DHA TELEHEALTH CLINICAL GUIDELINES

FOR VIRTUAL MANAGEMENT

OF GASTROENTERITIS IN CHILDREN – 07

Version 2

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Health Policies and Standards Department

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INTRODUCTION

Health Regulation Sector (HRS) forms an integral part of Dubai Health Authority (DHA) and is mandated by DHA Law No. (14) of the year (2021) amending some clauses of law No. (6) of 2018 pertaining to the Dubai Health Authority (DHA), to undertake several functions including but not limited to:

- Developing regulation, policy, standards, guidelines to improve quality and patient safety and promote the growth and development of the health sector;
- Licensure and inspection of health facilities as well as healthcare professionals and ensuring compliance to best practice;
- Managing patient complaints and assuring patient and physician rights are upheld;
- Governing the use of narcotics, controlled and semi-controlled medications;
- Strengthening health tourism and assuring ongoing growth; and
- Assuring management of health informatics, e-health and promoting innovation.

The DHA Telehealth Clinical Guidelines aim to fulfil the following overarching DHA Strategic Priorities (2026):

- Pioneering Human-centered health system to promote trust, safety, quality and care for patients and their families.
- Make Dubai a lighthouse for healthcare governance, integration and regulation.
- Leading global efforts to combat epidemics and infectious diseases and prepare for disasters.

- Pioneering prevention efforts against non-communicable diseases.
- Become a global digital health hub.
- Foster healthcare education, research and innovation.

ACKNOWLEDGMENT

The Health Policy and Standards Department (HPSD) developed this Guideline in collaboration with Subject Matter Experts and would like to acknowledge and thank these health professionals for their dedication toward improving quality and safety of healthcare services in the Emirate of Dubai.

Health Regulation Sector

Dubai Health Authority

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EXECUTIVE SUMMARY

Telehealth is based on Evidence Based Practice (EBP) which is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence and guidelines from systematic research.

EBP is important because it aims to provide the most effective care virtually, with the aim of improving patient outcomes. As health professionals, part of providing a professional service is ensuring that practice is informed by the best available evidence.

This guideline is presented in the format comprising of clinical history/symptoms, differential diagnosis, investigations and management. Identification of 'Red Flags' or serious conditions associated with the disease is an essential part of this telehealth guideline as it aids the physician to manage patients safely and appropriately by referrals to ER, family physicians or specialists for a face to face management.

Acute gastroenteritis is a clinical syndrome often defined by increased stool frequency (≥3 loose or watery stools in 24 hours or a number of loose/watery bowel movements that exceeds the child's usual number of daily bowel movements by two or more), with or without vomiting, fever, or abdominal pain. It usually lasts less than one week and not longer than two weeks. Diarrhea that lasts >14 days is "persistent" or "chronic." Diarrhea that recurs after seven days without diarrhea is "recurrent." Acute viral gastroenteritis is caused by a viral pathogen. Acute gastroenteritis also may be caused by bacteria and parasites.

DEFINITIONS/ABBREVIATIONS

Virtual Clinical Assessment: Is the evaluation of the patient's medical condition virtually via telephone or video call consultations, which may include one or more of the following: patient medical history, physical examination and diagnostic investigations.

Patient: The person who receives the healthcare services or the medical investigation or treatment provided by a DHA licensed healthcare professional.

ABBREVIATIONS

AAP	:	American Academy of Pediatrics
C. belli	:	Cystoisospora belli
C. defficile	:	Clostridiodes difficile
DHA	:	Dubai Health Authority
EBP	:	Evidence Based Practice
E. Coli	:	Escherichia Coli
ER	:	Emergency Room
GI	:	Gastrointestinal
IV	:	Intravenous
NICE	:	The National Institute for Health and Care Excellence
ORT	:	Oral Rehydration Therapy
SIRS	:	Systemic Inflammatory Response Syndrome
UTI	:	Urinary Tract Infection

1. BACKGROUND

1.1. Acute viral gastroenteritis occurs throughout the year, with a fall and winter predominance in most temperate climates.

