

**Blunt abdominal trauma with any of the following<sup>1</sup>:**

<ul style="list-style-type: none"> <li>GCS <math>\leq</math> 13</li> <li>Abdominal bruising</li> <li>Abdominal Seatbelt Sign</li> <li>Abdominal distention</li> <li>Abdominal pain/tenderness</li> <li>Vomiting</li> </ul>	<ul style="list-style-type: none"> <li>Abnormal FAST</li> <li>Abnormal chest or pelvic x-ray</li> <li>ALT <math>&gt;</math>125 U/L; AST<math>&gt;</math>200 U/L</li> <li>Decreased Hemoglobin (less than 7g/dl)</li> <li>Elevated Lipase</li> <li>Hematuria (UA <math>&gt;</math>50 rbc/hpf)</li> </ul>
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Exclusion criteria: Blunt Abdominal Trauma with peritonitis and penetrating abdominal trauma

Manage other injuries

**Circulatory Status**  
(recent/ongoing bleeding suspected?)

Unstable

Stable

**CT abd/pelvis with IV contrast**

**Negative**

- No evidence of Hollow or solid organ injury
- If intraperitoneal free fluid:
  - Small volume isolated intraperitoneal free fluid with  $\leq$ 25 HU<sup>4</sup>

- Suspected Hollow organ injury
- $>$ 25 HU<sup>4</sup> intraperitoneal free fluid
- Free air
- Soft tissue seatbelt sign
- Bowel wall thickening
- Mesenteric hematoma or stranding
- Abdominal Wall hernia

Significant intra-abdominal blood or contrast extravasation  
**OR**  
Solid organ injury

Other  
Manage per surgeon discretion

**Discharge Home from ED if:**

- Vitals normal
- Tolerating diet
- Minimal abdominal pain
- No blood product administration in ED
- Access to care: transportation & phone

*(admit to non-ICU for observation if all the above conditions are not met)*

**At discharge:**

- Provide discharge instructions - Blunt Abdominal Trauma & return precautions.

**See Hollow Viscus Injury Algorithm**

**Go to Page 2**

Fluid Resuscitation  
20 ml/kg NS or LR

Sustained response to bolus?

Resuscitation with PRBCs 10-20ml/kg

Recurrent hypotension or persistent shock<sup>2ab</sup>

**Failure of NOM**

Angiography & Embolization<sup>3</sup>

Surgery<sup>3</sup>

NOM at Surgeon's discretion

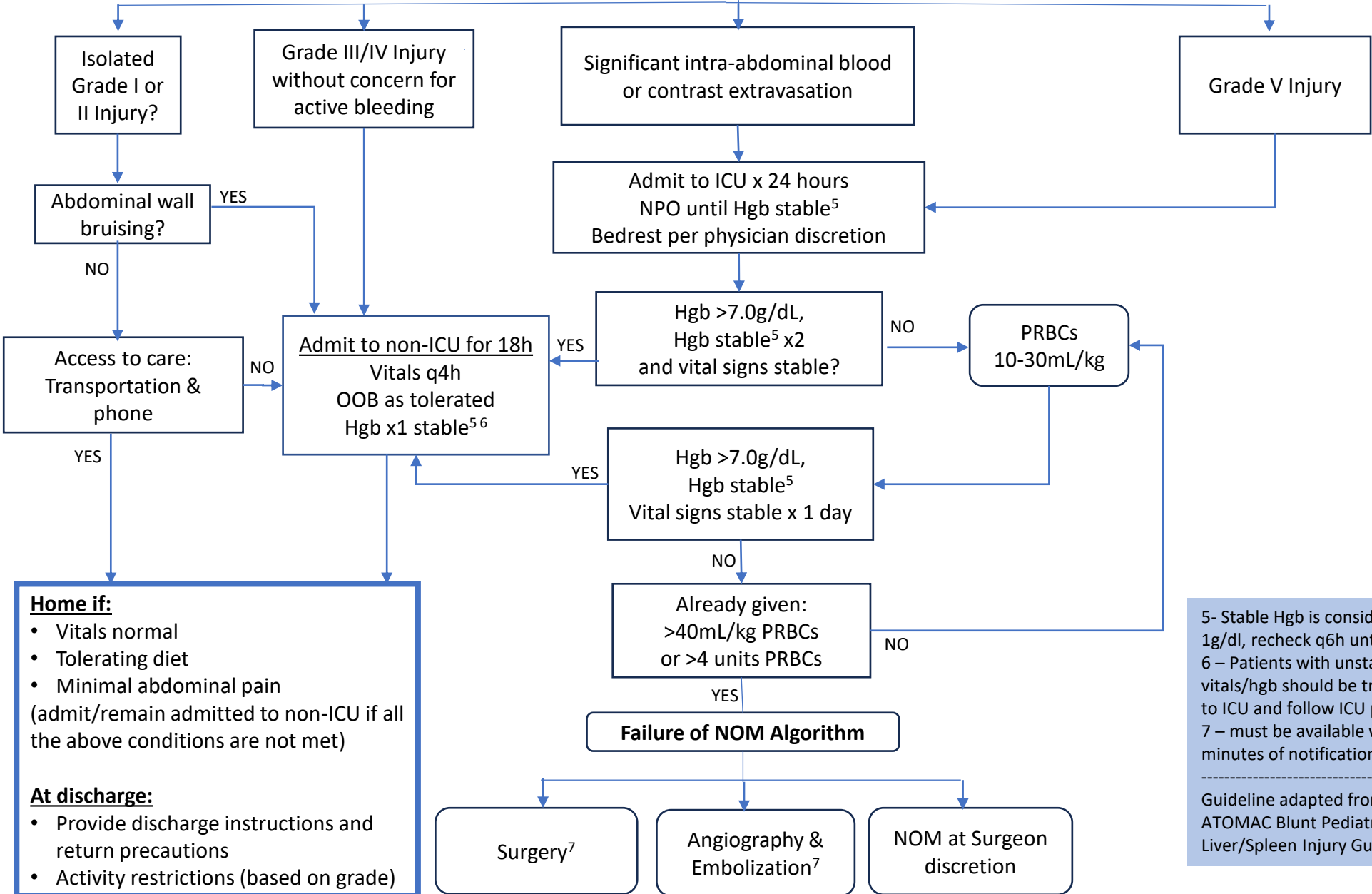
1-Based on PECARN & PedSRC prediction rule  
2a- Consider other causes (head injury, tension pneumothorax, tamponade, pelvic hemorrhage)  
2b-Activate Massive Transfusion protocol (see MTP guideline)  
3- must be available within 30 minutes of notification  
4 – Hounsfield Units

