mold/mildew. Drink an adequate amount of fluids to maintain hydration and help keep secretions loose so they're more easily expelled. Fluids also help keep the mucous membranes moist and soothe the throat. Warm fluids may be especially soothing for some people, while others tolerate cold fluids better. Tea or hot water with lemon juice and honey may also be soothing.

Avoid trying to "thin" the mucus with Mucinex aka guaifenesin which hasn't been shown to improve symptoms, instead just focus on drinking enough throughout the day to remain hydrated and your body will regulate the thickness of your mucus naturally: too thin and it pools in your lungs and you can't cough it out, too thick and it sticks in your lungs and you can't cough it out, just right and it comes up easily,

which generally depends on hydration rather than medication. When hydrating, don't gulp down large amounts all at once that tend to get urinated out quickly, but take 3 sips at a time frequently, from a bottle you keep with you.

Antibiotics

Antibiotics show no benefit to very minimal benefit in bronchitis: i.e. in the average 2-3 week course of illness, patients on antibiotics get better on average only 12 hours sooner than patients without an antibiotic, which is either too little benefit to warrant the risks of antibiotics, or no benefit at all and just an empirical anomaly due to some form of unforeseen study bias, inadvertent unblinding of study participants or activated placebo effects. For these reasons antibiotics are no longer recommended by the national physician groups that write guidelines on treatment.

All that being said, studies on populations don’t always give the best guidance on individual treatment, and there are likely some rare patients who do benefit from antibiotics occasionally. In patients who have a COPD exacerbation or who for some other reason require antibiotics for bronchitis, often times azithromycin and/or amoxicillin are tried.

Whooping cough is usually treated within the first 3 weeks of symptoms to reduce the spread rather than speed up resolution of symptoms.

Whooping cough:

Azithromycin 500 mg on day 1, then 250 mg daily for the next 4 days.

Other causes:

Azithromycin 500 mg on day 1, then 250 mg daily for the next 4 days.

Amoxicillin/clavulanate 875mg/125mg twice a day for 7 days.

Pneumonia

Intro

Pneumonia is a lower respiratory tract infection of the lungs and is best diagnosed and confirmed in person with the use of a stethoscope and/or chest x-ray to detect the typical signs present in the lungs of patients. Mild to moderate pneumonia in low risk patients can usually be treated at home, but more severe cases with respiratory failure require hospital management for supplemental oxygen and breathing treatments. In the worst cases, where there is also sepsis or septic shock, additional treatments may be required, including IV fluids and blood pressure supportive medications.

Risk Factors

Close quarters, older age, lung disease.

Typical Symptoms

Mild cases can mimic bronchitis. There is a spectrum of presentations from mild to moderate to severe. Symptoms can include cough with or without mucus, which may be clear or colored, shortness of breath, fever, chills.

Concerning signs that should always be worked up in person include blood in sputum, chest pain with coughing and/or on breathing in, rapid heart beat, rapid breathing.

More severe cases that must be seen in person can include these concerning symptoms: drowsiness, low oxygen level by pulse oximeter (above 95% is usually normal for most), low blood pressure, confusion, disorientation, loss of consciousness.

Treatment

Supportive care with hydration is similar to that for bronchitis.

Antibiotics

Amoxicillin/clavulanate 875mg/125mg twice daily for 7-14 days
PLUS
Azithromycin 500mg on day 1, then 250 mg daily for then next 4 days.

Sinusitis

Intro

One of the most common wintertime infections in America, also one of the most overtreated and mistreated. Studies show 98 - 99.5% of infections are due to viruses, for which antibiotics are completely ineffective. Viral infections tend to resolve in around 7-10 days, but may last longer. Between 0.5 - 2% of infections are bacterial and typically last for 2-3 weeks without an antibiotic. Some may last longer, but if lasting for over 4 weeks, it is more commonly a chronic infection or allergies.

Only bacteria are effectively killed by most antibiotics, so most people are simply killing their own healthy bacteria when they take an antibiotic for sinusitis. So it is unsurprising that if you are diagnosed with sinusitis and given an antibiotic, your likelihood of improving any faster due to the antibiotic is only 6% on average. Even this minor benefit may be due to empiric bias, inadvertent unblinding of trial participants and/or activated placebo effects.

Risk Factors

Frequent allergies, nasal obstruction, frequent colds.

Symptoms

Runny stuffy nose, with pressure or pain in the sinuses around the nose and forehead, fever, chills, change in sense of smell, fatigue, bad breath, fullness or pressure in the ear.

