ACUTE PANCREATITIS

ALGORITHM

Patient diagnosed with acute pancreatitis

Initial Pain / Nausea Management
- Goal: adequate pain / nausea control
- If mild pain and tolerating oral medication, can use sliding scale PO acetaminophen, PO oxycodone, IV morphine
- Use IV anti-emetics as needed

Secondary Pain Management
- Goal: adequate pain control
- Use a low threshold for IV morphine or hydromorphone
- Use a low threshold for patient controlled anesthesia pump (PCA)
- If inadequate pain control, consult acute pain service

Initial Fluid Management
- Goal: Intravascular Euvolemia (refer to page 3)
- 20 mg/kg (max 1L) bolus of Lactated Ringers, reassess fluid status, repeat as necessary

Continued Fluid Management
- Goal: Intravascular Euvolemia
- After bolus(es), start lactated ringers at 1.5X maintenance (max 150 mL/hr)

Evaluate for Etiology
- Labs: CMP, CBC, triglycerides
- Imaging: Abdominal ultrasound (repeat if done at outside facility)
- CT or MRI available from outside facility, upload to EPIC for over read instead of repeating ultrasound
- If history of trauma, discuss need for cross sectional imaging with Surgery and/or GI
- Consult GI and discuss if additional tests are needed

Secondary Pain Management
- Goal: adequate pain control
- Use a low threshold for IV morphine or hydromorphone
- Use a low threshold for patient controlled anesthesia pump (PCA)
- If inadequate pain control, consult acute pain service

Admit to Surgery Service (refer to page 8)
- Fluid management
- GI consult for potential Endoscopic Retrograde Cholangiopancreatography
- Cholecystectomy prior to discharge and/or Intraperative Cholangiogram for gallstone pancreatitis

Admit to ICU (refer to page 6)
- Management per ICU with GI consult and/or surgical consult
- Early enteral nutrition if possible (refer to Clinical Pathway, Nutrition for Patients with Acute Pancreatitis)

Discharge patient home with return precautions. Primary Care follow up in 2-4 days

Pediatric Pancreas Center Follow Up:
- Email patient information to pancreascenter@childrenscolorado.org, and consult with GI fellow or GI attending.
- Typical timeframe is approximately 1 month.

Special Circumstances:
- Kaiser Insurance – discuss with Kaiser hospitalist first
- Active malignancy – Discuss with Oncology
- Active multisystem diseases – Discuss with GI fellow
- If not admitted to Green Team, consult GI fellow

Admit to Team (Anschutz) or General Medical Floor (COS)
Unless special circumstances:
- Regular diet (refer to Clinical Pathway, Nutrition for Patients with Acute Pancreatitis)
- Fluid management
  - Lactated Ringers at 1.5X maintenance for 24-48 hours (max 150 mL/hr)
  - Monitor fluid status Q4H (heart rate, blood pressure, urine output greater than or equal to 1 mL/kg/hr)
  - Renal Function Panel at least daily until off intravenous fluids
  - Once euvolemia achieved (refer to page 3), adjust fluid rate to maintain and account for oral intake
- Pain / Nausea control
  - If mild pain and tolerating oral medication, can use sliding scale PO acetaminophen, PO oxycodone, IV morphine
  - Use a low threshold for IV morphine or hydromorphone
  - Use IV anti-emetics as needed
  - Use a low threshold for patient controlled anesthesia pump (PCA)
  - If inadequate pain control in 24 hours, consult acute pain service
  - Complete etiologic workup
  - Follow up in Pediatric Pancreas Center and with Primary Care

Need for ICU is uncommon in pediatric pancreatitis, but discuss disposition with PICU and floor team if signs of severe pancreatitis

Inclusion Criteria
- Patients greater than 6 months old with diagnosis of acute pancreatitis

Exclusion Criteria
- Patients less than 6 months old
- Patients who develop acute pancreatitis during hospitalization for another cause

Inpatient and/or surgical consult

Is pain controlled?

Yes

No

Does patient have a biliary obstruction or pancreatic leak as determined by imaging?

Yes

No

Does patient have persistent hypotension / tachycardia after 40 ml/kg fluid resuscitation?