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Guideline adapted from the ATOMAC Blunt Pediatric Liver/Spleen Injury Guideline v12.

# Blunt Liver/Spleen Injury Clinical Care Algorithm

Continued  
from  
page 1

**CT abd/pelvis with IV contrast with findings  
of solid organ injury**



5- Stable Hgb is considered within 1g/dl, recheck q6h until stable  
6 – Patients with unstable vitals/hgb should be transferred to ICU and follow ICU pathway  
7 – must be available within 30 minutes of notification

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Guideline adapted from the ATOMAC Blunt Pediatric Liver/Spleen Injury Guideline v12.

## Clinical Care Guideline

**Name: Solid Organ Injury Clinical Care Guideline for  
Emergency Department, Inpatient and ICU**

<b>I. Inclusion Criteria</b>	<ul style="list-style-type: none"> <li>• Patients ages 0-17 years presenting to CHOC Emergency Department with suspected or confirmed solid organ injuries to the liver or spleen.</li> </ul>
<b>II. Exclusion Criteria</b>	<ul style="list-style-type: none"> <li>• Major multiple trauma when the solid organ injury does not direct the patient's plan of care.</li> <li>• Specific findings/Injuries:             <ul style="list-style-type: none"> <li>○ Peritonitis</li> <li>○ Pancreatic injuries</li> <li>○ Penetrating solid organ injury</li> </ul> </li> <li>• Significant medical comorbidities</li> </ul>
<b>III. Assessment and evaluation</b>	<ul style="list-style-type: none"> <li>• Review of history, physical exam, labs, and imaging.</li> <li>• <a href="#">Refer to Solid Organ Injury Clinical Care Guideline (attached)</a> for recommendations on when to obtain CT abdomen/pelvis imaging and evaluation of the trauma patient with confirmed blunt abdominal trauma without peritonitis.</li> </ul>
<b>IV. Interventions (utilizing GRADE whenever possible)</b>	<p><a href="#">Interventions as listed in the Solid Organ Injury Clinical Care Guideline</a></p> <p>Interventions by GRADE:</p> <ul style="list-style-type: none"> <li>• 1A Management of the awake and oriented blunt abdominal trauma patient starts with the primary survey, E-FAST, physical examination and the secondary survey, blood chemistry, vital signs followed by contrast-enhanced abdominal CT.</li> <li>• 1A CT is recommended for the evaluation of hemodynamically stable patients with equivocal findings on physical examination, associated neurologic injury, or multiple extra-abdominal injuries. Under these circumstances, patients with a negative CT should be admitted for observation.</li> <li>• 1A CT is the diagnostic modality of choice for nonoperative management of solid visceral injuries.</li> <li>• 1A An abbreviated period of bed rest of 1 day or less for stable patients is unequivocally supported for children whose hemoglobin has been documented to be stable. The use of bed rest on the day of admission will be discretionary until data are available to support this practice.</li> <li>• 1A A transfusion threshold of 7.0 g/dL is safe and reasonable for children undergoing non-operative management for BLSI. Check hemoglobin every 6 hours until stable.</li> <li>• 1A Management of pediatric blunt liver and spleen injury may be based on hemodynamic status, rather than grade.</li> </ul>