Concerning red flag signs that require a visit to a doctor: severe or persistent headache, neck stiffness, tiredness, altered mental status or confusion, pain in the eyes, pain on eye movement, redness or swelling of the skin overlying the cheek, forehead or around the eye(s), double vision, change in vision, or trouble opening eyes, eyes bulging out, facial numbness, tooth pain, confusion, drowsiness, severe immunocompromise, suspicion for fungal sinusitis (primarily seen in the immunocompromised - HIV/AIDs, cancer/chemo, etc: this is a medical emergency).

Diagnosis

Less likely to be bacterial when associated with other symptoms in other areas suggestive of a viral infection, like cough, sneezing, runny nose, nasal congestion, sore throat.

More likely to be bacterial if:

Severe onset, including all of the following: fever over 102.2°F, colored nasal discharge, and facial pain, pressure or fullness for at least 3-4 consecutive days

Worsening or new onset symptoms within 10 days following initial improvement

Symptoms persist for 10 days or more

Treatment

Twice a day:

Steam inhalation for 5 minutes, then steroid nose spray: rhinocort or flonase, then Xlear (xylitol) nose spray, then neti pot with 1/2 teaspoon xylitol and 1 drop of Johnson's baby shampoo in it. Studies have shown 60% of patients get relief of symptoms using 1% diluted Johnson's baby shampoo solution in a neti pot sinus rinse (you can make this by putting a drop of Johnson's baby shampoo in the neti pot water). Other neti pot solutions include povidone iodine or hydrogen peroxide.

You can make a povidone iodine sinus rinse by mixing the following together:
240 ml of purified water
1/2 tsp of non-iodized salt
2.4 ml of 10% povidone iodine solution

You can make a dilute hydrogen peroxide rinse by mixing the following together:
60ml 3% hydrogen peroxide
1/2 tsp of non-iodized salt
180 ml filtered water

If severe congestion makes it difficult to breathe or sleep, then consider a decongestant spray like Afrin (for 2 days only to prevent rebound worsening).

If your nose is still stuffy (before or after the first two days of using Afrin) then you can consider rubbing a pinch of red pepper powder inside your nostrils and, if especially adventurous, can consider inhaling a tiny amount of red pepper powder into the nostrils. This can burn badly for 15 - 30 minutes, and is not usually necessary when using Afrin.

For patients with chronic or frequently recurrent sinusitis who may have diminished levels of healthy bacteria in their nose, and may have lost some of the especially beneficial species entirely, there is a nasal probiotic called lactobacillus sakei available from LantoHealth.com.

This probiotic bacteria has been found missing in the sinuses of people with chronic recurrent sinus infections and is thought to be a keystone bacterial species for the ecology of the nose, without which bad bacteria and or viruses can easily take up residence. When you reintroduce it, it may prevent unhealthy bacteria and viruses from gaining a foothold in your sinuses and causing infections.

The lactobacillus sakei powder can be rubbed into the nostrils or combined with a neti pot rinse.

A home remedy based on the same idea is kimchi juice rubbed into the insides of the nostrils (the kimchi has to be made with garlic in order to produce the lactobacillus sakei probiotic).

Antibiotics

If it is determined that an antibiotic is necessary or prudent:

Amoxicillin/clavulanate 875mg/125mg twice daily for 5-7 days

OR

Azithromycin 500mg day 1, then 250 mg daily for next 4 days

OR

Doxycyline 100mg twice daily for 5-7 days

Skin Infections

Intro

Cuts, scrapes and burns can easily get infected and in the old days could mean amputation if you were lucky and death if you weren't. With antibiotics, skin infections are easy to treat, but not all need treatment.

Most skin infections are caused by staphylococcus or streptococcus bacteria. A common form of staphylococcus resistant to many common antibiotics is Methicillin Resistant Staphylococcus Aureus aka MRSA.

One of the most common skin infections is paronychia, or an infection around the cuticle of the nail, often occurring after a hangnail is pulled off. These can be very painful, red and swollen, but do not spread and can almost always be treated with hot compresses.

Other skin infections can be severe and life- or limb-threatening from the get go, e.g. diabetic foot ulcer infections. These always need a doctor's evaluation and antibiotics.

Skin infections can develop into abscesses, which are pockets of pus trapped under the skin. Abscesses almost always need to be surgically drained, but in some cases mild abscesses like those often seen in the armpit or rectal area may resolve with antibiotics.

Risk Factors

Diabetes, disrupted skin (cuts, scrapes, burns).

