



*PROGRAM REQUIREMENTS FOR GRADUATE MEDICAL  
EDUCATION IN ACUTE CARE SURGERY*

*Sponsored by:  
American Association for the Surgery of Trauma (AAST)*

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# ***PROGRAM REQUIREMENTS FOR GRADUATE MEDICAL EDUCATION IN ACUTE CARE SURGERY***

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## **I. Introduction**

### **Duration and Scope of Training**

Institutions offering fellowships in Acute Care Surgery must provide the necessary education to qualify the fellow as an acute care surgical specialist in the care of patients, in teaching, and in research. Surgeons admitted to each fellowship are required to have completed the core training requirements of an RRC-approved residency in General Surgery. Thus, the fellows should have already developed a satisfactory level of clinical maturity, technical skills, and surgical judgment that will enable them to begin a fellowship in the specialty surgical field of Acute Care Surgery. The period of training must be two years and the program must comply with the institutional requirement for fellowship training. The key components of this training are to include trauma surgery, surgical critical care, and emergency general surgery.

## **II. Institutional Support**

### **A. Sponsoring Institution**

One sponsoring institution must assume ultimate responsibility for the program, as described in the Institutional Requirements, and this responsibility extends to fellow assignments at all participating institutions.

### **B. Participating Institutions**

1. Assignment to an institution must be based on a clear educational rationale, integral to the program curriculum, with clearly stated activities and objectives, and should provide resources not otherwise available to the program. When multiple participating institutions are used, there should be assurance of the continuity of the education experience.
2. Assignment to a participating institution requires a letter of agreement with the sponsoring institution that provides an educational experience for a resident that is one month in duration or longer. In instances where two or more participating institutions in the program function as a single unit under the authority of the program director, letters are not necessary. Such a letter of agreement should:
  - a. Identify the faculty who will assume both educational and supervisory responsibilities for residents;
  - b. Specify their responsibilities for teaching, supervision, and formal evaluation of fellows, as specified later in this document per sections III.B. and VII.A. of the Program Requirements;
  - c. Specify the duration and content of the educational experience; and
  - d. State the policies and procedures that will govern fellow education during the assignment.
3. Assignments at participating institutions must be of sufficient length to ensure a quality educational experience and should provide sufficient opportunity for continuity of care. Assignments at participating institutions will be a minimum of one month. Although the number of participating institutions may vary with the various specialties' needs, all participating institutions must demonstrate the ability to promote the program goals and educational and peer activities. Exceptions must be justified in writing and pre-approved.

## **III. Program Personnel and Resources**

A. Program Director

1. There must be a single program director responsible for the program. The person designated with this authority is accountable for the operation of the program and should be a member of the faculty of the sponsoring or integrated institution and the American Association for the Surgery of Trauma.
2. The program director, together with the faculty, is responsible for the general administration of the program, and for the establishment and maintenance of a stable educational environment. Adequate lengths of appointment for both the program director and faculty are essential to maintaining such an appropriate continuity of leadership. There should be a minimum of two faculty members, including the program director.
3. Qualifications of the program director are as follows:
  - a. The program director must possess the requisite specialty expertise, as well as documented educational and administrative abilities.
  - b. The program director must be certified in General Surgery and Surgical Critical Care by the American Board of Surgery.
  - c. The program director must be appointed in good standing and based at the primary teaching site.
  - d. The program director must be a member of the AAST.
  - e. The program director must show evidence of ongoing scholarly activity.
4. Responsibilities of the program director are as follows:
  - a. The program director must oversee and organize the activities of the educational program in all institutions that participate in the program. This includes selecting and supervising the faculty and other program personnel at each participating institution, appointing a local site director, and monitoring appropriate fellow supervision at all participating institutions.
  - b. The program director is responsible for preparing an accurate statistical and narrative description of the program as requested by the site selection committee of the American Association for the Surgery of Trauma (AAST), as well as annually updating both

program and resident records through the ACGME's Accreditation Data System, or a similar data system as requested by the AAST.