	<ul style="list-style-type: none"> <li>• 2B Hemodynamic status at presentation may be used as a determinant for ICU admission regardless of grade, with the exception of Grade 5 injuries, which require ICU.</li> <li>• 2C Patients not admitted to the ICU and without signs of ongoing bleeding may be allowed to drink and eat when comfortable and able.</li> <li>• 3A: Objective diagnostic testing (i.e. CT) is indicated for patient with abnormal mentation, equivocal findings on physical examination, multiple injuries, concomitant chest injury or hematuria.</li> </ul>
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<p><b>I. Recommendations and considerations (utilizing GRADE whenever possible)</b></p>	<p><b>Considerations related to Non-Operative Management</b></p> <ul style="list-style-type: none"> <li>• 1A Non-operative management in the face of peritonitis should be excluded from a practice management guideline for Solid Organ Injuries.</li> <li>• 1A Failure to stabilize as noted by persistent or recurrent hypotension cannot have non-operative management dictated by algorithm alone without taking into account local resources and other injuries. These patients should be considered for surgery, urgent embolization, or continued non-operative management, depending on other injuries.</li> <li>• 1A Where not contraindicated, non-operative management guideline may be applied to patients with multiple injuries. In patients with other intra-abdominal injuries, such as pancreatic trauma or small bowel injury, the other injuries may take priority over the liver or spleen injury.</li> <li>• 1B Transfusion beyond 40 mL/kg in pediatric trauma seems to be highly correlated with failure of non-operative management, and care beyond these thresholds should be individualized.</li> <li>• 1B Patients at risk for missed injury, need for operation, or recurrent bleeding are those with multiple identified abdominal injuries (especially pancreas), those with a contrast blush on CT scan, and those with bicycle handlebar injuries, and may not be candidates for early discharge. Since delayed bleeds have occurred (often outside of the APSA guideline period), standardized education remains an important component of the discharge.</li> <li>• 1B In children with isolated blunt liver spleen injury (BLSI) without signs of clinical bleeding at presentation and stable hemoglobin, discharge before 24 h seems to be safe. Patients at risk for missed injury, need for operation, or recurrent bleeding are those with multiple identified abdominal injuries (especially pancreas), those with a contrast blush on CT scan, and those with bicycle handlebar injuries, and may not be candidates for early discharge. Since delayed bleeds have occurred (often outside of the APSA guideline period), standardized education remains an important component of the discharge.</li> <li>• 2C Angioembolization may be used in the non-operative management of children with BLSI to improve splenic salvage and possibly complement available treatments of hepatic injury, but not all children with contrast extravasation need Angioembolization.</li> </ul>
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**Considerations related to hemoglobin monitoring, ongoing bleeding and transfusion:**

- 2C Clinical determination of recent or ongoing bleeding in children requires integration of multiple factors to determine the relative importance of solid organ injury bleeding. Important factors to consider are listed on the algorithm instructions to assist in the determination recent bleeding significant enough to suggest shock.
- 2C Consider use of 1:1:1 transfusion ratios early in resuscitation.
- 2C Consideration for TEG-directed therapy may be given based on adult data.
- 2C Limiting crystalloid volume and early use of transfusion in children with significant bleeding should be considered based on the adult literature.
- 2C A pediatric practice management guideline may be used for all children under 18 years of age, but a caution about the use of the algorithm for children 9-16 years of age may be appropriate.
- 2D Transfusion of red blood cells in response to shock is recommended.
- 2D A hemoglobin drop of 0.5 g/dL the day of admission is expected from a 20-mL/kg bolus of crystalloid in a patient receiving maintenance and does not represent ongoing bleeding.
- 2D The use of serial hemoglobin measurement every 6 h is commonly used in all non-operative management studies, but no evidence supports a meaningful impact on management.
- 2D No evidence in the literature suggests routinely performing a type and screen in a hemodynamically stable patient, without evidence of ongoing bleeding, and with a stable hemoglobin, above the transfusion threshold is necessary. There is evidence to suggest that eliminating a type and screen in stable patients could potentially reduce the cost of care.

