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2008-09 PROGRAM MANUAL

SURGICAL CRITICAL CARE AND ACUTE CARE SURGERY FELLOWSHIP

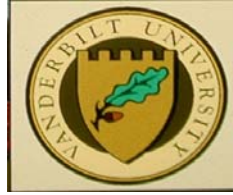
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VANDERBILT UNIVERSITY MEDICAL CENTER'S SURGICAL CRITICAL CARE AND ACUTE CARE SURGERY FELLOWSHIP

MISSION STATEMENT

The primary mission of the Vanderbilt University Medical Center Surgical Critical Care and Acute Care Surgery Fellowship is to provide residents with the training to become leaders in academic surgical critical care, trauma, emergent general surgery and burns through an intensive clinical and educational experience. Through an integrated program, fellows will attain knowledge and expertise to 1) satisfy the six core competencies outlined by the ACGME, 2) obtain a Certificate of Added Qualifications in Surgical Critical Care, 3) manage the most complex trauma and emergency general surgery cases, and 4) become administratively and academically successful in their careers.

PROGRAM PHILOSOPHY

The philosophy of the Vanderbilt University Medical Center Surgical Critical Care and Acute Care Surgery Fellowship program is to provide a setting in which advanced, highly skilled, adult education can take place. The faculty seeks to provide the opportunity for the resident/fellow to not only acquire an in-depth knowledge of critical care, trauma and emergency surgery, and advanced skills in critical care and operative techniques but also to develop both academically and professionally. This is most effectively achieved through an integrated 2 year program that includes an ACGME approved Surgical Critical Care Residency, specialty training in the management of emergency general surgery and trauma

patients, and the training to enhance administrative, research, and educational skills. We are committed to providing excellent clinical exposure as well as directed, expert instruction, promoting self-directed education, and fostering the refinement of the resident's scientific and academic pursuits. The educational program consists of a combination of resident mentoring by faculty, didactic and Socratic instruction, hands-on experience, and self-education.

GENERAL STRUCTURE OF THE VUMC SURGICAL CRITICAL CARE AND ACUTE CARE SURGERY FELLOWSHIP

To ensure that our program attains those goals and objectives outlined in our "Program Philosophy" section, the VUMC Surgical Critical Care and Acute Care Surgery Fellowship defines several components in the program including:

- A. Clinical
- B. Educational
- C. Administrative
- D. Research/Academic Development

For acquisition of clinical expertise, the fellowship is structurally divided into two separate years:

- 1) ACMGE approved surgical critical care experience - 1st year
- 2) Acute Care Surgery experience - 2nd year.

For acquisition and enhancement of administrative, research, and educational skills, the two year fellowship is an integrated program with the second year building on the first year. Additionally, the second year provides opportunities to obtain specific expertise and skills in areas of interest defined by the fellow.

SURGICAL CRITICAL CARE ONLY OPTION

While a two year commitment is strongly encouraged, our fellowship recognizes that individual needs of the applicants vary and we will consider those applicants applying for only a one year program. However, this significantly affects level of administrative, research, and educational skills acquisition by the participant.

ELIGIBILITY AND SELECTION

Eligibility for residency in accredited programs at Vanderbilt will adhere to the general guidelines outlined in the Vanderbilt House Staff Manual (Section I.I.). Applicants for the Surgical Critical Care Fellowship must also meet the following requirements:

- Completion of approved general surgery residency
- Must be board eligible for or certified by the American Board of Surgery
- Must show established ability as a teacher of medical students and residents

Submitted applications will be thoroughly reviewed and acknowledged. The Program Director may also contact the applicant by phone initially. Invitation to interview in person will be based on program needs and the individual's qualifications, references. In addition to the requisite eligibility criteria, selection for the program will be based on favorable interviews with existing faculty and fellows, favorable completion of his current program, as well as the applicant's expressed interest in the Surgical Critical Care program.

Candidates meet with the Program Director, Division Director, Department Chairman, Department Residency Program Director, faculty, fellows, and unit staff. The rank order list submitted to the National Residency Match Program is based on faculty consensus of the standardized evaluation results.

PROMOTION

Fellowship in Trauma and Surgical Critical Care at Vanderbilt is a two year commitment. Upon satisfactory completion of the first year accredited Surgical Critical Care program, the fellow is eligible for appointment to the faculty at the level of Instructor in Surgery which then begins the second year

of the fellowship. Appointment to the faculty and medical staff is subject to established institutional processes and guidelines. All members of the Vanderbilt faculty are expected to adhere to the standards of conduct and rules and procedures set forth in the *Vanderbilt Faculty Manual* as well as the *Medical Staff By-laws*.



SUMMARY OF EXPECTATIONS OF FELLOWS

Provided below is an outline of the programs expectations of the fellows. This is not fully inclusive. For detailed information regarding the program, please see section titled "Program in detail". **Dr. May is the Program Director for both years of the fellowship and is responsible for all aspects of the program. Please communicate any concerns or difficulties to him directly.**

The first year is designed to provide education in Surgical Critical Care and to expand skills in research, administration, and education. During this year, the framework for the development of specialized skill sets for each fellow is to be accomplished (see section following Summary of Expectations).

1st YEAR EXPECTATIONS

1) Clinical:

- **Primary "daytime" responsibilities** – direct the care of patients within the unit to which you are assigned for the month.
- **Primary "nighttime" responsibilities** - 1st to the surgical ICU's (Surgical, Trauma, and Burn ICUs) and the care of critically ill patients within the surgical units and 2nd to the resuscitation and operative management of acutely injured patients.
 - If fellow is not available for management of unstable patient due to patient care conflicts, notify attending.

Fellows are expected to:

- Supervise/direct the patient care delivery for those patients within the ICU to which you are assigned for the month to the attending of the week's satisfaction.

