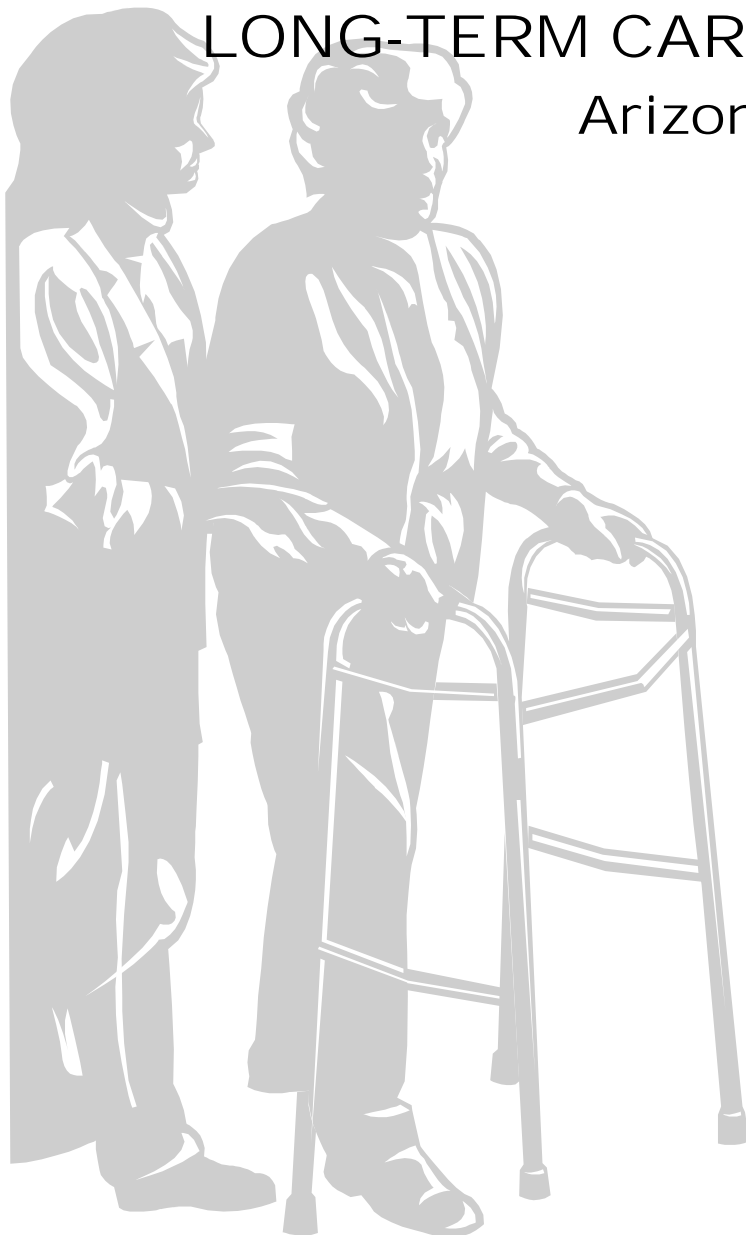


# NOROVIRUS OUTBREAK DETECTION AND MANAGEMENT

## GUIDANCE FOR LONG-TERM CARE FACILITIES Arizona



# Table of Contents

Norovirus Basics .....	2
Norovirus outbreak prevention, detection, and management .....	3
Outbreak prevention and detection.....	4
Outbreak response.....	5
Declaring an Outbreak Over.....	5
Appendix A: Control Measures.....	6
Appendix B: Forms and Tools .....	10
Line List Form.....	11
Log of Outbreak Cases.....	12
Facility Check-list.....	13
Basic Bleach Cleaning & Hand Washing Instructions.....	14
Appendix C: Laboratory Testing Guidelines .....	15
Appendix D: Notices and Information about Norovirus.....	17
Sign Template .....	18
Letter/Notice to Family Members and Visitors .....	19
Informational Handout .....	20
Appendix E: Contact Information.....	21

## ***Norovirus Outbreak Detection and Management, 2012***

### **Acknowledgements and References**

We would like to acknowledge and thank the Pima County Health Department for all their hard work developing this document. This guidance was adapted from materials developed by the Idaho Department of Health and Welfare, Colorado Department of Public Health & Environment, California Department of Health Services, Michigan Department of Community Health, the Williamson County Health District, and the Austin Travis County Health & Human Services Department.

