

Public Health

Chickasaw Council Online Merit Badge College



Session 2: April 4, 2020

Requirement 0

Show your work.

- If you are not taking notes, you are missing out.
- The only credit that will be given is for work submitted to:
chickasawvirtualmb@gmail.com
- Mute is good, be one with the mute.
- Use the hand raising feature to let speaker know you have a question
- Y'all are Scouts. Show us what that means.

Maddie Williams

Certified Nurse Midwife

- Master Science Nursing: Nurse Midwifery
 - Bachelors in Psychology and in Nursing, followed by Graduate School
- Labor and Delivery Registered Nurse (RN): 16 years
- Clinic and Inpatient Care: 4 years

Nurse Practitioners, Nurse Midwives, Physicians are often the first point of care for many people and are integral to the public health care system



Requirement 1

Public Health: What is It?

1. Do the following:
 - a. Explain what public health is. Explain how Escherichia coli (E. coli), tetanus, HIV/AIDS, malaria, salmonellosis, and Lyme disease are contracted.
 - b. Choose any FOUR of the following diseases or conditions, and explain how each one is contracted and possibly prevented: gonorrhea, West Nile virus, Zika, botulism, influenza, syphilis, hepatitis, emphysema, meningitis, herpes, lead poisoning.
 - c. For each disease or condition in requirement 1b, explain:
 - i. The type or form of the malady (viral, bacterial, environmental, toxin)
 - ii. Any possible vectors for transmission
 - iii. Ways to help prevent exposure or the spread of infection
 - iv. Available treatments

Public Health

- Science of protecting and improving people's health as a community
- Promote Healthy Lifestyles
- Research Diseases
- Prevent Injury
- Detect/Prevent/Treat Infectious Diseases

WHO, CDC, TN Health Department, Shelby County Health Department



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Vector

- the **SOURCE**
- living creatures that can transmit disease
 - Between humans or between animals and humans
 - Ex: ticks, mosquitos, tse fly, bats, humans, pigs, cows
- can spread: bacteria, viruses, parasites
- distribution is affected by demographics, environmental, and social

Contracted: How Do You Get It?

E. Coli (Escherichia Coli)

- bacteria that is normally harmless and healthy in the intestines of people and animals
- causes fever, (bloody) diarrhea, stomach cramps
 - lasts 5-7 days
- transmitted through contaminated water or food, or through contact with animals or persons - unsafe food handling and unwashed hands

Salmonellosis

- food-borne bacterial infection: poorly stored and/or unsafely handled food
- more common in summer
- diarrhea, fever, and stomach cramps
 - begins 6 hours to 6 days and last 4 to 7 days

Contracted: How Do You Get It?

Tetanus (Lockjaw)

- bacteria that releases toxins and is present all over the environment
- enters the body through a break in the skin

wounds contaminated with dirt, poop or spit

puncture wounds, like a nail or needle

clean superficial wounds (a scrape)

burns

crush injuries

injuries with dead tissue

surgical procedures

insect bites

dental infections

compound fractures (a break in the bone where it is exposed)

chronic sores and infections

intravenous (IV) drug use

intramuscular injections (shots given in a muscle)

Contracted: How Do You Get It?

HIV/AIDS

blood, semen/pre-seminal fluid, rectal fluids, vaginal fluids, breastmilk

- anal and vaginal sex without a condom
- sharing needles
- stuck by a needle
- pregnancy, birth, breastfeeding
- RARELY: oral sex, deep open mouth kissing, eating pre-chewed food, bitten, blood transfusion, contact with wounds/breaks in the skin

Contracted: How Do You Get It?