- Be present/available within the unit to which you are assigned beginning at the time specified by the Medical Director of that service and remain in the unit to the degree required to enable your direction of the resuscitation and management of critically ill or injured patients
- Participate in the daily ICU rounding process and, in collaboration with the faculty, direct ICU rounds.
- Direct the management of critically ill patients within each of the ICU's while on-call at night.
- Attain the skills and judgment to supervise invasive procedures according to **institutional and service specific performance standards and guidelines** including:
 1. central lines
 2. bronchoscopy and broncho-alveolar lavage
 3. percutaneous tracheostomies
 4. chest tube placement
 5. airway management

2) **Educational:**

- attend conferences specific to the unit/service to which you assigned for the month
- attend fellows conference if in town (excused from clinical duties unless life threatening emergency)
- Attend Division Faculty and Research meetings.
- demonstrate knowledge and application of critical care topics/principles outlined in fellows manual to the satisfaction of clinical critical care faculty
- take the Critical Care "in-service" exam

3) **Administrative:**

- satisfactorily administer the conferences/schedules to which you have been assigned as judged by the Director and faculty when appropriate (*see Program in Detail Section C*)
 - **Chadi Abouassaly--**
 - fellows conference
 - special seminars
 - **Raeanna Adams--**
 - fellows call schedule
 - vacation and meeting scheduling and reporting
 - time away record

- **Kirby Gross --**
 - SICU resident and student call schedule
 - SICU FCCS lecture series
 - SICU resident and student evaluation process
 - **Tim Dutton--**
 - Manage and ensure compliance of fellow's utilization of fellowship database and case and procedural recording mechanism
 - Direction under supervision of the SICU M & M participation and reporting process (see appendix for process and operating procedure)
 - Trauma/ED/Emergency surgery conference (Monday's conference)
 - **All 1st year fellows --**
 - SICU M & M participation/reporting and SICU PI attendance during their SICU rotations
 - Administration of trauma morning report during their TICU rotations
- **All 1st year fellows are expected to complete procedural and productivity information in the fellow's database.**

4) Research/Academic – 1st Year:

- Attend one national conference/meeting (*must communicate choice by September of 1st year and ensure entry on the fellow's out schedule with Dr Adams*)
- By **Oct – November**, identify at least one contract research project of interest and assume Sub- PI. (two year fellows only)
 - Discuss with Judy Jenkins and provide follow up to Program Director
 - Attend investigator's meeting as judged appropriate by the PI/study coordinator and supported by study sponsor (within 2 years of program)
 - Attend site initiation visit and participate/conduct educational initiatives for institution of protocol (within one year of program)
- By **December 20th**, give one fellows conference to meet the following requirements:
 - Topic provided to and discussed with Program Director ~ 1 month prior to presentation
 - Identify faculty mentor
 - Evidence based with literature review (best if limited to human, randomized studies)
 - Sufficient quality to present at Grand rounds level forum

(May wish to link this with research project interests)
- By **February 1st**, identify at least 1 research project of interest and discuss with Program Director. This process includes the following:
 - Identification of at least one faculty mentor

- Submission of a draft research concept (one page maximum) to the program director ~ one month prior to proposed discussion at research conference. Include in this
 - Project title
 - Mentor(s)
 - Study design
 - Study population
 - Data source (s)
 - Presentation of finalized concept to research conference
 - IRB approval (Judy Jenkins)
- By **March 1st**, clearly identify clinical administration, academic areas of interest for 2nd year and communicate this to Program Director.
- Schedule meeting with Program Director to develop action plan for implementation.
- By **June 20th**, give a second fellows conference to meet the following requirements:
- Topic provided to and discussed with Program Director ~ 1 month prior to presentation
- Identify faculty mentor
 - Evidence based with literature review (best if limited to human, randomized studies)
 - Sufficient quality to present at Grand rounds level forum
- By **April 1st**, meet with Program Director to discuss academic and training interests for the second year of fellowship with written statement (as discussed) by **April 15th**
- Meet with Program Director to discuss and develop job search strategies and timeline

SUMMARY OF EXPECTATIONS OF FELLOWS

2nd YEAR Fellows

The second year of the Fellowship clinically provides exposure to a variety of complex cases in trauma and emergency general surgery with attending level clinical responsibilities (admitting and operative privileges) and in depth mentoring. Additionally, full development of specialized skill sets in areas of interest for each fellow is to be completed (see section following Summary of Expectations)

1) Clinical:

Clinical Service coverage during 2nd year: The second year Trauma/Acute Care Surgery Fellow (Instructor) will participate in the call schedule with the other Trauma faculty.

- In each 6 month block:
 - ~9 weeks of day trauma coverage (divided between the Trauma Intensive Care Unit and Step down/admissions)
 - ~4 weeks of day EGS coverage
 - ~9 weekends – predominately Trauma Nights (Friday-Saturday-Sunday)
 - ~8 weeks of academic/administrative weeks (typically after weekend trauma nights)
 - 2 weeks of vacation

The Fellow (Instructor) is expected to work over either Christmas or New Years and have the other off.

