Adhesive Small Bowel Obstruction (ASBO)

Emergency Department & Inpatient

Nationwide Children's — When your child needs a hospital, everything matters.

Center for Clinical Excellence

Clinical/Radiographic Evidence of ASBO

Inclusion Criteria:

- History of abdominal surgery
- Clinical evidence of ASBO
  - Nausea/vomiting
  - Abdominal distention/pain
  - No recent passage of flatus/stool
- Radiographic evidence of ASBO
  - Small-bowel/colonic distention with air-fluid levels
  - Transition point on axial imaging

Exclusion Criteria:

- Evidence of compromised bowel requiring immediate surgical intervention §

Immediate operative intervention needed? § — Yes → **Off Pathway – Immediate Operative Management**

No

- Initiate fluid resuscitation with isotonic fluid
- Correct electrolyte abnormalities
- Place NG tube for gastric decompression

Admit to/consult Pediatric Surgery

§ Indications for Immediate Surgical Intervention

- Peritonitis on exam
- Pneumatosis or pneumoperitoneum on imaging
- Hemodynamic instability
- Evidence of bowel ischemia on imaging

Contrast Allergy?

No →

Contrast Protocol

- Fluid resuscitate with isotonic fluids
- Correct electrolyte abnormalities
- Gastric decompression for at least 1 hour

Yes →

Non-Contrast Protocol

- Ensure fluid resuscitation
- Correct electrolyte abnormalities
- Await return of bowel function

Contrast Challenge

- Maintain upright position
- Administer Gastrografin by NG/G-tube over 5 minutes
- Clamp tube for **1 hour**
- **Close clinical observation**

Obtain Portable Abdominal X-ray 8-10 hours after Contrast Challenge

Contrast seen in cecum or ostomy bag?

Yes → **Resolution of ABSO**

- Discontinue NG tube
- Start clear liquid diet

No

Obtain Portable Abdominal X-ray 24 hours after Contrast Challenge

Contrast seen in cecum or ostomy bag?

Yes → **Resolution of ABSO**

No → **Off Pathway Operative Management**

Discharge Home once tolerating diet and passing stool or flatus

Return of bowel function?

Yes → **Resolution of ABSO**

No

Signs of Worsening ASBO?

Yes → **Off Pathway Operative Management**

No → Monitor patients without signs of worsening ASBO per Surgeon discretion

Diagnosis & Definition

- Adhesive small bowel obstructions (ASBO) cause significant morbidity following abdominal surgery, with an incidence of 3-9% in the pediatric patient population.
- Diagnosis is based primarily upon history of abdominal surgery, in combination with clinical findings (nausea/vomiting, abdominal distention and pain, and lack of recent flatus/stool) and radiologic findings (small bowel or colonic distention with air fluid levels, and/or transition point on axial imaging).
- In the absence of a clear indication for surgery (peritonitis on exam, pneumatosis or pneumoperitoneum on radiologic images, or hemodynamic instability), a trial of non-operative management (gastric decompression, volume resuscitation, and electrolyte replacement) is the typical initial treatment. If this treatment fails, patients will proceed to surgical exploration. Optimal duration of non-operative management and criteria for operative intervention are not well defined. Gastrografin is a hyperosmotic water-soluble contrast agent used commonly in diagnostic imaging studies. A Gastrografin challenge has been successfully used in the non-operative management of ASBO in the adult population for decades and shown to decrease the need for surgery overall, and the length of stay for those who do not need surgery. Recent studies in the pediatric population have also shown promising results of water-soluble contrast challenge protocols. The transit of contrast from stomach to cecum has been reported to predict the success of non-operative management for SBO with 96% sensitivity and 98% specificity.[1]

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Testing
(performed pre-pathway for evidence of Adhesive SBO)

Findings suggestive of another diagnosis include:

- Constipation – AXR will show evidence of large stool burden
- Ileus – Can be difficult to distinguish from SBO. There is air in the colon and rectum, and on CT or small bowel series, there is no demonstrable mechanical obstruction
- Gastroenteritis – Typically patients with viral symptoms, often with diarrhea
- Gastroparesis – Usually a chronic diagnosis, patients with nausea, vomiting, large gastric bubble on imaging
- Colonic pseudo-obstruction – Usually limited to the colon, typically patients with underlying illness
- Pancreatitis – Elevated Amylase and Lipase

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Severity Assessment

Clinical evidence of the following should prompt emergent surgical consultation:

- Peritonitis on exam
- Pneumatosis or pneumoperitoneum on imaging
- Hemodynamic instability
- Evidence of bowel ischemia on imaging

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Admission Criteria

(patients on pathway will have been admitted for treatment)

- SBO on imaging
- Need for urgent operative intervention
- Inability to tolerate liquids PO
- Electrolyte derangements and/or dehydration
- Unclear etiology necessitating further workup
- Consider PICU admission with any signs of hemodynamic instability, respiratory distress or neurologic deterioration

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Assessment & Monitoring

ED:

- Q1 hour vital sign assessment
- Cardiopulmonary monitoring with pulse-oximeter

Floor:

- Q2H vital sign assessment with PEWS. See Patient/Family Care Policy, 15:15 Assessment and Consultation Team (ACT)
- Cardiopulmonary monitoring with continuous pulse oximetry
- Strict I&Os
- Serial Abdominal Exams Q4Hx2, then Q6H for a total 24 hours by Surgery APP or resident, to be documented in EMR

PICU:

- Q1H VS or more frequent based on patient status
- Cardiopulmonary monitoring with continuous pulse oximetry
- Strict I&Os
- Serial Abdominal Exams Q4H x 24 hours by Surgery or PICU resident, to be documented in EMR

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Recommended Treatments

ED:

- Initiation of IV access and isotonic IV fluids, consider dextrose containing fluids if hypoglycemic or risk for hypoglycemia
- Placement of nasogastric decompression tube per **Patient/Family Care policy: 80:40 Gastric Tube: Nasal Gastric (NG) and Oral Gastric (OG) Tube Placement, Management and Removal**
- Gastrostomy and/or jejunostomy tube to straight drain, if applicable

Floor:

- IV resuscitation and correction of electrolyte abnormalities
- Gastrostomy and/or jejunostomy tube to straight drain, if applicable
- Nasogastric decompression tube to low intermittent suction
- Administration of oral contrast (if without allergy) per protocol when patient arrives to the inpatient floor

Treatments Not Recommended

- PO challenge while initial workup is still ongoing

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Gastrografin

- Gastrografin (diluted 50:50 water)

small bowel obstruction, diaztrioate

Age	Gastrografin Volume
Less than 1 year	2.5 mL per kg
1 year through 4 years old	50 mL
5 years through 10 years old	75 mL
11 years and older	100 mL

Gastrografin to be diluted equal parts (1:1) with drinking water

- **Alternative**: Full strength and same volume **Cystografin** 30% or **Omnipaque 240**

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Signs of Worsening ASBO

- Peritonitis
- Worsening abdominal pain
- Fever

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Deterioration & Escalation of Care

Identification of Deterioration:

- Development of hemodynamic instability due to hypovolemia and sepsis
- Development of peritonitis on exam
- Patient becomes less responsive or unresponsive
- Respiratory distress due to severe abdominal distention

Escalation of Care Protocol:

- Maintain ABCs
- Floor nursing staff to follow Patient/Family Care Policy, 15:15 Assessment and Consultation Team (ACT)
- If Surgery APP or resident assesses worsening abdominal exam or deterioration of patient status, contact surgery fellow or attending
- Early discussion with PICU team if ICU bed is expected to be needed

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Discharge Criteria & Planning

- Return of bowel function
- Resolution of electrolyte derangements
- Tolerating regular diet
- Follow Up: 2-week follow up with Pediatric Surgery

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Patient & Caregiver Education

Education on:

- Signs and symptoms of recurrent SBO
- Bowel regimen at discharge
- Bowel Obstruction Helping Hands (to be developed)

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Risk Awareness & Zero Hero

- This clinical pathway aims to expeditiously manage SBOs nonoperatively if appropriate, while providing early identification of those patients who would most benefit from surgical intervention. This will decrease time to surgery for patients who may otherwise have undergone days of trialing bowel rest and decompression.

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Quality Measures & Potential Areas for Research

Utilization Metric:

- Adhesive Small Bowel Obstruction (ASBO) Pathway and Order Set Utilization

Process Metric:

- Length of Hospital Stay for all ABSO

Outcome Metric:

- Rate of operative intervention for ASBO

Balancing Metric:

- 7 day readmission, Rate of delayed OR (>48 hours after admission)

Patients who are eligible for this algorithm will be enrolled in the Management and Outcomes of Adhesive Bowel Obstructions in Children, or "The ABC Study," a collaborative study conducted by the Midwest Pediatric Surgery Consortium

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Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associates with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.

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