1.2. It can be transmitted by asymptomatic carriers as well as by symptomatic patients before the onset of symptoms. It is generally transmitted by the fecaloral route. The possibility of airborne transmission of rotavirus and norovirus has been suggested in some outbreaks. Illness usually begins 12 hours to five days after exposure and generally lasts for three to seven days.

1.3. Epidemiologic and clinical features of common causes of acute viral gastroenteritis in children

1.4. The most common causes of acute viral gastroenteritis in children include:

1.4.1. Rotavirus – usually occurs in children between six months and two years of age. fall and winter in temperate climates and throughout the year in tropical climates Rotavirus has historically been the most common cause of medically attended viral gastroenteritis in children. In countries that routinely immunize infants against rotavirus, rotavirus gastroenteritis has decreased substantially although some older children and adults develop symptomatic rotavirus disease post-vaccine years

1.4.2. Norovirus – occurs in people of all ages. It occurs year-round. Norovirus is highly contagious and the leading cause of outbreaks of gastroenteritis. Older

children and adolescents with severe acute gastroenteritis, especially as part of a common source outbreak (food, water source, or fomite), are more likely to have norovirus than other causes of acute gastroenteritis. Norovirus is, or is becoming, the leading cause of medically attended gastroenteritis in children in countries that immunize infants against rotavirus gastroenteritis.

1.4.3. Sapovirus –mainly affects infants and toddlers. It occurs year-round. The clinical illness is milder than that of rotavirus.

1.4.4. Astrovirus – it occurs in people of all ages. It may cause outbreaks in closed populations. Sporadic occurs primarily in children younger than four years. Astrovirus gastroenteritis usually occurs in the winter months.

1.4.5. Enteric adenovirus – Adenovirus gastroenteritis predominantly affects children younger than four years. It occurs throughout the year, with a peak in the summer.

1.4.6. Other viruses – Viruses that typically have extra-intestinal manifestations (e.g., coxsackievirus, echovirus, poliovirus, SARS coronavirus, influenza virus type B) also may cause mild gastroenteritis.

1.4.7. Mixed viral infections – Mixed viral infections are common, but the clinical significance of coinfection with multiple viruses is unclear.

2. SCOPE

2.1. Telehealth services in DHA licensed Health Facilities.

3. PURPOSE

3.1. To support the implementation of Telehealth services for children with complaints of Gastroenteritis in Dubai Health Authority (DHA) licensed Health Facilities

4. APPLICABILITY

4.1. DHA licensed physicians and health facilities providing Telehealth services.

4.2. Exclusion for Telehealth services are as follows

4.2.1. Emergency cases where immediate intervention or referral is required.

4.2.2. Prescribe Narcotics, Controlled or Semi-Controlled medications.

5. RECOMMENDATION

5.1. Most viral enteric infections are asymptomatic, but asymptomatic patients may transmit infection. Virtually every child has more than one symptomatic episode of acute GI before two years of age. In symptomatic children, the clinical manifestations include:

5.1.1. Diarrhea

5.1.2. Vomiting

5.1.3. Fever

5.1.4. Abdominal cramps

5.1.5. Anorexia

5.1.6. Headache

5.1.7. Myalgia

5.2. The findings vary by age, with young infants having fewer specific signs, from day to day and from person to person. Children may have only diarrhea or vomiting at first but with progression can become sufficiently ill to require hospitalization.

5.3. Illness generally begins 12 hours to five days after exposure and lasts for three to seven days. Vomiting usually lasts for one to two days and diarrhea for five to seven days. Stools are typically loose or watery; however, they may be normal in color or relatively pale colored. They may be odorless or have a characteristic odor. Gross blood or mucus in the stool are uncommon in viral gastroenteritis and should prompt consideration of a non-viral.

6. EVALUATION

6.1. Setting of evaluation: The evaluation of children with acute gastroenteritis may begin with a telephone call to assess whether the child needs to be seen in the clinic or the emergency department.