- **Call responsibilities during 2nd year:** Instructors take call as a credentialed member of the Division of Trauma and Surgical Critical Care faculty (Instructor of Surgery). Call is predominately Trauma Nights call on weekends.
- Appropriate faculty level participation on-services as judged by the Division faculty
- **Fellows are to involve the backup attending faculty in clinical situations in which adverse outcome or death is likely and/or experience is limited.**
 - Back up faculty are designated on the monthly call schedule

2) Educational:

- Faculty level participation in service specific conferences, seminars, etc.
- Attend Trauma Service Morning report except when on a non-clinical week

- Attendance of fellows conferences
- Self directed education and completion of appropriate reading program

3) Administrative:

(See Program in Detail Section C)

- Successful completion of administrative duties as assigned by the Program Director and outlined in body of the manual. These may include:
 - **Tim Nunez**
 - Direction of the Tuesday ACS conference
 - Administrator for the bi-monthly research conference of the Division
 - **Heather MacNew**
 - Development of Trauma/Acute Care Surgery educational curriculum – ATLS, ATOM (with ACS skills), FCCS
 - Compilation of Acute Care Surgery management topics synopses
- **All 2nd year fellows are expected to complete procedural and productivity information in the fellow's database.**

4) Research/Academic:

- Follow-up meeting with Program Director to update job search strategies and progress
- Attend one national meeting
 - Must notify Program Director of choice no later than one month into second year. Preferably prior to setting call schedule for the year in June of 1st year to assist with job searching activities.
- One fellows conference **July – December**
 - Topic provided to and discussed with Program Director ~ 1 month prior to presentation
 - Evidence based with literature review (best if limited to human, randomized studies)
 - Sufficient quality to present at Grand rounds level forum
- Present at Grand rounds before completion of fellowship
- Completion of at least one research project with national presentation and publication

5) Mentorship and supervision during second year:

- Through discussions with Program Director, fellow should choose a senior faculty as a Mentor during the 2nd year.

- Fellow should meet at least quarterly with Mentor to discuss progress, problems, conflicts, and career direction.
 - Written letters of progress by the mentor to the program director (Dr. May) copied to the fellow should be done bi-annually.
 - Mentors are to be evaluated by the fellows with a report to Dr. May.

- Fellow will meet at least quarterly with the Program Director to discuss academic development and career development.



PROGRAM FOR FELLOW'S ACADEMIC NICHE DEVELOPMENT

One of the unique products of the Surgical Critical Care and Acute Care Surgery Fellowship program is the development of specific “niches” tailored for individual fellows. These “niches” should provide extra “tools for their toolbox” that are easily viewable through review of the fellow’s curriculum vitae. The ability to achieve this unique “niche” product continues to grow and mature but remains very labor intensive on the part of the program director. However, this product sets both our fellows and our program apart from others. The process of developing these “niches” is one of the more powerful tools for ensuring a successful transition from fellow to academic faculty as the fellow learns and refines numerous skill sets and is intensively mentored in the process of growing collaborative initiatives.

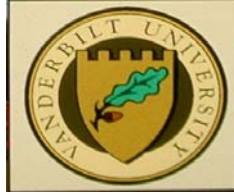
Process:

Particular “niches” are developed through a series of meetings over the 1st year of the program between individual fellows and the Program Director, Dr. May. Through this process, fellow’s areas of interests and developing skills in clinical, educational, academic, administrative areas are identified. Connecting common themes between these typically diverse interests are identified by the Program Director and fellow and they are molded into a single area of clinical expertise. A curriculum is developed for the subsequent period of the fellowship and appropriate mentors are assigned. Continued mentoring by the Program Director is continued through this period. This process brings academic, educational, and administrative interests into a single related area. Examples of previous, current, and potential specialty “niches” follow:

1. Critical Care Nutritional Support
2. Surgical Infectious Diseases
3. Trauma/Critical Care Educator

4. Process Improvement/Quality Assurance
5. Basic/translational research
6. ECMO
7. Business of Trauma and Surgical Critical Care

Curricula developed for previous fellows are provided later in this document in the appendix.



VUMC Surgical Critical Care and Acute Care Surgery Fellowship

Fellow's Job Search: the Programatic Approach and Organization

Underlying Concepts:

- Successful careers are greatly determined by the correct fit
- Maximizing likelihood of achieving success requires a systematic and directed approach with feedback from mentors
- The ideal methodology incorporates the following concepts:
 - do not leave first impressions to chance
 - Ensure personal contact from a faculty member before establishing contact or mailing CV
 - Faculty that are good friends – verbal contact
 - all opportunities are improved by at least written faculty/director contact
 - utilize all mentors at your disposal
 - leave no stone unturned

Initiation of process:

The Program Director will ensure adequate direction and a systematic approach

- Fellow to set a meeting with the Program Director, Dr May
 - Prior to meeting, determine and record your interests including:
 - Geographic region of interest
 - type of practice – academic, academic affiliated, private
 - type and mix of clinical practice – trauma, CC, EGS
 - Long term interests and where you see yourself in 5 years
 - list of any specific hospitals of interest
 - areas envisioned for promotion: academic interests, administrative, education, etc
 - provide list of jobs known to you at the time
 - During meeting will develop list of potential job interests
 - Will develop an action plan that includes:
 - Identifying potential jobs
 - Identifying faculty with contacts at programs of interest
 - Meeting with various faculty to discuss positions
 -

Continuation of process:

The Program Director will continue to coordinate the process and ensure adequate input by all mentors/faculty. The fellows must take an active process in ensuring coordinated involvement.

- Must develop teared list:
 - avoid too many contacts
 - 1st round - 3 to 5 interviews
 - keep @ least 2 active during process
- Establish contacts with top tear programs
- Personal introductions @ meetings
 - program director to coordinate prior to meeting
- Continued meetings with program director at intervals determined by need

Timeline:

- never too early to develop contacts
- Initiate process roughly 11 months prior to starting a job
 - By august of second year
 - By October for 1 year fellows
 - Determine which meetings to attend by August of second year
 - Have action plan by September of second year

Negotiations:

- Do not do them without input from mentors!!!!

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Program Director, Surgical Critical Care and Acute Care Surgery Fellowship
Division of Trauma and Surgical Critical Care



GENERAL GOALS AND OBJECTIVES OF THE SURGICAL CRITICAL CARE AND ACUTE CARE SURGERY FELLOWSHIP

The general educational goals and objectives are divided into those that relate primarily to Surgical Critical Care and those that relate to Acute Care Surgery, exclusive of Critical Care and provided below.