- c. The program director must ensure the implementation of fair policies, grievance procedures, and due process, as established by the sponsoring institution and in compliance with the Institutional Requirements.
- d. The program director must seek the prior approval in writing from the AAST for any changes in the program that may significantly alter the educational experience of the fellows. Examples of such changes include:
  - i. The addition or deletion of a participating institution;
  - ii. A change in the format of the educational program;
  - iii. An addition of an international rotation
  - iv. A change in the approved fellow complement; and/or
  - v. Designation of a new program director.

On review of a proposal for any such major change in a program, the AAST may determine that a focused site visit is necessary.

#### B. Faculty

- 1. At each participating institution, there must be a sufficient number of faculty with documented qualifications to adequately instruct and supervise all fellows in the program. A minimum number of 1 faculty per fellow must be present at each participating institution.
- 2. The faculty, furthermore, must devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities. They must demonstrate a strong interest in the education of fellows, and must support the goals and objectives of the Acute Care Surgery fellowship.
- 3. Qualifications of the physician faculty are as follows:
  - a. The physician faculty must possess the requisite specialty expertise and competence in clinical care and teaching abilities, as well as documented educational and administrative abilities and experience in their field.



- b. The physician faculty must be certified in the specialty by the American Board of Surgery, or possess qualifications judged to be acceptable by the AAST.
  - c. The physician faculty must be appointed in good standing to the staff of an institution participating in the program.
- 4. The responsibility for establishing and maintaining an environment of inquiry and scholarship rests with the faculty, and an active research component must be included in each program. Scholarship is defined as the following:
  - a. The scholarship of discovery, as evidenced by peer-reviewed funding or by publication of original research in a peer-reviewed journal;
  - b. The scholarship of dissemination, as evidenced by review articles or chapters in textbooks;
  - c. The scholarship of application, as evidenced by the publication or presentation of, for example, case reports or clinical series at local, regional, or national professional and scientific society meetings.
  - d. Complementary to the above scholarship is the regular participation of the teaching staff in clinical discussions, rounds, journal clubs, and research conferences in a manner that promotes a spirit of inquiry and scholarship (e.g., the offering of guidance and technical support for fellows involved in research such as research design and statistical analysis); and the provision of support for fellow's participation, as appropriate, in scholarly activities.
- 5. Qualifications of the non-physician faculty are as follows:
  - a. Non-physician faculty must be appropriately qualified in their field; and
  - b. Non-physician faculty must possess appropriate institutional appointments.

C. Other Program Personnel

Additional necessary professional, technical, and clerical personnel must be provided to support the program.

D. Facilities and Resources

The program must ensure that adequate resources (e.g., sufficient laboratory space and equipment, computer and statistical consultation services) are available. Fellows must have ready access to all major trauma, critical care and general surgery journals and textbooks either at the institution where the fellows are located or through arrangement with convenient nearby institutions. Texts and journals must be readily available during nights and weekends.

## **IV. Fellow Appointments**

### **A. Eligibility Criteria**

The program director must comply with the criteria for fellow eligibility as specified in the Institutional Requirements.

### **B. Number of Fellows**

The AAST will approve the number of fellows based upon criteria that include the adequacy of resources for fellow education (e.g., the quality and volume of patients and related clinical material available for education), faculty-resident ratio, institutional support, and the quality of faculty teaching.

### **C. Appointment of Fellows and Other Students**

The appointment of AAST Acute Care Surgery fellows must not dilute nor detract from the educational opportunities available to general surgery residents in an RRC-approved residency program.

## V. Program Curriculum

### A. Program Design

#### 1. Format

The program design and sequencing of educational experiences will be approved by the AAST as part of the review process.