Typical Symptoms

Localized pain, redness, swelling, warmth. Redness may spread in streaks along lymphatic channels, which is concerning. More severe infections can spread to the bloodstream and cause fevers, chills, confusion, drowsiness, rapid pulse and low blood pressure. The worst cases of cellulitis can penetrate into nearby bones and even lead to gangrene, with death of the surrounding tissues.

Red Flags

Swelling around eye, head injuries, confusion, low blood pressure/dizziness, rapid heartbeat, temp over 100.4F, severe infection, post-op wound infection, red streaks, uncontrolled bleeding, wound requiring closure/stitches, loss of sensation around injury, signs of loss of blood flow -- cold, blue skin, loss of function, pain out of proportion to injury.

Treatment

Breaks in the skin must be cleaned out thoroughly. Antiseptics like topical iodine or hydrogen peroxide are helpful for disinfecting any break in the skin.
Over-the-counter topical antibiotics can be applied and often resolve minor infections. Hot compresses applied for 15 minutes 4 times a day help superficial abscesses like the very tiny ones seen in paronychia, and even the larger ones sometimes seen in the armpit, groin and buttocks to mature, break out and drain to the surface.

Antibiotics

Non-MRSA infections only:

Cephalexin 500 mg 4 times a day for 7 - 10 days
Amoxicillin/Clauvalante 875mg/125mg twice daily for 7-10 days

MRSA and non-MRSA infections (second line medication - 1st line are clindamycin, bactrim):

Doxycycline 100mg twice daily for 5-14 days

Sore Throat & Tonsillitis

Intro

Sore throat is a common symptom of an upper respiratory infection and the peak season is later winter and early spring (November to May). Most sore throats are viral and resolve in about 7 days without treatment. In very rare instances you can develop an abscess, which will cause symptoms to extend beyond 7 days and even more rarely may require surgical drainage.

Tonsillitis refers to inflamed and enlarged tonsils, often with pus spots visible. This is a common occurrence during a sore throat and is not alarming or dangerous. The tonsils are lymphatic tissue, a part of your immune system and when enlarged are simply doing their job to catch and trap infections.

Symptoms

Sore, red inflamed throat which may have pus streaks, enlarged uvula (the little dangly thing hanging down in the center from the soft palate), enlarged tonsils with or without pus spots, fever, chills. There may or may not be other signs of upper respiratory infection like nasal congestion, ear symptoms, cough, etc.

Red Flags

Not improving after 5 days, not resolved after 7 days. Trouble breathing. Severe sore throat (especially if one-sided) with fever and “hot potato” or muffled voice. Pooling of saliva and drooling due to severity of pain (hesitant to swallow even saliva). Trouble swallowing. Feeling or sound of air trapped under the skin in the neck, spasm of the jaw or trouble opening the jaw. Recent penetrating injury to the mouth or throat, shaking chills, history of rheumatic fever. Fever over 100.5°F in patients over 60, those with diabetes, immunocompromised or who are bedridden. Fever over 103°F in anyone else. Suspected or confirmed pregnancy.

Specific Causes

Mono (viral: may try acyclovir): May have abdominal pain and rash, especially ages 10-30.
Gonorrhea (bacterial: see STD/STI section): May have fever, pain and green pus discharge in throat in sexually active patients.
Herpes simplex 1 or 2 (viral: consider acyclovir): May see small, fluid-filled lesions that may burst.

Strep Throat

The only common throat infection that is not an STD/STI (gonorrhea can affect the throat) and that responds to antibiotics is streptococcal pharyngitis aka strep throat, however data shows the majority of patients with strep throat do not need treatment and will actually benefit from not treating. Strep is incredibly rare under the age of 3, and incidence declines significantly with age above 44.

According to Rosen's Emergency Medicine Textbook (parenthetical notes added):

"Acute pharyngitis (sore throat) should not typically be treated with antibiotics. The great majority of cases are viral (for which antibiotics don't work) in origin, and suppurative complications (like a throat abscess) following streptococcal infection are both easily treated and too rare to justify routine use of antibiotics. In particular, antibiotics were beneficial in reducing rheumatic fever (another complication that can occur after strep infections) only during a single military epidemic in the mid-twentieth century (soldiers living in close quarters, where infections act differently than in the general population), and the decline of rheumatic fever is unrelated to trends in antibiotic use (data suggest that rheumatic fever actually only occurs in malnourished people after a strep infection)."

Strep infections almost always go away on their own in about the same amount of time as all sore throats i.e. 5-7 days, antibiotics only reduce the symptom duration by about 15 hours on average. Over the counter non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen provide similar pain relief and time to resolution as antibiotics.