## Norovirus Basics

Outbreaks of gastroenteritis in long term care facilities (LTCF) are not uncommon in Arizona. Noroviruses are most often the culprit and, due to the highly contagious nature of the virus, require immediate attention to prevent prolonged spread of the virus amongst residents and staff. Norovirus-associated gastroenteritis outbreaks can be detected early by recognizing the typical symptoms of illness, and can be controlled by taking specific infection control steps to prevent the virus from being transmitted from person-to-person.

### The Virus:

Noroviruses (formerly known as Norwalk-like viruses) are members of the virus family Caliciviridae. Noroviruses are single-stranded ribonucleic acid (RNA) viruses that are non-enveloped, making them difficult to eliminate (most disinfectants target an envelope which is missing in these viruses). Chlorine containing solutions are the most effective at eliminating norovirus contamination. Currently human Noroviruses belong to one of three genogroups (GI, GII, or GIV), each of which is further divided into greater than 25 genetic clusters. GII viruses are the most common type associated with outbreaks. Because there are many different circulating Noroviruses and immunity is not protective between circulating strains, Norovirus outbreaks may occur multiple times in the same facility. Norovirus characteristics are shown in the following table:

Characteristic	Observation	Consequences
Low infectious dose	<10 <sup>2</sup> viral particles	Permits droplet or person-to-person spread, secondary spread, or spread by foodhandlers
Prolonged asymptomatic shedding	≤2 weeks	Increased risk for secondary spread or problems with control regarding foodhandlers
Environmental stability	Survives ≤10 ppm chlorine, freezing, and heating to 60 C	Difficult to eliminate from contaminated water; virus maintained in ice and steamed oysters
Substantial strain diversity	Multiple genetic and antigenic types	Requires composite diagnostics; repeat infections by multiple antigenic types; easy to underestimate prevalence
Lack of lasting immunity	Disease can occur with reinfection	Childhood infection does not protect from disease in adulthood; difficult to develop vaccine with lifelong protection

Characteristics of "Norwalk-like viruses" that facilitate their spread during epidemics. From MMWR RR Vol 50 /No. RR-9, Table 1. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5009a1.htm>

## Incubation Period and Duration of Illness:

Illness begins between one to two days following exposure to a person who is ill or incubating the infection. Unless complicated by underlying illness, age, or dehydration, the illness is generally mild and of short duration (1-2 days). Some individuals may continue to feel weak. Short-lived immunity occurs only for that particular type of Norovirus following infection. Re-infections are possible. Cross-protection against other Norovirus types is not thought to occur.

## Signs and Symptoms of Norovirus-associated Gastroenteritis:

The main symptoms are:

- **Vomiting.** Vomiting, often projectile, is usually a prominent symptom and may be present in at least half of those ill.
- **Diarrhea.** Diarrhea tends to be watery, short-lived and less severe than diarrhea caused by bacteria. Bloody diarrhea is not a hallmark of *Norovirus* infection; therefore, a bacterial etiology should be explored if diarrhea is bloody.

Symptoms also may include:

- Nausea
- Headache
- Fever (usually low-grade)
- Chills
- Abdominal cramps

## Norovirus Transmission/Communicability:

Noroviruses are spread when material contaminated by stool or vomitus from an infected person is ingested. Noroviruses are **extremely infectious**. Excretion of virus in stool begins a few hours before the onset of symptoms and reaches a maximum 24-72 hours after exposure. The viruses can continue to be present in the stool of infected persons for a week or more, even after they recover or even if they have never been sick.