**Considerations related to imaging:**

- 2C While routine reimaging in all children with BLSI is not indicated, some cases may benefit from reimaging. Patients who might benefit have not been defined, but patients with high-grade injuries near the hilum seem to be at the greatest risk of developing pseudoaneurysms based on the reported cases of relevant pseudoaneurysms.
- 2C Pediatric patients with Hounsfield units (HU) of 25 or less isolated intraperitoneal free fluid (IIF) and a nonperitonitic physical examination do not require operative exploration or further workup for intraabdominal injury. In the absence of other injuries, it is safe to discharge these patients without further workup.

	<ul style="list-style-type: none"> <li>Level 3A: Haemodynamically stable children with blunt trauma should undergo radiographic evaluation if they have gross haematuria or &gt;50 red blood cells/high-power field on microscopic urine analysis.</li> </ul> <p><b>Considerations related to management:</b></p> <ul style="list-style-type: none"> <li>1A In the context of blunt abdominal trauma with or without solid organ injury, bowel injuries are often missed. A high index of suspicion is required.</li> <li>2D ERCP can be considered as an adjunct in the management of blunt hepatic injury with biloma or ductal injury.</li> <li>2D Management of late-presenting liver or spleen injury beyond 24 h of injury is at the discretion of the treating surgeon. Patient care should be based predominantly on the reason for finally seeking care (pain, ileus, etc.) rather than on the initial injury.</li> </ul> <p><b>Considerations related to discharge and follow-up:</b></p> <ul style="list-style-type: none"> <li>2D Children are advised to avoid nonsteroidal anti-inflammatory drugs at the time of discharge until follow-up is complete.</li> <li>2D Children may return to school when comfortable and able to comply with ongoing sports and contact restrictions. Modifications to allow children to change classes early should be used if there is concern about injury occurring between classes or elsewhere, depending on the child's environment.</li> <li>2D Parents and patients are instructed to return to the emergency department for increasing pain, pallor, dizziness, difficulty breathing, vomiting, worsening shoulder pain, jaundice, gastrointestinal bleeding, or black tarry stools.</li> </ul>
<b>Patient Family Education (PFE)</b>	Lexicomp patient education: <ul style="list-style-type: none"> <li>Spleen laceration (addendum C)</li> <li>Liver laceration (addendum D)</li> </ul>
<b>Discharge criteria</b>	For all patients (both ICU and non-ICU) may be discharged home when all the below criteria are met <ol style="list-style-type: none"> <li>Vital signs are normal for age</li> <li>Adequate oral intake</li> <li>Minimal abdominal pain and/or pain controlled with oral medication</li> <li>No PRBCs in 24 hours</li> <li>Ambulatory</li> </ol>
<b>Discharge instructions:</b>	<ol style="list-style-type: none"> <li>Return to school: As tolerated</li> </ol>

	<ol style="list-style-type: none"> <li>2. Follow-up: – Trauma Surgery Clinic in 2- 3 weeks</li> <li>3. Children are advised to avoid nonsteroidal anti-inflammatory drugs at the time of discharge until follow-up is complete.</li> <li>4. Return to the Emergency Department for increasing pain, pallor, dizziness, difficulty breathing, vomiting, worsening shoulder pain, jaundice, gastrointestinal bleeding, or black tarry stools.</li> <li>5. Restricted activity: <ul style="list-style-type: none"> <li>Grade I – 3 weeks</li> <li>Grade II – 4 weeks</li> <li>Grade III – 5 weeks</li> <li>Grade IV – 6 weeks</li> <li>Grade V – 7 weeks</li> </ul> </li> </ol>
<b>References (leveled)</b>	<p><b>Level II:</b></p> <p>Linnaus ME, Notrica DM, Langlais CS, St Peter SD, Leys CM, Ostlie DJ, Maxson RT, Ponsky T, Tuggle DW, Eubanks JW 3rd, Bhatia A, Alder AC, Greenwell C, Garcia NM, Lawson KA, Motghare P, Letton RW. Prospective validation of the shock index pediatric-adjusted (SIPA) in blunt liver and spleen trauma: An ATOMAC+ study. <i>J Pediatr Surg.</i> 2017 Feb;52(2):340-344. doi: 10.1016/j.jpedsurg.2016.09.060. Epub 2016 Sep 23. PMID: 27717564.</p> <p>Stottlemire RL, Notrica DM, Cohen AS, Sayrs LW, Naiditch J, St Peter SD, Leys CM, Ostlie DJ, Maxson RT, Ponsky T, Eubanks JW 3rd, Bhatia A, Greenwell C, Lawson KA, Alder AC, Johnson J, Garvey E. Hemodilution in pediatric trauma: Defining the expected hemoglobin changes in patients with liver and/or spleen injury: An ATOMAC+ secondary analysis. <i>J Pediatr Surg.</i> 2023 Feb;58(2):325-329. doi: 10.1016/j.jpedsurg.2022.10.044. Epub 2022 Oct 23. PMID: 36428184.</p> <p>Vaughan N, Tweed J, Greenwell C, Notrica DM, Langlais CS, Peter SD, Leys CM, Ostlie DJ, Maxson RT, Ponsky T, Tuggle DW, Eubanks JW 3rd, Bhatia A, Greenwell C, Garcia NM, Lawson KA, Motghare P, Letton RW, Alder AC. The impact of morbid obesity on solid organ injury in children using the ATOMAC protocol at a pediatric level I trauma center. <i>J Pediatr Surg.</i> 2017 Feb;52(2):345-348. doi: 10.1016/j.jpedsurg.2016.09.002. Epub 2016 Sep 13. PMID: 27707653.</p>