Malaria

- a parasite spread through mosquito bites
- symptoms usually appear within in 7-30 days but can take up to one year to develop
- symptoms include high fevers, shaking chills, and flu-like illness. Without treatment, malaria can cause severe illness and even death

Lyme Disease

- most common vector-born disease in the United States
- a bacteria transmitted to humans through the bite of infected blacklegged ticks
- symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans
- if left untreated, infection can spread to joints, the heart, and the nervous system

West Nile Virus

- virus spread by an infected mosquito that fed on an infected bird
- prevent mosquito bites: use insect repellent, wear long-sleeved shirts and pants, treat clothing and gear with DEET/Picaridin
- control mosquitoes indoors and outdoors:
 - community coordinated mosquito spraying, bat boxes
 - use screens on windows and doors, use air conditioning, bed netting
 - stop mosquitoes from laying eggs in or near water
 - Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers
- no vaccines or treatments

Zika Virus

- virus spread by the bite of an infected mosquito: Aedes species
- passed to baby during pregnancy, causes birth defects
- spread through sex without condoms
- prevention/exposure: prevent mosquito bites/control mosquito population
- no vaccine or treatment

Meningitis

Inflammation of the lining of the brain and spinal cord

Bacteria

- 5 major bacteria
- birth, coughing, sneezing, sharing spit in drinks/kissing, close quarter living, unwashed hands, eating contaminated food, lab exposure, certain medical procedures, travel to sub-Saharan Africa/areas of the Middle East
- handwashing, not sharing drink/food, clean living space, sanitary food prep
- treatment: antibiotics, usually IV
- vaccine available depending on the bacteria

Meningitis

Virus

- multiple viruses can cause meningitis: Chickenpox, Shingles, Herpes, Measles, Mumps, Influenza, West Nile, Mono, Enteroviruses
- late spring to fall, most common season
- children <5 more likely to contract, also those immune compromised
- contracting depends on the type of virus. For the majority it is close contact/sharing drinks with someone who has the virus
- handwashing, not sharing drink/food, cleaning living space
- treatment: comfort measures, antivirals (depending on the virus)
- vaccine available depending on the virus

Fungus/Parasite/Amebic/Non-infectious

Lead Poisoning

- environmental contaminant
- sources
 - homes built before 1978 with lead-based paints
 - certain water pipes placed before 1986
 - toys and jewelry
 - candies/foods, and cosmetics imported from other countries or traditional home remedies
 - certain jobs and hobbies put parents and their families at risk
 - stain glass work, industrial repair/demolition/recycling
- at risk
 - children <6, poverty, living in older homes, pregnant, refugees
- *primary prevention* – the removal of lead hazards from the environment before a child is exposed
- *secondary prevention* – including blood lead testing and follow-up
- no treatment or vaccine

Botulism

- bacteria that releases toxin
- food
 - improperly home-canned or fermented food, damaged packaging from store
 - low acid foods at most risk
- wound
- infant or adult intestinal toxemia
- iatrogenic
- antitoxin, possible surgery to remove the toxin producing source
- no vaccine

Influenza

- multiple viral strains
 - human to human
- seasonal: late September to March
- prevention
 - wash hands, avoid close contact
 - cover mouth/nose during cough/sneeze
 - don't touch face
 - clean work/home surfaces
 - stay home if sick
 - get vaccine
- antivirals, if treated within 72 hours- Tamiflu
- comfort measures
- quadrivalent vaccine- EVERY YEAR

Emphysema

- type of chronic obstructive pulmonary disease
- causes
 - long-term exposure to irritants: [cigarette smoke](#), pipe, cigar, vaping
 - exposure to [secondhand smoke](#), [air pollution](#), and chemical fumes or dusts from the environment or workplace
 - a genetic condition called [alpha-1 antitrypsin deficiency](#)
- prevention: avoid causes
- no cure
- treatments for symptoms
 - lifestyle changes
 - oxygen therapy
 - medicines to help inflate the lungs and treat other illnesses that you are more prone to
 - lung removal or transplant (most serious)
- no vaccine

Gonorrhea

- bacteria
- vaginal, anal, or oral sex with someone infected
- vertical transmission during birth: from mother to baby
- prevention
 - condom use
 - regular STI check-ups and treatment
- may be reinfected
- treatment
 - Rocephin 250mg injection and Azithromycin 1000mg by mouth
- no vaccine

