



## Complete Summary

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### GUIDELINE TITLE

Practice management guidelines for the nonoperative management of blunt injury to the liver and spleen.

### BIBLIOGRAPHIC SOURCE(S)

EAST Practice Management Guidelines Work Group. Practice management guidelines for the nonoperative management of blunt injury to the liver and spleen. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2000. 33 p. [120 references]

## COMPLETE SUMMARY CONTENT

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- METHODOLOGY - including Rating Scheme and Cost Analysis
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## SCOPE

### DISEASE/CONDITION(S)

Blunt injury to liver and spleen

### GUIDELINE CATEGORY

Diagnosis  
Evaluation  
Management

### CLINICAL SPECIALTY

Emergency Medicine  
Gastroenterology  
Internal Medicine  
Pediatrics  
Radiology

### INTENDED USERS

Advanced Practice Nurses  
Allied Health Personnel  
Nurses  
Physician Assistants  
Physicians

#### GUIDELINE OBJECTIVE(S)

To provide recommendations for the nonoperative management of blunt injury to the liver and spleen

#### TARGET POPULATION

Hemodynamically stable children and adults with splenic and hepatic injuries

#### INTERVENTIONS AND PRACTICES CONSIDERED

Diagnostic assessment of blunt injury to the liver or spleen

1. Scintigraphy
2. Diagnostic Peritoneal Lavage (DPL)
3. Computed tomography (CT), including oral and intravenous contrast
4. Laparoscopy
5. Ultrasound
6. Evaluation of grade or severity of hepatic or splenic injury, neurologic status, presence of associated injuries

Nonoperative management

1. Angiographic embolization (as adjunct to nonoperative management)
2. Follow-up to ensure medical evidence of healing
3. Follow-up serial computed tomography scans (considered but not recommended)
4. Bed rest/activity restriction (considered but not recommended)

#### MAJOR OUTCOMES CONSIDERED

- Accuracy of diagnosis of blunt injury to the liver and spleen (false-positive, false-negative rates; sensitivity and specificity of diagnostic modalities)
- Morbidity and mortality related to blunt injury to liver and spleen and other intra-abdominal complications
- Need for transfusions
- Length of stay (hospital or intensive care unit)
- Rate of nontherapeutic laparotomies
- Mean time to healing of splenic and injuries
- Splenic salvage rate
- Late hemorrhage rate, including fatal hemorrhages

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Secondary Sources)  
Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

References were identified using the computerized searches of the National Library of Medicine (NLM) using the National Library of Medicine's search service to access Medline. The search was designed to identify English language citations between 1976 and 1996 using the keywords: splenic injury; liver injury; intestinal injury; and blunt abdominal trauma. The bibliographies of the selected references were examined to identify relevant articles not identified by the computerized search. One hundred forty-five articles were identified.

Literature reviews, case reports, and editorials were excluded. A cohort of seven trauma surgeons selected 120 articles for review and analysis.

### NUMBER OF SOURCE DOCUMENTS

120

### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Classification Scheme:

Class I: Prospective, Randomized, Double-Blinded Study

Class II: Prospective, Randomized, Non-Blinded Trial

Class III: Retrospective Analysis of Patient Series

### METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

## RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Level I: The recommendation is convincingly justifiable based on scientific evidence alone-based on class I data.

Level II: The recommendation is reasonably justifiable by available scientific evidence and strongly supported by expert opinion-supported by class I or class II data.

Level III: Adequate scientific evidence is lacking but the recommendation is widely supported by available data and expert opinion-supported by Class II or class III data.

## COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft document is submitted to all members of the panel for review and modification. Subsequently the guidelines are forwarded to the chairmen of the Eastern Association of Trauma ad hoc committee for guideline development. Final modifications are made and the document is forwarded back to the individual panel chairpersons.

# RECOMMENDATIONS

## MAJOR RECOMMENDATIONS

Level I-III recommendations and the class of data grading (I-III) are defined at the end of the "Major Recommendations" field.