Antibiotics will kill your healthy bacteria, which are an integral part of your first line of defense against future pathogens (including another round of strep throat next year), may cause various acute side effects like diarrhea, can trigger C Diff infection, which can be severe and difficult to treat and also lead to development of resistant superbugs.

Some countries like England, Belgium and the Netherlands do not even recommend routinely checking for strep throat anymore, because of the reasons outlined above:

Despite all of that, there will always be very rare incidences of severe reactions to a strep infection, immunocompromised patients may be at higher risk and some patients need to stop transmission to their elderly loved ones.

Diagnosing Strep Throat

Even patients who repeatedly test positive for strep back to back or every year may not be *infected***.** Many people are asymptomatic carriers of strep, who will test positive any time, whether or not they are sick. So should they be infected with a virus causing sore throat, they will test positive for strep despite the cause of their symptoms being something else.

The rule of thumb for diagnosing strep throat are the Centor Criteria, though in practice they are no longer recommended for use to make a treatment decision, but instead are currently used primarily to decide who should be tested for strep. Importantly, the presence of a cough makes it *less* likely to be strep, not more likely, so *absence* of a cough increases the score.

Centor Score
Add up all the numbers for a final score.

Age

3-14 +1
15-44 0
≥45 years -1

Pus or swelling on tonsils

No 0
Yes +1

Tender/swollen neck glands (in front)

No 0
Yes +1

Temp > 100.4°F

No 0
Yes +1

Cough

No +1
Yes 0

Score	Likelihood of strep	Recommendation
-1 or 0	1-2.5%	no further testing or antibiotics recommended
1	5-10%	no further testing or antibiotics recommended
2	11-17%	optional testing, antibiotics considered if positive
3	28-35%	optional testing, antibiotics considered if positive
4-5	51-53%	optional testing, antibiotics may be given before test results

Treatment

Hot salt water gargles never go out of style and can be used as frequently as needed.

Gargling with 1% dilute hydrogen peroxide has direct antibiotic and antiviral effects, which can kill bacteria and viruses instantly on contact. 2% solutions are commonly available which can be mixed 1:1 with drinking water to dilute down to 1%.

Topical pain relievers like Gaia Throat Shield, a well regarded mixture of soothing antibiotic essential oils. Alternatives include chloraseptic spray and propolis sprays. Peppermint tea with honey can also be soothing.

Non-steroidal anti-inflammatory drugs like ibuprofen with or without tylenol. Best to use the lowest effective doses but for severe unrelenting pain, the maximum dose of ibuprofen is 800 mg every 8 hours and the maximum dose of tylenol is 1000mg every 6 hours, though care should be taken to avoid other sources of tylenol, which are common in combination products sold for upper respiratory infections.

Antibiotics

Preferred:
Amoxicillin/Clavulanate 875mg/125mg twice daily for 7 days

Alternative:
Azithromycin 500mg on day 1, then 250 mg daily for the next 4 days

Sexually Transmitted Infections

Intro

The age of antibiotics made sexually transmitted diseases an optional scourge. Common sexually transmitted diseases include chlamydia, gonorrhea, ureaplasma, and trichomonas. Although it is always best to test prior to treatment, in practice, many physicians in resource-poor settings, where patients are unlikely or unwilling to obtain testing, will simply prescribe a standard regimen that covers the common pathogens, since treatment is cheap, easy and effective with few downsides.

In all cases it is important to treat both partners even if one has no symptoms, as many sexually transmitted infections can lay dormant.

Symptoms

Vary greatly depending on specific disease and the time of onset but usually the first signs are discomfort on urination in men and women, and vaginal discomfort or discomfort during sexual intercourse, itching and/or discharge in women. Bacterial vaginosis is commonly reported to produce an unpleasant-smelling discharge and a fishy odor, especially after sexual intercourse. Trichomoniasis often produces a foul-smelling gray, white, yellow or green frothy discharge. However, symptoms alone are notoriously unreliable in differentiating various causes without some other clue like a known exposure, prior infection with the same agent, or testing.

Treatment

Antibiotics

Bacterial Vaginosis

Metronidazole 500 mg twice daily for 7 days

Chlamydia

Preferred in non pregnant patients:

Doxycycline 100 mg twice daily for 7 days

Preferred in pregnancy (alternate for non pregnant):

Azithromycin 1000 mg taken once.

Gonorrhea
Note: due to developing resistance to the oral treatment options, ideally the referred regimen is intramuscular ceftriaxone.

