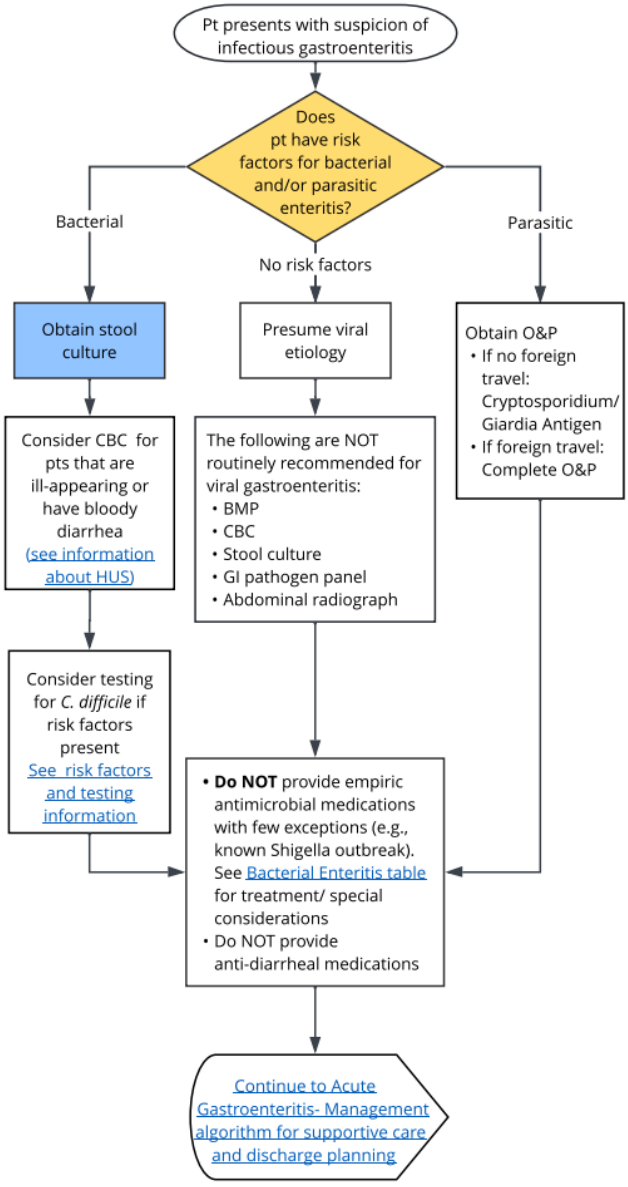
Acute Gastroenteritis
Clinical Pathway Synopsis

Acute Gastroenteritis- Diagnostic Algorithm

Inclusion criteria:
- Pt ≥ 3 months of age
- Diarrhea of recent onset < 7 days
- With or without vomiting, fever, nausea, or abdominal pain

Exclusion Criteria
- Pt < 3 months of age
- Immunocompromised
- Toxic appearance (consider sepsis and refer to Sepsis pathway)
- Vomiting with no diarrhea for > 24 hours
- Bilious emesis (*consider bowel obstruction*)
- Acute surgical abdomen
- Head injury
- Chronic disease (e.g., renal failure, inflammatory bowel disease, liver disease)
- Admission to intensive care unit

Routine stool culture includes:
- Culture for:
  - *Salmonella* sp.
  - *Shigella* sp.
  - *Yersinia* sp.
  - *Campylobacter* sp.
  - *E. coli* 0157:H7
- Shiga-toxin testing for enterohemorrhagic *E. coli* (Note: rectal swabs are not accepted for Shiga-toxin testing at CMH lab)



Risk factors for Bacterial Enteritis (excluding *C. difficile*):
- Bloody diarrhea
- Close contact to person with bacterial gastroenteritis (household, daycare)
- Animal exposure: farm animals, petting zoo, pet reptiles, new pets
- Undercooked meat or poultry, unpasteurized dairy products, raw shellfish
- Community outbreaks of specific bacterial gastroenteritis
- International travels in the past month
- Ingestion of potentially contaminated water (from pools, lakes, streams, ponds, etc.)

Risk factors for Parasitic Enteritis:
- Bloody diarrhea with international travel (*Entamoeba histolytica*)
- Close contact to a person with parasitic gastroenteritis
- Community outbreaks of specific parasitic gastroenteritis (especially Cryptosporidium)
- International travels in the last month
- Ingestion of potentially contaminated water (from pools, lakes, streams, ponds, etc.)

