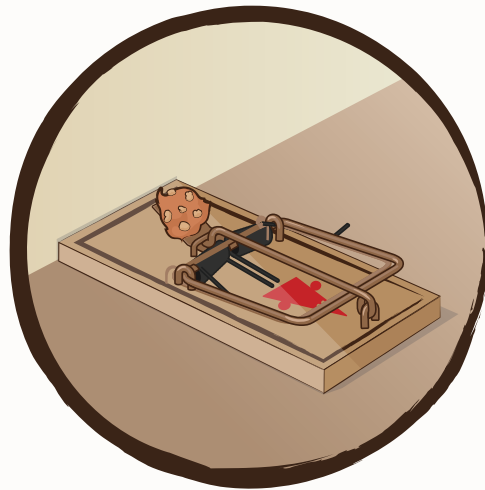


You Can Prevent Hantavirus

How to Protect Yourself and Your Family from **Hantavirus Pulmonary Syndrome** in the United States



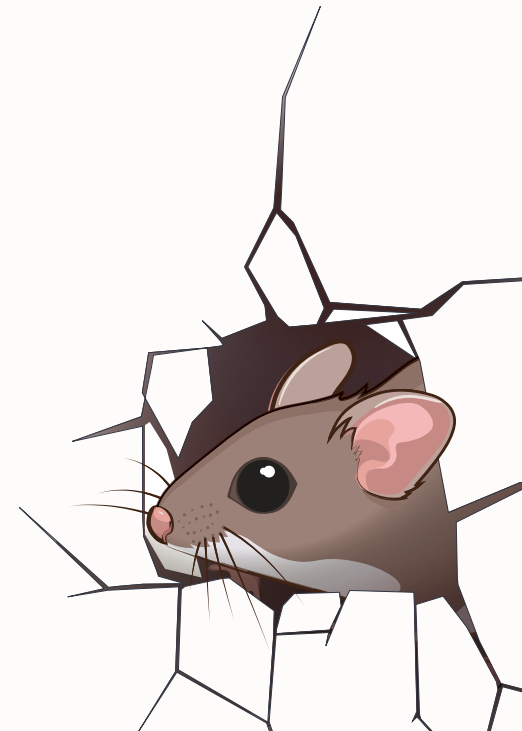
SEAL UP!



TRAP UP!



CLEAN UP!





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Hantaviruses are a family of viruses that are carried by certain rodents (like rats and mice) around the world.

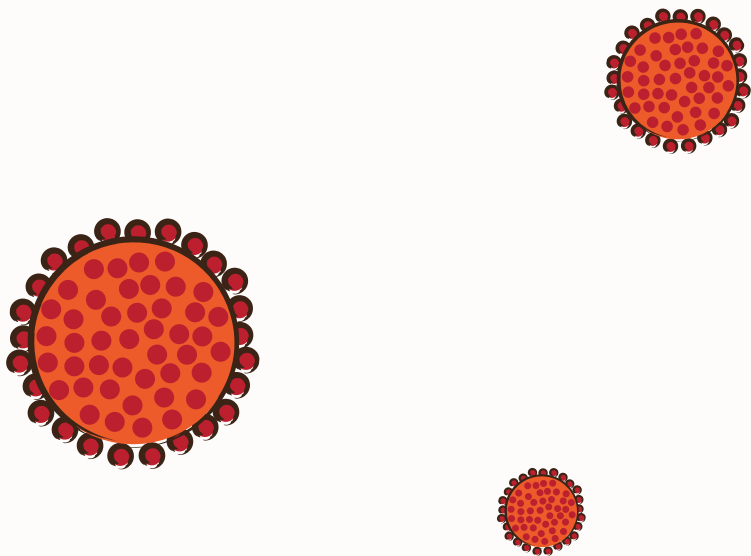
What is hantavirus pulmonary syndrome (HPS)?

Hantavirus pulmonary syndrome (HPS) is a severe, sometimes fatal, respiratory disease in humans caused by infection with hantaviruses. Hantaviruses most commonly spread to people when they have contact with infected rodents or their urine, droppings, and saliva.

What are the symptoms of HPS?

Symptoms of HPS usually start one to eight weeks after contact with infected mice or rats or their urine, feces, and saliva.

- People usually DO NOT have a runny nose, sore throat, or a rash.
- Four to 10 days after initial symptoms (see pictures to the right), some people recover, while others develop more severe HPS. Patients may have a hard time breathing, which can become life-threatening.
- **Seek medical attention immediately if symptoms (especially difficulty breathing) occur after exposure to rodents or rodent waste.**



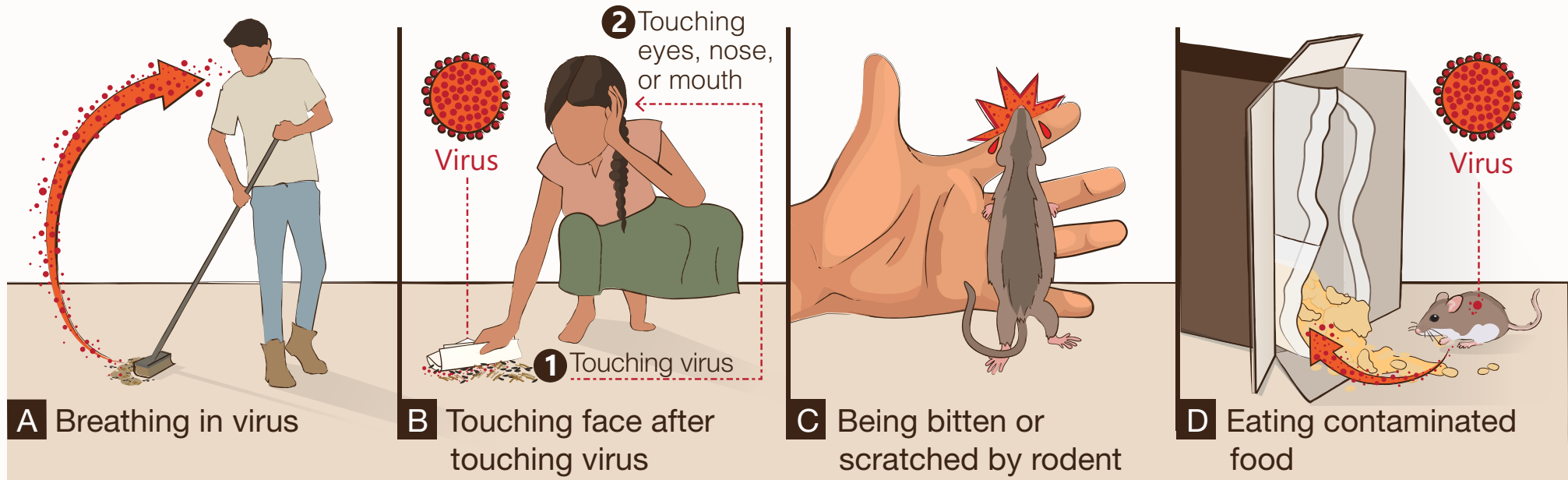
How do people get HPS?