Surgical Critical Care:

The general educational goals of the VUMC Surgical Critical Care Residency Program are focused on facilitating the residents':

- 1) developing a sound understanding of the pathophysiology of critical illness;
- 2) acquiring an in-depth knowledge of the management of critically ill and critically injured patients including the literature supporting various clinical approaches;
- 3) mastering the use of various technologies for monitoring in the critical care unit;
- 4) attaining competence in the therapeutic interventions employed in the intensive care setting;
- 5) developing the administrative skills necessary to direct a surgical intensive care unit;
- 6) acquiring the skills and expertise to design, implement, and conduct basic and clinical research;
- 7) developing sound clinical decision making and enhancing professional demeanor;
- 8) acquiring the fundamental core competencies as described by the ACGME.

Acute Care Surgery:

The goals for the second year of the fellowship are provided below:

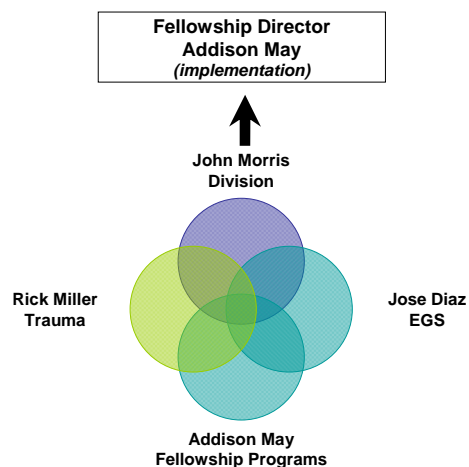
- (1) Fellows will, through mentored clinical exposure and courses such as Advanced Trauma Operative Management (ATOM), obtain and master the technical skills necessary to manage the operative aspects of the most severely injured and complex trauma patient.
- (2) Fellows will, through mentored clinical exposure and surgical sub-specialty skills labs, obtain and master the technical skills necessary to provide all aspects of the initial care and life-saving/limb-sparing maneuvers to the patient with complex injuries that may be addressed definitively by a sub-specialty surgeon.
- (3) Fellows will, through mentored clinical exposure and a combination of lectures and self-education, obtain and master the technical skills necessary to manage the most complex emergency surgery patient.
- (4) Fellows will, through a combination of lectures, morning report, clinic encounters, and self-education, obtain the cognitive skills necessary to manage the operative and non-operative aspects of the complex emergency surgery patient.
- (5) Fellows will, through a combination of lectures, morning report, and self-education, obtain the cognitive skills necessary to lead a trauma team both in the trauma bay, operating theater, and ICU and master the ability to establish "command-physician" presence in each of these arenas.
- (6) Fellows will, through a combination of lectures, morning report, and self-education, and first hand experience, obtain appropriate training and cognitive skills in the areas of Acute Care Surgery administration and triage, as well as trauma center development and accreditation per the American College of Surgeons "Gold Book."



MANAGERIAL STRUCTURE OF THE FELLOWSHIP

Dr. Addison K. May, MD, FACS, FCCM is the Program Director for the VUMC Surgical Critical Care and Acute Care Surgery Fellowship and is responsible for all fellowship issues for both the first and second year. Nelda Fowlkes, Dr. May's assistant is the Program Coordinator. To ensure a coordinated training model that provides broad training and exposure and achieves concordance with each major clinical discipline (Surgical Critical Care, Trauma, Emergency General Surgery), an Oversight Committee provides direction and managerial support. This Oversight Committee consists of Dr. May in his role as Medical Director of the SICU and Program Director of the Fellowship, Dr. Rick Miller as the Medical Director of the Trauma Service, Dr. Jose Diaz as the Medical Director of the Emergency General Surgery Service and Dr. John Morris as the Chief of the Division of Trauma and Surgical Critical Care. This is model diagramed below.