Oral options:

Preferred in non pregnant patients:

Doxycycline 100 mg twice daily for 7 days (10-20% antibiotic resistance)

Preferred in pregnancy (alternate for non pregnant):

Azithromycin 1000 mg taken once. (5% antibiotic resistance)

Ureaplasma

Preferred in non-pregnant patients:

Doxycycline 100 mg twice daily for 7 days

Preferred in pregnancy (alternate for non-pregnant):

Azithromycin 1000 mg taken once

Trichomoniasis

Women:

Metronidazole 500 mg twice daily for 7 days

Men:

Metronidazole 2000 mg taken once

Tooth Infections

Intro

Nearly all tooth infections cause toothaches, but not all toothaches are due to tooth infections. Cavities can be painful without being infected due to irritation of the nerve root, especially from hot and cold foods.

Unlike upper respiratory infections, which are primarily viral but can be bacterial, tooth infections are bacterial infections by default and can be serious if left untreated, because the bacteria can easily enter the bloodstream and even reach the brain.

Symptoms

Pain, swelling of the gum, bleeding gums, if abscessed pus may drain out, if infection enters the bloodstream may cause fever, chills, confusion, low blood pressure.

Red Flags

Jaw spasm, inability to open the jaw, trouble swallowing, trauma to the tooth, pain on lifting the tongue, pain, swelling or breakdown of gums with bad breath, change in taste and tiredness, ulcer on gum, mass under the gum, red or white patches in the mouth that are painful swollen or bleeding, short intense jabs of pain usually one sided, loose teeth, painful bleeding gums, pus from gums, fever over 100.4F.

Prevention

What happens once will likely happen again. Take care of your other teeth before you lose them.

Important nutrients:

Vitamin D is important for absorbing calcium from the diet. Vitamin K2 is important for directing the absorbed calcium into teeth and bones. Most people don't get enough vitamin K2 because food sources are rare in our cuisine and it's not included in most multivitamin formulations, so you probably need to supplement.
Magnesium - most people are deficient in this mineral that is important for healthy bones and teeth. Most natural food sources in industrialized nations are depleted due to low soil levels, so best to supplement with an absorbable form like magnesium glycinate.

Oral Hygiene

Brush your teeth ***gently*** after every meal for 2 minutes. Floss daily. Oil pull daily. Xylitol-based mouthwash 3 times a day after meals has an antibacterial effect.

An ancient natural mouthwash alternative which has been shown to reduce bacteria in the mouth as effectively as mouthwash is a practice called oil pulling. Basically you put a tablespoon of coconut oil, sesame oil or olive oil in your mouth and swish it around and through your teeth for 5-20 minutes once a day and then spit it out. The oil will emulsify bacteria clinging to your teeth, effectively removing them. Neem is an herb with beneficial properties for oral health and you can add it to your regimen by rubbing neem powder on your gums before starting.

Diet: Remove added sugars from the diet along with industrial seed oils and industrial grains. Add grass-fed ghee and other healthy fats. Proper preparation of grains, nuts and seeds includes soaking to remove harmful antinutrients. See "The Dental Diet" by Dr. Steven Lin and "Nutrition and Physical Degeneration" by Dr. Weston Price or visit the Weston Price Foundation online.

Treatment

Avoid hot and cold food and drink, avoiding chewing on the affected side. Pain control with over-the-counter painkillers.

Some natural remedies may help until the problem is resolved:

Crushed garlic releases an antibiotic substance called allicin after 15 seconds. If the garlic is then held to the nearby gum until it starts burning (usually 10 - 15 seconds or so) this will initially hurt and afterwards may temporarily relieve pain, presumably due to absorption into the surrounding tissues. Allimax capsules are a concentrated allicin extract from garlic that can also be used to support healing from infections. You can take 10 of the 180 mg capsules 4 times a day for 5-10 days.

Crushed cloves applied to the nearby gum and left in the mouth have a numbing effect and can help, alternatively clove essential oil applied to a cotton swab or toothpick can be inserted into a cavity. Oil pulling, an ancient Indian remedy, may also be helpful for soothing the pain and is best done with coconut oil - swishing it around the mouth and through the teeth, especially in the area of pain for 5-15 minutes and then spitting out. Gentle pressure applied near the corner of the mouth on the side of the pain may numb the nerve root for temporary relief.

You can also get temporary fillings from any pharmacy if there is a hole, until such time as a dentist can be consulted.

Antibiotics

Amoxicillin/Clavulanate 875 mg/125 mg twice daily for 10 days.

Urinary Tract Infections (UTI)

Definitions:

Simple UTI: urinary tract infection that only affects the bladder, diagnosed when there are no signs of spread.