While HPS is very rare, cases have occurred in all regions of the continental United States. Anyone who is exposed to infected rodents or their waste is at risk. Rodent infestation in and around the home is the primary risk for HPS. People can get HPS by:

- Breathing in air contaminated with fresh mouse or rat urine, droppings, or nesting materials from an infected rodent
- Touching contaminated mouse or rat urine, droppings, or nesting materials and then touching eyes, nose, or mouth
- Being bitten or scratched by an infected rodent
- Eating food contaminated by urine, droppings or saliva from an infected rodent

In the United States, there have been no reports of HPS spreading between people.

TRANSMISSION: A person can be infected by

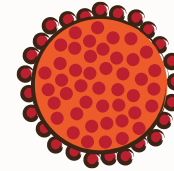


What are some activities that can put people at risk?

- Cleaning up mouse and rat urine, droppings, and nests without wearing rubber or plastic gloves
- Entering a home, shed, camper, or cabin infested with rodents
- Working in areas where mice and rats may live (such as barns or vehicles)
- Participating in recreational outdoor activities where exposure to mice and rat habitat may occur (such as visiting infested trail shelters or camping)

What animals carry the hantaviruses that cause HPS?

In North America, certain kinds of mice and rats can spread the hantaviruses that cause HPS to people, including: the deer mouse, the white-footed mouse, the rice rat, and the cotton rat (the geographic range for these mice and rats in the United States is below.) It is hard to tell if a mouse or rat is infected with a hantavirus just by looking at it; so it is best to avoid all wild rodents and to safely clean up any rodent urine, droppings, or nests in your home. Dogs and cats cannot get sick from hantavirus infection or spread hantaviruses to people.



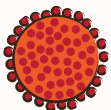
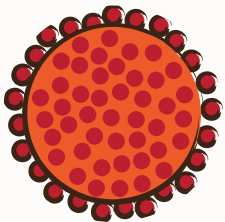
Deer Mouse

Peromyscus maniculatus



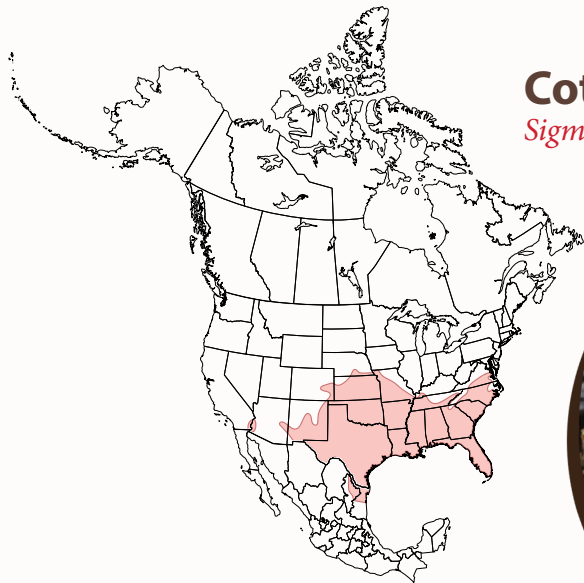
Rice Rat

Oryzomys palustris





White Footed Mouse
Peromyscus leucopus



Cotton Rat
Sigmodon hispidus



How can you prevent HPS?

SEAL UP! TRAP UP! CLEAN UP! The best way to protect yourself and your family from HPS (as well as other rodent-borne diseases) is by keeping wild mice and rats out of your home and cleaning up after rodents the right way.

SEAL UP! Keep wild mice & rats out of your home



Step 1: Maintain inside areas to keep mice and rats out

- Check for gaps or holes; seal up any that you find. Mice can fit through a hole the width of a pencil.
- Keep food sealed in thick plastic, metal, or glass containers with tight lids.
- Clean up spilled food right away. Wash dishes and cooking utensils soon after use.
- Put pet food away after use. Do not leave food or water bowls out overnight.
- Keep garbage in thick plastic or metal containers with tight lids.

Actual size of a hole
a mouse can enter
($\frac{1}{4}$ in or 6 mm in diameter)



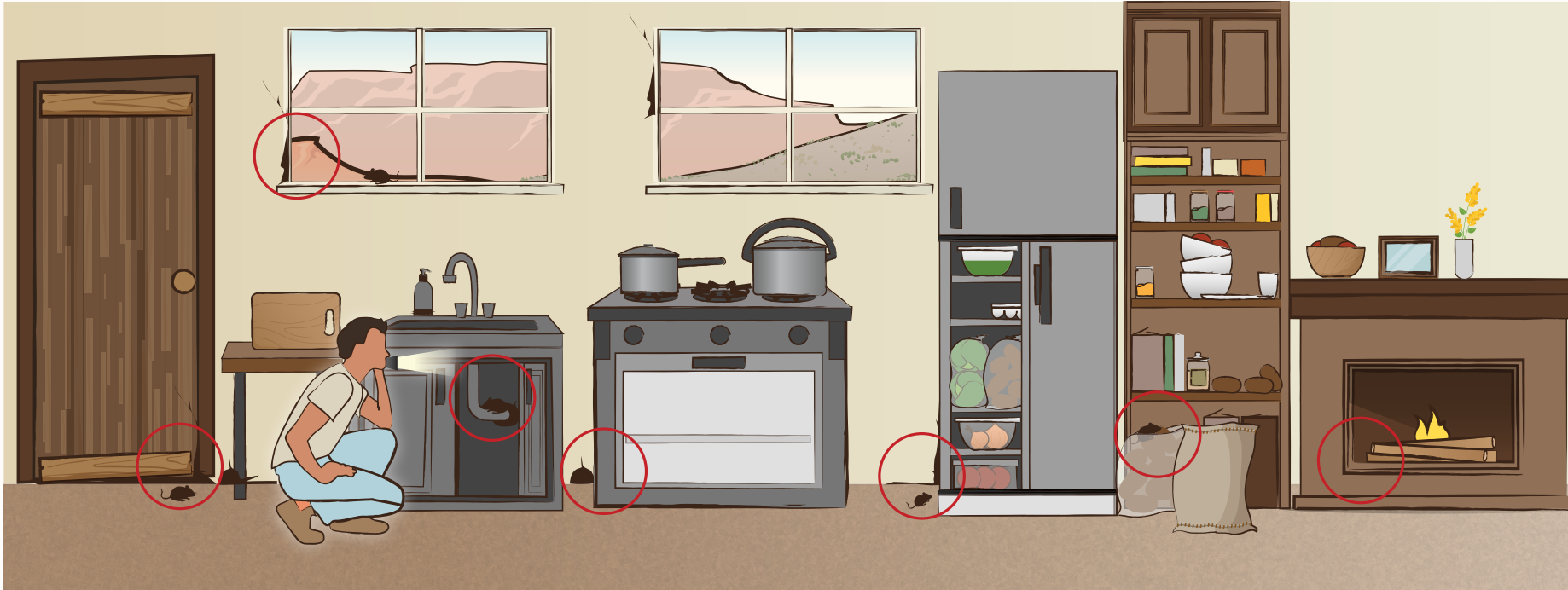
Step 2: Maintain outside areas to keep mice & rats out of your home