QR code for mobile view

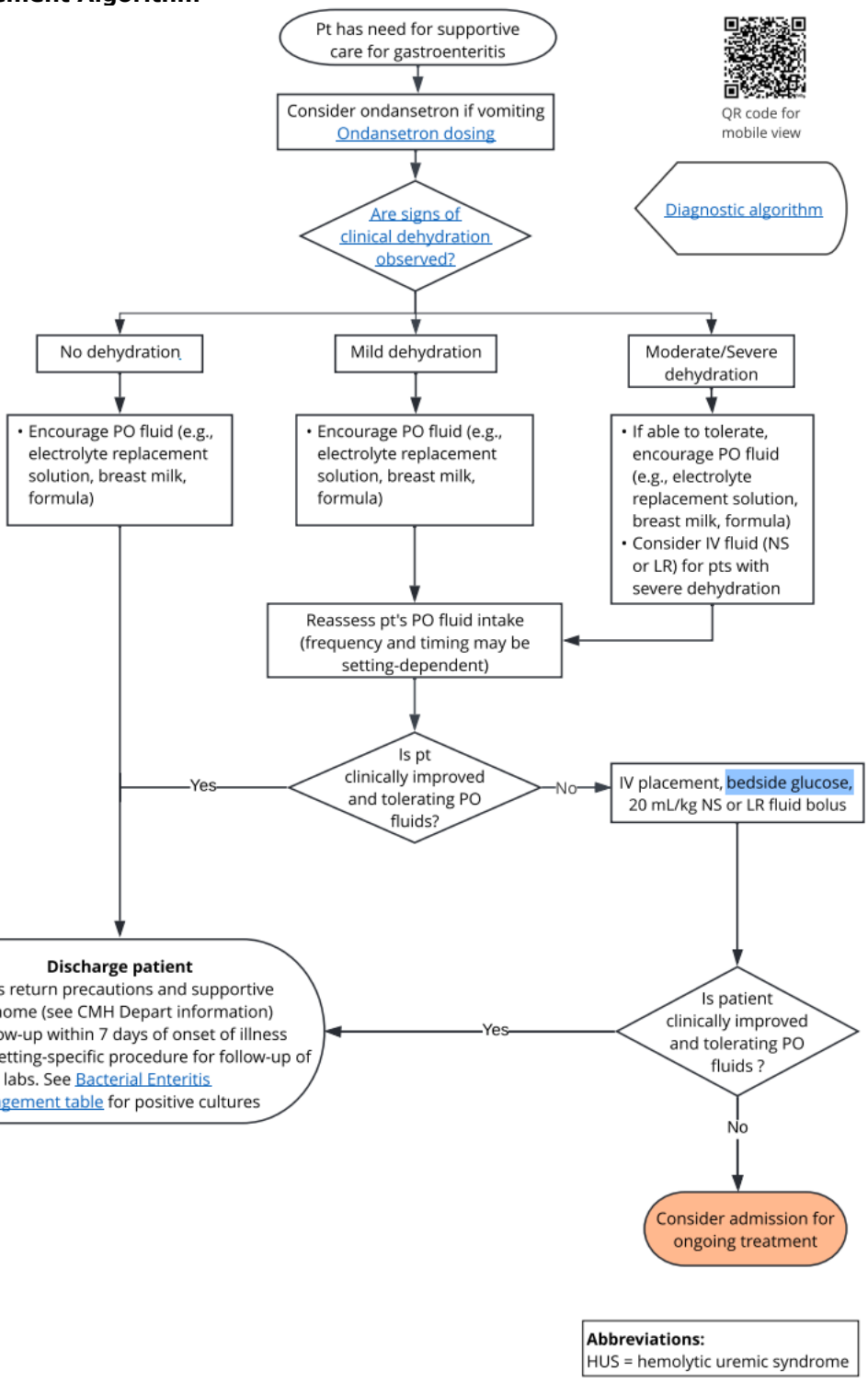
Abbreviations:
HUS = hemolytic uremic syndrome
O&P = ova and parasites

** These clinical pathways do not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare a clinical pathway for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.*

Acute Gastroenteritis- Management Algorithm

Inclusion criteria:
- Pt ≥ 3 months of age
- Diarrhea of recent onset < 7 days
- With or without vomiting, fever, nausea, or abdominal pain

Exclusion Criteria
- Pt < 3 months of age
- Immune compromised
- Toxic appearance (consider sepsis and refer to Sepsis pathway)
- Uncompensated hypovolemic shock
- Vomiting with no diarrhea for > 24 hours
- Bilious emesis (*consider bowel obstruction*)
- Acute surgical abdomen
- Head injury
- Chronic disease (e.g., renal failure, inflammatory bowel disease, liver disease)
- Need for intensive care unit