Yes to Any

No to All

Evaluate for Etiology
- Labs: CMP, CBC, triglycerides
- Imaging: Abdominal ultrasound (repeat if done at outside facility)
- CT or MRI available from outside facility, upload to EPIC for over read instead of repeating ultrasound
- If history of trauma, discuss need for cross sectional imaging with Surgery and/or GI
- Consult GI and discuss if additional tests are needed

Admit to Surgery Service (refer to page 8)
- Fluid management
- GI consult for potential Endoscopic Retrograde Cholangiopancreatography
- Cholecystectomy prior to discharge and/or Intraperative Cholangiogram for gallstone pancreatitis

Discharge patient home with return precautions. Primary Care follow up in 2-4 days

Pediatric Pancreas Center Follow Up:
- Email patient information to pancreascenter@childrenscolorado.org, and consult with GI fellow or GI attending.
- Typical timeframe is approximately 1 month.

Special Circumstances:
- Kaiser Insurance – discuss with Kaiser hospitalist first
- Active malignancy – Discuss with Oncology
- Active multisystem diseases – Discuss with GI fellow
- If not admitted to Green Team, consult GI fellow

Admit to Team (Anschutz) or General Medical Floor (COS)

Unless special circumstances:
TARGET POPULATION

Inclusion Criteria
Patients greater than 6 months of age with diagnosis of acute pancreatitis: i.e. if 2 of 3 criteria are met:

- Abdominal pain
- Serum lipase or amylase greater than or equal to 3 times upper limit of normal
- Imaging findings consistent with pancreatitis

Exclusion Criteria
- Patients who develop acute pancreatitis during hospitalization for another cause.
- Patients less than 6 months old.
BACKGROUND | DEFINITIONS

Definition
Acute Pancreatitis: Condition diagnosed by meeting two of the following three elements: clinical symptoms such as abdominal pain, nausea/vomiting, or radiating back pain; serum levels of pancreatic amylase and/or lipase three times the upper limit of normal; and radiographic evidence of acute pancreatitis including pancreatic edema on ultrasound or computed tomography1.

Background
Major considerations for management of acute pancreatitis are adequate fluid resuscitation, pain control, early enteral nutrition, evaluation for common etiologies, and monitoring/management of complications. Most cases of acute pancreatitis in children are mild, meaning little to no involvement of other organ systems, but there are some cases of severe pancreatitis which can lead to respiratory, renal, and circulatory compromise, as well as sequelae such as abdominal fluid collections and pancreatogenic diabetes type 3c.

Optimal management of pediatric pancreatitis is an area of ongoing research, but several paradigms of management have been found to be unnecessary or harmful, such as prolonged gut rest or avoidance of certain types of opioid medications2. Standardization of initial management using best available evidence is an important step to improve patient care.

INITIAL EVALUATION

Once the diagnosis of acute pancreatitis has been made, next management steps should focus on:

Pain Control
- Use a low threshold for using IV opioids (no data to support one type vs another) for severe pain including early initiation of patient controlled analgesia pump (PCA).
- Consider scheduled oral acetaminophen (unless patient meets criteria for IV acetaminophen) 15 mg/kg Q6 hours, max 1000 mg and ketorolac IV 0.5 mg/kg Q6 hours max 30mg for 48 hours.
- If mild pain and tolerating oral intake, can use sliding scale of acetaminophen, oxycodone, and IV morphine. NSAIDS can be considered as well.
- If pain is unable to be adequately controlled, recommend escalating pain control to PCA, and consulting acute pain service if pain is not controlled within 24 hours.

Fluid Rehydration
Acute pancreatitis leads to intravascular hypovolemia via decreased intake, vomiting, and 3rd spacing of fluid. IV rehydration is critical for circulatory support, and may change disease course by decreasing pancreatic tissue ischemia. Optimal fluid type and amount are not known in pediatrics, but there is limited adult data that Lactated Ringers may be beneficial compared to normal saline if used early3. Volume goal is intravascular euvolemia, knowing that some 3rd spacing may occur. Recommendations for patients outside of the ICU are:
- Lactated Ringers preferred over normal saline for first 24-48 hours (unless patient with hyperkalemia or < 6 months old) bolus 20 ml/kg (max 1 L), repeat if necessary.
- Fluids at 1.5X maintenance (max 150 mL/hr) and assess fluid status Q4H (HR, BP, urine output goal ≥ 1 mL/kg/hr, BUN/Cr daily or Q12 hours until normal). If this is inadequate, can repeat bolus or increase rate to 2X maintenance.
- Euvolemia: Provider has determined that the patient is at their ideal volume status (neither dehydrated, nor volume overloaded). The patient therefore requires intravenous fluids to maintain their ideal volume status rather than for repletion purposes
- Once euvolemia achieved, adjust fluid rate to maintain and account for enteral intake, and switch to D5 NS + 20 mEq KCl with total fluids at maintenance.
Evaluate for etiologies which will guide initial management