- Clean up garbage around your house. Use a thick plastic or metal garbage can with no holes and a tight lid.
- Keep composting bins 100 feet from your house.
- Dispose of abandoned vehicles or move them more than 100 feet from your home.
- Clean up brush and weeds around your home. Keep grass and shrubbery within 100 feet of your home well-trimmed.
- Check outside of your home for gaps and holes and seal up any that you find.
- Keep grains and animal feed in thick plastic or metal containers with tight lids.
- Move woodpiles 100 feet or more from your home and raise the wood at least one foot off the ground.
- Fix gaps in trailer skirting.

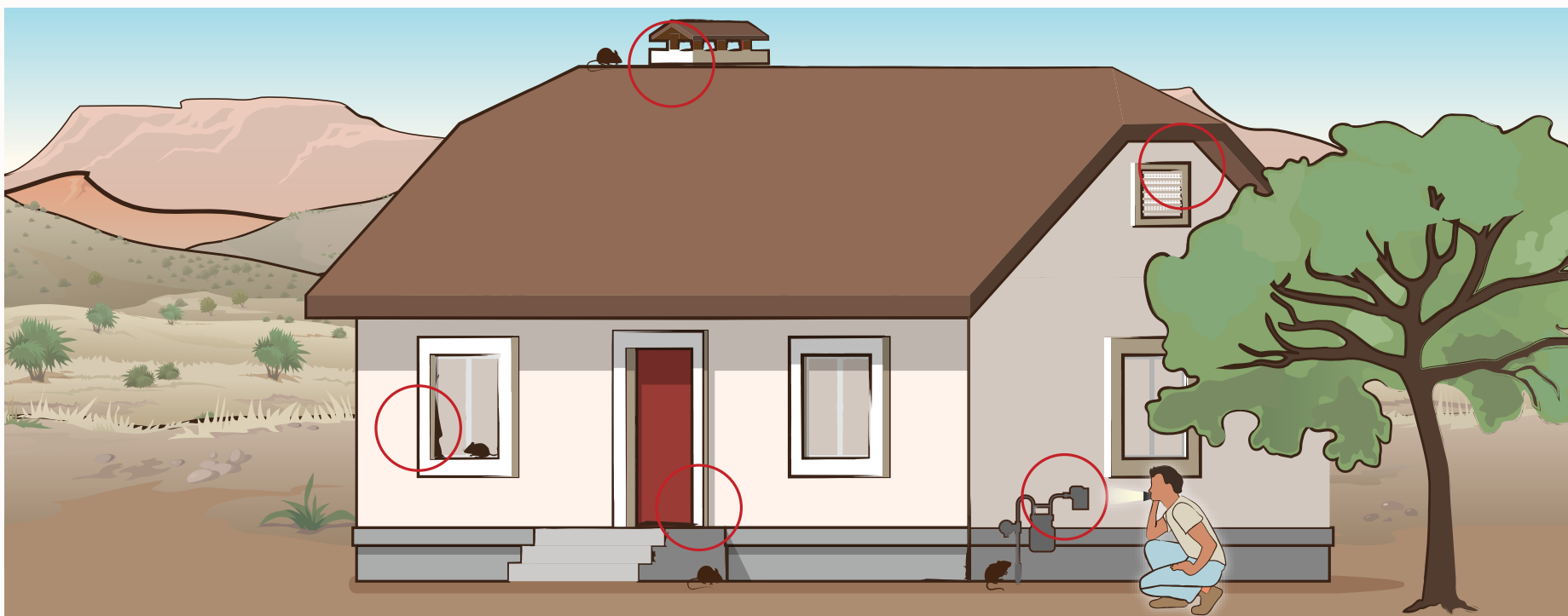
HOW TO: LOOK FOR GAPS OR HOLES INSIDE OR OUTSIDE YOUR HOME

Using a flashlight, inspect the following locations for gaps ($\geq 1/4$ -inch in diameter), holes, or evidence of rodent activity (such as nests, gnaw marks, droppings, or urine).



Where to look inside your home:

- Inside, under, and behind kitchen cabinets
- Floor areas in closets, especially corners
- Around the fireplace
- Around windows and doors
- Behind appliances
- Around the pipes located under sinks and washing machines
- Around the pipes leading to hot water heaters and furnaces
- Around floor air and dryer vents
- Around all electrical, water, gas, and sewer lines
- Inside the attic
- In the basement or crawl space



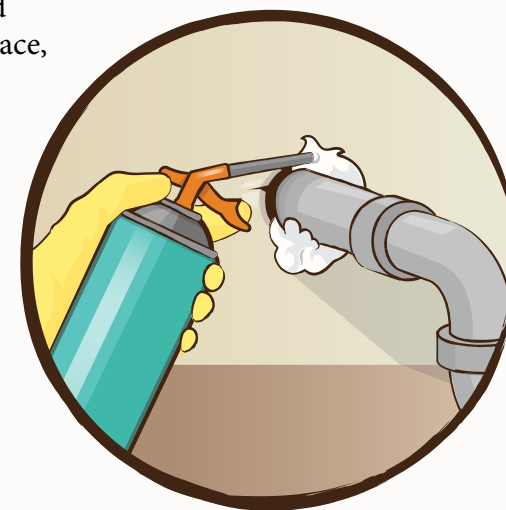
Where to look for holes outside your home:

- In the roof among the rafters, gables, and eaves
- Around windows and doors (especially those without weather stripping)
- Between the foundation of the home and the ground
- Around the attic and crawlspace vents
- Around holes for electrical, plumbing, and gas lines

HOW TO: SEAL GAPS AND HOLES INSIDE AND OUTSIDE YOUR HOME

- Fill small holes with steel wool and secure it with caulk to keep it in place, or use spray foam.
- Use lath screen, metal, cement, hardware cloth, or metal sheeting to fix large holes.
- Cut material to fit around pipes.