### Summary

Nonoperative management of blunt adult and pediatric hepatic and splenic injuries is the treatment modality of choice in hemodynamically stable patients, irrespective of the grade of injury. It is associated with a low overall morbidity and mortality and does not result in increases in length of stay, need for blood transfusions, bleeding complications, or visceral associated hollow viscus injuries as compared with operative management. There is no evidence supporting routine imaging (computed tomography or ultrasound) of the hospitalized, clinically improving, hemodynamically stable patient. Nor is there evidence to support the practice of keeping the clinically stable patient at bedrest. Finally, angiographic

embolization is a useful adjunct in nonoperative management of the hemodynamically stable patients who continue to bleed.

#### A. Level I Recommendations

There are insufficient data to suggest nonoperative management as a Level I recommendation for the initial management of blunt injuries to the liver and/or spleen in the hemodynamically stable patient.

#### B. Level II Recommendations

1. There are class II and mostly class III data to suggest that nonoperative management of blunt hepatic and/or splenic injuries in a hemodynamically stable patient is reasonable.
2. The severity of hepatic or splenic injury (as suggested by computed tomography grade or degree of hemoperitoneum), neurologic status, and/or the presence of associated injuries are not contraindications to nonoperative management.
3. Abdominal computed tomography is the most reliable method to identify and assess the severity of the injury to the spleen or liver.

#### C. Level III Recommendations

1. The clinical status of the patient should dictate the frequency of follow-up scans.
2. Initial computed tomography of the abdomen should be performed with oral and intravenous contrast to facilitate the diagnosis of hollow viscus injuries.
3. Medical clearance to resume normal activity status should be based on evidence of healing.
4. Angiographic embolization is an adjunct in the nonoperative management of the hemodynamically stable patient with hepatic and splenic injuries and evidence of ongoing bleeding.

#### Definitions:

##### Recommendation Scheme:

Level I: The recommendation is convincingly justifiable based on scientific evidence alone-based on class I data.

Level II: The recommendation is reasonably justifiable by available scientific evidence and strongly supported by expert opinion-supported by class I or class II data.

Level III: Adequate scientific evidence is lacking but the recommendation is widely supported by available data and expert opinion-supported by Class II or class III data.

##### Evidence Classification Scheme:

Class I: Prospective, randomized studies

Class II: Prospective, non-comparative studies; retrospective series with controls

Class III: Retrospective analyses (case series, databases or registries, case reviews)

#### CLINICAL ALGORITHM(S)

None provided

### EVIDENCE SUPPORTING THE RECOMMENDATIONS

#### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Conclusions were based on evidence obtained from prospective randomized studies (Class I); prospective, non-comparative studies; retrospective series with controls (Class II); or retrospective analyses (case series, databases or registries, case reviews (Class III). The evidentiary tables included one Class I reference, 29 Class II references, and 85 Class III references.

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

### BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

#### POTENTIAL BENEFITS

Advantages of non-operative management include avoidance of non-therapeutic celiotomies and the associated cost and morbidity, fewer intra-abdominal complications compared to operative repair, and reduced transfusion risks.

#### POTENTIAL HARMS

- Hemorrhage
  - Late fatal hemorrhage after nonoperative management of the liver
  - Delayed hemorrhage after rupture of a splenic artery pseudoaneurysm
- Risks entailed in nonoperative management of patients with pathologic spleens
- Risks entailed in missing hollow viscus injuries through nonoperative management

Subgroups Most Likely to Be Harmed:

Patients older than 50 to 60 years of age with splenic injuries are more likely to fail nonoperative management and also are at greater risk for nonoperative related complications.