Reasons to consider for pediatric pancreatitis:

- Choledocholithiasis and other obstructive processes
- Abdominal Trauma
- Medications (reference Figure 1: UptoDate List of Medications for Drug-Induced Acute Pancreatitis)
- Toxins, alcohol in particular
- Ductal anatomic abnormality
- Genetic
- Autoimmune
- Idiopathic

Pancreatitis caused by gallstones or pancreaticobiliary obstruction or pancreatic duct disruption will be managed differently than pancreatitis from other causes.

- Abdominal ultrasound is first line imaging test to assess for gallstones and biliary obstruction. If ultrasound was performed at an outside facility, it should be repeated at CHCO.
- If an outside CT or MRI was performed, these should be uploaded into EPIC and over read instead of a repeat ultrasound.
- Initial labs include CMP to monitor electrolytes, serum calcium, renal function, and assess for biliary obstruction, CBC for WBC, and triglycerides as a potential cause of pancreatitis

Disposition depends on clinical status

- For very mild pancreatitis (patients able to tolerate adequate oral intake and control symptoms with oral medications), home discharge from the ED with return precautions may be appropriate if the family is comfortable.
- Need for ICU is uncommon in pediatric pancreatitis, but can be considered if there are signs of multisystem dysfunction or clinical status is not suitable for the medical floor. Patients with severe pancreatitis can decompensate quickly. Respiratory compromise (progressive increased work of breathing, increasing oxygen requirement not accounted for by hypopnea from pain medication), persistent hypotension after 40 ml/kg (or 2 L) fluid resuscitation, or worsening clinical status (other than pain control) should prompt a discussion with the ICU team and the inpatient medical team for appropriate disposition.
- Patients with biliary obstruction/gallstone pancreatitis, or pancreatic duct disruption should be admitted to the surgical service.
- Typically, most patients with acute pancreatitis should be admitted to the Green Team if at Anschutz. Special considerations which may warrant admission to other teams are: Kaiser insurance (should discuss with Kaiser attending), active multi-system disease (discuss with GI fellow green vs. general medical team), or current malignancy (discuss with oncology). If the patient is at a satellite campus with inpatient services, there should be a discussion with the inpatient team if the patient is clinically appropriate for admission at that site, or if transfer to Anschutz campus is necessary.
### Summary of drug-induced acute pancreatitis based on drug class