6.2. The focus of the telemedicine consultation:

6.2.1. Red flags

6.2.2. Dehydration assessment

6.2.3. The possibility of severe illness or condition other than acute gastroenteritis that requires specific therapy

6.2.4. Red flags to be ruled out:

a. Age <6 months or weight <8 kg (17 pounds 10 ounces)

b. Fever ≥38°C (100.4°F) for infants <3 months or ≥39°C (102.2°F) for children 3 to 36 months

c. Blood in stool, melena or mucus

d. Diarrhea for >7 days

e. Persistent vomiting

f. Neurologic abnormalities (lethargy, seizures)

g. Moderate to severe dehydration

h. Multisystem compromise and cardiovascular instability

i. Failure of oral rehydration

j. Underlying immunodeficiency or condition complicating the treatment or course of illness (e.g., malnutrition, diabetes mellitus or other metabolic disease)

6.2.5. Assessment of Dehydration

a. Refer to APPENDIX 1

6.2.6. Important aspects of the history for a child with acute gastroenteritis

a. Refer to APPENDIX 2

7. DIAGNOSIS

7.1. Clinical diagnosis — The diagnosis of acute viral gastroenteritis is made clinically; laboratory studies are not routinely necessary. Clinical features suggestive of viral gastroenteritis include:

7.1.1. Diarrhea (e.g., ≥3 loose or watery stools in 24 hours or a number of loose/watery bowel movements that exceeds the child's usual number of daily bowel movements by two or more), with or without vomiting, fever, or abdominal pain

7.1.2. Absence of gross blood and mucus in the stool

7.1.3. Absence of atypical features: findings more characteristic of bacterial or parasitic gastroenteritis, extraintestinal infections, or noninfectious conditions associated with diarrhea and vomiting. In children with atypical features, other causes of acute gastroenteritis, extraintestinal infections, and noninfectious causes of diarrhea and/or vomiting must be considered and may require exclusion (by history, targeted laboratory or imaging studies) before making the diagnosis of acute viral gastroenteritis.

8. DIFFERENTIAL DIAGNOSIS

8.1. Bacterial or parasitic gastroenteritis Non-virus enteritis pathogens (e.g., bacteria and parasites) account for approximately 30% of cases of acute GI in children; the proportion is lower in resource-rich countries and higher in resource-poor countries.

Clinical features that favor bacterial or parasitic gastroenteritis over viral gastroenteritis include:

8.1.1. Age >2 years – Bacterial and parasitic agents generally cause GI in children at an older age (e.g., 2 to 4 years), whereas viral pathogens more frequently cause serious GI in those younger than 2 years.

8.1.2. Gross blood or mucus in the stool – Gross blood or mucus in the stool is more suggestive of bacterial than viral GI but may occasionally occur in viral GI; occult blood (detected only by stool guaiac test) does not help to distinguish viral from bacterial GI.

8.1.3. High fever (i.e., >40°C [104°F]), tenesmus, central nervous system symptoms (e.g., seizures), severe abdominal pain, and smaller volume stools are more characteristic of bacterial pathogens, but high fever and seizures have been reported in rotavirus and norovirus GI.

8.1.4. Exposures (e.g., international travel, exposure to poultry or other farm animals, consumption of processed meat).

8.1.5. An elevated band count (if complete blood count is performed) is suggestive of bacterial gastroenteritis.

8.1.6. Bacterial causes of acute GI in children include:

a. Diarrheagenic E. coli

b. Salmonella

c. Shigella

d. C. difficile

e. Campylobacter jejuni

f. Campylobacter upsaliensis

g. Mycobacteria, such as Mycobacterium avium complex, particularly in immunocompromised patients)

8.1.7. Parasitic causes of acute gastroenteritis in children include:

a. Giardia

b. Cryptosporidium

c. C. belli (formerly known as I. belli)

d. Microsporidia and Cyclospora

8.1.8. Extraintestinal infections — Extraintestinal infections that may present with diarrhea and/or vomiting are listed below. These infections can usually be differentiated from acute gastroenteritis by their extraintestinal manifestations and/or specific laboratory tests (e.g., chemistry, cell count, and culture of cerebrospinal fluid; urinalysis and urine culture).