### **Level III**

Holmes, James F et al. "Identification of children with intra-abdominal injuries after blunt trauma." *Annals of Emergency Medicine* vol. 39,5 (2002): 500-9. doi:10.1067/mem.2002.122900

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Notrica DM, Sussman BL, Sayrs LW, St Peter SD, Maxson RT, Alder AC, Eubanks JW 3rd, Johnson JJ, Ostlie DJ, Ponsky T, Naiditch JA, Leys CM, Lawson KA, Greenwell C, Bhatia A, Garcia NM. Early vasopressor administration in pediatric blunt liver and spleen injury: An ATOMAC+ study. *J Pediatr Surg*. 2021 Mar;56(3):500-505. doi: 10.1016/j.jpedsurg.2020.07.007. Epub 2020 Jul 12. PMID: 32778447.

### **Level IV**

Harrell, Kevin N et al. "Management of blunt traumatic abdominal wall hernias: A Western Trauma Association multicenter study." *The journal of trauma and acute care surgery* vol. 91,5 (2021): 834-840. doi:10.1097/TA.00000000000003250

Magoteaux SR, Notrica DM, Langlais CS, Linnaus ME, Raines AR, Letton RW, Alder AC, Greenwell C, Eubanks JW, Lawson KA, Garcia NM, St Peter SD, Ostlie DJ, Leys CM, Bhatia A, Maxson RT, Tuggle DW, Ponsky TA. Hypotension and the need for transfusion in pediatric blunt spleen and liver injury: An ATOMAC+ prospective study. *J Pediatr Surg*. 2017 Jun;52(6):979-983. doi: 10.1016/j.jpedsurg.2017.03.021. Epub 2017 Mar 16. PMID: 28363471.

### **Level V**

Adelgais, Kathleen M et al. "Accuracy of the abdominal examination for identifying children with blunt intra-abdominal injuries." *The Journal of pediatrics* vol. 165,6 (2014): 1230-1235.e5. doi:10.1016/j.jpeds.2014.08.014



	<p>Perea, Lindsey L et al. "Low-density Isolated Intraperitoneal Free Fluid in Pediatric Blunt Trauma Is Not Associated with Abdominal Injury." <i>Pediatric emergency care</i> vol. 38,1 (2022): e143-e146. doi:10.1097/PEC.0000000000002189</p> <p><b>Expert Opinion:</b> Hoff, W., Holevar, M., Nagy, K., Patterson, L., Young, J., Arrillaga, A., Valenziano, C. (n.d.). Practice Management Guidelines for the Evaluation of Blunt Abdominal Trauma: The EAST Practice Management Guide</p> <p>Notrica DM, Eubanks JW 3rd, Tuggle DW, Maxson RT, Letton RW, Garcia NM, Alder AC, Lawson KA, St Peter SD, Megison S, Garcia-Filion P. Nonoperative management of blunt liver and spleen injury in children: Evaluation of the ATOMAC guideline using GRADE. <i>J Trauma Acute Care Surg.</i> 2015 Oct;79(4):683-93. doi: 10.1097/TA.0000000000000808. PMID: 26402546.</p>
<p><b>Education and communication dissemination plans (provider, nursing, and other departments/ services as needed).</b></p>	<p><b>Guideline to be reviewed and distributed at the following:</b></p> <ol style="list-style-type: none"> <li>1. Trauma M&amp;M and IOP</li> <li>2. Trauma Nurse staff meetings</li> <li>3. Critical Care Committee</li> <li>4. ED Physician meetings</li> </ol>
<p><b>Pertinent policies and/or procedures</b></p>	<ol style="list-style-type: none"> <li>1. Massive Blood Transfusion (F747)</li> <li>2. Blunt Abdominal Trauma clinical care algorithm (appendix B)</li> </ol>

### Blunt Abdominal Trauma Discharge Instructions

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#### About this topic

Trauma is an injury caused by some force or energy from the environment. Abdominal trauma can be very serious. Trauma calls for special doctors to care for you to help your chances of healing.