<table>
<thead>
<tr>
<th>Class Ia</th>
<th>Class Ib</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-methyl dopa</td>
<td>All-trans-retinoic acid</td>
<td>Acetaminophen</td>
<td>Alendronate</td>
<td>Adrenocorticotropic hormone</td>
</tr>
<tr>
<td>Azosalicylate</td>
<td>Amiodarone</td>
<td>Chlorothiazide</td>
<td>Atorvastatin</td>
<td>Ampicillin</td>
</tr>
<tr>
<td>Bezaflurite</td>
<td>Azathioprine</td>
<td>Clozapine</td>
<td>Carbamazepine</td>
<td>Bendroflumethiazide</td>
</tr>
<tr>
<td>Cannabis</td>
<td>Clomiphene</td>
<td>Didanosine</td>
<td>Capsipil</td>
<td>Benazepril</td>
</tr>
<tr>
<td>Carbinazole</td>
<td>Dexamethasone</td>
<td>Erythromycin</td>
<td>Ceftriaxone</td>
<td>Betamethasone</td>
</tr>
<tr>
<td>Codeine</td>
<td>Ilosfamide</td>
<td>Estrogen</td>
<td>Chloralhydrine</td>
<td>Capedacine</td>
</tr>
<tr>
<td>Cytosine</td>
<td>Lamivudine</td>
<td>L-asparaginase</td>
<td>Cimetidine</td>
<td>Clisplatin</td>
</tr>
<tr>
<td>Arabinoside</td>
<td>Losartan</td>
<td>Pegaspargase</td>
<td>Clarithromycin</td>
<td>Cokchicine</td>
</tr>
<tr>
<td>Dapsone</td>
<td>Lymestrel/methoxyethylhexadrol</td>
<td>Propofol</td>
<td>Cyclosporin</td>
<td>Cyclophosphamide</td>
</tr>
<tr>
<td>Enalapril</td>
<td>6-mercaptoquinine</td>
<td>Tamoxifen</td>
<td>Gold</td>
<td>Cyproheptadine</td>
</tr>
<tr>
<td>Furosemide</td>
<td>Meglumine</td>
<td>Hydrochlorothiazide</td>
<td>Danazol</td>
<td>Diazoxide</td>
</tr>
<tr>
<td>Isoniazid</td>
<td>Methazolamide</td>
<td>Indomethacin</td>
<td>Diclofenac</td>
<td>Diphenoxylate</td>
</tr>
<tr>
<td>Mesalamine</td>
<td>Nelfinavir</td>
<td>Interferon beta-2</td>
<td>Doxorubicin</td>
<td>Ethanolic acid</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>Norhexitron/nootrol</td>
<td>Irbesartan</td>
<td>Ethacrynic acid</td>
<td>Famotidine</td>
</tr>
<tr>
<td>Pantamidine</td>
<td>Omeprazole</td>
<td>Isotretinoin</td>
<td>Finasteride</td>
<td>Furosemide</td>
</tr>
<tr>
<td>Pravastatin</td>
<td>Premarin</td>
<td>Ketorolac</td>
<td>5-fluorouracil</td>
<td>Fluvalastin</td>
</tr>
<tr>
<td>Procainamide</td>
<td>Trimethoprim/sulfamethazine</td>
<td>Lisinopril</td>
<td>Gemfibrozil</td>
<td>Gemtrac-2</td>
</tr>
<tr>
<td>Pirbutal</td>
<td></td>
<td>Metolazone</td>
<td>Interleukin-2</td>
<td>Ketoprofen</td>
</tr>
<tr>
<td>Simvastatin</td>
<td></td>
<td>Metformin</td>
<td>Lovastatin</td>
<td>Lipstatin</td>
</tr>
<tr>
<td>Sibogluconate</td>
<td></td>
<td>Minocycline</td>
<td>Mefenamic acid</td>
<td>Labetalol</td>
</tr>
<tr>
<td>Sulfamethoxazole</td>
<td></td>
<td>Moxapine</td>
<td>Nitrofurantoin</td>
<td>Octreotide</td>
</tr>
<tr>
<td>Sulindac</td>
<td></td>
<td>Naproxen</td>
<td>Oxphenbutazone</td>
<td>Oxymethylphenol</td>
</tr>
<tr>
<td>Tetracycline</td>
<td></td>
<td>Paclitaxel</td>
<td>Penicillin</td>
<td>Phenolphthalein</td>
</tr>
<tr>
<td>Valporate</td>
<td></td>
<td>Ponatinib</td>
<td>Propoxyphene</td>
<td>Propoxyphene</td>
</tr>
</tbody>
</table>


Figure 1: UpToDate List of Medications for Drug-Induced Acute Pancreatitis
CLINICAL MANAGEMENT

Management During Admission

General Management

- If there is a suspected pancreatic duct disruption, consider surgical consult.
- Cross-sectional imaging can be considered for clinical worsening such as new worsening pain unrelated to eating, new fevers, new hypotension, or new anemia (Abdominal MRI/MRCP preferred if stable and no sedation required, CT with IV contrast otherwise).
- Routine use of antibiotics has not been found to be beneficial, but can be considered on a case-by-case basis for high suspicion of infected fluid collections or infected necrotic pancreatic tissue.