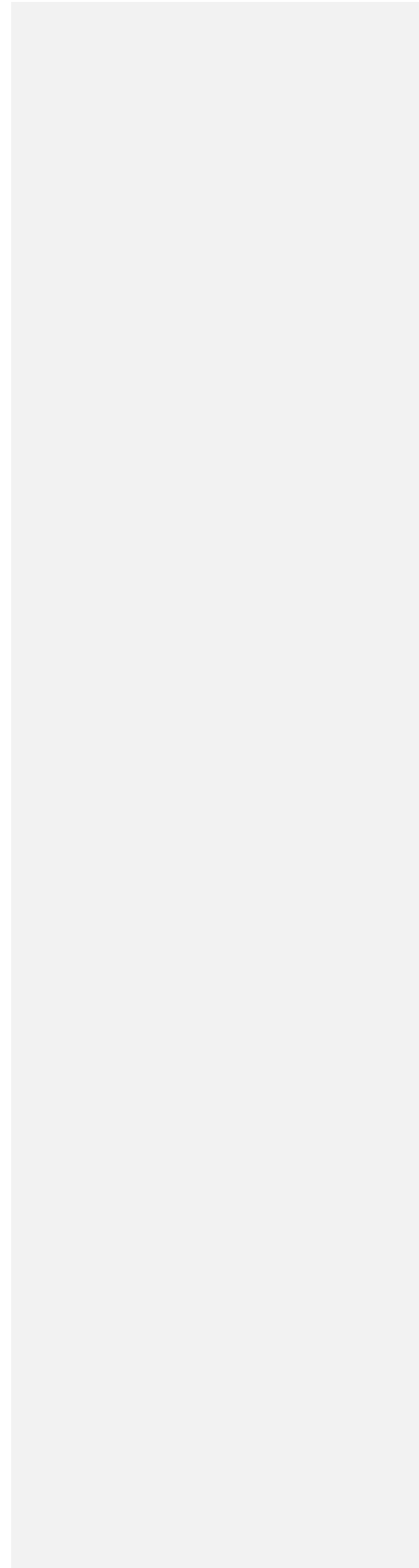
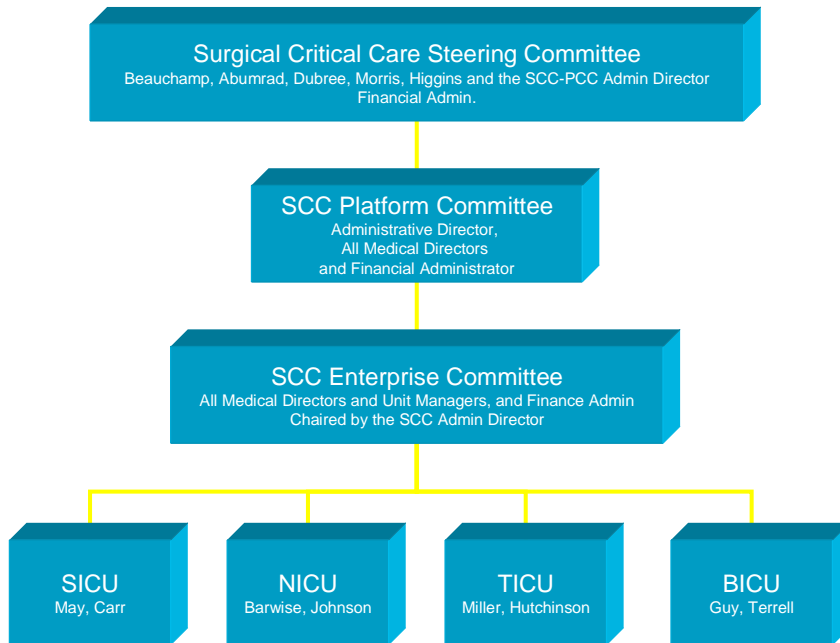
Oversight Model



In addition to regularly scheduled Fellowship Oversight Committee meetings, input regarding the fellowship program is obtained from all members of the Division of Trauma and Surgical Critical Care through bi-weekly Division business meetings (fellows are in attendance) and from Anesthesia Critical Care faculty through monthly meetings of the Multidisciplinary Surgical Critical Care Service (the service that provides critical care management within the SICU and is under the direction of Dr. May).

The 4 core ICUs through which all fellows rotate (SICU, TICU, Neurological ICU, and Burn ICU) during their first year are all managed under a single platform reporting line that facilitates consistency of care, efficiency of management and the reduction of practice variation. This reporting structure is diagramed below. Direction of 3 of the 4 ICUs (SICU, TICU, Burn ICU and service) is from within the Division of Trauma and Surgical Critical Care.

Additionally, the Emergency General Surgery Service is directed by a member of this division, Dr. Jose Diaz and the Critical Care Transport Service (4 helicopters, 1 fixed wing, one ground transport ICU) is directed through the Division of Trauma and Surgical Critical Care.





PROGRAM IN DETAIL

Programmatic Organization to Attain Goals and Objectives

To accomplish the educational goals and objectives outlined, the VUMC Surgical Critical Care and Acute Care Surgery Fellowship Program are organized into four general components including:

- A. Clinical
- B. Educational
- C. Administrative
- D. Research/Academic Development

(Detailed information regarding these four components provided on pages to follow)

Each of these program components are directed from within the Division of Trauma and Surgical Critical Care. This Division runs the Surgical Intensive Care Unit and Multidisciplinary Surgical Critical Care Service (approximately 1250 – 1300 admits/yr), a busy Trauma service (~3800 adult trauma admissions/yr and ~1700 operative procedures/yr), Burn service (~400 admissions/yr), and an Emergency General Surgery Service (~1200 admissions/yr, ~2300 consultations/yr, ~1500 operative cases/yr). Under the purview of this Division are a 14 bed trauma ICU, a 23 bed multidisciplinary surgical ICU, and a 10 bed burn ICU. The Division maintains very active clinical and basic sciences research programs including industry and NIH sponsored multi-center clinical trials. Surgical Critical Care residents and Acute Care Surgery fellows are to actively participate in all aspects of the Division of Trauma and Surgical Critical Care including the patient care, administrative and research components. The degree with which each resident functions independently and subsequently in supervisory roles will increase over their tenure, subject to periodic evaluations of their abilities.

The 1st and 2nd years of the fellowship provide distinct clinical education experiences (Critical Care – 1st year, Acute Care Surgery – 2nd year). However, the administrative, academic, and research components are integrated over the two years (all three of these components are abbreviated, the research component significantly so for those electing to pursue a 1 year experience in Critical Care only). The 4 components of the program are outlined in materials that follow.

A. Clinical Component:

The clinical component of the VUMC Surgical Critical Care and Acute Care Surgery Program is generally a two year fellowship of which the first year is designed to provide requirements for a Certificate of Added Qualifications in Critical Care and the second year is designed to prepare the surgeon for a leadership role in academic Acute Care Surgery with directed supplemental training in Trauma and Emergency General Surgery. Additionally, candidates interested in additional expertise in the care of acutely burned patients may elect to complete supplemental training in burns. Our program also offers specific educational opportunities in several diverse areas such as surgical infectious diseases, surgical nutrition, and opportunities to obtain masters degrees in public health and clinical sciences research if specific interests are expressed by the fellows. Candidates interested in only a one year experience are considered by our fellowship according to the needs of the applicant.