#### 2. Goals and Objectives

The program must possess a written statement that outlines its educational goals with respect to the knowledge, skills, and other attributes of fellows for each major assignment and for each year of the program. This statement must be distributed to fellows and faculty, and must be reviewed with fellows prior to their assignments.

### B. Curriculum Design

The program must possess a well-organized and effective curriculum, both didactic and clinical. The curriculum must provide fellows with direct experience in progressive responsibility for patient management. The content of this curriculum must be consistent with the Acute Care Surgery curriculum defined by the American Association for the Surgery of Trauma (AAST). It is the responsibility of the program to meet the major goals and educational opportunities outlined by this curriculum. The program has the responsibility to present a detailed plan for curricular activities, including clinical rotations, didactic teaching, reading assignments, and competency in technical procedures.

### C. Fellows' Scholarly Activities

Each program must provide an opportunity for fellows to participate in research or other scholarly activities, and active fellow participation in scholarly activities must be documented.

### D. ACGME Core Competencies and the ACGME/ABS Milestone Project

The fellowship program must require its fellows to obtain competence in the six areas listed below to the level expected of a new practitioner. Programs must define the specific knowledge, skills, behaviors, and attitudes required, in keeping with the AAST Acute Care Surgery Curriculum outline, and provide educational experiences as needed in order for their fellows to demonstrate the following:

1. *Patient care* that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health;

2. *Medical knowledge* about established and evolving biomedical, clinical, and cognate sciences, as well as the application of this knowledge to patient care;
3. *Practice-based learning and improvement* that involves the investigation and evaluation of care for their patients, the appraisal and assimilation of scientific evidence, and improvements in patient care;
4. *Interpersonal and communication skills* that result in the effective exchange of information and collaboration with patients, their families, and other health professionals;
5. *Professionalism*, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to patients of diverse backgrounds; and
6. *Systems-based practice*, as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

The fellowship program should also evaluate its fellows using milestones, which provide a framework for the assessment of the development of the fellow in key dimensions of the elements of physician competency. The milestones will include the following practice domains: Care for diseases and conditions, performance of operations or procedures, coordination of care, teaching, self-directed learning, improvement of care, maintenance of physical and emotional health, and performance of assignments or administrative tasks. The milestones will be linked to the six core competencies in a manner similar to that put forth by the ACGMA and ABS.

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E. Didactic Components

1. Fellows in Acute Care Surgery should be given the opportunity to obtain sufficient knowledge of those aspects of trauma, critical care, and emergency surgery to develop overall competence as a specialist. Such training is best accomplished in cooperation with all clinical departments.
2. Teaching contributes to the educational process, and therefore should be a regular part of the training program. The fellow should assist when possible in the instruction of general surgical residents and medical students, as well as nurses and other allied health professionals. It is

important to include instruction in trauma system design, disaster management, surgical critical care, and recognition and management of surgical emergencies.

F. Clinical Components

1. The program should supply the necessary volume and variety of trauma, critical care, and general surgery to assure adequate training of fellows. If there is insufficient volume or variety in the primary institutions, arrangements should be made for an affiliation with a participating institution to correct the inadequacy.
2. Each fellow must have ample opportunity and responsibility for the care of patients with acute surgical problems, and the operative experience consistent with developing competency in technical skills and procedures required to provide acute surgical care.
3. Elective general surgery is an essential component of the training of Acute Care Surgeons.
4. Emergency surgical call and trauma call are mandatory components of the training curriculum. Fellows will take a minimum of 52 trauma and emergency surgery night calls during the 2-year fellowship.
5. Operative experience in thoracic, vascular, and complex hepatobiliary and pancreatic procedures is expected as a means of developing competency in the management of acute surgical emergencies in these anatomic regions.
6. Experience in the diagnosis, management and operative treatment of neurosurgical and orthopedic injuries is encouraged.
7. Experience with the use of interventional radiology techniques is encouraged.
8. Experience and competency with diagnostic upper and lower GI endoscopy and bronchoscopy is expected.
9. Further details of the clinical components are given in the Appendix.