Noroviruses can remain infectious on environmental surfaces for many days and are relatively resistant to disinfection, heat, and cold. The virus can spread a number of ways:

- Person-to-person (fecal/oral, vomit/oral, vomiting will also suspend viral particles in the air resulting in contamination of the environment)
- Fomites (contaminated surfaces)
- Food
- Water (including ice)

## Outbreak Prevention and Detection

Inform employees of the importance of immediately reporting acute gastroenteritis and that they should not come to work or continue to work if they are sick. Strictly enforce hand washing and glove policies. Unfortunately, in some cases there may be little that can be done to prevent the initial introduction of the virus, since an infected person may be shedding the virus even before they are ill, or they may never become symptomatic.

Discuss routine infection control measures with residents and family members (Appendix A).

Establish and maintain a program of surveillance for gastrointestinal illness to detect an outbreak early:

- Conduct systematic surveillance for illness throughout the facility (not just for gastrointestinal illness). Extract data from patient charts to monitor for trends that may reveal an outbreak (i.e. people with similar symptoms over time).
- Immediately report staff or patients with diarrhea or vomiting to the Infection Control Practitioner, Director of Nurses or facility manager.
  - An outbreak of viral gastroenteritis should be suspected when two or more residents and/or staff have vomiting and diarrhea with onset within one to two days.
- If you suspect a reportable disease (e.g. *E. coli*, *Salmonella*, *Shigella*, *Campylobacter*) report to your local public health department (see Appendix E for contact information). Please note outbreaks of gastrointestinal illness are reportable. For a list of conditions reportable in Arizona go to: <http://www.azdhs.gov/phs/oids/pdf/rptlist.pdf>

## Outbreak Response

Rapidly implementing control measures at the first sign of a gastroenteritis outbreak can prevent additional cases. Interrupting person-to-person transmission controls the outbreak of viral gastroenteritis.

1. **Notify your local public health department within 24 hours** if an outbreak is suspected. The health department is available to assist LTCFs to investigate outbreaks, review appropriate control measures and facilitate collection of stool specimens for analysis.
2. Record and track cases using the *Log of Outbreak Cases* (Appendix B).
3. Work with your local health department to submit samples for laboratory testing (Appendix C).

**NOTE:** Decisions to institute control of a possible outbreak should not be delayed while waiting for laboratory test results.

4. Implement control measures (Appendix A).
5. Consult as needed with your local health department during outbreak response.

Facilities should be prepared to provide the following:

- List of current residents, with names, room and bed numbers, dates of birth;
- List of current employees, with job assignment (RN, LVN, CNA, , housekeeping), dates of birth, and home or cell phone number;
- List of cases, with names, room and bed numbers, dates of onset of symptoms, symptoms, hospitalization status

### **CDC Link:**

The following is a CDC link for guidelines for the prevention and control of norovirus outbreaks in healthcare settings, revised in 2011:

<http://www.cdc.gov/hicpac/pdf/norovirus/Norovirus-Guideline-2011.pdf>

## Declaring an Outbreak Over

It is recommended that the infection control activities mentioned throughout this document remain in place throughout the outbreak. The health department will typically declare an outbreak over when 2 days pass without new cases.

After the outbreak is over, consider screening new admissions for signs and symptoms of gastroenteritis. If present, isolate and place on standard and contact precautions immediately.

# Appendix A

## Control Measures

## Control Measures

### Hand Sanitation:

- Enforce frequent hand washing (using soap and water) among all residents, staff, and visitors.
  - Hands should be washed prior to meals or preparing food, before and after helping residents with activities of daily living (bathing, dressing, feeding, etc.), and after toileting.
- Frequent hand washing is the best prevention method. If soap and water are not available, hand sanitizing dispensers may be used as an alternative although it may not be as effective as traditional hand washing. (Use ethanol-based hand sanitizers (60-95%) as the preferred active agent compared to other alcohol or non-alcohol based hand sanitizer products during outbreaks of norovirus gastroenteritis.)