With abdominal trauma, you may have a mild injury like bruises. Other times you may have more serious problems if there is damage to any of your internal organs. You may need to have surgery right away. Trauma can lead to bleeding inside of your body, shock, or even death.

Most often, you will need care right away after a trauma. You may need emergency care where the accident happened. Staff will work to make sure you are breathing. They will control bleeding and protect you from any more harm. Then, you may be taken to the emergency room.

At the hospital, you will be given urgent medical care. The goal is to find and treat your injuries and to help you heal fully. How quickly you heal from a trauma may vary from person to person. Healing is based on how:

- Serious the injury and disability are
- Quickly treatment is given
- You respond to treatment

#### What care is needed at home?

- Ask your doctor what you need to do when you go home. Make sure you ask questions if you do not understand what the doctor says.
- Get lots of rest. You may have a problem sleeping or changes in sleep patterns. Be sure to take time to rest even if you cannot sleep. Take naps during the day.
- You may still have pain, even after fully healing. Talk with the doctor about your pain and how to control it.
- You may have emotional problems, worry, anxiety, or low mood. This could be caused by the trauma. The doctor may suggest counseling or other therapies.
- Talk to your doctor about how to care for your injuries. Ask your doctor about:
  - When you should change your bandages
  - When you may take a bath or shower
  - If you need to limit your activity or be on bedrest
  - If you need to be careful with lifting things over 10 pounds (4.5 kg)
  - When you may go back to your normal activities like work, driving, or sex
- Be sure to wash your hands before touching your wound or dressing.

#### What follow-up care is needed?

- Your condition needs close monitoring.
- Your doctor may ask you to make visits to the office to check on your progress. Be sure to keep these visits.

#### What drugs may be needed?

The doctor may order drugs to:

- Help with pain and swelling
- Prevent or fight an infection
- Prevent constipation

#### Will physical activity be limited?

You may need to rest for a while. You should not do physical activity that makes your health problem worse. If you run, work out, or play sports, you may not be able to do those things until your health problem gets better.

#### What problems could happen?

- Infection

- Bleeding
- Need for surgery

## What can be done to prevent this health problem?

There are no specific ways to prevent general trauma. But, you can help prevent traumatic events by:

- Always wear a seat belt with a shoulder strap.
- Drive safely. Obey speed limits.
- Do not drink and drive. Do not text or talk on the phone when you drive.
- Do not use illegal drugs.
- Stay active and work out to keep your muscles and joints strong and flexible.
- Follow special precautions when in high-risk situations, like:
  - Avoid activities that may cause falls.
  - Wear protective gear when participating in sports.
- Talk to your doctor if you are worried about domestic abuse and be sure you have resources for your safety.

## When do I need to call the doctor?

- Signs of infection. These include a fever of 100.4°F (38°C) or higher; chills, and redness near the site of injuries.
- Throwing up blood or passing blood with your stool
- Upset stomach and throwing up
- New blood in your urine or stool
- Increasing size of your belly
- Dizziness

## Teach Back: Helping You Understand

The Teach Back Method helps you understand the information we are giving you. After you talk with the staff, tell them in your own words what you learned. This helps to make sure the staff has described each thing clearly. It also helps to explain things that may have been confusing. Before going home, make sure you are able to do these:

- I can tell you about my condition.
- I can tell you what changes I need to make with my activities.
- I can tell you what I will do if I have fever, throw up blood, or have an upset stomach.

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### Liver Laceration

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#### About this topic

A liver laceration is a cut or tear in the liver. Your liver is located below the ribs on your right side. A liver laceration can be mild or very serious. You may need to have surgery right away. A liver laceration can lead to bleeding inside of your body, shock, or even death.

Most often, you will need care right away after this injury. You may need emergency care where the accident happened. Then, you may be taken to the emergency room. The goal is to find and treat your injuries and to help you heal fully. How quickly you heal from a liver laceration may vary from person to person. Healing is based on how:

- Serious the injury is
- Quickly treatment is given
- You respond to treatment

#### What are the causes?

A liver laceration may be a result of a car crash, fall, or an accident. It may be caused by violence, abuse, or a physical attack. Even an accident in the home or while playing sports may cause a liver laceration.

