Blunt Abdominal Trauma, Splenectomy, and Post-Splenectomy Vaccination
Agenda

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Purpose

This CPG provides evidence–based guidelines for the management of blunt abdominal injury and provides post splenectomy vaccination recommendations.
Summary

- Patients with hemodynamic instability after blunt abdominal trauma and evidence of hemoperitoneum on FAST should undergo exploratory laparotomy immediately.

- Patients with active hemorrhage are best managed by splenectomy.
Key Principles of CPG

- Background
- Splenectomy
- OPSI Prevention
- Performance Improvement (PI) Monitoring

- System Reporting and Frequency
- Responsibilities
- References
- Appendices
Background

- Blunt abdominal trauma provides a diagnostic and clinical challenge over penetrating trauma in the combat setting
  - Surgical units often lack computed tomography (CT)
  - Providers will likely be dependent on physical and focused assessment with sonography for trauma (FAST) examinations
- Unstable patients with an identified hemoperitoneum on FAST should undergo exploratory laparotomy
Background

- If at a facility that can ensure adequate follow-up and evaluation (Typically Role 3 or higher), non-operative management may be considered
  - No transfer until intraabdominal hemorrhage is assessed and controlled
  - Evolving peritonitis or require persistent blood products to maintain blood pressure warrant an exploratory laparotomy

- Interventional radiology, if available, may be used as an adjunctive procedure for blunt injury of visceral organs
BAT (known or suspected)

Guidelines apply for Level II+ and Level III with surgical capability. Focused assessment with sonography for trauma (FAST) exam reliability is very operator dependent. Providers who rely on FAST exam must be mindful of risk of false negative exam. Only providers with personal experience of accurate findings should rely on the FAST exam as a screening tool for hemoperitoneum. If splenic preservation is to be attempted (including embolization), the patient should remain in the facility for a minimum of 48 hours of observation before being transported to another facility.
Splenectomy

- Splenectomy should be done for all grade IV and V splenic injuries and any lacerated spleens with active hemorrhage encountered during laparotomy.

- Non-operative management may be considered for grade III or below injuries without active extravasation, pseudo aneurysm, hemoperitoneum or other indications for laparotomy.
  - Patient must be under direct care of an experienced trauma surgeon.
  - Ideally, patients should be monitored for 48 hours in a Role 3 facility prior to aeromedical evacuation out of theater.
  - CT scan should be obtained at the end of 48 hours to assess for complications.
Interventional radiology embolization of the spleen may be considered as an adjunct to non-operative therapy, but patients must be monitored for 48 hours following the procedure prior to aeromedical evacuation.

Failure of non-operative management include, but are not limited to hypotension and requirements for blood transfusion.

Failure of non-operative management requires splenectomy.
Overwhelming Post-Splenectomy Infection (OPSI) is a devastating complication with mortality rates approaching 50%.
- Life long risk with incidence in trauma patients <0.5%.

Clinical presentation includes:
- Initial flu-like symptoms
- Rapid progression to sepsis
- Consumptive coagulopathy
- Bacteremia
- Death within 12-48 hrs

Causative organisms are typically encapsulated including: 
*Streptococcus pneumonia* (pneumococcus), *Hemophilus influenzae* type B, and *Neisseria meningitis* (meningococcal).
Vaccination used to prevent OPSI

- Pneumococcal (Pneumovax 23©): Single Dose
- Haemophilus influenza type B (ActHIB©, PedvaxHIB©, or Hiberix©): Single Dose
- Meningococcal (Menactra© or Menveo©): Single Dose

Vaccinations indicated for all splenectomized patients and those deemed to be functionally asplenic (<51% normal architecture and/or vascularization)
All patients should be administered all three vaccinations in the immediate postoperative period at the first facility that can do so.

Important to document administration of vaccines or explaining why one or more were not administered.

- Documentation to include date, time, dose, lot number/lot sticker, manufacturer and nurse signature
- Documentation in the electronic medical record preferred

After aeromedical evacuation of patients, Role 3 and Role 4 facilities should not assume vaccines were given without documentation.
### INTENT (EXPECTED OUTCOMES)
- All patients with Splenic lacerations grade IV-V will have splenectomy prior to theater evacuation
- All patients with blunt abdominal trauma who remain unstable after initial resuscitation will undergo exploratory.
- To ensure all patients in the CENTCOM AOR who are rendered asplenic by trauma and/or surgery are completely vaccinated against OPSS.

### DATA SOURCE
- Patient Record
- DoD Trauma Registry (DoDTR)
- Nursing MAR
PI Monitoring

- PERFORMANCE/ADHERENCE MEASURES

- All patients with grade IV-V Splenic lacerations underwent splenectomy prior to transport out of theater.

- All blunt abdominal trauma patients who remained unstable after initial resuscitation underwent exploratory laparotomy.

- All patients undergoing splenectomy and those who are functionally asplenic received all three post-splenectomy vaccines.

- All post-splenectomy vaccinations are documented in the physician orders and nursing MARs.

- All vaccination documentation is complete and accurate to include date, time, dose, lot number/lot sticker, manufacturer, and nurse signature for each of the three vaccines administered.
References


10. Recommended Adult Immunization Schedule: UNITED STATES 2011, the Centers for Disease Control (CDC) and Prevention’s Advisory Committee on Immunization Practices (ACIP); www.cdc.gov/vaccines.
Appendices in CPG

- Appendix A: Algorithm for Evaluating Blunt Abdominal Trauma
- Appendix B: Timing of Vaccination After Splenectomy
- Appendix C: Additional Information Regarding Off-Label Uses in CPGs