### Staffing:

- Keep ill employees home for at least 48 hours after vomiting and diarrhea stop. Virus shedding can occur for up to two weeks in stool.
- Employees returning after a gastrointestinal illness should be restricted from handling kitchenware or ready-to-eat food for 72 hours. Limit their contact with persons who are medically fragile or could be put at risk of severe complications if they were to contract a norovirus infection.
- Inform agency staff not to work at this facility or other facilities until 2 days (48 hours) after symptoms subside.
- Staff should not 'float' between units that are experiencing illness to ones that are not experiencing illness. This will minimize the chance of spread.
- Keep ill food service workers or servers from preparing or handling food.
- Pair employees who have recovered from the illness with currently ill residents.
- Maintain same staff-to-resident assignments.
- Discontinue floating staff from the outbreak-affected areas to unaffected areas.
- Exclude non-essential personnel from outbreak-affected wards.
- Wear gloves, masks, and disposable gown if available when caring for a patient after a vomiting or diarrhea accident.
- Wear gloves and gown when with ill residents; change gloves and gown between ill and well residents.
- Remove everything before leaving the room and wash hands immediately.

### New Admission/Transfers/Visitors:

- You may consider discontinuing new admissions to the facility until two days (48 hours) after the onset date of the last case. This can help keep the illness from re-entering your facility.
- Restrict visitors, especially children, until outbreak is over. Provide all visitors with information sheets on how they can limit their own risks of contracting norovirus (Appendix D).
- Ask family members and visitors with vomiting and/or diarrhea to stay home until symptom-free for at least 24 hours or more.



- Inform family members and healthcare providers in writing of ongoing transmission of gastrointestinal illness possibly attributable to norovirus (Appendix D).
- Post precautionary notifications on entrances and exits (Appendix D).
- Limit transfers out to only medically necessary transfers. (**NOTE:** EMS/patient transport, hospitals and other receiving facilities should be notified of the possibility of norovirus when transferring/ transporting patients from a facility experiencing cases of acute gastroenteritis).

### Group Activities:

- Close common dining room(s) and deliver meals to resident's rooms.
- Cancel group activities until outbreak is over.

### Separating Ill from Well:

- Ask sick residents to remain in their rooms until symptom free for 2 days (48 hours) or more
- If possible, move residents with vomiting or diarrhea to private rooms or to rooms with other patients with vomiting or diarrhea (cohorting).
- Do not transfer residents (symptomatic or not) from outbreak-affected wards to unaffected areas.
- Dedicate the use of patient-care equipment to a single resident or among similarly symptomatic residents. If the use of common equipment or items is unavoidable, clean and disinfect before another resident uses it.

### Environmental Cleaning and Disinfection:

- Perform deep cleaning of the facility, including common areas and resident rooms. Solution used for disinfection should contain chlorine.
- Increase routine cleaning, especially surfaces that are frequently touched.
  - Examples of items to disinfect (non-visibly soiled areas): doorknobs, faucets, sinks, toilets & flush lever, commodes, bath rails, phones, counters, chairs (including backs), tables, hand rails, elevator buttons, light switches, mattress covers, aprons, uniforms, linens, bedding, and ice machines.
- For large spills of vomitus or stool:
  - Pre-clean visible organic debris with absorbent material (double layer and placed in a plastic bag to minimize exposure to aerosols).
  - Liberally disinfect area and objects surrounding the contamination (multiple applications may be required).
  - For carpets/upholstered furniture, after pre-cleaning, clean with hot water and detergent and then steam clean (158 °F for 5 minutes or 212 °F for 1 minute) for complete inactivation of the virus. A professional carpet cleaning company is recommended to reduce the risk of aerosolizing virus. Dry vacuuming is not recommended.
- For linens/clothing that have been soiled, carefully remove them to minimize aerosols. Keep contaminated and uncontaminated clothes separated. Do not shake soiled laundry and linens. Soiled linens and laundry should be placed directly into a bag at the point of removal. Wash items in a pre-wash cycle, then use a regular wash cycle using detergent and dry separately from uncontaminated clothing at high temperature greater than 170° F. Ensure segregation of clean and soiled linens and clothing.

