First, we must know when not to use antibiotics.

When they become a precious commodity they will need to be used very wisely. Many of the patients I see in the adult emergency department, and most of the patients I see in the children's Emergency Department for various types of infections do not need antibiotics.

There is also a growing and very real danger with antibiotic resistance. It is a very legitimate fear that we may use antibiotics to the point that they are no longer effective, at which point it will be just like it was in the pre-antibiotic age.

Also, antibiotics are not completely innocuous. They have the potential to cause harm. (All medicines do, including the "safe, natural" remedies.) Allergic reactions are common, and the only way to become allergic to a medication is to be exposed to it in the first place. Drug reactions are also very prevalent, and range from the annoying (e.g. rash, diarrhea), to the life-threatening (e.g. skin sloughing off in sheets, causing the equivalent of a bad total body burn.)

Most infections involving the nose, sinuses, throat, and respiratory tract are viral and will not respond to antibiotics. Even some presumptive bacterial infections like otitis media (the common middle ear infection) will usually do just fine without antibiotic usage. If you have one of the following, think twice before using your precious antibiotic supply:

Cold, cough, runny nose
Sinus pain or pressure
Bronchitis (coughing up phlegm)
Ear pain or pressure
Sore throat (there is debate about whether even strep throat needs antibiotics)

When and how to use antibiotics.

Which antibiotics to use is always a big subject of debate. A roomful of physicians will seldom agree on the proper treatment of any disease, much less antibiotic use. In fact, there is a medical specialty (Infectious Disease) in which physicians train for 5 years after medical school so they can run around the hospital and tell other physicians what antibiotics they can and cannot use.

If you are going to use antibiotics, remember some guidelines. (Again, for information purposes only.) Dosages are given in milligrams (mg). Pediatric doses are given in milligrams per kilogram (mg/kg). All dosing notations here assume they are taken orally.

What follows is a list of common diseases and the antibiotics that treat them. Remember that there are many antibiotics, most of which are not listed here.

Pneumonia/bronchitis

doxycycline 100 mg twice a day for 7-10 days

erythromycin 500 mg every 6 hours

amoxicillin (more often used in children) 45 mg/kg two times a day for 10 days

Ciprofloxacin can be used in conjunction with another antibiotic, but it is not commonly considered a "respiratory drug." Its sister drugs, levofloxacin and moxifloxacin, are, but are not available without a prescription.

Ear infection — adult

amoxicillin 500 mg 3 times a day for 7-10 days

Ear infection — children

amoxicillin 30 mg/kg 3 times a day for 7-10 days

Sinusitis

amoxicillin 500 mg 3 times a day for 10-14 days

doxycycline 100 mg twice a day for 7 days

Sore (strep) throat

amoxicillin 500 mg 3 times a day for 10 days (child 25 mg/kg two times a day for 10 days)

clindamycin 450 mg three times a day for 10 days (child 10 mg/kg three times a day for 10 days)

Intra-abdominal infections (diverticulitis, etc)

ciprofloxacin 500 mg twice a day PLUS metronidazole 500 mg three times a day for 10 days

Infectious diarrhea

ciprofloxacin 500 mg twice daily for 5-7 days

Urinary infection — child-bearing age females without a fever (not pregnant)

trimethoprim/sulfamethoxazole 160/180 mg two times a day for 3 days

ciprofloxacin 250 mg twice a day for 3 days

Urinary infection — child-bearing age females without a fever (pregnant)

cephalexin 500 mg twice a day for 7 days

amoxicillin 500 mg three times a day for 7 days

Urinary infection — other adults

ciprofloxacin 500 mg twice a day for 7-10 days

Urinary infection — children

trimethoprim/sulfamethoxazole 5 mg/kg twice daily for 7 days (this dosing is based on the trimethoprim portion, which is usually 160 mg per tablet)

Bacterial vaginosis

metronidazole 500 mg twice daily for 7 days

clindamycin 300 mg twice daily for 7 days

Skin infections

trimethoprim/sulfamethoxazole 160/180 mg (child 5 mg/kg) two times a day AND cephalexin 500 mg (child 6.25 mg/kg) four times a day for 7-10 days

clindamycin 300 mg (child 10 mg/kg) four times a day for 7-10 days

doxycycline 100 mg twice a day for 7-10 days

(Methicillin-resistant staphylococcus aureus, aka MRSA, is a consideration in all skin infections nowadays.)

Not common household diseases, but possible biological weapons:

Plague (Yersinia pestis) post-exposure prevention

ciprofloxacin 500 mg twice a day for 7 days

doxycycline 100 mg twice a day for 7 days

Anthrax (Bacillus anthracis) post-exposure prevention

ciprofloxacin 500 mg twice a day for 60 days, doxycycline 100 mg twice a day for 60 days

Beware of allergies. If you are allergic to a medication avoid any drugs in its same family. Some of the families are related, such as penicillins and cephalosporins. Depending on where you read, there is a 2-10% cross-reactivity. However, as long as the reported reaction is not serious (e.g. a simple rash when someone takes penicillin), I will often give cephalosporins to penicillin allergic patients.

Antibiotic classes:

Please note that these lists are not comprehensive:

Penicillins ("-cillins"): amoxicillin, ampicillin, methicillin, dicloxacillin

Cephalosporins ("cef-"): cephalexin, cefaclor, cefuroxime, cefdinir, ceftriaxone, cefepime

Lincosamides: lincomycin, clindamycin

Fluoroquinolones ("-floxacins"): ciprofloxacin, ofloxacin, levofloxacin, moxifloxacin

Sulfa drugs (this is a very broad category, and includes many non-antibiotics): trimethoprim/sulfamethoxazole, sulfasalazine, dapsone

Tetracyclines ("-cyclines"): tetracycline, doxycycline, minocycline

Macrolides: erythromycin, azithromycin, clarithromycin

Not all antibiotics can be used across all patient populations. Pregnant women, breastfeeding women, and children deserve special consideration. Although some antibiotics should be avoided in certain patients, there is always a risk/benefit consideration. For example, if my pregnant wife developed a life-threatening pneumonia, and all I had was doxycycline, I would give it to her and accept the risk to the baby.

Avoid in pregnancy:
Ciprofloxacin (Cipro)
Trimethoprim/sulfamethoxazole (Bactrim, Septra)
Doxycycline

Avoid in children and breastfeeding women:
Ciprofloxacin (Cipro)
Doxycycline