All materials can be found in the masonry or building materials section at a hardware store.

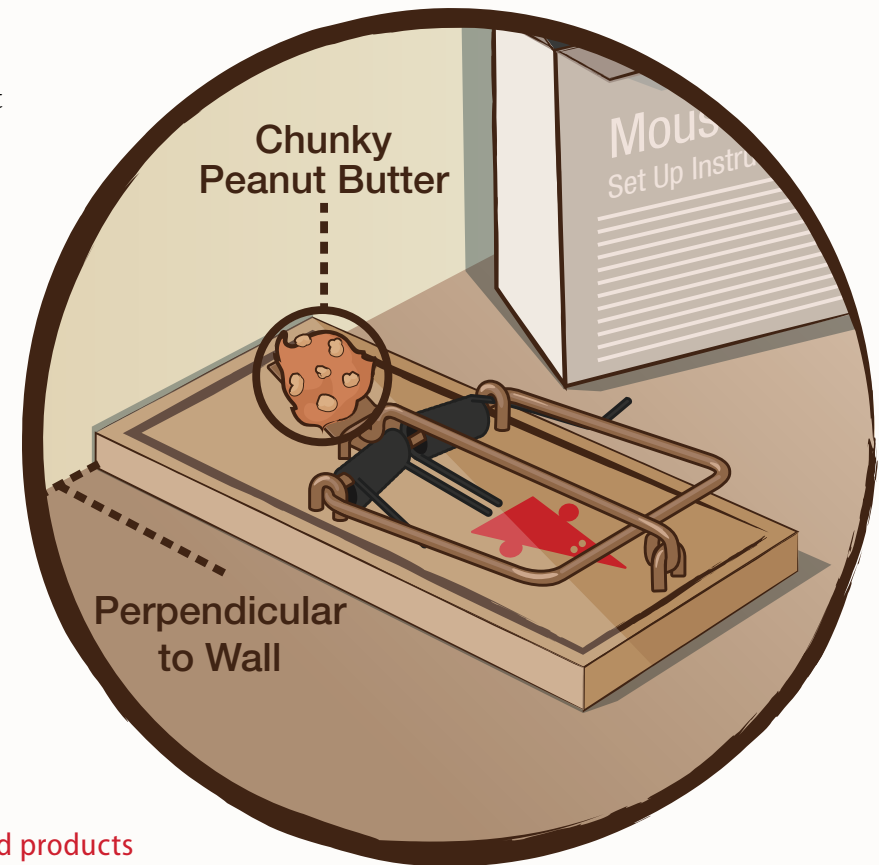


TRAP UP! Trap rodents around the home to help reduce the rodent population

Always keep traps and bait out of reach of children and pets. Only use snap traps, or poison bait for serious mouse and rat problems. DO NOT USE glue traps and live traps. These traps can scare the rodents causing them to urinate, which can increase your chance of getting sick.

HOW TO: USE SNAP TRAPS

- Choose the right kind of snap trap for the rodents in your home; there are different traps for mice and rats.
- Read the instructions on the box before setting the snap trap.
- Place a pea-sized amount of bait (chunky peanut butter or mutton fat work best) on the bait pan located on the snap trap.
- Place the snap trap on the floor against the wall. Put the baited end of the trap next to the wall so it forms a “T” with the wall.
- Place snap traps in areas where you have seen mice or rats, nesting materials, urine and droppings, or nibbled food. Place snap traps in closed areas, such as behind the stove and refrigerator, and in the back of cabinets and drawers.
- Put snap traps near other areas where you think mice or rats are coming into your home.



HOW TO: USE POISON BAITS

(Poison baits can be useful if you have a serious mouse or rat problem. EPA-registered products are recommended. For more information visit <http://www.epa.gov/rodenticides>.)

- Carefully read the instructions on the bait package.
- Place bait trays or bait station in or near places where you have seen mice or rats, droppings, or nesting materials.
- Remember that poison baits are dangerous for people and animals. Place baits out of reach from children and pets.
- Check bait every week and re-fill or move it as needed for at least 15 days. Leave the bait out longer if you still have mice and rats.

CLEAN UP! Clean rodent waste the right way

If you have mice or rats in or around your home or vehicle, it is important to clean up all urine, droppings and nesting materials. Before you begin cleaning, ALWAYS take the following precautions.

- Use one of the following preferred disinfectants:
 - » General-purpose household disinfectant cleaning product (confirm the word “Disinfectant” is included on the label), OR
 - » Bleach solution made with 1.5 cups of household bleach in 1 gallon of water (or 1 part bleach to 9 parts water). Make bleach solution fresh before use.
- Wear rubber or plastic gloves. Special precautions should be used for cleaning homes or buildings with heavy rodent infestation.
- After cleaning up the affected area, wash gloved hands with soap and water or use a disinfectant on gloves before removing them.
- Wash hands with soap and warm water after removing your gloves.

HOW TO: CLEAN UP RODENT URINE AND DROPPINGS

Do NOT sweep or vacuum up mouse or rat urine, droppings, or nests. This can increase your risk of inhaling the virus.

Step 1: Wear rubber or plastic gloves.

Step 2: Spray urine and droppings with bleach and water solution (or disinfectant) until very wet. Let it soak for 5 minutes.

