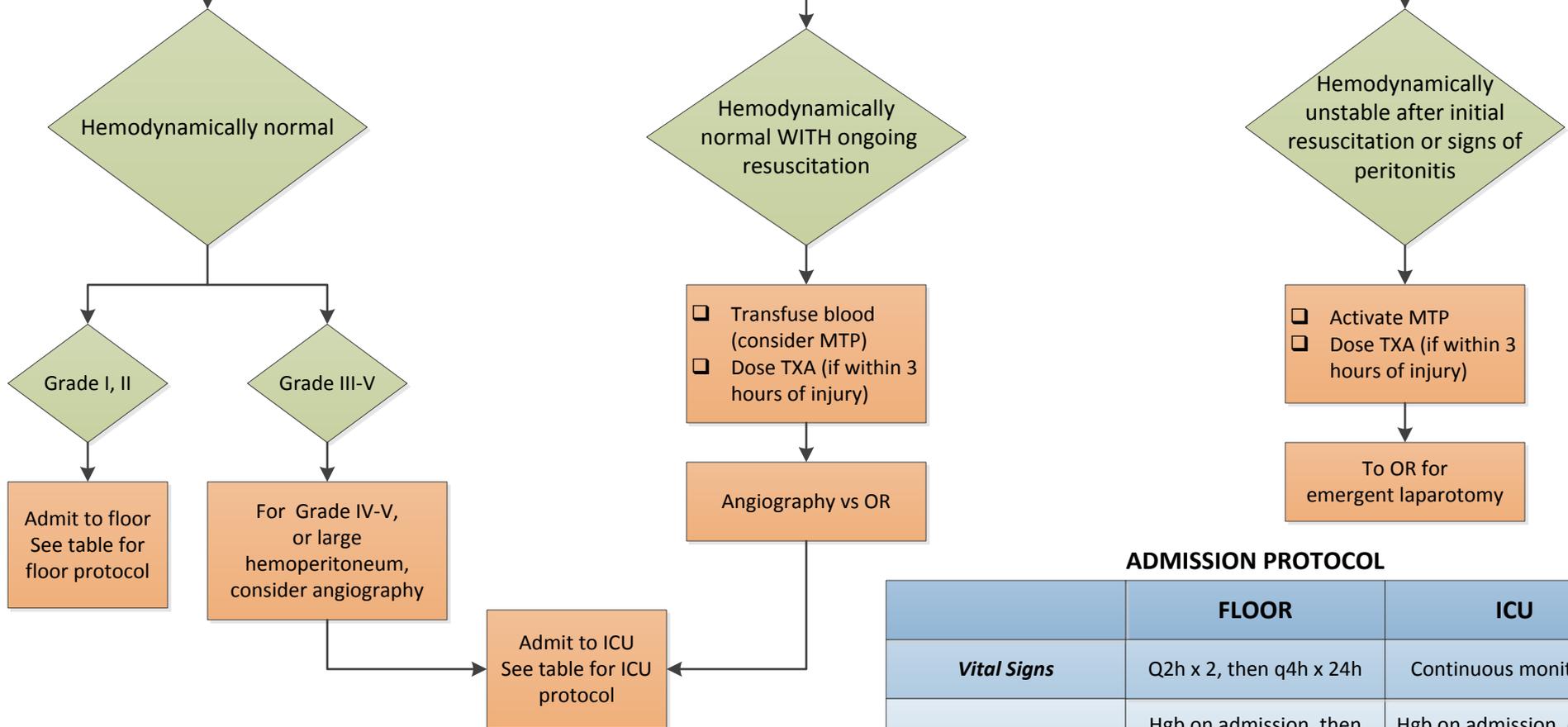


MHealth Fairview Trauma System Liver and Spleen Injury Guideline

CT Scan showing Liver or Spleen Injury



ADMISSION PROTOCOL

	FLOOR	ICU
Vital Signs	Q2h x 2, then q4h x 24h	Continuous monitoring
Lab	Hgb on admission, then daily in a.m.	Hgb on admission, q8h x3, then daily in a.m.
Diet	Advance as tolerated	Clears until Hb stable x 2, then ADAT
Activity	Up ad lib	Bedrest with bathroom privileges
DVT prophylaxis	Start when hemodynamically normal x24h AND not actively transfusing	Start when hemodynamically normal x24h AND not actively transfusing
MD notification	SBP < 90, HR > 120, worsening abdominal exam	SBP < 90, HR > 120, worsening abdominal exam