Syphilis

- bacteria
- direct contact with a syphilis sore during vaginal, anal, or oral sex
- vertical transmission during birth: mother to baby
- four stages: Primary, Secondary, Latent, Tertiary
- prevention
 - condom use
 - regular STI check-ups
- may be reinfected
- treatment
 - Benzathine Penicillin G
 - different dose depending on the stage
 - different dose if pregnancy, HIV status, congenital
- no vaccine

Herpes

- Herpes simplex virus 1 and Herpes simplex virus 2
 - called oral and genital- but can be in either location
- HSV-1
 - non-sexual spit contact
 - kissing someone with a sore
 - oral sex
- HSV-2
 - vaginal, anal, or oral sex with someone infected
 - vertical transmission
- prevention
 - condom use
 - not sharing drinks
 - washing hands and not touching face
 - antivirals in pregnancy
- antiviral, during outbreaks to decrease the length of symptoms
- no vaccine

Hepatitis A-C

- Virus
- A
 - person-to-person through the fecal-oral route or eating contaminated food or water
 - prevention: wash hands, sanitary food practices
 - no treatment
 - vaccine available
- B
 - blood, semen, or another body fluid from a person infected through sexual contact, sharing needles, or vertical transmission
 - prevention: condom use, do not share needles
 - no treatment
 - vaccine available

Hepatitis A-C

- C
 - blood
 - sharing needles, razors, toothbrushes
 - donated blood
 - needle stick
 - unregulated tattoo
 - vertical transmission
 - prevention
 - condom use
 - do not share needles/razors/personal items
 - go to regulated tattoo shop
 - no treatment for acute illness, chronic illness treated with protease inhibitors
 - no vaccine available

Requirement 2

Immunization.

2. Do the following:
 - a. Explain the meaning of immunization.
 - b. Name eight diseases against which a young child should be immunized, two diseases against which everyone should be re-immunized periodically, and one immunization everyone should receive annually.
 - c. Using the list of diseases and conditions in requirement 1b, discuss with your counselor those which currently have no immunization available.

Immunization

- Vaccination
 - getting a vaccine: injection or orally
- Immunization
 - the process of getting the vaccine and then becoming immune to the disease
- Periodic Vaccines
 - Adults: Tdap, followed by Td every 10 years: Tetanus and Diptheria
 - Older Adults: Shingles, Pneumococcal

Immunization

- Childhood Vaccines (15 in total from Birth-18 years)
 - Chickenpox
 - Hepatitis A
 - HPV
 - Measles, Mumps, Rubella
 - Polio
 - Pertussis (Whooping Cough)
 - Pneumococcal
 - Hib (Haemophilus influenza type b)
- Annual Vaccines
 - Influenza: FLU SHOT

Requirement 3

Water, Water, Everywhere.

3. Discuss the importance of safe drinking water in terms of the spread of disease. Then, demonstrate two ways for making water safe to drink that can be used while at camp. In your demonstration, explain how dishes and utensils should be washed, dried, and kept sanitary at home and in camp.

Water

That cool, refreshing drink

- In 2017, 71% of the global population (5.3 billion people) used a safely managed drinking-water service – that is, one located on premises, available when needed, and free from contamination.
- 90% of the global population (6.8 billion people) used at least a basic service. A basic service is an improved drinking-water source within a round trip of 30 minutes to collect water.
- 785 million people lack even a basic drinking-water service, including 144 million people who are dependent on surface water.
- Globally, at least 2 billion people use a drinking water source contaminated with faeces.
- Contaminated water can transmit diseases such as diarrhoea, cholera, dysentery, typhoid, and polio. Contaminated drinking water is estimated to cause 485 000 diarrhoeal deaths each year.
- By 2025, half of the world's population will be living in water-stressed areas.
- In least developed countries, 22% of health care facilities have no water service, 21% no sanitation service, and 22% no waste management service



Treating Water

You should treat water well.

