

Acute Gastroenteritis: Adult

Gastrointestinal

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

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Background

Gastroenteritis, also known as enteritis or gastroenterocolitis, is an inflammation of the stomach and intestines that manifests as anorexia, nausea, vomiting, and diarrhea (Thomas, 2019).

Gastroenteritis can be acute or chronic and can be caused by bacteria, viruses, parasites, injury to the bowel mucosa, inorganic poisons (sodium nitrate), organic poisons (mushrooms, shellfish), and drugs (Thomas, 2019). Chronic causes include food allergies and intolerances, stress, and lactase deficiency (Thomas, 2019).

Gastroenteritis caused by bacterial toxins in food is often known as food poisoning and should be suspected when groups of individuals present with the same symptoms (Thomas, 2019).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- moderate dehydration (six to 10% loss of body weight), and blood pressure and mental status do not stabilize in the normal range within one hour of initiating rehydration therapy;
- severe dehydration (>10% loss of body weight);
- high fever and appears acutely ill;
- tachycardia or palpitations;
- hypotension;
- severe headache;
- blood or pus in stool;
- severe abdominal pain;
- abdominal distention;
- absent bowel sounds.
- altered mental status;
- older and immunocompromised clients; and/or

- severe vomiting (Interprofessional Advisory Group [IPAG], personal communication, October 20, 2019). The RN(AAP) should initiate an intravenous fluid replacement as ordered by the physician/NP or as contained in an applicable RN Clinical Protocol within RN Specialty Practices if any of the *Immediate Consultation* circumstances exist.

Classification of Gastroenteritis

| Infectious | Non-infectious |
|--|--|
| <p>Acute gastroenteritis is most often caused by an infectious agent. The most common mode of transmission is the fecal-oral route from contaminated food or water (Thomas, 2019). Bacterial pathogens cause approximately 30 to 80% of cases. Viral, and parasitic pathogens may also cause gastroenteritis (Huether, 2019).</p> <p>Common causes may include:</p> <p>Bacterial:</p> <ul style="list-style-type: none"> • <i>Campylobacter jejuni</i> • <i>Shigella</i> • <i>Salmonella</i> • Enterohemorrhagic <i>Escherichia coli</i> • <i>Clostridium difficile</i> (<i>C. difficile</i>) <p>Viral:</p> <ul style="list-style-type: none"> • Rotavirus • Norovirus <p>Parasitic:</p> <ul style="list-style-type: none"> • <i>Giardia lamblia</i> • <i>Cryptosporidium</i> | <p>Acute gastroenteritis can also be caused by dietary factors, medications, and metabolic factors such as:</p> <ul style="list-style-type: none"> • coffee, • tea, • sodas containing caffeine, • antacids, • antibiotics, • diabetes mellitus, • hyperthyroidism, • adrenal insufficiency. |

(Huether, 2019; Thomas, 2019)

Predisposing and Risk Factors

Predisposing and risk factors for acute gastroenteritis in adult clients include:

- recent travel to developing countries,
- immunocompromised clients,
- anal intercourse,
- residents of institutions or nursing homes,
- consumption of raw shellfish and seafood,
- consumption of contaminated food or water,
- crowded living conditions, and/or
- antibiotic and/or antacid use (Thomas, 2019).

Health History and Physical Exam

Subjective Findings

The circumstances of the presenting complaint should be determined. These include:

- onset (abrupt or gradual) and duration of symptoms;
- alleviating or provoking factors;
- contact with someone with similar symptoms;
- degree of nausea, vomiting, and diarrhea;
- fever;
- abdominal pain or cramping;
- fatigue, malaise, anorexia, tenesmus, borborygmus (presence of symptoms depends on underlying condition);
- symptoms of dehydration;
- characteristics of feces (frequency, amount, fluidity, and colour);
- diet history, including food intolerances;
- recent travel;
- exposure to animals (e.g., reptiles which may harbour Salmonella, pets with diarrhea, or a recent visit to a farm or petting zoo);
- source of drinking water;
- intake of untreated water (e.g., swimming in a stream or lake);
- medications (e.g., antibiotics, antacids);
- medical/surgical history;
- sexual practices, including anal intercourse;
- social history, including living conditions, illicit drug use, alcohol use; and/or
- family history (e.g., colon cancer, inflammatory bowel disease) (Thomas, 2019).

Objective Findings

The physical examination is usually normal in adults presenting with acute gastroenteritis, except for the gastrointestinal symptoms identified in Subjective Findings section (Thomas, 2019). The physical examination should look for signs of dehydration including:

- altered mental status;
- decreased capillary refill;
- decreased skin turgor which is tested on inner aspect of thighs or the skin overlying the sternum, and is less reliable in older clients due to decreased skin elasticity with age;
- dry mucous membranes of the tongue and oral mucosa;
- orthostatic hypotension, which is determined by taking supine blood pressure after the client is laying down for five to 10 minutes, and then taking the blood pressure as soon as the client sits or stands up, and again in this position after two to three minutes. A drop in systolic blood pressure ≥ 20 mmHg or a drop in diastolic blood pressure ≥ 10 mmHg from supine indicates orthostatic hypotension; and
- weight loss (Sterns, 2017).