#### What can make this more likely to happen?

- Younger age people are at higher risk of trauma and domestic violence
- Not using a seatbelt or using it the wrong way
- Use of illegal drugs and alcohol abuse
- Violence or abuse
- High contact sports like football or boxing
- Handling guns or weapons

#### What are the main signs?

- Abdominal pain, especially in the right upper area of your belly
- Right shoulder or flank pain
- Feeling dizzy, weak, or short of breath
- Swollen belly
- Low blood pressure

#### How does the doctor diagnose this health problem?

The doctor will take your history and do an exam. The doctor will ask about what caused the injury. Your doctor may check your abdomen by feeling for tenderness, cuts, and swelling. The doctor may order:

- Lab tests
- X-rays
- Ultrasound
- MRI or CT scan

## How does the doctor treat this health problem?

How your liver laceration is treated is based on how serious it is. The doctor may need to:

- Do emergency surgery
- Give blood transfusions
- Give a large amount of IV fluids
- Check the fluid in your belly for bleeding
- Place a tube in your bladder to test your urine
- Do a procedure to stop the bleeding from a blood vessel
- Check your labs to see if the bleeding has stopped or is increasing

Later, the doctor will plan for long-term care. You may be moved to an Intensive Care Unit or admitted to the hospital so staff can watch you closely. More care may include rest, drugs, help with your breathing, and checking your oxygen. The staff will give you drugs to help with the pain. Sometimes, surgery and other therapy are needed based on your injuries and health problems.

## Are there other health problems to treat?

- Shock – Low blood flow all over your body. Shock is caused by low blood pressure.
- Bleeding – Rapid blood loss from the injury. This bleeding may be inside your body.
- Infection – When germs enter the site of injury or surgery. An infection can slow healing and may spread to other parts of the body.
- Blood clots – Cause block of blood flow to the heart or brain or through other blood vessels like in your legs.
- Mental and emotional problems – Changes in your behavior. You may have strong fear, loss of control, worry, and low mood.
- Post-traumatic stress disorder (PTSD) – Includes memories of the traumatic event and problems coping.

## What drugs may be needed?

The doctor may order drugs to:

- Help with blood pressure
- Help with pain and swelling
- Fight an infection
- Prevent constipation
- Help with blood clotting

## What problems could happen?

- Infection
- Bleeding
- Need for surgery
- Problems with your bowels

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## **Last Reviewed Date**

2021-07-13



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# Spleen Injury

## What is a Spleen?

- An organ that is located in the upper left area of the abdomen and below the stomach.
- The spleen's job is to filter and remove old blood cells and bacteria.
- It also makes red blood cells and is important in helping the body fight infection.

## Spleen Injuries

- The spleen is easily injured in children due to falls, bicycle crashes, contact sports, motor vehicle crashes, and violence.
- A spleen injury may also happen from a gunshot wound or knife wound which tears and cuts the organ.
- A spleen injury takes time and rest to heal.
- It is important that the spleen heal without another injury. Even a minor re-injury could cause serious complications such a bleeding, longer recovery time, or even death.

## Spleen Precautions:

- Do not lift, push, or pull more than 10 pounds.
- No contact sports or activities such as soccer, football, hockey, wrestling, running, bicycle or scooter riding for at least six to eight weeks.
  - Your doctor will tell you when it is OK to start these activities.
- Do not take aspirin, Advil®, Aleve® or Ibuprofen, Motrin®, or other anti-inflammatory medications for six weeks unless approved by a doctor. These medications may increase your risk of bleeding.
- Try to take pain medications with food to prevent upset stomach.

**Call your physician** or go to the nearest emergency department immediately if you experience any of the following:

- Worsening shortness of breath
- New or increase in stomach pain, left shoulder or left lower back pain
- Fever greater than 101 degree F
- Fainting or dizziness when standing up
- Increase in heart rate
- Pale color skin
- Increased weakness or feeling very tired
- Lack of appetite, upset stomach, or vomiting
- GI bleeding or black-colored stools

Return to school on: \_\_\_\_\_

No Physical exercise class/gym until: \_\_\_\_\_

### Spleen Injury Discharge Instructions

Printed on 2023-03-08

*You must carefully read the "Consumer Information Use and Disclaimer" below in order to understand and correctly use this information*

#### About this topic

A spleen injury may mean your spleen has a cut or laceration in it. Your spleen is an organ in the upper left part of your belly under your ribs. It is part of your immune system and helps to fight infections. Your spleen makes blood cells and also helps get rid of old blood or damaged blood cells. Your spleen stores platelets and white blood cells until your body needs them.