### IMPLEMENTATION OF THE GUIDELINE

#### DESCRIPTION OF IMPLEMENTATION STRATEGY

The guideline developers make the following recommendations regarding implementation:

Implementation involves extensive education and inservicing of nursing, resident, and attending staff members and has one important guiding principle: the guidelines must be available to the clinicians in real time while they are actually seeing the patient. The two most common ways to apply these are by using either a critical pathway or a clinical management protocol. A critical pathway is a calendar of expected events that has been found to be very useful within designated diagnosis-related groups. In trauma, where there are multiple diagnosis-related groups used for one patient, pathways have not been found to be easily applied with the exception of isolated injuries. Clinical management protocols, on the other hand, are annotated algorithms that answer the "if, then" decision making problems and have been found to be easily applied to problem-, process-, or disease-related topics. The clinical management protocol consists of an introduction, an annotated algorithm and a reference page. The algorithm is a series of "if, then" decision making processes. There is a defined entry point followed by a clinical judgment and/or assessment, followed by actions, which are then followed by outcomes and/or endpoints. The advantages of algorithms are that they convey the scope of the guideline, while at the same time organize the decision making process in a user-friendly fashion. The algorithms themselves are systems of classification and identification that should summarize the recommendations contained within a guideline. It is felt that in the trauma and critical care setting, clinical management protocols may be more easily applied than critical pathways, however, either is acceptable provided that the formulated guidelines are followed. After appropriate inservicing, a pretest of the planned guideline should be performed on a limited patient population in the clinical setting. This will serve to identify potential pitfalls. The pretest should include written documentation of experiences with the protocol, observation, and suggestions. Additionally, the guidelines will be forwarded to the chairpersons of the multi-institutional trials committees of the Eastern Association for the Surgery of Trauma, the Western Association for the Surgery of Trauma, and the American Association for the Surgery of Trauma. Appropriate guidelines can then be potentially selected for multi-institutional study. This process will facilitate the development of user friendly pathways or protocols as well as evaluation of the particular guidelines in an outcome based fashion.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

EAST Practice Management Guidelines Work Group. Practice management guidelines for the nonoperative management of blunt injury to the liver and spleen. Winston-Salem (NC): Eastern Association for the Surgery of Trauma (EAST); 2000. 33 p. [120 references]

#### ADAPTATION

Not applicable: The guideline was not adapted from another source.

#### DATE RELEASED

2000

#### GUIDELINE DEVELOPER(S)

Eastern Association for the Surgery of Trauma - Professional Association

#### SOURCE(S) OF FUNDING

Eastern Association for the Surgery of Trauma (EAST)

#### GUIDELINE COMMITTEE

Eastern Association for the Surgery of Trauma (EAST) Practice Management Guidelines Work Group

#### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Eastern Association for the Surgery of Trauma (EAST) Practice Management Guidelines Work Group: Maria Alonso, MD; Collin Brathwaite, MD; Victor Garcia, MD; Lisa Patterson, MD; Tres Scherer, MD; Perry Stafford, MD; Jeffrey Young, MD

#### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

#### GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

#### GUIDELINE AVAILABILITY

Electronic copies are available (in PDF format) from the [Eastern Association for the Surgery of Trauma \(EAST\) Web site](#).

Print copies: Available from EAST, c/o Victor Garcia, M.D., Childrens' Hospital Medical Center, Pediatric Surgery Department, 3333 Burnett Avenue, OSB3, Cincinnati, OH 45002, (513) 636-4453, email: [garcv0@chmcc.org](mailto:garcv0@chmcc.org).

## AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Eastern Association for the Surgery of Trauma (EAST) Ad Hoc Committee on Practice Management Guideline Development. Utilizing evidence based outcome measures to develop practice management guidelines: a primer. Allentown (PA): EAST, 2000. 18 p.

Electronic copies are available (in PDF format) from the [EAST Web site](#).

Print copies: Available from the EAST Guidelines, c/o Fred A. Luchette, MD, Loyola University Medical Center, Department of Surgery Bldg. 110-3276, 2160 S. First Avenue, Maywood, IL 60153; Phone: (708) 327-2680; E-mail: fluchet@lumc.edu.

## PATIENT RESOURCES

None available

## NGC STATUS

This summary was completed by ECRI on September 17, 2001. The information was verified by the guideline developer on September 27, 2001.

## COPYRIGHT STATEMENT

This NGC summary is based on the original guideline which is copyrighted by the Eastern Association for the Surgery of Trauma (EAST).

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