Complicated UTI: urinary tract infection that has spread beyond the bladder, evidenced by signs like fever over 99.9°F, chills, shakes, significant fatigue, flank pain, tenderness on either side in the soft spot of the back where the ribs join the spine. Some groups consider all UTIs in men to be complicated, as well as UTIs in those with a childhood history of UTIs, postmenopausal women, anyone with a kidney stone, stricture, stent, physical urinary tract abnormalities, like urinary diversion, etc.

Intro

Urinary tract infections are very common in both young and older women and much less common in men. The difference is due to the anatomy of the urethra, which is very short in women and much longer in men. The longer urethra acts as a natural barrier to the entry of bacteria from the surface to the interior.

UTIs usually last 2-3 days when antibiotics are taken and if mild may resolve within a week without antibiotics.

Some women are particularly prone to recurrent UTIs for various reasons, and in some women interstitial cystitis, a non-infectious inflammatory condition can masquerade as a UTI. However, for the most part, UTIs are one infection that women can accurately diagnose without the help of their physician or any testing and in general practice it is common to treat women based on symptoms alone without performing a urine culture, unless symptoms suggest a complicated infection as defined above.

Risk Factors

Prior UTIs especially history of UTIs before the age of 15, female sex, sexual activity 3 or more times per week, new or multiple sex partners, menopause, diaphragm, spermicide use, pregnancy, older age, reduced mobility, urinary incontinence, urinary catheter, kidney stones, physical abnormalities of the urinary tract, cleaning the groin back to front, diabetes.

In men: insertive anal intercourse, enlarged prostate.

Symptoms

Pain on urinating, frequent urination, urgency - feeling like you have to run to the bathroom to urinate urgently, fever, cloudy urine, blood in urine, feeling of incomplete emptying, pressure/cramping in the groin or lower abdomen.

Red Flags

Signs of a complicated UTI: fever over 99.9°F, chills, shakes, nausea, vomiting, night sweats, significant fatigue, flank pain, tenderness on either side in the soft spot of the back where the ribs join the spine. Confusion, confirmed or suspected pregnancy, vaginal discharge or irritation, bleeding between menses, after sexual contact or pain during sexual intercourse. Lower stomach pain, pelvic pain, or pus-like discharge, immunocompromised.

Prevention

Urinate before and after sexual activity, wipe front to back, stay hydrated, urinate regularly, showers instead of baths, avoid douches, genital sprays, powders, spermicides, diaphragms, and avoid tight-fitting underwear.

Treatment

Over-the-Counter Products

D-mannose 500-1000 mg 5 times a day for 5 days may help and does not hurt. E. coli bacteria cause 9 out of 10 UTIs and D-mannose disrupts the ability of e. coli bacteria to stick to the bladder wall, so the causative organism is flushed out in the urine. Cranberry tablets may help and do not hurt.

Phenazopyridine (AZO) is available over-the-counter at pharmacies and it relieves the pain without getting rid of the infection. You can take 100-200 mg three times a day as needed for burning. It usually turns the urine temporarily orange.

Antibiotics

First line:
Cephalexin 500mg 4 times a day for 7 days

Usually overkill:
Amoxicillin/Clavulanate 875mg/125mg twice daily for 7 days

Bioweapons

Anthrax

Intro

Anthrax is weaponizable as an inhaled pathogen and is considered a Tier 1 biological agent - one of the most likely agents to be used in a bioterror attack according to the CDC, and has been used in the past in the US, spread via spores in the mail. During that attack in 2001, 22 people, including 12 mail handlers, got anthrax and 5 of the 22 people died.

Invisible anthrax spores can also be put in powders, sprays, food and water. In spray form they can be released into the air.

Anthrax can affect the skin and that is the most common form of the disease. It can also affect the stomach and the lungs. Inhaled anthrax is the most serious form of the disease. Rarely, injection drug users have been infected via the bloodstream.

Skin infections occur after spores penetrate the surface of the skin, usually as a result of contact with infected animals or animal products.

Symptoms/Diagnosis

Skin infection: small, painless, often itchy bumps that quickly enlarge and develop a central fluid-filled swelling, then pop and ulcerate, at which point they are painless, with a black, depressed lesion. Extensive surrounding tissue swelling due to fluid usually occurs and nearby glands usually swell up and there may be streaks of red seen on the skin. There can also be fever, tiredness and headache. Mortality with treatment is less than 1%, while mortality without treatment can be as high as 20%.