a. Meningitis – Characteristic features of meningitis include fever, altered level of consciousness, and meningeal signs.

b. Bacterial sepsis – Clinical features of sepsis include alterations in vital signs and white blood cell count indicating a systemic inflammatory

response syndrome (SIRS) in the presence of clinical or laboratory findings of infection.

c. Pneumonia – Clinical features of pneumonia include fever and symptoms or signs of respiratory distress (e.g., tachypnea, nasal flaring, grunting, retractions, crackles, decreased breath sounds).

d. Urinary tract infection (UTI) – Clinical features of UTI include suprapubic or flank tenderness, dysuria, urgency, and frequency.

e. Otitis media – Symptoms and signs of otitis media include ear pain, bulging of the tympanic membrane, and hearing loss.

8.1.9. Noninfectious conditions — A number of noninfectious conditions can present with symptoms that mimic those of infectious gastroenteritis. The approach to distinguishing these conditions from acute viral gastroenteritis is not covered in this Clinical Guidance.

9. COMPLICATIONS

9.1. Complications of acute viral gastroenteritis include:

9.1.1. Hypovolemia/dehydration – Severe dehydration that is not promptly addressed with rehydration may lead to shock, multiorgan dysfunction, and death, particularly in immunocompromised patients.

9.1.2. Acute viral gastroenteritis that requires medical attention for dehydration occurs predominantly in young children, particularly those younger than

two years. Young children are more susceptible to dehydration than older children because they have a higher body surface-to-volume ratio, a higher metabolic rate, lower fluid reserves, and depend upon others to provide fluids.

9.1.3. Electrolyte abnormalities and acid base disturbance (hypernatremia, hyponatremia, hypokalemia, metabolic acidosis)

9.1.4. This cannot be assessed via teleconsultation and will need investigation

9.1.5. Carbohydrate intolerance, particularly lactose intolerance

10. MANAGEMENT

10.1. Refer to APPENDIX 3 for the Virtual Management of Gastroenteritis in Children Algorithm

10.2. Overview — Acute viral gastroenteritis usually is self-limited. It is treated with supportive measures (fluid repletion and unrestricted diet)

10.3. Supportive treatment — The management of acute viral gastroenteritis is supportive. Fluid repletion and replacement of ongoing fluid losses are the goals of therapy, whether the child is managed at home, in the clinic/emergency department, or in the hospital.

10.4. Fluid repletion and maintenance — Initial therapy is directed toward correcting fluid deficit and electrolyte imbalance. Fluid repletion is based upon the degree of hypovolemia (dehydration). Children should be referred for Intravenous (IV) fluids

administration if dehydration is moderate to severe or if the patient is unable to take oral solutions

10.4.1. Mild dehydration – Oral rehydration therapy is the preferred first-line treatment for fluid and electrolyte losses in children with mild dehydration from acute gastroenteritis

10.4.2. Moderate to severe dehydration – Moderate to severe hypovolemia requires rapid isotonic fluid resuscitation in face to face health facility.

10.5. Diet Within the age-appropriate diet, complex carbohydrates, lean meats, yogurt, fruits, and vegetables are better tolerated than foods containing high levels of fats and simple sugars. Foods high in simple sugars (e.g., sugar sweetened beverages, some fruit juices) may increase stool output and the risk of hyponatremia because they increase the osmotic load and contain low concentrations of sodium and potassium. Diet advise to be given as follows:

10.5.1. First: During rehydration therapy:

a. Continue breastfeeding

b. Avoid hard solid foods

c. In children without red flag symptoms, do not give oral fluids other than oral rehydration solution. However, provide supplementation with the child's usual fluids (milk feeds or water) if they refuse ORS solution. (avoid fruit juices or carbonated drinks)

10.5.2. Second: After rehydration:

a. Provide full-strength milk directly

b. Introduce again the child's usual solid food

c. Avoid fruit juices and carbonated drinks until the diarrhoea is resolved

d. Avoid foods that are high in fat, such as fried foods, pizza, and fast foods.