- Pts with grade III or higher injuries should be admitted to a facility with both ICU and IR capability. This may require transfer to UMMC, contact the Adult Emergency Referral Line at 612-672-7575.
- Pts with isolated splenic injury of any grade may be admitted to the floor following splenectomy, depending upon post-procedure stability.
- Repeat imaging is NOT mandatory, but consider in patients with suspicion for abscess (eg. fevers, worsening abdominal exam, ileus, leukocytosis)
- Consider HIDA scan 48-72h after admission for pts with liver injury and suspected bile leak (eg fevers, worsening abdominal exam, leukocytosis)

AAST Solid Organ Injury Scale - 2018 Revision:

Grade	Liver	Spleen	Renal
I	– Subcapsular hematoma <10% surface area	– Subcapsular hematoma <10% surface area	– Subcapsular hematoma and/or parenchymal contusion without laceration
	– Parenchymal laceration <1 cm in depth	– Parenchymal laceration <1 cm depth – Capsular tear	
II	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <10 cm in diameter	– Subcapsular hematoma 10–50% surface area; intraparenchymal hematoma <5 cm	– Perirenal hematoma confined to Gerota fascia
	– Laceration 1–3 cm in depth and ≤ 10 cm length	– Parenchymal laceration 1–3 cm	– Renal parenchymal laceration ≤ 1 cm depth without urinary extravasation
III	– Subcapsular hematoma >50% surface area; ruptured subcapsular or parenchymal hematoma – Intraparenchymal hematoma >10 cm	– Subcapsular hematoma >50% surface area; ruptured subcapsular or intraparenchymal hematoma ≥ 5 cm	– Renal parenchymal laceration >1 cm depth without collecting system rupture or urinary extravasation
	– Laceration >3 cm depth – Any injury in the presence of a liver vascular injury or active bleeding contained within liver parenchyma	– Parenchymal laceration >3 cm depth	– Any injury in the presence of a kidney vascular injury or active bleeding contained within Gerota fascia
IV	– Parenchymal disruption involving 25–75% of a hepatic lobe	– Parenchymal laceration involving segmental or hilar vessels producing >25% devascularization	– Parenchymal laceration extending into urinary collecting system with urinary extravasation – Renal pelvis laceration and/or complete ureteropelvic disruption
	– Active bleeding extending beyond the liver parenchyma into the peritoneum	– Any injury in the presence of a splenic vascular injury or active bleeding confined within splenic capsule	– Active bleeding beyond Gerota fascia into the retroperitoneum or peritoneum – Segmental or complete kidney infarction(s) due to vessel thrombosis without active bleeding
V	– Parenchymal disruption >75% of hepatic lobe	– Shattered spleen	– Shattered kidney with loss of identifiable parenchymal renal anatomy
	– Juxtahepatic venous injury to include retrohepatic vena cava and central major hepatic veins	– Any injury in the presence of splenic vascular injury with active bleeding extending beyond the spleen into the peritoneum	– Main renal artery or vein laceration or avulsion of hilum – Devascularized kidney with active bleeding

- Vascular injury is defined as a pseudoaneurysm or arteriovenous fistula and appears as a focal collection of vascular contrast that decreases in attenuation with delayed imaging. Active bleeding from a vascular injury presents as vascular contrast, focal or diffuse, that increases in size or attenuation in delayed phase. Vascular thrombosis can lead to organ infarction.
- Grade based on highest grade assessment made on imaging, at operation or on pathologic specimen.
- More than one grade of organ injury may be present and should be classified by the higher grade of injury.
- Advance one grade for multiple injuries up to a grade III.

References

Kozar RA, Crandall M, Shanmuganathan K, Zarzaur BL, Coburn M, Cribari C, Kaup K, Schuster K, Tominaga GT. Organ injury scaling 2018 update: Spleen, liver, and kidney. (2018) The journal of trauma and acute care surgery. 85 (6): 1119-1122

Rowell, SE, Biffi, WL, Brasel, K, Moore, EE, Albrecht, RA, DeMoya, M, Namias, N, Schreiber, MA, Cohen, MJ, Shatz, DV, Karmy-Jones, R, Moore, FA. Western Trauma Association Critical Decisions in Trauma: Management of adult blunt splenic trauma—2016 updates. (2017) The journal of trauma and acute care surgery. 82 (4): 787-793

Hildebrand, DR, Ben-sassi, A, Ross, NP, Macivicar, R, Frizelle, FA, Watson, AJM. Modern management of splenic trauma. (2014) BMJ. 348 (1864): 1-7

Miller, PR, Chang, MC, Hoth, JJ, Mowery, NT, Hildreth, AN, Martin, RS, Holmes, JH, Meredith, JW, Requarth, JA. Prospective trial of angiography and embolization for all grade III to V blunt splenic injuries: nonoperative management success rate is significantly improved. (2014) The journal of American college of surgeons. 218(4): 644-648