A1. First year: During the first year of the Critical Care Residency Program, residents will assume responsibility for overseeing the care of critically ill patients in various ICU's in one month block rotations. Residents will undergo 12 rotations with 10 of these rotations in intensive care units and 2 months of elective non-ICU rotations. Core intensive care units include the burn, neurologic, trauma, and surgical ICUs. Additional rotations in the pediatric and medical ICUs are optional at the resident's discretion. Resident's will take call in-house call an average of every fourth night and provide senior level supervision for the trauma and surgical ICUs and act in concert with the in-house surgical critical care faculty. The VUMC Critical Care Fellowship complies with all ACGME regulations regarding work hours. Rotation schedule may be viewed in chapter 4.

- **1st year fellows assigned to core ICU services are expected to:**
 - ***Be knowledgeable of the management guidelines, policies, and operating procedures of each core ICU prior to beginning a rotation***
 - ***Arrive in the ICU at the time designated by the Medical Director of the unit to which fellow is assigned***
 - ***Be present in the ICU and on rounds to provide supervision and direction of critical care issues***
 - ***Attend the conferences for the ICU service of the unit in which fellow is rotating***
 - ***Actively participate in educational activities of the service on which fellow is rotating***

A2. Second year: In its initial report (Shackford, et. al.), the Eastern Association for the Surgery of Trauma identified four main problems with trauma fellowships: 1) lack of specified educational objectives, 2) undefined curricula, 3) inconsistent emphasis on research, and 4) inconsistent surgical exposure. Our Acute Care Surgery Fellowship has attempted to address these four problems with an integrated program that enables fellows to obtain clinical, research, administrative, and educational expertise that will enable them to assume leadership roles in the field.

During the second year, the fellows undergo a graded increase in responsibility to that of a junior level faculty in trauma and emergency general surgery. During this period they will continue to receive direct mentorship from faculty and continuous evaluation. Each fellow will be credentialed and appointed as active members of the medical staff with full operating room and admitting privileges (Instructors of Surgery). The fellows will manage both trauma and emergency general surgery clinical services including ICU, step-down, general care, and clinic settings. This integrated experience in trauma, emergency general surgery, and critical care over 2 years enables an in-depth understanding of the patho-physiology of acutely injured or critically ill surgical patients, principles of resuscitation, timing of operative intervention, critical care management, and the systems and resources required for high level care.

A2a. Specific service involvement during 2nd year:

The second year Trauma/Acute Care Surgery Fellow (Instructor) will participate in the call schedule with the other Trauma faculty.

- In each 6 month block:
 - ~9 weeks of day trauma coverage (divided between the Trauma Intensive Care Unit and Step down/admissions)
 - ~4 weeks of day EGS coverage
 - ~9 weekends – predominately Trauma Nights (Friday-Saturday-Sunday)
 - ~8 weeks of academic/administrative weeks (typically after weekend trauma nights)
 - 2 weeks of vacation

The Fellow (Instructor) is expected to work over either Christmas or New Years and have the other off.

A2b. Call responsibilities during 2nd year:

Instructors take call as a credentialed member of the Division of Trauma and Surgical Critical Care faculty (Instructor of Surgery). Call is predominately Trauma Nights call on weekends.

- Appropriate faculty level participation on-services as judged by the Division faculty
- **Fellows are to involve the backup attending faculty in clinical situations in which adverse outcome or death is likely and/or experience is limited.**
 - Back up faculty are designated on the monthly call schedule

A2c. Clinical Faculty Back-up:

- **Trauma**
 - While on the trauma service, back-up faculty should be contacted for manpower shortages, very complex cases, and all patients at high risk of operative death.
 - For Friday, Saturday, Sunday night service – faculty back-up is designated on the call schedule published monthly
 - During weekly service on T1, T2 the faculty member on the other trauma service should be approached

➤ **Emergency General Surgery**

- While fellows are on-service for EGS, they should utilize the faculty listed as back up on the Divisional call schedule published monthly.
- For all critically ill EGS patients (ie. in SICU), the fellow should discuss the management and risk of failure of source control with the Multidisciplinary Surgical Critical Care surgical faculty (May, Diaz, Collier) or their back-up faculty.

A2d. Emergency General Surgery Fellow's Experience:

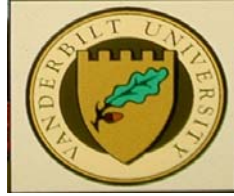
1. Operative Experience:
 - a. Minimum of 150 Major cases: Abdominal, laparoscopic, Skin & Soft Tissue, Abdominal Wall Reconstructions
 - b. Minimum of 150 Minor Cases
 - c. A mid-year report will be provided
2. Clinic Experience:
 - a. Evaluation, work-up, and management of acutely ill surgical patients that present by consultation or visit to the ED
 - Focused exposure to critically ill surgical patients (~1/3 require ICU admission)
 - Focused exposure to complex source control issues
 - Focused exposure to complex abdominal processes
 - b. Out-Patient management of complex abdominal wounds and fistula with a focus on nutrition support
3. Acute and ICU Endoscopy:
 - a. PEG/J, Upper Endoscopy, Bronch

A2e. General expectations of second year fellows:

2nd year fellows are expected to:

- ***be knowledgeable of the management guidelines, policies, and operating procedures of each service prior to beginning a rotation on-service***
- ***direct the service as an Instructor of Surgery in accordance with the Medical Directorship's policies***

- ***attend service conferences while on-service***
- ***assume a leadership role in the educational activities and conferences on the trauma and EGS services***



1ST YEAR FELLOW'S DUTY HOURS POLICY, VACATION/SICK TIME REPORT, LEAVE OF ABSENCE, ROTATION SCHEDULE and CALL SCHEDULES

POLICY ON SURGICAL CRITICAL CARE RESIDENT DUTY HOURS

The Division of Trauma and Surgical Critical Care is committed to ensuring full compliance with the resident duty hour policies set forth by the ACGME. Thus, Surgical Critical Care residents will be on-call, in-house on average of no greater than every third night. As manpower permits, every effort will be made to move to an every fourth night in-house call schedule. All residents will have at least one full 24 hour period per week without clinical duties. Additionally, residents work hours are to be limited to an average of less than or equal to 80 hours per week during each 4 week block beginning the 1st day of the month and for the entire month. Resident's schedules should ensure that all fellows have greater than 10 hours off between all shifts. Additionally, resident's clinical on-call duties must be compliant with the 24+6 hour requirement mandated by the ACGME. Resident duty hour policies are compliant with the institutional policies outlined in the Vanderbilt House Staff Manual (SCCR VI.B.4).