The RN(AAP) should be cognizant that:

- classical signs of dehydration such as loss of skin turgor, increased thirst, and orthostatic hypotension have a low sensitivity in older adults.
- dehydration may cause atypical symptoms such as confusion, constipation, fever, and falls (Hooper, 2016; Huang, 2018; Sterns, 2017).

The following table can assist in determining the level of dehydration in adult clients, noting that moderate and severe dehydration require immediate consultation with a physician/NP.

Physical Findings in Association with Degree of Dehydration

| Clinical Sign | Mild Dehydration | Moderate Dehydration | Severe Dehydration |
|---|------------------------------|----------------------------------|-------------------------|
| Estimated fluid loss (% of body weight) | < 6% | 6-10% | > 10% |
| Level of consciousness | alert | lethargic | obtunded or comatose |
| Capillary refill | 2 sec | 2-4 sec | > 4 sec, cool limbs |
| Mucous membranes | normal | dry | parched, cracked |
| Heart rate | normal or slightly increased | increased | very increased |
| Respiratory rate/pattern | normal | increased | increased and hyperpnea |
| Blood pressure | normal | normal, but abnormal orthostatic | decreased |
| Pulse | normal | thready | faint or impalpable |
| Skin turgor (over sternum or inner aspect of thigh) | normal | slow | tenting |
| Eye appearance | normal | sunken | very sunken |
| Urine output | decreased | oliguria | oliguria/anuria |

(Huang, 2018)

Differential Diagnosis

The following should be considered as part of the differential diagnosis:

- viral infection,
- bacterial infection,
- parasitic infection,
- diet induced (e.g., excess consumption of alcohol or fruit),
- medication induced (e.g., current or recent antibiotic use, laxatives, supplements),
- irritable bowel syndrome (IBS),
- inflammatory bowel disease (Crohn's colitis, ulcerative colitis, ischemic colitis),
- ischemic bowel disease,
- partial bowel obstruction,
- pelvic abscess,
- malabsorption syndrome (e.g., lactase deficiency),
- acute psychosocial stress/anxiety,
- any surgical alteration of the GI tract, or
- complications from diabetes mellitus, small bowel diverticulosis, Whipple's disease, or chronic pancreatitis (Thomas, 2019).

Making the Diagnosis

Systematically ruling out all differential diagnoses through history, physical, and diagnostic testing where appropriate can help lead to a definitive diagnosis. Caution should be exercised in making the diagnosis and attributing gastrointestinal symptoms only to acute gastroenteritis. The following table may help identify the diagnosis.

Clues to Underlying Etiology

| Sign or Symptom | Potential Cause |
|--|--|
| Bloody stool | Bacterial pathogens such as: <ul style="list-style-type: none"> • <i>Shigella</i> • <i>Salmonella</i> • <i>Campylobacter</i> • Enterohemorrhagic <i>Escherichia coli</i> |
| Symptoms present after eating hamburger meat | <i>E. coli</i> |
| Persistent diarrhea (> 2 weeks) | ova and parasites |
| Recent travel to Russia, Nepal, Rocky Mountains or other mountainous regions | ova and parasites |
| Exposure to infants in a daycare centre | ova and parasites |

| Men who have sex with men | ova and parasites |
|---|---------------------|
| Sign or Symptom | Potential Cause |
| Symptoms after initiation of antibiotics and the month following completion | <i>C. difficile</i> |
| Vomiting as main symptom | viral pathogen |
| Suspected food or waterborne contamination | viral pathogen |
| Frothy stools and flatus | malabsorption |

(Thomas, 2019)

Investigations and Diagnostic Tests

Laboratory tests are not usually necessary in clients with non-bloody diarrhea and no evidence of systemic toxicity (Thomas, 2019). Selection of the appropriate tests is based on the history and physical exam (Thomas, 2019) as well as through consultation with a physician/NP, as in most cases clients requiring testing are acutely ill. Stool testing for culture and sensitivity, ova and parasites, and *C. difficile* toxin, may be considered in clients with severe bloody diarrhea, fever of $\geq 38.5^{\circ}\text{C}$ and symptoms on return from travel (Thomas, 2019).

Management and Interventions

Goals of Treatment

The primary goals of immediate treatment are to identify the cause, relieve symptoms, prevent complications (e.g., dehydration), and prevent transmission if the cause is determined to be infectious.

Non-Pharmacological Interventions

All clients who present with diarrhea require fluid and electrolyte management, particularly older adults and those who are immunocompromised. Refer to the CRNS *Dehydration Adult* Clinical Decision Tool for information on rehydration and oral rehydration solution.