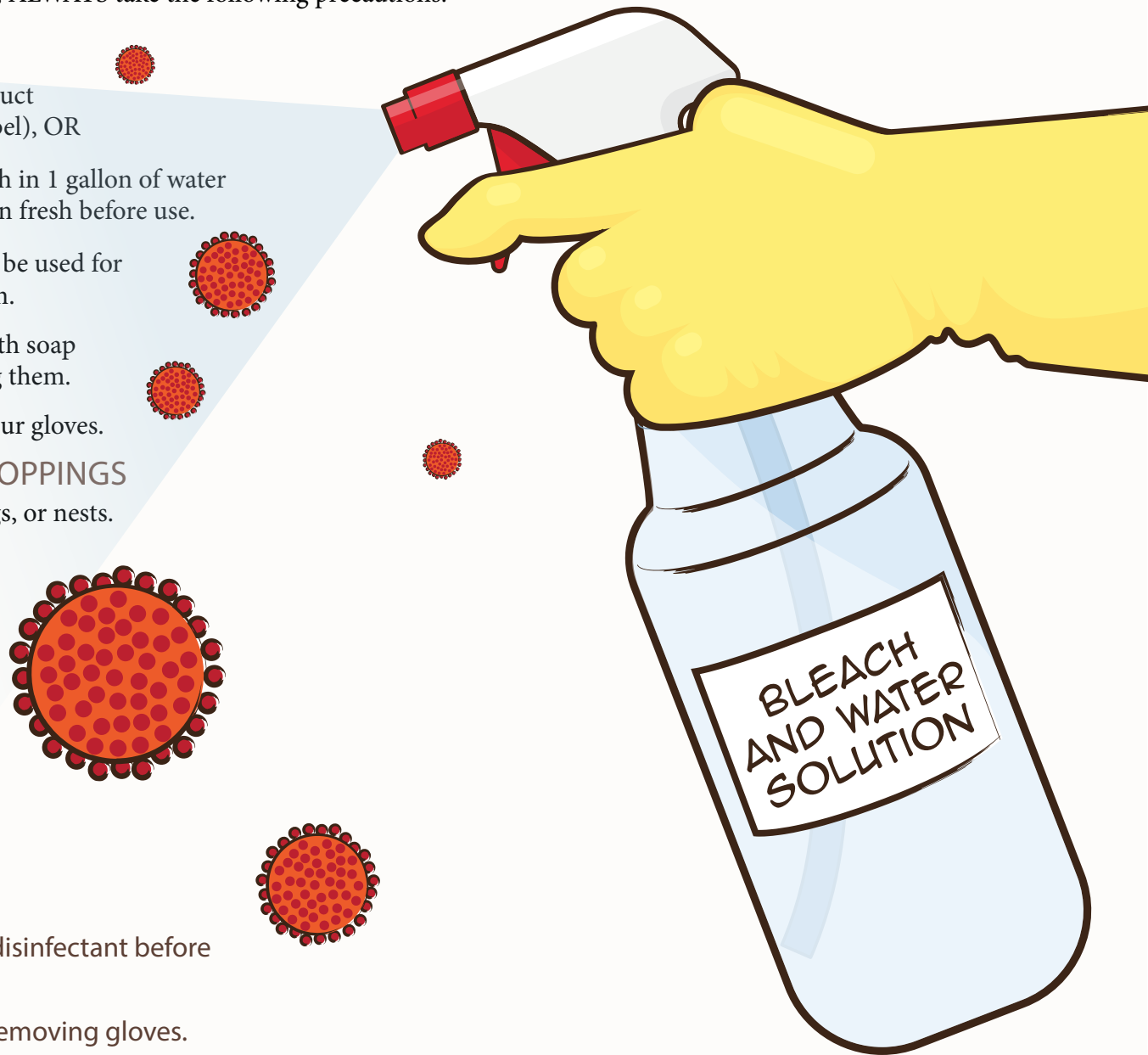
Step 3: Use paper towels to wipe up the urine or droppings.

Step 4: Throw the paper towels in the garbage.

Step 5: Mop or sponge the area with a disinfectant.

Step 6: Wash gloved hands with soap and water or a disinfectant before removing gloves.

Step 7: Wash hands with soap and warm water after removing gloves.



HOW TO: CLEAN UP MOUSE URINE AND DROPPINGS

1 Always wear rubber or plastic gloves.



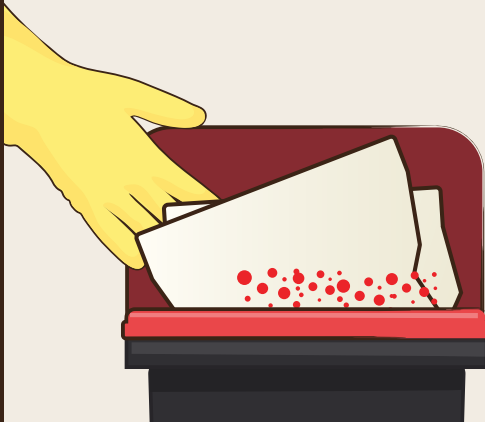
2 Spray urine and droppings with disinfectant until very wet. Let it soak for 5 minutes.



3 Use paper towels to wipe up the urine or droppings.



4 Throw soiled paper towels in the garbage.



5 Mop or sponge area with disinfectant.



6 Wash gloved hands with soap and water, or disinfectant, **before** taking gloves off.



7 Wash hands with soap and warm water **after** removing gloves.



HOW TO: CLEAN UP A DEAD MOUSE OR RAT IN A SNAP TRAP OR NEST

Use insect repellent (containing DEET) on clothing, shoes, and hands to reduce the risk of fleabites while picking up dead rodents.

Step 1: Wear rubber or plastic gloves.

Step 2: Spray the dead mouse, rat, nest or trap, and surrounding area with a disinfectant. Let it soak for 5 minutes.

Step 3: Place the dead rodent in a plastic bag along with any nesting materials or the trap.

Step 4: Tie the ends of the bag together into a knot to seal the bag. Place the full bag in a second plastic bag and seal that bag by tying the ends together into a knot.