10.6. Symptomatic therapy

10.6.1. Viral gastroenteritis is usually an acute and self-limited disease that does not require pharmacologic therapy.

10.7. Antidiarrheal agents

10.7.1. We suggest that antidiarrheal agents not be administered in the treatment of acute viral gastroenteritis. High-quality evidence of efficacy is lacking for most of these agents and there is a potential for serious side effects, as discussed below

10.8. Anti-motility drugs

10.8.1. Opiate receptor agonists, such as loperamide.

10.8.2. These drugs have potentially severe side effects, including lethargy, paralytic ileus, toxic megacolon, central nervous system depression, coma, and even death in less than 1%. In addition, because they delay transit time, they can prolong the course of bacterial diarrheas, such as

that caused by Shigella and Escherichia coli (Whether this also is true in viral gastroenteritis is unknown).

10.9. Anti-secretory drugs

10.9.1. These include racecadotril (Hidrasec).

10.9.2. Racecadotril, an enkephalinase inhibitor with anti-secretory actions, has shown promise as an adjunct to oral rehydration, demonstrating decreased stool output and duration of diarrhea.

10.10. Adsorbents

10.10.1. Hydrated aluminomagnesium silicates have the potential to bind digestive mucus and toxins and reduce water loss.

10.11. Antiemetic agents

10.11.1. Ondansetron: Ondansetron use in the routine management of children with acute viral gastroenteritis is not suggested. However, for children ≥6 months of age with suspected viral gastroenteritis, mild to moderate dehydration, and persistent vomiting that interferes with oral rehydration therapy (ORT), ondansetron (a selective serotonin 5-HT3 antagonist) to facilitate ORT is suggested. A single oral dose of ondansetron 0.15 mg/kg (maximum dose of 8 mg) is suggested.

10.12. Other antiemetics (e.g., phenothiazines, antihistamines [e.g., dimenhydrinate], dopamine receptor antagonists [e.g., domperidone], glucocorticoids [e.g.,

dexamethasone]) in the treatment of acute gastroenteritis in children is not suggested. Evidence to support their use is lacking and they may have adverse effects.

10.13. Phenothiazines (e.g., promethazine, metoclopramide) have the potential to cause extrapyramidal reactions, including dystonic reaction and oculogyric crisis. Domperidone has been associated with serious ventricular arrhythmias and sudden cardiac death.

10.14. Probiotics and prebiotics — Probiotics are live microbes that have the potential to benefit the host by altering intestinal flora. Prebiotics are substrates that are selectively utilized by host microorganisms conferring a health benefit; examples of prebiotics include fructooligosaccharides and inulin.

10.15. Decisions regarding the use of probiotics with or without prebiotics in children with acute viral gastroenteritis are made on a case-by-case basis after discussing the potential benefits and harms with the patient's caregivers.

10.16. Zinc supplementation — for the treatment of children with acute diarrhea in resource-rich country where zinc deficiency is rare and no benefit from zinc is expected.

10.17. Antivirus agent — No specific antiviral agents are available. Although randomized trials suggest that nitazoxanide, a thiazolide antimicrobial with activity against anaerobic bacteria, protozoa, and viruses, decreases the duration of symptoms in

children with viral gastroenteritis, additional studies are necessary before it can be considered for routine use. Antimicrobial agents are not indicated in the management of viral gastroenteritis. They should not be used unless diagnostic tests establish a treatable bacteria or parasite as the cause of the clinical syndrome and treatment is indicated. The routine use of antimicrobial agents may lead to increased antimicrobial resistance.