ICU Management

- ICU management is primarily on case-by-case basis by ICU team with GI consultation.
- Enteral nutrition compared to parenteral nutrition has been shown to improve outcomes in multiple prospective, randomized adult studies in patients with severe acute pancreatitis (patients with necrotizing pancreatitis and/or needing ICU-level care). Studies have shown early enteral nutrition to have lower mortality, lower overall and septic complications as well as lower cost and improved inflammatory markers in patients with severe acute pancreatitis. The benefits have been confirmed in meta-analyses as well. Unless patient condition prohibits (needing pressors, unable to attain enteral access), early enteral nutrition should be strongly considered.

Surgical team management of gallstone pancreatitis

- Fluid management with goal of intravascular euvolemia
- Adequate pain control (see initial management), consult acute pain service if pain not controlled in 24 hours
- GI consult if Endoscopic Retrograde Cholangiopancreatography (ERCP) is needed or other questions. Patients may need additional imaging to assess for choledocholithiasis prior to ERCP (such as a patient with mild LFT elevation or biliary dilation without definite choledocholithiasis seen on other imaging). This is typically MRCP or endoscopic ultrasound. ERCP is only available at Anschutz campus. If ERCP is needed, transfer will be required from satellite campuses.
- Cholecystectomy prior to discharge to decrease risk of recurrent biliary pancreatitis

Medical team management

- Pain control (see initial management). If pain not adequately controlled within 24 hours, consult acute pain service.
- Regular diet, no role for routine fat-restricted diet or prolonged NPO. Allowing children with mild pancreatitis to advance their diets as tolerated has been associated with shorter hospitalizations without increased complications.
- IV lactated ringers at 1.5X maintenance until euvolemia achieved, then can transition to standard IV fluids (D5 NS with 20 mEq KCl) for total fluids at 1X maintenance, accounting for oral intake.
- Monitor fluid status closely (strict Is and Os, HR, BP, UOP greater than or equal to 1 mL/kg/hr).
  - Renal function panel (RFP) daily or Q12 H until patient is tolerating fluid needs enterally.
- Complete etiologic workup (family or prior history of pancreatitis, trauma, medication/substance exposures). UpToDate has a useful summary table with medications to consider and strength of evidence for associations with acute pancreatitis. Obtain a Hereditary Pancreatitis panel if family history of pancreatitis or 2 or more episodes of pancreatitis with complete resolution of symptoms and/or normal lipase between episodes.
- Consider DVT prophylaxis as patients often have limited mobility during acute pancreatitis and it is an inflammatory state. Refer to Venous Thromboembolism (VTE) Prevention clinical pathway.

Discharge Readiness
Tolerating adequate oral intake.

Pain has resolved or well controlled by oral medications.

Follow Up

There is up to a 42% rate of repeat hospitalization for children discharged after acute pancreatitis\textsuperscript{12}.

- Children with uncomplicated / mild acute pancreatitis who do not require admission can follow up through primary care office in 2-4 days. If GI follow up is desired, this can be arranged by PCP office.
- Inpatients admitted with acute pancreatitis should have follow up with primary care office within 1-2 weeks to monitor symptoms and ensure adequate hydration.
- Inpatients admitted with acute pancreatitis should also have follow up in the Pediatric Pancreas Center approximately 1 month after discharge.
- Exceptions:
  - Patients outside of Denver-metro-area (reviewed case-by-case basis; could follow up with general GI provider in Colorado Springs).
  - Primary oncology / bone marrow transplant.
  - Uncomplicated Gallstone (biliary) pancreatitis s/p cholecystectomy does not require routine GI follow up.
  - If sooner access in GI is required than can be accommodated in pancreas center, then GI clinic is reasonable.

LABORATORY STUDIES | IMAGING

Imaging

- Abdominal ultrasound is first line imaging test to assess for gallstones and biliary obstruction. If ultrasound was performed at an outside facility, it should be repeated at CHCO.
- If an outside CT or MRI was performed, these should be uploaded into EPIC and over read instead of an ultrasound.
- Cross-sectional imaging can be considered for clinical worsening such as new worsening pain unrelated to eating, new fevers, new hypotension, or new anemia (Abdominal MRI/MRCP preferred if stable and no sedation required, CT with IV contrast otherwise).
- Patients may need additional imaging to assess for choledocholithiasis prior to ERCP (such as a patient with mild LFT elevation or biliary dilation without definite choledocholithiasis seen on other imaging). This is typically MRCP or endoscopic ultrasound.