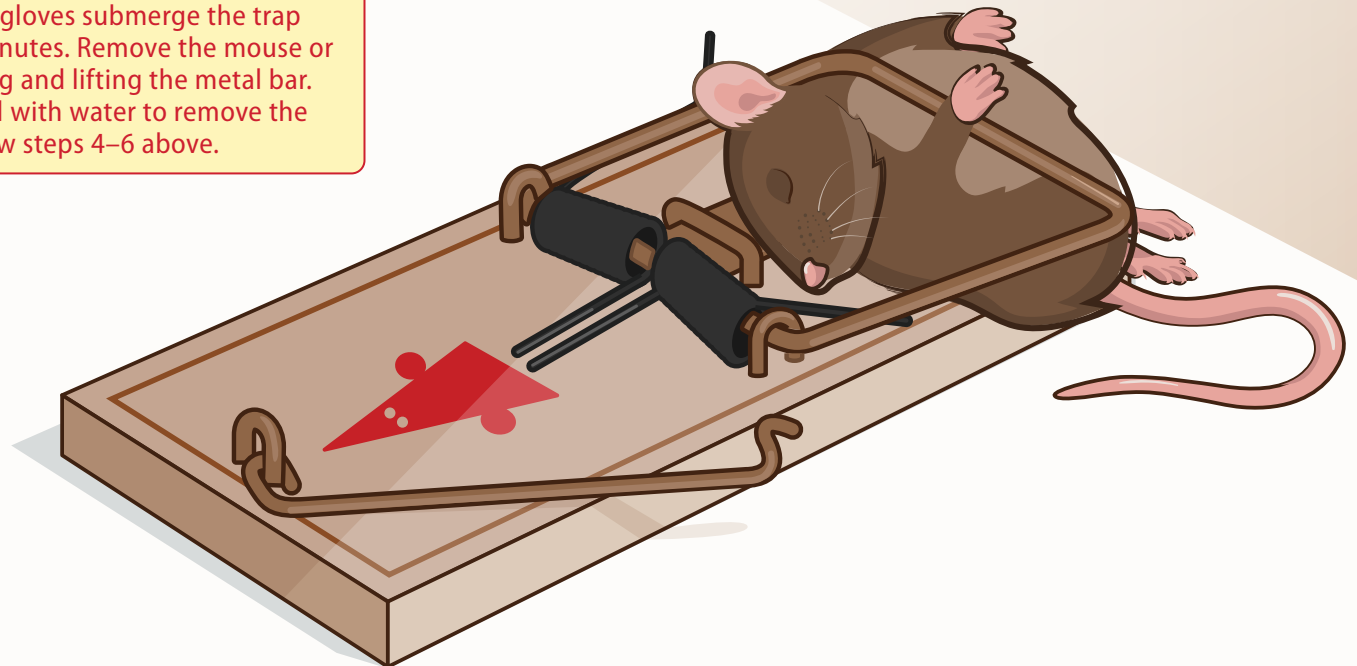
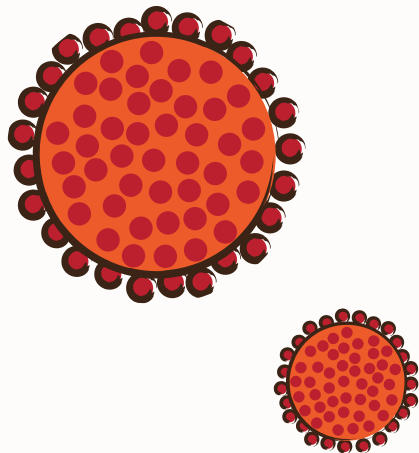
Step 5: Throw the bag into a covered garbage can that is regularly emptied, or contact your state health department for information on other ways to throw away dead mice and rats.

Step 6: Wash gloved hands with soap and water or a disinfectant before removing gloves.

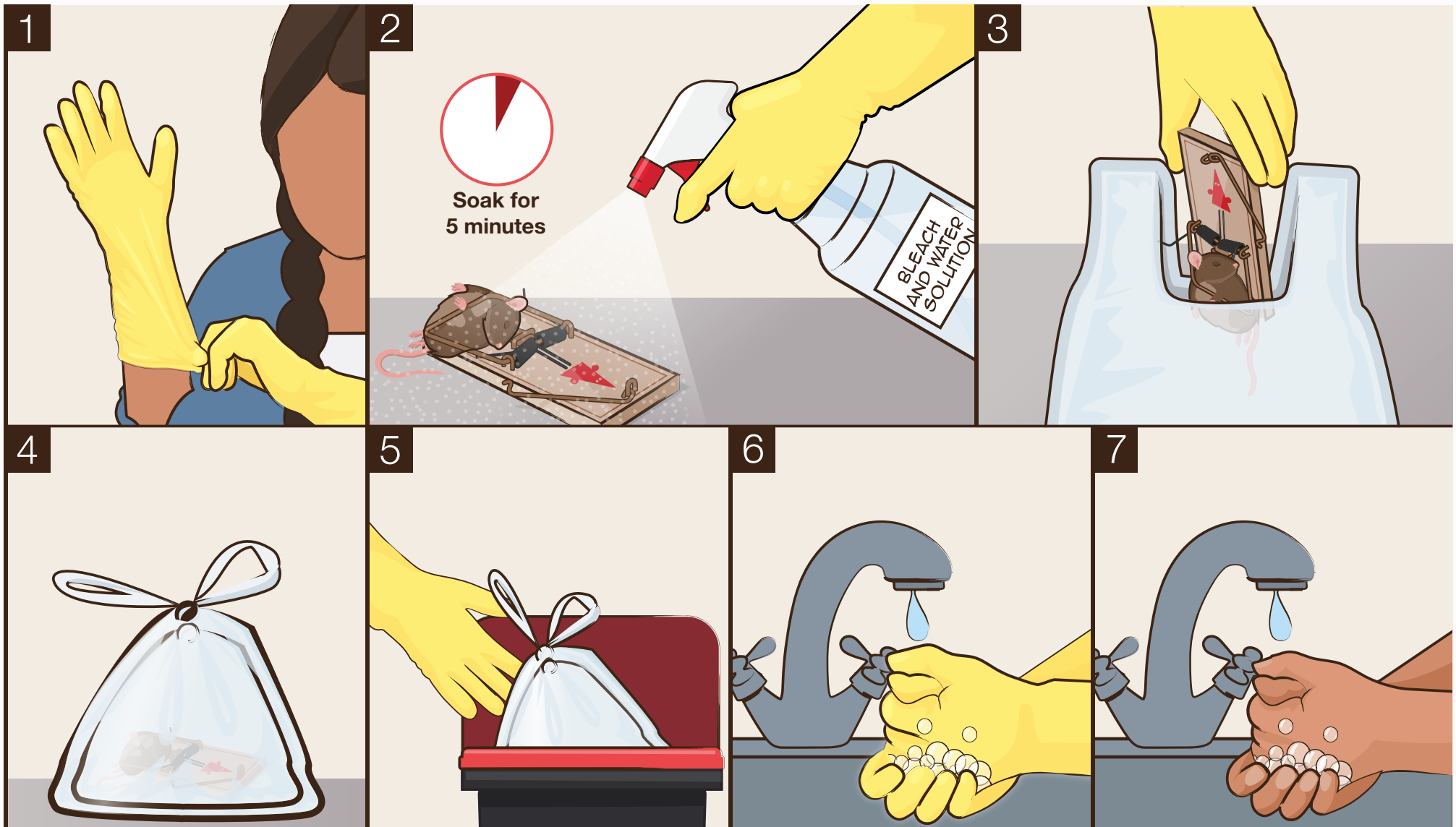
Step 7: Wash hands with soap and warm water after removing gloves.



If you plan to reuse the trap: While wearing rubber gloves submerge the trap with the rodent in disinfectant (using a bucket) for 5 minutes. Remove the mouse or rat from the trap by holding the trap over the plastic bag and lifting the metal bar. Let the mouse or rat drop in the bag. Rinse the trap well with water to remove the scent of the disinfectant and let it dry completely. Follow steps 4–6 above.