A spleen injury can be mild or very serious. Your spleen may be bruised or it may rupture or break open. Your care is based on what kind of injury you have and your condition. Sometimes, your doctor may leave your spleen in place to heal. Other times, you need to have your spleen taken out or have the blood supply to it stopped. A ruptured spleen is an emergency and occurs when the covering of the spleen breaks open and can lead to bleeding inside your body, shock, or even death. You may need to have surgery right away.

Most often, you will need care right away after this injury. You may need emergency care where the accident happened. Then, you may be taken to the emergency room. The goal is to find and treat your injuries and to help you heal fully. How quickly you heal from a spleen injury may vary from person to person. Healing is based on how:

- Serious the injury is
- Quickly treatment is given
- You respond to treatment

#### What care is needed at home?

- Ask your doctor what you need to do when you go home. Make sure you ask questions if you do not understand what the doctor says.
- Get lots of rest. You may have a problem sleeping or changes in sleep patterns. Be sure to take time to rest, even if you cannot sleep. Take naps during the day.
- You may still have pain, even after fully healing. Talk with the doctor about your pain and how to control it.
- You may have emotional problems, worry, anxiety, or low mood. This could be caused by the trauma. The doctor may suggest counseling or other therapies.
- Talk to your doctor about how to care for your injuries. Ask your doctor about:
  - When you should change your bandages
  - When you may take a bath or shower
  - If you need to limit your activity or be on bedrest
  - If you need to be careful with lifting things over 10 pounds (4.5 kg)
  - When you may go back to your normal activities like work, driving, or sex
- Be sure to wash your hands before touching your wound or dressing.

#### What follow-up care is needed?



- Your condition needs close monitoring.
- Your doctor may ask you to make visits to the office to check on your progress. Be sure to keep these visits.
- You may need to have blood tests or other follow-up tests. Be sure to keep these visits.
- If you have stitches or staples, you will need to have them taken out. Your doctor will often want to do this in 1 to 2 weeks.

## **What drugs may be needed?**

The doctor may order drugs to:

- Help with blood pressure
- Help with pain and swelling
- Fight an infection
- Prevent constipation

## **Will physical activity be limited?**

You may need to rest for a while. You should not do physical activity that makes your health problem worse. If you run, work out, or play sports, you may not be able to do those things until your health problem gets better.

## **What problems could happen?**

- Infection
- Bleeding
- Need for surgery at a later time
- Problems with your bowels

## **What can be done to prevent this health problem?**

There are no specific ways to prevent general trauma. But, you can help prevent traumatic events by:

- Always wear a seat belt with a shoulder strap.
- Drive safely. Obey speed limits.
- Do not drink and drive. Do not text and drive.
- Do not use illegal drugs.
- Stay active and work out to keep your muscles and joints strong and flexible.
- Follow special precautions when in high-risk situations, like:
  - Avoid activities that may cause falls.
  - Wear protective gear when participating in sports.
- Talk to your doctor if you are worried about domestic abuse and be sure you have resources for your safety.

## **When do I need to call the doctor?**

- Signs of infection. These include a fever of 100.4°F (38°C) or higher; chills.
- Increasing size of your belly
- Feeling short of breath
- Dizziness
- Belly pain that does not get better or is getting worse
- Bruises across your belly, sides, or back
- Pain behind your ribs or along your back

- Very pale skin

## Teach Back: Helping You Understand

The Teach Back Method helps you understand the information we are giving you. After you talk with the staff, tell them in your own words what you learned. This helps to make sure the staff has described each thing clearly. It also helps to explain things that may have been confusing. Before going home, make sure you are able to do these:

- I can tell you about my condition.
- I can tell you what changes I need to make with my activities.
- I can tell you what I will do if I have fever, belly pain, or my belly is getting bigger.

## Where can I learn more?

Family Doctor

<https://familydoctor.org/splenectomy/>

NHS

<https://www.nhs.uk/conditions/spleen-problems-and-spleen-removal/>

Consumer Information Use and Disclaimer:

This generalized information is a limited summary of diagnosis, treatment, and/or medication information. It is not meant to be comprehensive and should be used as a tool to help the user understand and/or assess potential diagnostic and treatment options. It does NOT include all information about conditions, treatments, medications, side effects, or risks that may apply to a specific patient. It is not intended to be medical advice or a substitute for the medical advice, diagnosis, or treatment of a health care provider based on the health care provider's examination and assessment of a patient's specific and unique circumstances. Patients must speak with a health care provider for complete information about their health, medical questions, and treatment options, including any risks or benefits regarding use of medications. This information does not endorse any treatments or medications as safe, effective, or approved for treating a specific patient. UpToDate, Inc. and its affiliates disclaim any warranty or liability relating to this information or the use thereof. The use of this information is governed by the Terms of Use, available at

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