11. PREVENTION

11.1. Vaccines — Administration of rotavirus vaccine is the most effective way to prevent rotavirus gastroenteritis in children

11.2. General measures

11.2.1. Handwashing – Handwashing with soap by parent and child, especially after diaper changes or contact with vomitus, may decrease the spread of the viruses that cause acute gastroenteritis

11.2.2. Diaper changing – Diaper changing areas should be separate from food preparation areas. Diapers should be disposed of directly in the changing area and put in occlusive bags before moving outside the home. A wipe-down fluid for the changing area should be used; a reasonable choice is diluted household bleach prepared in a spray bottle – alcohol solutions have little effect on norovirus.

11.2.3. Water purification – Disinfection of water obtained from unsafe water sources is an important means of prevention of gastroenteritis. Methods suitable in the home for disinfection include boiling water for 10 minutes or addition of chlorine-containing tablets or solutions. Application of these interventions may be limited by cost or acceptability.

11.2.4. Return to child care or school — Resolution of diarrhea and absence of vomiting are the major factors that determine when the child can return to child care, including nurseries and similar settings, or school. In general, more restrictive exclusion recommendations are associated with decreased risk to other children. Children with diarrhea may attend child care or school, provided that:

a. Stools are contained in the diaper (for infants)
b. The child has no accidents using the toilet (for older children)
c. Stool frequency is less than two stools greater than the child's normal stool frequency

11.2.5. Children who have had ≥2 episodes of vomiting related to acute gastroenteritis in the previous 24 hours should be excluded until vomiting has resolved.

11.2.6. The NICE guideline recommends that children should be excluded from child care or school until ≥48 hours after the last episode of diarrhea or vomiting.

11.3. Return to water recreation — Children with diarrhea should avoid swimming and other water-related activities when they have diarrhea. The AAP recommends that children with acute viral gastroenteritis who are not toilet trained avoid swimming for one week after diarrhea resolves. NICE recommends that children should not swim in swimming pools for two weeks after the last episode of diarrhea

12. REFERRAL CRITERIA

12.1. Referral criteria include (Referral to Family Physician/ER):

12.1.1. Age <6 months or weight <8 kg (17 pounds 10 ounces)

12.1.2. Temperature ≥38°C (100.4°F) for infants <3 months or ≥39°C (102.2°F) for children 3 to 36 months

12.1.3. Visible blood in stool

12.1.4. Frequent and substantial volumes of diarrhea • Diarrhea for >7 days

12.1.5. Persistent vomiting

12.1.6. Moderate to severe dehydration

12.1.7. Failure of oral rehydration

12.1.8. Neurologic abnormalities (lethargy, seizures)

12.1.9. Possibility of severe illness or condition other than acute gastroenteritis that requires specific therapy (bowel obstruction)

12.1.10. Caregiver's report of symptoms of moderate to severe dehydration

12.1.11. Multisystem compromise & cardiovascular instability (Refer to ER)

12.1.12. Inability of the caregiver to administer or failure of the child to tolerate or respond to oral rehydration therapy at home

12.1.13. Underlying immunodeficiency or condition complicating the treatment or course of illness (e.g., malnutrition, diabetes mellitus or other metabolic disease)

12.1.14. Social circumstances that make telephone assessment unreliable

12.1.15. Clinical features suggesting extraintestinal involvement or another etiology

13. RESPONSE TO THERAPY

13.1. Monitoring response — The child must be evaluated to ensure the volume status is correcting properly.

13.2. Expected response — With appropriate fluid repletion, maintenance of hydration, and timely reintroduction of an age-appropriate diet, most children with acute viral gastroenteritis recover completely. Parents and caregivers should understand that diarrhea may last for ≥7 days.

13.3. Failure to respond or worsening — Conditions other than acute viral gastroenteritis must be considered in children who fail to respond to fluid therapy or whose clinical condition worsens despite fluid therapy. In this case, child should be referred to face to face consultation.