HOW TO: CLEAN UP A DEAD MOUSE IN A SNAP TRAP OR NEST



HOW TO: CLEAN OUT HOMES AND OUTBUILDINGS (SUCH AS CABINS, SHEDS, AND BARNs)

Prepare

- Open all doors and windows for 30 minutes before cleaning and leave the area during this time.
- Re-enter the area and look for rodent waste.
- Put on rubber or plastic gloves.

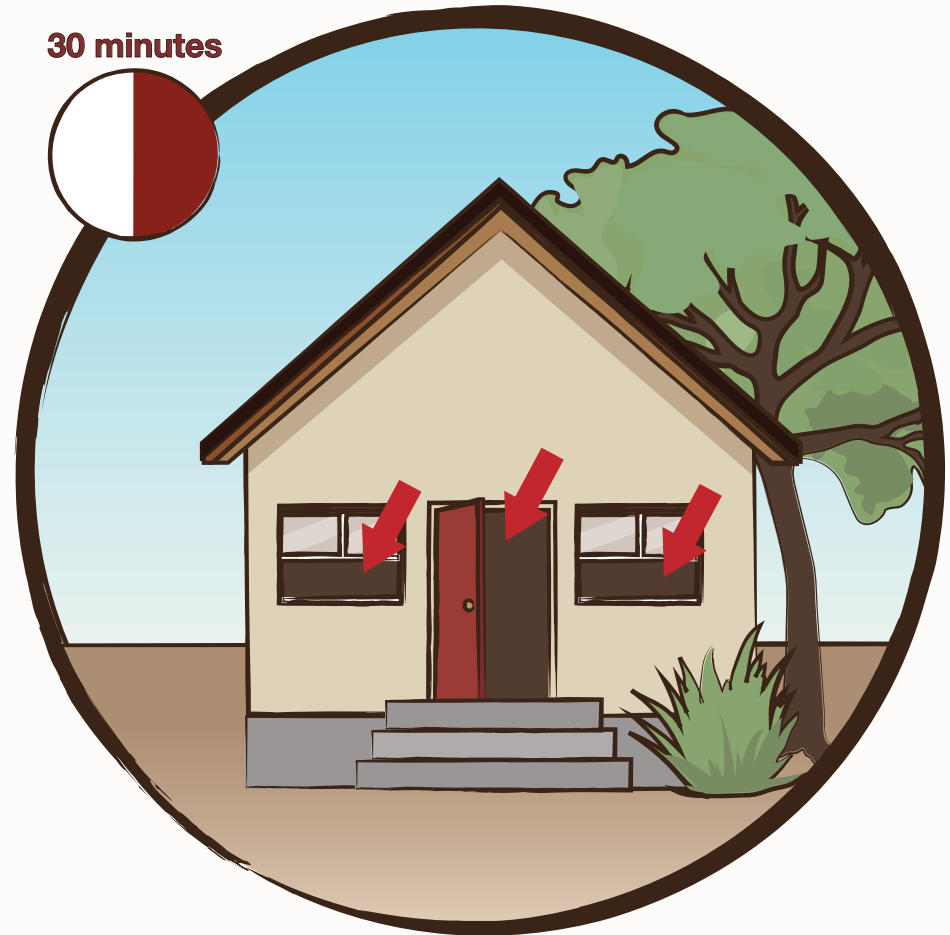
Disinfect

- Clean up all rodent urine, droppings, nests, or dead mice or rats by using a disinfectant as described earlier.
- Mop floors and/or spray dirt floors with disinfectant.
- Clean countertops, cabinets, and drawers with a disinfectant.
- Steam clean or shampoo rugs and upholstered furniture.
- Wash any bedding and clothing with laundry detergent in hot water if you see any mouse or rat urine or droppings on them.
- Leave items that cannot be cleaned with a liquid disinfectant (for example, books, and papers) outdoors in the sunlight for several hours, or in an indoor area free of rodents for a minimum of three weeks. (A longer period of six weeks is strongly suggested.) After that time, any virus that may be on the items should no longer be infectious.

Wash hands

- Wash gloved hands with soap and water or a disinfectant before removing gloves.
- Wash hands with soap and warm water after removing gloves.

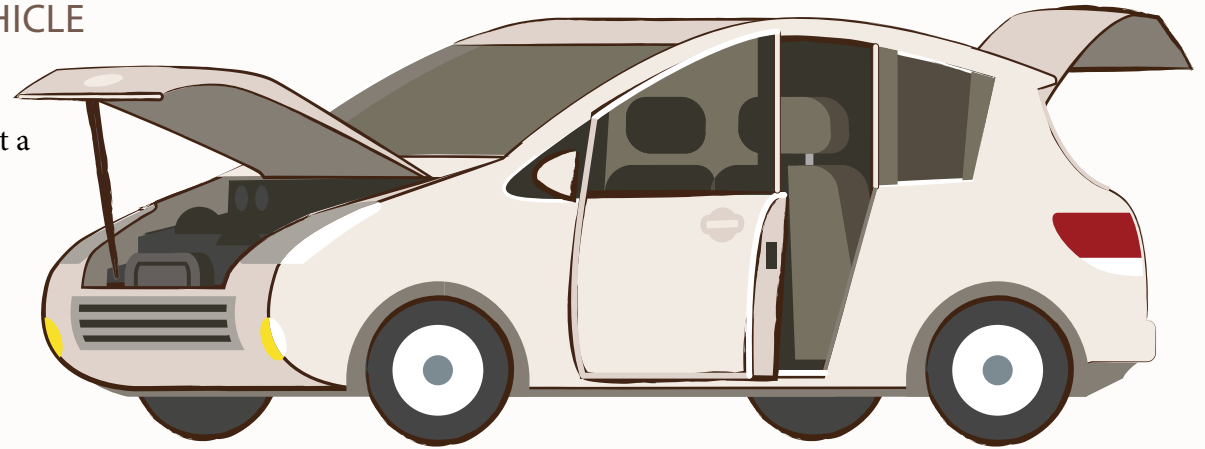
30 minutes



HOW TO: INSPECT, DETECT, AND DISINFECT A VEHICLE

Rodents may build their nests in cars, trucks, campers, and other vehicles, especially if such vehicles are used infrequently. Check and clean your vehicle to prevent the spread of hantavirus. Consult a qualified mechanic or automotive professional for assistance.

While the vehicle is in a well-ventilated space:



Inspect

Step 1: Open the hood, vehicle doors, and trunk to allow the engine compartment to air out for 20 minutes.

Step 2: Remove cables from the battery to avoid shock. Inspect the engine compartment for evidence of nest building (be sure to wear plastic gloves and a long-sleeved shirt).

Detect

Step 3: If you find dead rodents, nesting materials, or rodent waste (like urine or droppings), follow earlier instructions to clean them up the right way.