Management of hypoglycemia
- POC blood glucose < 70
- Treat with 15 g of glucose PO (4 ounces of juice or gel)
- If not tolerating any PO, treat with D10 IVF bolus
- Repeat blood glucose in 15 minutes
- Repeat treatment if needed

Inpatient Management:
- Continue isotonic IV fluids while not tolerating PO
- Reconsider diagnostic algorithm
- Avoid NSAIDS and other potentially nephrotoxic medications or IV contrast
- Daily weights
- Strict measurement of intake and urine output
- If concerned for acute kidney injury, obtain BMP
- If concerned for HUS, obtain CBC and BMP (see information about HUS)

Abbreviations:
HUS = hemolytic uremic syndrome

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Table of Contents

Objective of Clinical Pathway

To provide care standards for the patient presenting with acute gastroenteritis. The aim of this clinical pathway is to provide guidance for the diagnosis of viral, bacterial, and parasitic gastroenteritis, the management of associated symptoms such as dehydration, vomiting, and hypoglycemia, and considerations for treatment and follow-up care.

Background/Epidemiology

Acute gastroenteritis is one of the most common causes of outpatient pediatric visits in the United States with an estimated 30-day prevalence of 7.8% in children < 5 years of age and 3.3% in children 5-17 years of age (Schmidt et al., 2022). Implementation of the rotavirus vaccine reduced the burden of illness in children (Leshem et al., 2014), but viral infections remain the most common etiology. While most patients with viral gastroenteritis do not require medical intervention for this self-limited disease, some are in need of management of their dehydration, vomiting, and/or hypoglycemia. It is for these patients that avoiding laboratory and diagnostic studies may increase the value and quality of their care. While less common, bacterial etiologies require more nuanced consideration of treatments and of potentially severe complications (e.g., hemolytic uremic syndrome). The most common bacterial pathogens in children are *Salmonella enterica* subsp. (42%), *Campylobacter* sp. (28%), *Shigella* sp. (21%), *Yersinia* sp. (5%), and *E. coli* O157 (3%) (Shane et al., 2017). Parasitic disease is often associated with travel to endemic regions or exposure to contaminated water. Assessing patients for risk factors for bacterial or parasitic disease guides diagnostic and follow-up plans.

Target Users

- Physicians (Emergency Medicine, Urgent Care, Hospital Medicine, Primary Care Clinic, Fellows, Residents)
- Nurse Practitioners
- Nurses

Target Population

Inclusion Criteria

- Patients ≥ 3 months of age
- Diarrhea of recent onset within the last 7 days, with or without vomiting, fever, nausea, or abdominal pain

Exclusion Criteria

- Patients < 3 months of age
- Immunocompromised
- Toxic appearance (consider sepsis and refer to Sepsis pathway)
- Vomiting with no diarrhea for > 24 hours
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- Acute surgical abdomen
- Head injury
- Chronic disease (e.g., renal failure, inflammatory bowel disease, liver disease)
- Admission to intensive care unit

Practice Recommendations

A clinical practice guideline has not been established for the care process for pediatric patients presenting with acute gastroenteritis. Practice recommendations are based on consensus among providers with knowledge of the existing evidence and expertise in the examination, diagnosis, and treatment of patients presenting with suspected acute gastroenteritis. Recommendations for the diagnostic pathway were informed by the Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Management of Infectious Diarrhea (Shane et al., 2017) though the scope of the IDSA guideline is much broader than this pathway. The chapters in *Red Book: 2021–2024, Report of the Committee on Infectious Diseases* (American Academy of Pediatrics [AAP], 2021) relevant to the diagnostic pathway and bacterial enteritis treatment guidance were also used as a reference in development.

Additional Questions Posed by the Clinical Pathway Committee

No clinical questions were posed for formal literature review.

Updates from Previous Versions of the Clinical Pathway

- Establishment of a diagnostic algorithm to differentiate viral, bacterial, and parasitic gastroenteritis.
- Provide guidance for treatment and special considerations for patients diagnosed with bacterial enteritis specific to pathogen.
- Provide diagnostic and treatment guidance for patients with bloody diarrhea with concern for hemolytic uremic syndrome (HUS).

Recommendation Specific for Children's Mercy

Practice recommendations, which were based on expert opinion, include:

- Identification of risk factors for bacterial or parasitic enteritis
- Laboratory testing guidance for infectious gastroenteritis
- Treatment and follow-up recommendations
- Assessment and treatment of dehydration, including admission and discharge criteria

Measures

- Utilization of Acute Gastroenteritis Clinical Pathway and associated power plans
- Utilization of appropriate laboratory testing

Value Implications

The following improvements may increase value by reducing healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families and reducing costs and resource utilization for healthcare facilities.