- Medical equipment used for care of norovirus infected patients should be either dedicated to that room for the duration of isolation or be thoroughly disinfected upon removal from the room. Consult terminal cleaning recommendations for your facility. Select a cleaning agent that is consistent with the equipment manufacturer's recommendations.
- The EPA recommends a list of disinfecting agents that are effective for norovirus at: [http://www.epa.gov/oppad001/list\\_g\\_norovirus.pdf](http://www.epa.gov/oppad001/list_g_norovirus.pdf). Read manufacturer's instructions/recommendations for appropriate contact time.
- **The use of chlorine bleach solution (sodium hypochlorite) is a preferred cleaning agent for surfaces.**
  - Concentrations of chlorine bleach used for disinfection: 1:10 dilution (1 $\frac{2}{3}$  cup standard, 5.25%, bleach per gallon of water)
  - Leave bleach on surface for 10-20 minutes, and then rinse with clean water.
  - Solutions should be made daily, or can be stored in a dark (light-proof) container and discarded after 30 days

### **If vomiting occurs in the kitchen or dining area:**

- Carefully remove all vomit and clean the area using the general cleaning principles described on page 8.
- Deep clean food preparation area (including vertical surfaces). Because thorough disinfection might be necessary, partial or complete closure of the food establishment should be considered after a vomiting incident.
- Any exposed food or single-service articles (e.g., drinking straws, takeout containers, and paper napkins) should be discarded, and all surface areas within at least a 25-foot radius of the vomiting site should be disinfected. Also, destroy food that was handled by an infected person.
- Report any incident of vomiting to the infection control team and appropriate managers.

# Appendix B

## Forms and Tools

Line List/Log of Outbreak Cases

Facility Check-list

Bleach Cleaning and Hand Washing Instructions

## Line List Form:

A line list form will be provided by the local health department for you to use or you can create your own as long as it has the minimum information of ill person's name, whether they are a staff member or resident, their room number, onset of illness date, recovery date, sex, age, symptoms, whether they visited an emergency department or were admitted to the hospital and the hospital name. Local health department staff members will ask that you keep this document updated regularly and provide a final copy at the conclusion of the outbreak.

## Log of Outbreak Cases

Location/Facility Name: \_\_\_\_\_ Earliest Date for Onset of Symptoms: \_\_\_\_\_

Facility Contact Name and Phone Number: \_\_\_\_\_

Name of Ill Person	Resident: Room #/Bed # Staff: Position & Shift	DOB/AGE	Sex	Date of symptom onset (include am/pm)	ED Visit (Y/N)	Hospital Admit (Y/N)	Where Hospitalized?	Abdominal Cramps	Fever	Diarrhea	Vomiting	Nausea	/Date Recovered	Date Specimen Submitted	Lab Results

## Gastroenteritis Outbreak Response Checklist Long Term Care Facilities

- Notify your local public health department of outbreak within 24 hours.

---

- Initiate tracking of outbreak cases using Log of Outbreak form.

---

- Limit or temporarily suspend new admissions or transfers.

---

- Limit transfers out to only medically necessary transfers (NOTE: EMS/patient transport, hospitals and other receiving facilities should be notified of the possibility of norovirus when transferring/transporting patients from a facility experiencing cases of acute gastroenteritis).

---

- Cancel group activities.

---

- Require ill employees to remain at home until they have been without symptoms for 48 hours. Upon their return to work, limit their contact with persons who are medically fragile or could be put at risk of severe complications if they were to contract a norovirus infection.

---

- Limit mingling of ill and non-ill residents. If possible, limit ill residents to their rooms for the duration of their illness.

---

- Perform deep cleaning of the facility, including common areas and resident rooms.

---

- Enforce strict hand washing and glove policies.

---

- Ensure universal precautions are followed by staff cleaning up vomitus/feces. Gowns and masks should be worn along with gloves.

---

- Inform family members and healthcare providers in writing of ongoing transmission of gastrointestinal illness possibly attributable to norovirus.

---

- Limit visitors. Provide all visitors with information sheets on how they can limit their own risks of contracting norovirus.

---

- Post precautionary notifications on entrances and exits.