## VI. Duty Hours and the Working Environment

Providing fellows with a sound didactic and clinical education must be carefully planned and balanced with concerns for patient safety and fellow well-being. Each program must ensure that the learning objectives of the program are not compromised by excessive reliance on fellows to fulfill service obligations. Didactic and clinical education must have priority in the allotment of fellow's time and energy. Duty hour assignments must recognize that faculty and trainees collectively have responsibility for the safety and welfare of patients.

### A. Supervision of Fellows

1. All patient care must be supervised by faculty credentialed by the hospital. The program director must ensure, direct, and document adequate supervision of fellows at all times. Fellows must be provided with rapid, reliable systems for communicating with supervising faculty.
2. Faculty schedules must be structured to provide fellows with continuous supervision and consultation.
3. Faculty and trainees must be educated to recognize the signs of fatigue, and adopt and apply policies to prevent and counteract its potential negative effects.

### B. Duty Hours

1. Duty hours are defined as all clinical and academic activities related to the fellowship program, including but not limited to: patient care (both inpatient and outpatient), administrative duties relative to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled activities such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.
2. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.
3. Fellows must be provided with one (1) day in seven (7) free from all educational and clinical responsibilities averaged over a four-week period, inclusive of call. *One day* is defined as one (1) continuous 24-hour period free from all clinical, educational, and administrative duties.
4. Adequate time for rest and personal activities must be provided. This should consist of a ten-hour time period provided between all daily duty periods and after in-house call.

### C. On-Call Activities

The objective of on-call activities is to provide fellows with continuity of patient care experiences throughout a 24-hour period. *In-house call* is defined as those duty hours beyond the normal work day, when fellows are required to be immediately available in the assigned institution.

1. In-house call must occur no more frequently than every third night, averaged over a four-week period.
2. Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Fellows may remain on duty for up to six (6) additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care.
3. No new patients may be accepted after 24 hours of continuous duty.
4. *At-home call* (or *pager call*) is defined as a call taken from outside the assigned institution.
  - a. The frequency of at-home call is not subject to the every-third-night limitation. At-home call, however, must not be so frequent as to preclude rest and reasonable personal time for each resident. Fellows taking at-home call must be provided with one (1) day in seven (7) completely free from all educational and clinical responsibilities averaged over a four-week period.
  - b. When fellows are called into the hospital from home, the hours they spend in-house are counted toward the 80-hour limit.
  - c. The program director and the faculty must monitor the demands of at-home call in their programs, and make scheduling adjustments as necessary to mitigate excessive service demands and/or fatigue.

D. Moonlighting

1. Because fellowship education is a full-time endeavor, the program director must ensure that moonlighting does not interfere with the ability of the fellow to achieve the goals and objectives of the educational program.
2. The program director must comply with the sponsoring institution's written policies and procedures regarding moonlighting, in compliance with the ACGME Institutional Requirements.
3. Any hours a fellow works for compensation at the sponsoring institution or any of the sponsor's primary clinical sites must be considered part of



the 80-hour weekly limit on duty hours. This refers to the practice of *internal moonlighting*.

E. Oversight

1. Each program must have written policies and procedures consistent with the Institutional and Program Requirements for fellow duty hours and the working environment. These policies must be distributed to the fellows and the faculty. Duty hours must be monitored with a frequency sufficient to ensure an appropriate balance between education and service.
2. Back-up support systems must be provided when patient care responsibilities are unusually difficult or prolonged, or if unexpected circumstances create fellow fatigue sufficient to jeopardize patient care.

## **VII. Evaluation**

### **A. Fellow**

#### **Formative Evaluation**

The faculty must evaluate the fellows whom they supervise in a timely manner. In addition, the fellowship program must demonstrate that it has an effective mechanism for assessing fellow performance throughout the program, and for utilizing the results to improve fellow performance.