The Surgical Critical Care residents are responsible for organizing their schedules and ensuring that vacations and meetings are scheduled such that the above policy can be fulfilled. The "on-call" schedule should incorporate the actual hours of clinical responsibility to facilitate timely departure from the hospital. Schedules are to be reviewed by the Program Director prior to publication. The Program Director is to be notified in advance if conflicts arise that do not allow Surgical Critical Care resident coverage of clinical obligations as outlined above.

Vacation/Sick Time Report

Vacation and sick time reporting is a requirement of the GME office. Your time reporting is included in the monthly report for the Division's exempt employees. You will be contacted each month to provide updates on vacation and sick time used in the previous month.

Leave of Absence

Requests for leave will be administered according to applicable laws and in conjunction with the established guidelines in the Vanderbilt House Staff Manual (Section I.H.). Whenever possible leave requests should be submitted to the program director at least 30 days in advance. Emergency requests should be submitted as soon as the situation allows. Each case will be considered on an individual basis and approved by the Program Director. In addition the resident will be fully informed as to his responsibilities during the absence as well as the effect of the absence on completion of the program and subsequent eligibility for board certification.

Call Schedule Postings

Faculty and resident call schedules are available on the web (www.traumaburn.com) at the end of each month for the upcoming month. Your individual rotations, etc. will be prepared by the Administrative Fellow and submitted to Nelda for uploading to the web. Any subsequent changes to that schedule should be communicated through Dr. May's office.

FELLOW'S ROTATION SCHEDULE

- Fellow's rotations are in combination with the Anesthesia Critical Care Fellowship
 - Anesthesia fellows: Bill O'Byrne, Rachel Idowu, Stuart McGrane

Monthly Rotation Schedule							
Month/Unit	SICU	TICU	BICU	NeuroICU	CTICU	VASICU	Elective
July	Gross	Adams	Dutton	McGrane	Abouassaly	Idowu	O'Byrne
Aug	Abouassaly	Dutton	Idowu	Adams	McGrane	Gross	O'Byrne
Sept	Adams	Gross	Abouassaly	O'Byrne	Idowu	McGrane	Dutton
Oct	Dutton	O'Byrne	Gross	Abouassaly	CV fellow	McGrane	Adams
Nov	McGrane	Abouassaly	Adams	Idowu	O'Byrne	An-Ca3	Dutton Gross
Dec	Idowu	Dutton	McGrane	Gross	CV fellow	An-Ca3	Abouassaly Adams
Jan	O'Byrne	Adams	Gross	Dutton	Idowu	An-Ca3	Abouassaly McGrane
Feb	Gross	Abouassaly	Adams	Idowu		An-Ca3	Dutton McGrane
Mar	Abouassaly	Idowu	Dutton	McGrane		An-Ca3	Adams Gross
April	Dutton	McGrane	Gross	Adams		An-Ca3	Abouassaly Idowu
May	Adams	Gross	Dutton	Abouassaly	McGrane	Idowu	
Jun	Gross	Adams	Abouassaly	Dutton		An-Ca3	McGrane

Elective submitted to Director for approval > 1 month ahead

Combined Monthly Surgical and Anesthesia Critical Care Fellows Rotations								
	SICU	TICU	BICU	NICU	CTICU	VA	ELEC	Total
Gross	3	2	3	1	0	1	2	12
Abouassaly	2	2	2	2	1	0	3	11
Adams	2	3	2	2	0	0	3	6
Dutton	2	2	3	2	0	0	3	12
McGrane	1	1	1	2	2	0		
Idowu	1	1	1	2	2			
O'Byrne	1	1	0	1	1			
Total	12	12	12	12	6	NA	NA	

FELLOW'S IN-HOUSE CALL SCHEDULE:

- Fellows will rotate on average Q4 in-house with the following duty hours.
- In-house call schedule:
 - Surgical Critical Care Fellows will cover the SICU, TICU, BICU and respond to trauma alerts as appropriate on a Q4 rotation.
 - When Anesthesia Critical Care fellows are available within the call rotation, they will be responsible for coverage of the SICU and BICU and the Surgical Critical Care Fellow will be responsible for trauma alerts and the trauma ICU.
- **Draft template to be used to facilitate scheduling:**
 - Fellows make their own call schedule but must ensure compliance with the ACGME duty hours rules
 - Where appropriate, the arrival time may be shifted to 7 am and allow attendance of mid-day conferences to ensure compliance with the 24+6 rule
 - Fellows are not required to attend conferences if this places them in jeopardy of violating duty hour restrictions.