You may need to treat well water.

- There are few places in North America where you can safely drink water from a lake or stream.
- At about **8 pounds per gallon**, water can be a real drag if you have to carry it far. The alternative is to go light and purify what you need.



Boiling

First and Best Option

Boiling water from an in-the-wild water source will kill almost everything, even parasites like giardia and cryptosporidium that can survive long exposure to iodine and chlorine.

The Environmental Protection Agency recommends a one-minute rolling boil for elevations less than 6,600 feet and three minutes for higher elevations.

You will still need to filter water of visible contaminants, using a coffee filter, strainer, or ceramic filter.

Chemical Treatment

An Answer in a Bottle, With conditions

Chlorine bleach or iodine will kill most waterborne pathogens, but if you get the dosage wrong, **they can be dangerous**. Water-treatment tablets are safer and easier to use. Chlorine dioxide and sodium dichloroisocyanurate tablets are more effective against giardia than chlorine or iodine tabs. However, water-treatment tablets will not reliably kill cryptosporidium, which, fortunately, is uncommon in surface waters.

Some negatives about using water-treatment tablets: They require at least 30 minutes to work if the water temperature is above 68 degrees. Much more time is needed for cold or cloudy water. Heat speeds chemical reactions, so you'll shorten the purification time if you set your water in the sun while the tablets work. **Tablets lose potency over time**; fresh ones work faster. And to reduce the bitter taste after treatment, aerate your water by pouring it back and forth between two canteens.

Filters and Purifiers

Useful, but not perfect

Filters strain out microorganisms, **but they don't kill them**. If hiking in the U.S., filtration is typically considered to be sufficient.

A filter should remove the smallest infectious agents. For instance, a filter with a 1-micron absolute pore size will trap giardia and cryptosporidium. Viruses fly through the smallest pores, but they can be killed with water-treatment tablets after filtering. Fortunately, harmful viruses are extremely rare in surface waters.

Because the “bugs” become trapped inside the filter, this can eventually become clogged and **must be cleaned or replaced**.

Purifiers, on the other hand, typically use microfiltration and either chemical treatment or ultraviolet light to kill microorganisms, including viruses. This higher level of water purification is necessary when traveling outside of the U.S. in regions where viral contaminants are a risk.

Show What You Know

A Do-It-At-Home™ Adventure!

Take a short video or series of pictures showing how to make water safe to drink.

You are illustrating, so stand in props can be used.