- Decreased in unnecessary laboratory studies for viral gastroenteritis
- Decreased risk of overtreatment (i.e., antibiotic treatment for viral gastroenteritis)
- Decreased risk of underdiagnosis of bacterial gastroenteritis which may lead to increased spread of disease or complications
- Decreased frequency of admission
- Decreased unwarranted variation in care

Organizational Barriers and Facilitators

Potential Barriers

- Variability of acceptable level of risk among providers
- Challenges with follow-up faced by some families

Potential Facilitators

- Collaborative engagement across care continuum settings during clinical pathway development
- High rate of use of the clinical pathway
- Standardized order set for Urgent Care Clinic, Emergency Department, and Hospital Medicine

Diversity/Equity/Inclusion

Our aim is to provide equitable care. These issues were discussed with the Committee, reviewed in the literature, and discussed prior to making any practice recommendations.

Power Plans

- EDP Acute Gastroenteritis Pathway
  - Subphases: No dehydration, Some dehydration, Moderate/Severe dehydration
- ED Gastroenteritis Pathway Quick Discharge
- Gastroenteritis Pathway (inpatient)

Associated Policies

- There are no policies associated with this clinical pathway.

Education Materials

- Acute Gastroenteritis, Gastroenteritis, and Diarrhea care instructions
  - Intended to be customized to the individual patient
  - Found in Cerner depart process
  - Available in English and Spanish

Clinical Pathway Preparation

This pathway was prepared by the Evidence Based Practice (EBP) Department in collaboration with the Acute Gastroenteritis Clinical Pathway Committee composed of content experts at Children's Mercy Kansas City. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

Acute Gastroenteritis Clinical Pathway Committee Members and Representation

- George Abraham, MD | Emergency Medicine| Committee Chair
- Chris Day, MD | Infectious Diseases | Committee Member
- Kristie Marble, DO, FAAP | Hospital Medicine | Committee Member
- Emily Montgomery, MD | Urgent Care | Committee Member
- Abiye Okah, MD, FAAP | General Academic Pediatrics | Committee Member
- Rangaraj Selvarangan, BVSc, PhD, D(ABMM), FIDSA, F(AAM) | Pathology and Laboratory Medicine | Committee Member

Patient/Family Committee Member

- Kevin Sullivan | Committee Member

EBP Committee Members

- Kathleen Berg, MD, FAAP | Hospitalist, Evidence Based Practice
- Megan Gripka, MT (ASCP) SM | Evidence Based Practice

Clinical Pathway Development Funding

The development of this clinical pathway was underwritten by the following departments/divisions: Emergency Medicine, General Academic Pediatrics, Hospital Medicine, Infectious Diseases, Pathology and Laboratory Medicine, Urgent Care, and Evidence Based Practice.

Conflict of Interest

The contributors to the Acute Gastroenteritis Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed.

Approval Process

This pathway was reviewed and approved by the Acute Gastroenteritis Committee, Content Expert Departments/Divisions, and the EBP Department; after which they were approved by the Medical Executive Committee.

- Pathways are reviewed and updated as necessary every 3 years within the EBP Department at CMKC. Content expert teams are involved with every review and update.

Review Requested

Department/Unit	Date Obtained
Emergency Medicine	February 2024
General Academic Pediatrics	February 2024
Hospital Medicine	February 2024
Infectious Diseases	February 2024
Pathology and Laboratory Medicine	February 2024
Urgent Care	February 2024
Evidence Based Practice	January 2024

Version History

Date	Comments
October 2020	Version one – development of pathway to manage dehydration associated with acute gastroenteritis and guidance for diagnosis of bacterial and parasitic enteritis
February 2024	Version two – development of a separate diagnostic pathway and additional guidance for treatment and follow-up of bacterial enteritis along with information about HUS

Date for Next Review

- February 2027

Implementation & Follow-Up

- Once approved, the pathway was presented to appropriate care teams and implemented. Care measurements will be assessed and shared with appropriate care teams to determine if changes need to occur.
- Order sets/power plans consistent with recommendations were updated for each care setting
- Education was provided to the following stakeholders:
  Divisions of Emergency Medicine, Hospital Medicine, Urgent Care, Infectious Diseases, and General Academic Pediatrics
- Additional institution-wide announcements were made via email, hospital website, and relevant huddles.

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the supporting documents and the power plan(s) that accompany the clinical pathway.

These clinical pathways do not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time.

It is impossible to anticipate all possible situations that may exist and to prepare clinical pathways for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.

References

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