1. Assessment should include the use of methods that produce an accurate assessment of fellows' competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice, and the milestones as modified by the AAST
2. Assessment should include the regular and timely performance feedback to fellows that includes at least semi-annual written evaluations. Such evaluations are to be communicated to each fellow in a timely manner, and maintained in a record that is accessible to each fellow.
3. Assessment should include the use of assessment results, including evaluation by faculty, patients, peers, self, and other professional staff, to achieve progressive improvements in fellows' competence and performance.

### **B. Final Evaluation**

The program director must provide a final evaluation for each fellow who completes the program. This evaluation must include a review of the fellows' performance during the final period of education, and should verify that the fellow has demonstrated sufficient professional ability to practice completely and independently. The final evaluation must be part of the fellow's permanent record maintained by the institution.

### **C. Faculty**

The performance of the faculty must be evaluated by the program no less frequently than at the midpoint of the accreditation cycle, and again prior to the next site visit. The evaluations should include a review of their teaching abilities, commitment to the educational program, clinical knowledge, and scholarly activities. This evaluation must include annual written confidential evaluations by fellows.

D. Program

The educational effectiveness of a program must be evaluated at least annually in a systematic manner.

1. Representative program personnel (e.g., at least the program director, representative faculty, and one fellow) must be organized to review program goals and objectives, and the effectiveness with which they are achieved. This group must conduct a formal documented meeting at least annually for this purpose. In the evaluation process, the group must take into consideration written comments from the faculty, the most recent report of the GMEC of the sponsoring institution, and the fellows' confidential written evaluations. If deficiencies are found, the group should prepare an explicit plan of action, which should be approved by the faculty and documented in the minutes of the meeting.
2. The program should use fellow performance and outcome assessment in its evaluation of the educational effectiveness of the fellowship program. Performance of program graduates on the American Board of Surgery Surgical Critical Care certification examination and the AAST Acute Care Surgery examination should be used as one measure of evaluating program effectiveness. The program should maintain a process for using assessment results together with other program evaluation results to improve the fellowship program.

## **VIII. Experimentation and Innovation in Training**

Since responsible innovation and experimentation are essential to improving professional education, experimental projects along sound educational principles are encouraged. Programs are encouraged to consider improvements or innovations in the training of Acute Care Surgeons. Requests for experimentation or innovative projects that may deviate from the program requirements must be approved in advance by the AAST, and must include the educational rationale and method of evaluation. Such deviations or innovations in training must remain consistent with ACGME principles of fellow education. The sponsoring institution and program are jointly responsible for the quality of education offered to trainees for the duration of such a project.

## **IX. Accreditation and Certification**

This fellowship is designed and accredited by the American Association for the Surgery of Trauma. An essential component of the fellowship is completion of an ACGME RRC-approved Surgical Critical Care residency, with certification for that component provided by the American Board of Surgery. The Acute Care Surgery Fellowship training sites will be accredited as complying with the AAST-sponsored Acute Care Surgery curriculum, and a certificate of completion of such fellowship will be provided by the AAST. The period of fellowship accreditation will be up to 5 years. Prior to the end of this period, the program will be required to submit a new Program Information Form and undergo a site visit by the AAST. One year prior to the end of the accreditation period, the AAST will send a letter to the program director notifying them that a new PIF is required and a site visit must be scheduled. If there are focal areas of concern identified during an initial AAST site visit, the program may receive provisional accreditation. The program will be required to address these areas of concern in writing and a focused site visit will occur within one year of provisional accreditation.