Do **NOT** use a vacuum or high-pressure sprayer on rodent urine, droppings, or contaminated surfaces until they have been disinfected.

Disinfect

Step 4: Spray materials with a disinfectant until fully soaked and let sit for 5 minutes.

Step 5: Use a paper towel to pick up the materials, and dispose of the waste in the garbage.

If you find nesting materials in the air intake system, remove both the nesting materials and the air filter, and discard in the garbage. Insert the new replacement filter, and close the unit.

Step 6: After the rodent droppings and nesting materials are removed, clean the rest of the area with additional disinfectant.

Step 7: Reconnect the battery when the area is dry.

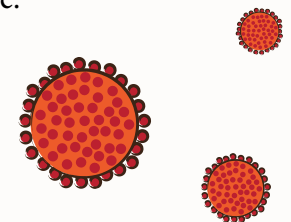
Step 8: Wash gloved hands with soap and water or a disinfectant before removing gloves. Then wash hands with soap and warm water after removing gloves.

Keep Your Passenger Compartment and Trunk Clean

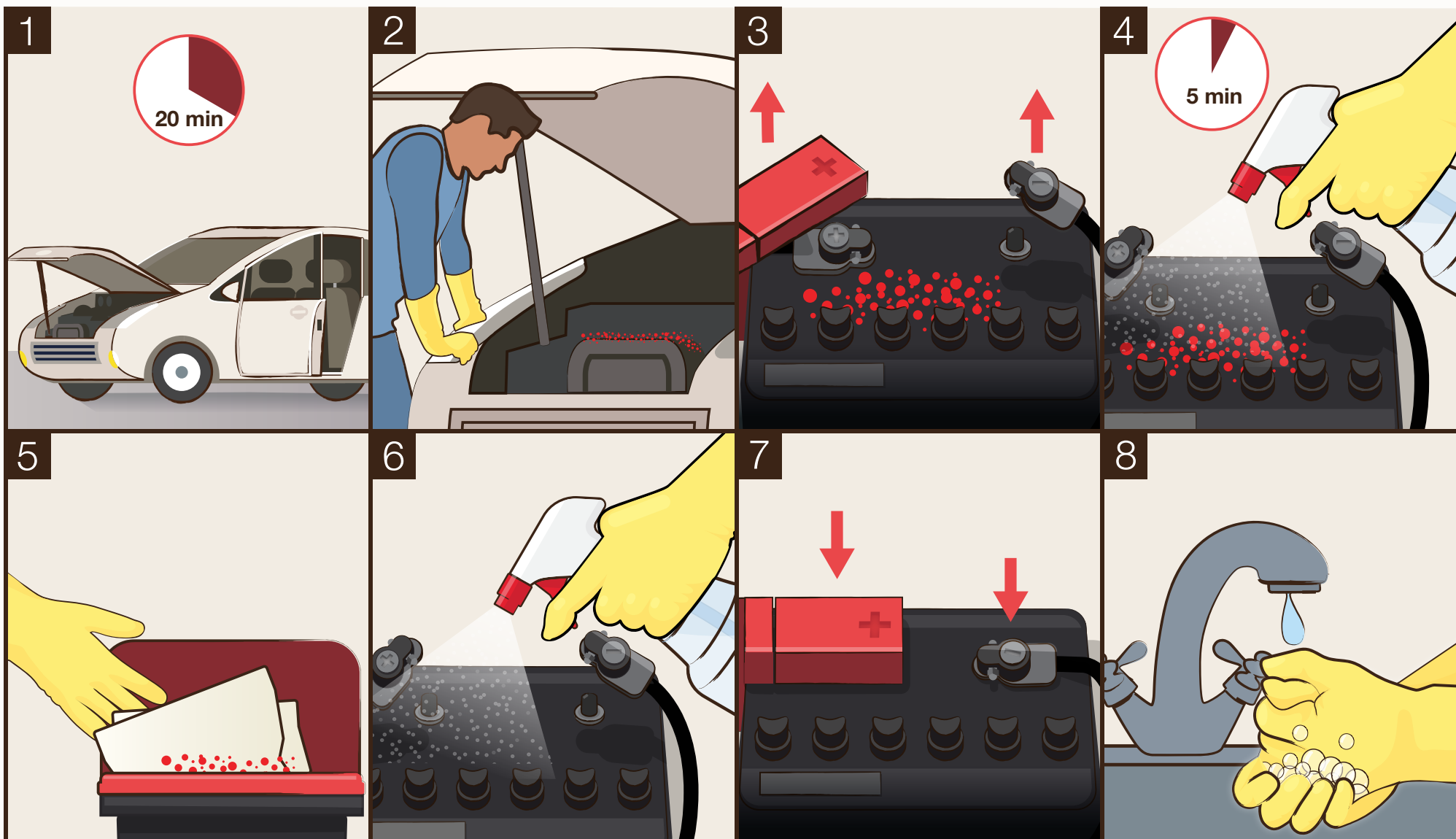
Rodents can enter the passenger compartment through ducting, rusted areas, and cable conduit. Do not leave any kind of food anywhere in the car, as it can attract rodents.

Prevent Colonization of Vehicles

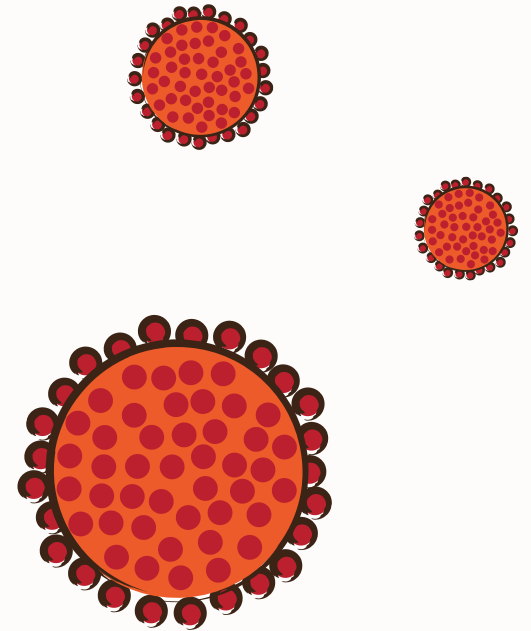
Snap traps and poison baits are effective in stopping rodent access into vehicles. When starting a vehicle that has been idle for an extended period, air it out first, and inspect the air intakes and filters before starting the engine.



HOW TO: INSPECT, DETECT, AND DISINFECT A VEHICLE







**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

For more information about hantavirus,
visit www.cdc.gov/hantavirus or contact
your state or local health department.