Lung infection: symptoms occur in two phases. Early on, muscle aches, fever and tiredness can mimic the flu, but there may be other unusual symptoms like nausea, bloody sputum, trouble breathing, painful swallowing and chest pain. This phase lasts about 4-5 days and is followed by rapidly progressive severe breathing difficulty, low oxygen and shock manifested by severe drop in blood pressure. This second

phase is catastrophic and is almost always deadly within a few days regardless of treatment. Chest X-ray findings can point to anthrax early on when antibiotics can still help.

Gastrointestinal (mouth and stomach) infection:

In the mouth can cause ulcers, mouth pain and swelling of the neck and mouth, sore throat and fever. Can be deadly even with antibiotics.

In the stomach it begins with weakness, headache, low-grade fever, facial flushing and red eyes. Followed by stomach pain, nausea, vomiting and sometimes diarrhea.

Meningitis (infection and inflammation around the brain): Has been reported with all the above forms of anthrax. Delirium, coma, seizures have been reported. 75% of patients die within 24 hours.

Treatment

Must be started urgently at first suspicion without delay. All symptomatic patients must be hospitalized if at all possible, due to the severe risk of rapid deterioration.

In a bioterror attack with suspected or known exposure, the best course of action is to treat prophylactically before symptoms start, because after symptoms begin, treatment is primarily IV not oral and requires hospitalization for multiple antibiotics that are not available in oral form.

Antibiotics

Bioterror cases / inhaled aerosols / skin infection without systemic involvement (no evidence of symptoms elsewhere):

Ciprofloxacin 500mg every 12 hours for 60 days OR
Doxycycline 100mg every 12 hours for 60 days

Meningitis

Hospital treatment required.

Preferred: Ciprofloxacin 400 mg every 8 hours IV (equivalent oral dose is 500mg)
PLUS
Meropenem IV AND Linezolid IV AND antitoxin.

Systemic Infection (spread via bloodstream)

Hospital treatment required.

Ciprofloxacine 400mg every 8 hours IV PLUS
Clindamycin 900 mg every 8 hours OR Linezolid 600mg every 12 hours AND antitoxin.

COVID-19

Information including off-label protocols that have been used worldwide is available separately on request and is sent automatically to all patients who request COVID prescriptions. See also: flccc.net.

For over-the-counter protocols see also our dedicated COVID Care Ebook.

Plague

Intro

Yersinia Pestis caused the infamous Black Death or plague that devastated Europe in the Dark Ages. The disease is now rare in humans, but still exists among animals and is primarily spread by fleas, scratches or bites from infected domestic cats, direct handling of infected animal tissue, aerosols breathed out by infected animals and humans *(the only source of human to human spread)*, or contaminated food and biolab exposure. The most common form is bubonic plague, which is a febrile infection of the lymph nodes. Less common forms cause bloodstream infection (septicemic plague), and pneumonia (pneumonic plague). Even less commonly it can cause throat infections and meningitis - an infection of the soft tissue enveloping the brain.

Bioterror Potential

As a bioweapon, plague would likely be spread by aerosols. If the natural yersinia pestis bacteria were released into the atmosphere above a city of 5 million, 150,000 would be expected to become infected, of which at least 36,000 or 24% would likely die due to delays in treatment and other factors. IF treatment is delayed more than 24 hours after onset of symptoms, fatality rates are very high. **IF NO treatment is instituted, 100% mortality is expected.**

Symptoms

Pneumonic plague (bio weaponized form of the illness): fever, cough, shortness of breath, sputum which could be watery or bloody and less commonly green or yellow mucus. nausea, vomiting, stomach pain and diarrhea may also be present. Rarely, swelling of the glands in the neck might occur.

Treatment

Must be started urgently at the first sign of fever or cough. If possible, all symptomatic patients should be hospitalized for IV therapy and close monitoring, though oral antibiotics are recommended when hospitals are not available.

In a bioterror attack with suspected or known exposure, the best course of action is to treat prophylactically before symptoms start, because after

symptoms begin, treatment is primarily IV, not oral, and requires hospitalization for multiple antibiotics that are not available in oral form.

Antibiotics

Post Exposure Prophylaxis (no symptoms):

Preferred:

Ciprofloxacin 500 mg by mouth twice daily for 7 days

Second line:

Doxycycline 100mg twice daily for 14 days

Treatment (with symptoms):

Preferred:

Ciprofloxacin 500 mg by mouth twice daily for 10-14 days

Second line:

Doxycycline 100mg twice daily for 14 days or until 2 days after fever has resolved, whichever is longer.