A. Curriculum outline

1. Required rotations

Required Clinical Rotation	Length
Surgical Critical Care including:	
<ul style="list-style-type: none"> <li>Trauma/Surgical Critical Care, including other relevant Critical Care rotations <ul style="list-style-type: none"> <li>This portion of the fellowship must comply with ACGME requirements for a surgical critical care residency</li> </ul> </li> </ul>	12 months
Emergency and Elective Surgery including:	12 months
<ul style="list-style-type: none"> <li>Trauma/Emergency Surgery</li> </ul>	2-3 months
<ul style="list-style-type: none"> <li>Thoracic</li> </ul>	1-2 months
<ul style="list-style-type: none"> <li>Transplant/Hepatobiliary/Pancreatic</li> </ul>	1-2 months
<ul style="list-style-type: none"> <li>Vascular/Interventional Radiology</li> </ul>	1-2 months
<b>Total</b>	<b>24 months</b>

2. Suggested rotations during Emergency and Elective Surgical experience.

Suggested Clinical Rotations	Length
<ul style="list-style-type: none"> <li>Orthopedic Surgery</li> </ul>	1 month
<ul style="list-style-type: none"> <li>Neurological Surgery</li> </ul>	1 month
Electives	1-3 months
<ul style="list-style-type: none"> <li>Recommended: Burn Surgery and Pediatric Surgery <ul style="list-style-type: none"> <li>Also include: Endoscopy, Imaging, Plastic Surgery, etc.</li> </ul> </li> </ul>	

B. Notes to Curriculum Outline

It is a requirement that over the 2-year fellowship, trainees participate in Acute Care Surgery call for no less than 12 months. Fellows are required to take 52 night calls in trauma and emergency surgery during the 2-year fellowship.

1. Flexibility in the timing of these rotations, and the structure of the 24-month training should be utilized to optimize the training of the fellow.
2. Rational for out-of-system rotations for key portions of the training must be based on educational value to the fellow.
3. Acute Care Surgery fellowship sites must have RRC-approval for Surgical Critical Care training.
4. Experience in elective surgery is an essential component of fellowship training.
5. An academic environment is mandatory and fellows should be trained to teach others and conduct research in Acute Care Surgery.

- C. Operative Management Principles and Technical Procedure Requirements of Acute Care Surgery Fellowship.

## Head and Neck

### Exposures/Incisions – Essential

N=5

Neck exploration  
Collar incision  
Sternocleidomastoid incision  
Thoracic extension  
*(may include exposures for vascular, thyroid and parathyroid cases)*

### Organ Management – Essential

N=19

Brain	
Intracranial pressure monitor	N=5
Nose	
Nasal packing for hemorrhage	N=2
Trachea	
Tracheostomy	N=10
Cricothyroidotomy	N=2

### Organ Management – Desired

Brain	
Burr hole	
Craniotomy/craniectomy	
Eye	
Canthotomy	
Trachea	
Resection/repair	
Esophagus	
Resection/repair	
Endocrine	
Thyroidectomy	
Parathyroidectomy	
Cervical lymphadenectomy	

### Alternate Modalities:

Simulation, ATOM or ASSET courses may fulfill one requirement for each of the following: neck dissection, cricothyroidotomy



# Thoracic

## Exposures/Incisions - Essential:

Thoracotomy	N=10
Thoracoscopy	N=10
Sternotomy	N=10
Pericardiotomy	N=5

*(includes sub-xiphoid, transdiaphragmatic and transthoracic approaches)*

## Organ Management – Essential

Lung (N=35)	
• Operative evacuation of the pleural space	N=5
• Parenchymal procedures	N=10
• Bronchoscopy	N=20
Diaphragm (N=5)	
<i>May include thoracoabdominal exposures for spine surgery</i>	
Cardiac (N=5)	
<i>Includes emergent or elective cases requiring cardiac suture or repair</i>	
Esophagus (N=2)	
<i>Includes elective resection</i>	
Intrathoracic great vessel injury (N=3)	
<i>Includes endovascular stenting of aortic and subclavian injuries</i>	

## Organ Management – Desired

Elective or emergent tracheal or bronchial procedures (not tracheostomy)  
Management of chest wall injuries (includes rib plating)  
Operative management intrathoracic great vessel injury  
Extracorporeal vascular support (includes ECMO, partial left heart bypass)

## Alternate Modalities:

Simulation, ATOM or ASSET courses may fulfill one requirement for each of the following: thoracotomy, sternotomy, diaphragm repair, cardiac repair, esophageal repair, thoracic vascular repair. Similarly, organ harvest may fulfill one requirement for sternotomy.