---

- Remind staff, residents and visitors to frequently wash hands using soap and water

---

- After outbreak subsides, meet with staff to review response to outbreak. Identify any necessary updates to policies and procedures.

---

- Implement any necessary updates to policies and procedures.

## Basic Bleach Cleaning

1. Put on disposable gloves.
2. Fill a clean container with 1 gallon of water.
3. Is there contamination with vomit or stool?

Yes	No
Add 1 ½ cups bleach (5000 ppm solutions)	Add ½ cup bleach (1000 ppm solution)
4. Mix water and bleach in container.
5. If the surface is contaminated with vomit or stool, liberally soak the area in bleach solution before cleaning with disposable towels.
6. Apply bleach solution to surface and allow it to air dry.
7. Dispose of soiled paper towels and gloves in a plastic trash bag and place in garbage.

## Proper Hand Washing Instructions:

1. Wet your hands with WARM running water.
2. Add soap and rub hands together, front and back, between fingers and under nails for 20 seconds
3. Rinse. Dry hands with a clean paper towel.
4. Turn off water with used paper towel before you throw it away.
5. Use hand sanitizers with at least a 60% alcohol content when soap and water is not available.

### You should always wash your hands after:

1. (And before!) Handling food or eating.
2. Using the bathroom or changing diapers
3. Sneezing, blowing your nose, or coughing.
4. Touching a cut or open sore.
5. Playing outside or with pets.

**Handwashing is the Most Effective Way to Stop the Spread of Illness!**

# Appendix C

## Laboratory Testing Guidelines



## Laboratory Testing Guidelines for Norovirus

Consult with your local public health department Epidemiology Section to coordinate laboratory testing. The local health department will submit specimens to the Arizona State Public Health Laboratory for testing. The estimated turn around time is 3-5 days.

Most times the local health department will provide specimen collection kits along with instructions for the specimen collection procedure.

**Control measures should never be delayed while awaiting laboratory confirmation.**

### General Stool Specimen Collection Guidelines:

1. Specimens should be collected as soon as possible after the onset of illness, within 48 hours. Viral shed is greatest during this phase.
2. Collect one specimen from a minimum of four to a maximum of ten ill individuals in support of an outbreak investigation. Collect ~10 mL of stool from each ill individual.
3. Place fresh stool specimens (liquid preferable), unmixed with urine, in clean, dry containers. Do not place anything else in the container (Sample should be raw stool).
4. **IMPORTANT:** Complete the specimen label with name, date of birth, and date of collection. Unlabeled specimens will not be tested.
5. Immediately refrigerate specimen. All specimens must be stored cold (in refrigerator or cooler) until picked up.
6. For transportation of specimen, keep refrigerated. Place bagged and sealed specimens with ice or frozen refrigerant packs in an insulated box/cooler.
7. Contact your local health department for pick up.

**NOTE:** If the sample is left at room temperature, bacteria can grow and interfere with testing. Freezing the sample will limit what testing can be performed.

# Appendix D

## Notices and Information about Norovirus

Sign Template

Letter/Notice to Family Members and Visitors

Informational Handout

# NOTICE!

This facility is currently experiencing an outbreak of gastrointestinal illness.

We are working with the Local Health Department to contain and control the outbreak.

For the safety of our residents, family members, and guests, we are requesting that visitation be limited as much as possible.

If you must visit during this time, please check in at the front desk, sign in, and take an information sheet for your reference.

(Date)

Dear Family Member and Visitors:

The comfort, health, and safety of our residents are our highest priority. As you may be aware, a stomach illness known as “norovirus” has been identified in some of our residents this week. We are working diligently with public health authorities to prevent the spread of the virus. Information on norovirus has been attached for your review.

Please be assured that control measures are currently in place and that our staff members are closely monitoring all residents for signs of illness.

If you or a family member should experience nausea, vomiting, or diarrhea please follow-up with your medical provider and notify the Local Health Department at <health department phone number>. Should you have any additional questions, please feel free to call us at <facility phone number>.