Smallpox

Intro

Variola major was the virus strain that caused the serious form of smallpox, which was a highly infectious disease characterized by fever, rash and 30 - 50% mortality rate. Variola minor had a 1% mortality rate. The disease was eradicated by 1979, however there are known US and Russian government stockpiles of the virus and since the genetic sequence is well known it can be recreated by any sufficiently advanced bioweapons lab.

The virus was only spread by humans, primarily by sneezing and coughing. It most severely affected infants, the elderly and the immunocompromised.

There were 5 presentations, and all could be caused by either the severe or mild variant of the virus and in practice which one was involved was inferred by the mortality seen. Nowadays, molecular diagnostics could distinguish the two.

The 5 types each had distinct rash characteristics and were: ordinary type, modified type, flat type, hemorrhagic type and variola sine eruptione.

Treatment

There is no commercially available oral drug to treat smallpox. The US Strategic National Stockpile keeps two oral drugs on hand: tecovirimat and brincidofovir, which may work based on animal studies of other similar viruses, and test tube studies against variola, but none were ever tested in humans with smallpox. The IV drug cidofovir, which can be toxic to the kidneys, has also been tested and may be effective.

Other Off-label & Herbal Possibilities

Nitazoxanide

Other broad spectrum antivirals like nitazoxanide may also have activity against variola though they have not been specifically tested against it, since the virus is generally unavailable for research. However, nitazoxanide has been tested and found to inhibit vaccinia virus, which is a similar poxvirus.

If used off-label against smallpox, a dose similar to that used in studies of COVID-19 might be employed:

500 mg twice daily for 5 days

Sarracenia Purpurea

Native Americans reportedly used an infusion of Sarracenia pupurea, a species of pitcher plant, which was also described in a small series of case reports in the British Medical Journal as an effective treatment in 1863, which also referenced another article published in the Lancet in 1862, also reporting success with Sarracenia. In modern times, this extract has also been shown to inhibit replication of variola in a test tube.

Resveratrol

The grape extract touted for its effects on longevity has been shown to strongly inhibit vaccinia in the test tube.

Tularemia

Intro

Tularemia is one of the most infectious pathogens known to man, requiring exposure to as little as 10 individual bacteria to cause disease. It infects animals and people. Rabbits, hares and rodents are commonly affected. People can catch it naturally from deer flies and ticks, contact with infected animals, contaminated water, inhaling aerosols and dust, or biolab exposure.

Bioterror Potential

High due to its extreme infectivity, easy spread via aerosols and high rates of illness and death. According to a WHO expert committee, if it were released over a city of 5 million, it would cause an estimated 250,000 incapacitating infections and 19,000 deaths. In aerosolized infections without treatment, mortality is as high as 30-60%. Mortality can be decreased to 2% with adequate early antibiotics.

Symptoms

Lung infections (bio-weaponized form): fever which often goes away after a few days then returns and other variable and non-specific symptoms, including chills, loss of appetite, lack of desire to do anything, headache, tiredness, soreness in chest and body aches, stomach pain, vomiting and diarrhea. Without treatment, progresses to lung failure with shortness of breath and low oxygen, shock with low blood pressure and death. There are some typical signs that may be visible on chest X-ray.

Treatment

Post-exposure prophylaxis can be given. If symptoms develop and tularemia is suspected, treatment must be started urgently at the first sign.

Severe infection requires hospital treatment with drugs only available by IV.

Post Exposure Prophylaxis

Preferred:

Ciprofloxacin 500 mg twice daily for 14 days

Second line:

Doxycycline 100 mg twice daily for 14 days

Mild to moderate infection:

Preferred:

Ciprofloxacin 500 mg twice daily for 10 - 14 days

Second line:

Doxycycline 100 mg twice daily for 14 days

Appendix A

Pregnancy Risk Categories

Important note:

Pregnancy categories were published in 1979 by the FDA.

There are extremely few category A drugs because in general, drug safety studies, required for Category A inclusion, are not performed on pregnant mothers that may put the developing fetus at risk.

In 2015, the FDA stopped categorizing drugs this way and instead on drug package inserts includes the following sections.

Category A

Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).

Examples: thyroid hormones (levothyroxine and liothyronine), the vitamin folic acid.

Category B

Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.

Examples: amoxicillin, azithromycin, cephalexin, ciprofloxacin, doxycycline, metronidazole.

Category C

Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Examples: gabapentin, amlodipine, trazodone.

Category D

There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Example: losartan.

Category X

Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.

Example: atorvastatin, simvastatin, methotrexate, finasteride.