Labs

- For diagnosis: serum lipase or amylase (lipase generally more reliable)
- Initial labs include CMP to monitor electrolytes, serum calcium, renal function, and assess for biliary obstruction, CBC for WBC, and triglycerides as a potential cause of pancreatitis
- Monitoring labs:
  - Daily Renal Function Panel while receiving IV fluids.
- Obtain a Hereditary Pancreatitis panel if family history of pancreatitis or 2 or more episodes of pancreatitis with complete resolution of symptoms and/or normal lipase between episodes.

THERAPEUTICS
Antibiotics

- Routine use of antibiotics has not been found to be beneficial in multiple adult studies, but can be considered on a case-by-case basis for high suspicion of infected fluid collections or infected necrotic pancreatic tissue. Consult GI before administering any antibiotics.

Pain Control

- Low threshold for using IV opioids (no data to support one type vs another) for severe pain including early initiation of patient controlled analgesia pump (PCA).
- Consider scheduled oral acetaminophen (unless patient meets criteria for IV acetaminophen) 15 mg/kg Q6 hours, max 1000 mg and ketorolac IV 0.5 mg/kg Q6 hours max 30mg for 48 hours.
- If mild pain and tolerating oral intake, can use sliding scale of acetaminophen, oxycodone, and IV morphine. NSAIDS can be considered as well.
- If pain is unable to be adequately controlled, recommend escalating pain control to PCA, and consulting acute pain service if pain is not controlled within 24 hours.

Fluid Management

- Lactated Ringers preferred over normal saline for first 24-48 hours (unless patient with hyperkalemia or less than 6 months old) bolus 20 ml/kg (max 1 L), repeat if necessary for initial resuscitation.
- Fluids at 1.5X maintenance (max 150 mL/hr) and assess fluid status Q4H (HR, BP, urine output goal greater than or equal to 1 mL/kg/hr, BUN/Cr daily or Q12 hours until normal). If this is inadequate, can repeat bolus or increase rate to 2X maintenance (max 200 mL/hr).
- Once euvolemia achieved, adjust fluid rate to maintain and account for enteral intake, and after 24-48 hours can switch to D5 NS with 20 mEq KCl with total fluids at maintenance.

Nutrition

- Regular diet, no role for routine fat-restricted diet or prolonged NPO. Allowing children with mild pancreatitis to advance their diets as tolerated has been associated with shorter hospitalizations without increased complications.
- Enteral nutrition compared to parenteral nutrition has been shown to improve outcomes in multiple prospective, randomized adult studies in patients with severe acute pancreatitis (patients with necrotizing pancreatitis and/or needing ICU-level care). Studies have shown early enteral nutrition to have lower mortality, lower overall and septic complications as well as lower cost and improved inflammatory markers in patients with severe acute pancreatitis. The benefits have been confirmed in meta-analyses as well. Unless patient condition prohibits (needing pressors, unable to attain enteral access), early enteral nutrition should be strongly considered.

PARENT | CAREGIVER EDUCATION

Discharge Instructions

Activity as tolerated. No need to restrict exercise or contact sports except in some cases of pancreatitis from trauma to the pancreas.

Regular Diet

Typically dietary fat restriction is not necessary. In some cases, children may feel abdominal pain and/or nausea if they eat high fat foods. In these cases, a low fat diet may help control symptoms.

Second-hand Smoke

Cigarette smoking is known to contribute to pancreatitis in adults. In children, second-hand smoke has been associated with more episodes of pancreatitis. If there are members of the family who smoke, we recommend cutting back or quitting to help your child’s pancreas. You can discuss ways to do this with your primary care physician or contact the Colorado quitline at www.coquitline.org or 1-800-QUIT-NOW.
REFERENCES


Clinical pathways are intended for informational purposes only. They are current at the date of publication and are reviewed on a regular basis to align with the best available evidence. Some information and links may not be available to external viewers. External viewers are encouraged to consult other available sources if needed to confirm and supplement the content presented in the clinical pathways. Clinical pathways are not intended to take the place of a physician’s or other health care provider’s advice, and is not intended to diagnose, treat, cure or prevent any disease or other medical condition. The information should not be used in place of a visit, call, consultation or advice of a physician or other health care provider. Furthermore, the information is provided for use solely at your own risk. CHCO accepts no liability for the content, or for the consequences of any actions taken on the basis of the information provided. The information provided to you and the actions taken thereof are provided on an “as is” basis without any warranty of any kind, express or implied, from CHCO. CHCO declares no affiliation, sponsorship, nor any partnerships with any listed organization, or its respective directors, officers, employees, agents, contractors, affiliates, and representatives.