The RN(AAP) should recommend, as appropriate, non-pharmacological options:

- dietary adjustments (avoid sorbitol, xylitol, lactose, or known food triggers);
- stop solid foods for a brief period (six hours) or eat small frequent meals slowly throughout the day if stool is frequent and watery or if vomiting occurs in association with diarrhea;
- drink eight to 10 cups of fluid per day through a combination of clear broths, oral rehydration solutions (e.g., Gastrolyte™), and a modest amount of hypotonic fluids (water, half-strength juices, weak tea);
- resumption of a normal diet as soon as tolerated;
- limit fried or fatty foods, and foods high in sugar;

- add sources of soluble fiber to bulk up stool; and
- avoid coffee, alcohol, most high fiber fruits and vegetables, red meats, and heavily seasoned foods initially (Gastrointestinal Society, 2018; Huether, 2019; RxFiles Academic Detailing, 2021).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of diarrhea are in accordance with the *RxFiles: Drug Comparison Charts* (RxFiles Academic Detailing Program, 2021), *Viral Gastroenteritis* (Stuempfig & Seroy, 2022), and *Infectious Gastrointestinal Disorders* (Thomas, 2019).

Pharmacological interventions are available to relieve symptoms, but routine use is discouraged when an infectious cause is suspected. Over-the-counter pharmacological options might be appropriate in the following mild to moderate cases only:

- an otherwise healthy adult,
- no fever,
- less than two days duration, and
- no blood in stool.

Anti-diarrheal Agents

Symptomatic treatment of acute diarrhea can decrease its occurrence by 50% and is most effective against secretory diarrhea. Antimotility drugs are the most frequently prescribed and most effective for symptomatic treatment of gastroenteritis. These drugs work by slowing intraluminal peristalsis thereby slowing passage of fluids through the bowel, facilitating absorption (Thomas, 2019).

| | Drug | Dose | Route | Frequency | Duration |
|--------------|-----------------------|---|-------|---|----------|
| Adult | | | | | |
| | Bismuth subsalicylate | 30 mL or 2 tabs | p.o. | q30 minutes prn to a maximum of 8 doses/day | 1-2 days |
| OR | Loperamide | 4 mg initially and then 2 mg after each loose bowel movement (maximum of 16 mg day) | p.o. | 4 mg once and then 2 mg after each bowel movement | 1-2 days |

Antiemetics

| | Drug | Dose | Route | Frequency | Duration |
|--------------|----------------|----------|-------|-----------|----------|
| Adult | | | | | |
| | DimenHYDRINATE | 25-50 mg | IM/IV | once | n/a |
| THEN | DimenHYDRINATE | 50 mg | p.o. | q4-6h prn | 1-2 days |

Antispasmodic

May help relieve abdominal cramping.

| | Drug | Dose | Route | Frequency | Duration |
|--------------|-----------------------|-------|-------|-----------|----------|
| Adult | | | | | |
| | Hyoscine butylbromide | 20 mg | IM/IV | once | n/a |

Client and Caregiver Education

The RN(AAP) provides client and caregiver education as follows:

- Counsel about the appropriate use of medications (dose, frequency, side effects, compliance, etc.).
- Inform that proper hand washing and safe disposal of waste products prevents the spread of infection (Thomas, 2019).
- Share strategies on how to prevent recurrent diarrhea (e.g., water purification as appropriate, which is to boil water for 20 minutes or use chlorine tablets or solution).
- Consume only safe food and beverages when traveling to high-risk areas (e.g., acidic foods such as unpeeled citrus fruits; dry foods such as breads and cereals; steamed foods and beverages; foods containing high amounts of sugar; bottled carbonated drinks) (Thomas, 2019).
- Recognize signs and symptoms of dehydration and to return to the clinic if they occur.
- Advise to temporarily discontinue any medications associated with diarrhea, if possible.
- Recommend pericare with a gentle cleanser and application of a moisture barrier cream, ointment or liquid barrier film, which may provide relief to the raw perianal area. Zinc oxide ointments can be used in severe cases (Brennan, Milne, Agrell-Kann, & Ekholm, 2017).

Monitoring and Follow-Up

The RN(AAP) should:

- Monitor hydration, general condition, and vital signs until stable.

- Advise follow-up in 24 hours (sooner if oral intake is not keeping up with losses) and encourage fluid intake after rehydration.
- Ensure adequate follow-up of hydration and nutritional status, especially in elderly clients.

Complications

The following complications may be associated with acute gastroenteritis:

- dehydration,
- electrolyte imbalance,
- metabolic acidosis,
- aspiration pneumonia,
- perforated esophagus, and
- weight loss (Huether, 2019).

Referral

Refer to a physician/NP if client presentation is consistent with those identified in the *Immediate Consultation Requirements* section, where there is diagnostic uncertainty, or who has not responded to treatment (IPAG, personal communication, October 20, 2019).

References

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