# Abdominal

## Exposures/Incisions – Essential

Endoscopy	N=20
Enteral access	N=10
Laparotomy	N=10
Diagnostic Laparoscopy	N=5
Hepatic mobilization	N=2
Damage control techniques	N=10
Complex Laparoscopy	N=10
<i>(includes colectomy, lysis of adhesions, common bile duct exploration, Graham patch, hernia repair, enteral access)</i>	

## Organ Management – Essential

Liver (N=5)	
Management of hemorrhage	N=3
Reexploration of hepatic wound	
Hepatotomy	
Donor hepatectomy	
Transplantation	
Partial hepatectomy	
Spleen (N=2)	
Splenectomy	
Splenorrhaphy	
Kidney (N=3)	
Exploration	
Nephrectomy	
Partial nephrectomy	
Donor/recipient nephrectomy	
Renal repair	
Renal transplant	
Pancreas (N=5)	
Drainage	
Resection	
Repair	
Donor pancreatectomy	
Pancreatic transplantation	
Stomach (N=5)	
Gastrectomy	
Management gastric injury	
Management gastric ulcer	

Duodenum (N=2)

Management duodenal injury

Management duodenal ulcer

Small Intestine (N=10)

Enterectomy

Repair of injury

Lysis of adhesions

Management of volvulus/intussusception/internal hernia

Colon/Rectum (N=10)

Colectomy

Colostomy reversal

Management rectal injury

Appendix (N=15)

Appendectomy

Anus (N=5)

Incision and drainage perirectal abscess

Exam under Anesthesia

Fistula management

Biliary system (N=3 exclusive of cholecystectomy)

Cholecystectomy with or without cholangiography

Common bile duct exploration

Hepaticoenterostomy

Bladder (N=3)

Repair

Cystectomy

Ureter (N=1)

Repair/stent

**Alternate modalities:**

Simulation, ATOM or ASSET courses may fulfill one requirement for the following: bladder repair, ureter repair

## Vascular

### Exposures/Incisions – Essential

Left medial visceral rotation	N=2
Right medial visceral rotation	N=5
Infrarenal aorto-pelvic exposure	N=3
Brachial exposure	N=3
Femoral	N=5
Popliteal	N=2
Retrograde balloon occlusion of aorta	N=5

*May be obtained at the time of endovascular stenting for other disease*

### Exposures/Incisions – Desired

Trap door incision  
Cervical extension from sternotomy  
Supraclavicular incision  
Infraclavicular incision

### Organ Management – Essential

Management of arterial disease for injury or occlusion (N=10)  
    Open arterial bypass graft  
    On-table angiography  
    Thromboembolectomy  
    Repair of arteriotomy or venous injury  
Amputation of extremity (N=3)  
Fasciotomy (N=5)

### Organ Management – Desired

Placement of inferior vena caval filter

### Alternate modalities:

Simulation, ATOM or ASSET courses may fulfill one requirement for the following: left medial visceral rotation, right medial visceral rotation, infrarenal aorto-pelvic exposure, retrograde balloon occlusion of aorta.

# Ultrasound

## Exposures/Incisions - Essential:

None

## Organ Management – Essential

FAST and/or E-FAST	N=25
Thoracic ultrasound to assess cardiac function	N=15
Thoracic ultrasound guided drainage	N=5
Ultrasound guided central line insertion	N=5

## Organ Management – Desired

Transesophageal echocardiography  
Percutaneous cholecystostomy  
Ultrasound guided pericardiocentesis  
Ultrasound guided IVC filter placement (IVUS or transabdominal)