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APPENDICES

APPENDIX 1 - ASSESSMENT OF DEHYDRATION

No Clinically Detected Dehydration	Clinical Dehydration *This category represents a spectrum of increasing dehydration severity. With worsening dehydration clinical manifestations may be expected to become more numerous and severe*	Clinical Shock
Symptoms		
Well Child	Perceived to be unwell or deteriorating	
Normal conscious state	Excessive or unaccustomed irritability or lethargy	Depressed conscious state
Normal level of thirst	Increased thirst	
Normal urine output	Decreased urine output	
Normal skin color and feet	Normal skin color	Pale or mottled skin
Warm hands and feet	Warm hands and feet	Cold hands and feet
Signs (Face-to-Face Assessment)		

Normal conscious state	Irritability or lethargy	Depressed conscious state
Normal skin color and warm peripheries	Normal skin color and warm peripheries	Pale or mottled skin and/or cold peripheries
No sunken eyes	Sunken eyes	
Moist mucous membranes	Dry mucous membranes	
Normal fontanelle	Depressed fontanelle	
Normal heart rate	Tachycardia	Tachycardia
Normal breathing pattern	Tachypnea	Tachypnea
Normal peripheral pulses	Normal peripheral pulses	Weak peripheral pulses
Normal capillary refill time	Normal capillary refill time	Prolonged capillary refill time
Normal skin turgor	Reduced skin turgor	
Normal blood pressure	Normal blood pressure	Hypotension (decompensated shock)

APPENDIX 2 – IMPORTANT ASPECTS OF THE HISTORY FOR A CHILD WITH ACUTE GASTROENTERITIS

Historical Features	Potential Significance
Duration of illness	Symptoms >7 days may indicate: • Underlying GI or metabolic disease, or • Systemic disease (e.g., IBD, celiac disease, immunodeficiency)
Frequency, volume, and character of stools (e.g., blood mucus)	• Frequent, watery, large volume without blood or mucus favors viral GI • Small volume, gross blood, or mucus favors bacterial GI • Blood or mucus also may occur with intussusception, appendicitis, toxic megacolon
Frequency, volume, and character of emesis (e.g., blood, bile, projectile)	• Prolonged vomiting increases risk of dehydration and concern for underlying systemic or metabolic disorder • Bilious or projectile vomiting may indicate intestinal obstruction (e.g., intussusception, pyloric stenosis) • Hematemesis may suggest esophageal injury or varices (with underlying liver disease)
Weight before illness	• Used to assess degree of dehydration and response to fluid repletion
Urine output	• Decreased: suggests dehydration • Increased: may indicate diabetes ketoacidosis
Associated symptoms: fever, headache, localized abdominal pain, urinary complaints, and others	• May suggest alternate etiology (e.g., urinary tract infection, appendicitis, and others)
Recent intake of food and fluids	• Used to assess degree of dehydration and other causes of diarrhea (e.g., starvation stools, food poisoning, food allergy/intolerance, overfeeding [particularly with hyperosmolar fluids])
Underlying medical problems	• May increase risk of complications

Recent medications (particularly antibiotics) and medications in the home	• May be associated with vomiting or diarrhea • Clinical manifestations of certain ingestions may mimic findings of acute GI (e.g., tachypnea and acidosis in salicylate ingestion)
Immunization history (particularly rotavirus)	• Rotavirus immunization decreases likelihood of rotavirus GI (even after one dose) • Incomplete pneumococcal or *Haemophilus influenzae* type b immunization may increase likelihood of extraintestinal infection with these organisms (e.g., otitis media, pneumonia, meningitis)
Contacts with acute diarrhea or vomiting	• Supports infectious GI, may suggest a common source outbreak • Symptoms may suggest etiology (e.g., prominence of vomiting suggests norovirus)
Exposures: • Known source of enteric infection (e.g., contaminated food or water) • Unsafe foods (e.g., raw/undercooked meats, eggs, shellfish, unpasteurized milk or juice) • Swimming in or drinking untreated fresh surface water • Farm, petting zoo, reptiles, pets with diarrhea • International travel	• Increases risk of bacterial or parasitic gastroenteritis

APPENDIX 3 – VIRTUAL MANAGEMENT OF GI IN CHILDREN ALGORITHM