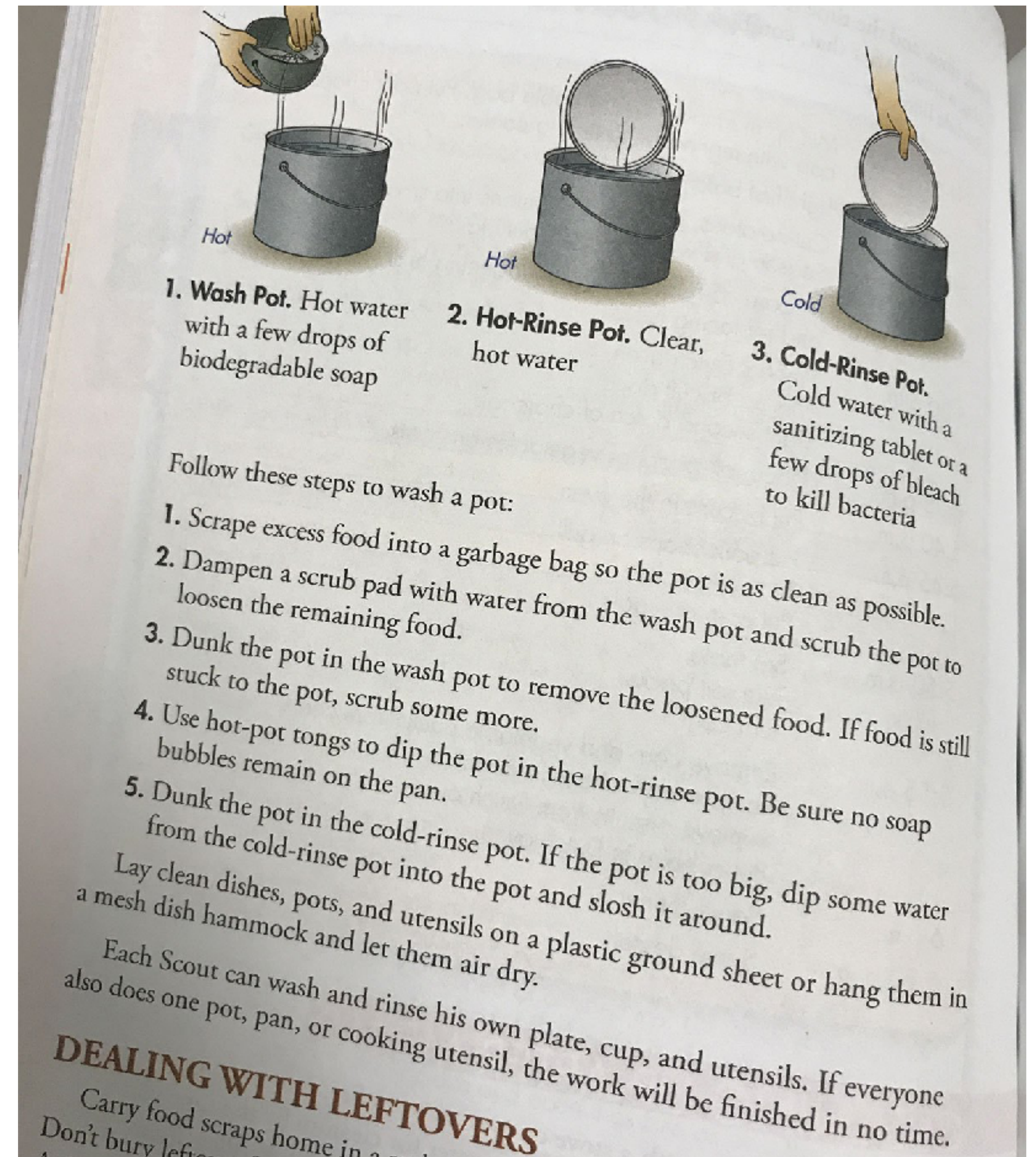


Cleaning Up

A Do-It-At-Home™ Adventure!

What you need:

- A dishwashing spot that's at least 200 feet from any sources of water
- Hot water (Pro tip: start heating your wash water before you sit down to eat)
- Three plastic tubs
- Biodegradable dish soap
- A dish brush/scrubber or two
- Hot tongs for dipping plates and spoons into the hot rinse
- Bleach or sanitizing tablets
- Ground cloth, towel, mesh bag or lightweight hammock for air-drying



Before you begin

- Get your dishes as clean as you can before placing them into the wash pot. That way you won't overwhelm Pot 1 with food particles.
- Note: This may involve scraping and literally licking your plate clean. At Scout camp, this is perfectly acceptable behavior.

Pot 1: Wash pot

- Add a few drops of biodegradable soap to hot water. Your instinct will be to use more soap than you actually need, so use sparingly.

Pot 2: Hot-rinse pot

- Fill the pot with clear, hot water.

Pot 3: Cold-rinse pot

- Place a few drops of bleach or a sanitizing tablet (like Steramine) into cold water.

After you're done

- Hang or place utensils and dishes to dry
- Dispose of soapy wash water 200 feet from any water sources. Filter out food particles, and put those in a plastic bag to throw away. Then spread the water over a wide area.

Also worth noting

- Minimizing dishwashing time starts with menu planning. Meals that use one pot and few food-prep utensils will leave less mess afterward.
- Scouts should use as few dishes and utensils as possible. One bowl, one mug and one spork will be all you'll need for most meals.