**Clinical Pathway and Measures Review Committee – August 22, 2019**

**Pharmacy & Therapeutics Committee – August 1, 2019**

<table>
<thead>
<tr>
<th>MANUAL/DEPARTMENT</th>
<th>Clinical Pathways/Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIGINATION DATE</td>
<td>August 22, 2019</td>
</tr>
<tr>
<td>LAST DATE OF REVIEW OR REVISION</td>
<td>August 22, 2019</td>
</tr>
</tbody>
</table>

**COLORADO SPRINGS REVIEW BY**

Michael DiStefano, MD
Chief Medical Officer, Children’s Hospital Colorado – Colorado Springs

**APPROVED BY**

Lalit Bajaj, MD, MPH
Medical Director, Clinical Effectiveness
Children’s Hospital Colorado

**REVIEW | REVISION SCHEDULE**

Scheduled for full review on: August 22, 2023

---

**CLINICAL IMPROVEMENT TEAM MEMBERS**

- Jacob Mark, MD | Digestive Health Institute
- Robert Kramer, MD | Digestive Health Institute
- Jason Soden, MD | Digestive Health Institute
- Christine Waasdorp, MD | Digestive Health Institute, COS
- Bernadette Johnson, MD | Emergency Department
- Ryan Good, MD | Critical Care
- Jonathan Roach, MD | Pediatric Surgery
- Seth Eisdorfer, MD | Anesthesiology
- Tracey Clark, MD | Hospitalist, COS
- Heather Skillman, MS, RD, Dietitian | Clinical Nutrition
- Andrew Hatt, PharmD | Clinical Pharmacist
- Erica Lynes, CSSBB | Process Improvement Specialist

---

Children’s Hospital Colorado • Anschutz Medical Campus • 13123 East 16th Avenue • Aurora, CO 80045 • 720-777-1234 • childrenscolorado.org
Discrimination Is Against the Law. Children's Hospital Colorado complies with applicable Federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, or sex. Children's Hospital Colorado does not exclude people or treat them differently because of race, color, national origin, age, disability, or sex.

Children's Hospital Colorado provides free aids and services to people with disabilities to communicate effectively with us, such as: Qualified sign language interpreters, written information in other formats (large print, audio, accessible electronic formats, other formats). Children's Hospital Colorado provides free language services to people whose primary language is not English, such as: Qualified interpreters, information written in other languages.

If you need these services, contact the Medical Interpreters Department at 720-777-9800.

If you believe that Children's Hospital Colorado has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, or sex, you can file a grievance with: Corporate Compliance Officer, 13123 E. 10th Avenue, B450, Aurora, Colorado 80045, Phone: 720.777.1234, Fax: 720.777.7257, corporate.compliance@childrensch.co.org. You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Corporate Compliance Officer is available to help you.

You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at: portal.hhs.gov/corporal/lobbyyst, or by mail or phone at: U.S. Department of Health and Human Services 200 Independence Avenue, SW Room 509F, HHH Building Washington, D.C. 20201 1-800-368-1019, 800-537-7537 (TDD) Complaint forms are available at www.hhs.gov/ocr/office/file/index.html.

Children's Hospital Colorado complies with applicable Federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, or sex.

ATENCIÓN: si habla español, bene a su disposición servicios gratuitos de asistencia lingüística. Llame al 1-720-777-9800.


注意：如果您使用繁體中文，您可以免費獲得語言援助服務。請致電1-720-777-9800。

ВНИМАНИЕ: Если вы говорите на русском языке, то вам доступны бесплатные услуги перевода. Звоните 1-720-777-9800.

警告：如果您说中文，您可以免費獲得語言援助服務。請致電1-720-777-9800。


注意事項：日本語を話される場合、無料の言語支援をご利用いただけます。1-720-777-9800 まで、お電話にてご連絡ください。