Kindest regards,

(facility representative)

**Link to CDC Norovirus Fact Sheet:**

Norovirus in Healthcare Facilities Fact Sheet:

<http://www.cdc.gov/ncidod/dvrd/revb/gastro/downloads/noro-hc-facilities-fs-508.pdf>

## **Norovirus Fact Sheet**

### **What are noroviruses?**

Noroviruses or Norwalk-like viruses (NLVs) are a group of viruses that cause the “stomach flu,” or gastroenteritis, in people.

### **What are the symptoms of illness caused by noroviruses?**

Symptoms of norovirus illness usually begin about 24 to 48 hours after ingestion of the virus. The symptoms of norovirus illness usually include nausea, vomiting, diarrhea, and some stomach cramping with symptoms lasting only about 1 or 2 days. Sometimes people have a low-grade fever, chills, headache, muscle aches, and a general sense of tiredness.

### **How serious is norovirus disease?**

Sometimes people are unable to drink enough liquids to replace the liquids they lost due to vomiting and diarrhea. Sports drinks do not replace the nutrients and minerals lost during this illness. The very young, the elderly, and persons with weakened immune systems can become dehydrated and may need special medical attention.

### **How do people become infected with noroviruses?**

Noroviruses are found in the stool or vomitus of infected people. People can become infected eating food or drinking liquids contaminated with norovirus; touching surfaces or objects contaminated with norovirus, and then placing their hand in their mouth; having direct contact with another person who is infected and showing symptoms (for example, when caring for someone with illness, or sharing foods or eating utensils with someone who is ill).

### **Are noroviruses contagious?**

Noroviruses are very contagious and can spread easily from person to person. Both stool and vomitus are infectious. People infected with norovirus are contagious from the moment they begin feeling ill to at least 3 days after recovery. Some people may be contagious for as long as 2 weeks after recovery.

### **What treatment is available for people with norovirus infection?**

Norovirus infection cannot be treated with antibiotics. This is because antibiotics work to fight bacteria and not viruses.

### **Can norovirus infections be prevented?**

Yes. You can decrease your chance of coming in contact with noroviruses by frequently washing your hands, especially after toilet visits and changing diapers and before eating or preparing food; carefully washing fruits and vegetables, and steaming oysters before eating them; thoroughly cleaning and disinfecting contaminated surfaces immediately after an episode of illness by using a bleach-based household cleaner; immediately removing and washing soiled clothing or linens (use hot water and soap); flushing or discarding any vomitus and/or stool in the toilet and making sure that the surrounding area is kept clean.

# Appendix E

## Local Health Jurisdiction Contact Information

- [Apache County Health Department](#) – 928-337-7640 or 928-333-2415
- [Cochise County Health Department](#) – 520-432-9435 or 520-432-9437
- [Coconino County Public Health Services District](#) - 928-679-7222
- [Gila County Health Department](#) - 928-402-8802
- [Graham County Health Department](#) - 928-428-0110
- [Greenlee County Health Department](#) - 928-865-2601
- [La Paz County Health Department](#) - 928-669-9364
- [Maricopa County Department of Public Health](#) - All callers: 602-506-6767 (M-F 8 to 5), Medical providers only: 602.747.7111 (24 hours/7 days)
- [Mohave County Health Department](#) – 928-753-0714; 928-718-4927 (24 hr reporting line)
- [Navajo County Health Department](#) - 928-532-6057 M-Fri 7am-5:30pm; all other times 928-241-0960 or 928-243-2815
- [Pima County Health Department](#) - 520-243-7797
- [Pinal County Health Department](#) - 520-866-7325 or 520-866-7321; 520-866-6239 (24 hr reporting line)
- [Santa Cruz County Health Department](#) - 520-375-7900; 1-877-202-0586 (24 hr reporting line)
- [Yavapai County Health Department](#) - 928-771-3134
- [Yuma County Health Department](#) - 928-317-4624

## Arizona Department of Health Services Contact Information

- [Arizona Department of Health Services](#) – 602-364-3676; 480-303-1191 (24 hr reporting line)