		A	B	C	D
Mon	A	6am-6am (24)	6am-4pm (10)	6am-4pm (10)	6am-4pm (10)
Tues	B	6am-12pm (6)	6am-6am (24)	6am-4pm (10)	6am-4pm (10)
Wed	C	6am-4pm (10)	6am-12pm (6)	6am-6am (24)	6am-4pm (10)
Thurs	D	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)	6am-6am (24)
Frid	A	6am-6am (24)	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)
Sat	B	6am-9am (3)	6am-6am (24)	OFF	OFF
Sun	A	6am-6am (24)	6am-9am (3)	OFF	OFF
Mon	C	6am-12pm (6)	6am-4pm (10)	6am-6am (24)	6am-4pm (10)
Tues	D	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)	6am-6am (24)
Wed	A	6am-6am (24)	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)
Thurs	B	6am-12pm (6)	6am-6am (24)	6am-4pm (10)	6am-4pm (10)
Frid	C	6am-4pm (10)	6am-12pm (6)	6am-6am (24)	6am-4pm (10)
Sat	D	OFF	OFF	6am-9am (3)	6am-6am (24)
Sun	C	OFF	OFF	6am-6am (24)	6am-9am (3)
Mon	B	6am-4pm (10)	6am-6am (24)	6am-12pm (6)	6am-4pm (10)
Tues	C	6am-4pm (10)	6am-12pm (6)	6am-6am (24)	6am-4pm (10)
Wed	D	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)	6am-6am (24)
Thurs	A	6am-6am (24)	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)
Frid	B	6am-12pm (6)	6am-6am (24)	6am-4pm (10)	6am-4pm (10)
Sat	C	OFF	6am-9am (3)	6am-6am (24)	OFF
Sun	B	OFF	6am-6am (24)	6am-9am (3)	OFF
Mon	D	6am-4pm (10)	6am-12pm (6)	6am-4pm (10)	6am-6am (24)
Tues	A	6am-6am (24)	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)
Wed	B	6am-12pm (6)	6am-6am (24)	6am-4pm (10)	6am-4pm (10)
Thurs	C	6am-4pm (10)	6am-12pm (6)	6am-6am (24)	6am-4pm (10)
Frid	D	6am-4pm (10)	6am-4pm (10)	6am-12pm (6)	6am-6am (24)
Sat	A	6am-6am (24)	OFF	OFF	6am-9am (3)
Sun	D	6am-9am (3)	OFF	OFF	6am-6am (24)
Average hours/wk for 28 days		76 hrs/wk	76 hrs/wk	76 hrs/ wk	77hrs/ wk

B. Educational Component:

Self-motivated and self-directed education is a hallmark of quality adult education. Without individual motivation and direction, no program can ensure a quality experience. To ensure appropriate care for one's patients, physicians are mandated to life-long, self-directed continuous education and the VUMC Surgical Critical Care and Acute Care Surgery Fellowship mandates these characteristics in its fellows. Thus, fellows must assume the responsibility of attaining appropriate knowledge and skills for their throughout their career in practice. Our fellowship provides an organized, integrated and intensive program through which all fellows should master the clinical fields of critical care, trauma, and emergency surgery. The educational process for the fellows (throughout both years) has several components including daily attending rounds, didactic and Socratic lectures (see table below), a critical care and trauma reading program, and directed instruction of various techniques such as the use of ultrasound, hemodynamic monitoring devices, and continuous hemo-filtration.

B1. 1st year educational component: Daily attending rounds with the critical care faculty occur in all ICUs in which the critical care fellows rotate. Fellows are an integral part of these rounds and assume a gradual increasing responsibility for directing them during the 1st year. The critical care fellows will be expected to complete a reading program that encompasses both landmark articles and recent literature covering each of the topics outlined in section IV, A of the Graduate Medical Education Directory's program requirements for residency education in surgical critical care. To assist the surgical critical care residents with this reading program, textbooks, CD ROM containing selected landmark articles, and a referenced collection of critical care and trauma articles are provided. A weekly Fellows Critical Care Conference addresses important and changing topics in the field and attendance for all fellows is mandatory. Numerous other conferences are available and outlined in the section below. Fellows assigned to each unit should attend conferences specific for that unit's service. Attendance of educational conferences of other units is optional but encouraged as time permits. Additionally, workshops are scheduled throughout the year to enable acquisition of skills in a

variety of critical care techniques. Additionally, fellows will become instructors in the ATLS and FCCS courses.

B2. 2nd year educational component: Over the two year period, the fellow's experience shifts to that of an Instructor of Surgery (2nd year) and thus fellows increasingly become the educator during daily patient rounds. 2nd year fellows maintain active participation in several conferences specific to trauma and emergency general surgery and undertake a self directed reading program (the "Trauma" text by Mattox is recommended). 2nd year fellows are required to participate in the trauma service morning report conference Monday through Friday during clinical/academic rotations. Additionally, they should participate in all Acute Care Surgery Fellows Conferences, Multidisciplinary Critical Care Fellows Conferences, and Morbidity and Mortality Conference when in town. Near the completion of the second year, fellows will be tested on their mastery of initial management, resuscitation strategies, and operative approach to the acutely injured or acutely ill emergency surgical patient by means of an oral examination.

B2a. Specific educational expectations of fellows during second year:

1. The 2nd year should run the Acute Care Surgery Conference:
 - a. Focus: Operative /Clinical Management
 - b. Needs to be a Problem Base Learning with EBM application (Less Didactic filibustering)
 - c. Participates should be: All fellows, Trauma / EGS on service faculty, EGS / Trauma Chief residents
2. Teaching Rounds while on service of the Residents and Medical Students
3. Participation of the Educational endeavors of the Department of Surgery
 - a. Grand Rounds
 - b. Mock Boards
 - c. Mock Oral Exams – Medical Students

B3. Educational conferences:

Numerous educational conferences are available for the fellows' educational experience. These are outlined in the table below. The two conferences in bold are specifically for the fellows and their attendance is mandatory.

DIVISION OF TRAUMA & CRITICAL CARE EDUCATIONAL CONFERENCES:		
Acute Care Surgery Fellows Conference	Tuesday	12:00 pm
Multidisciplinary Critical Care Fellows Conference	Thursday	12:00 pm
SICU/NICU Combined Critical Care Conference	Tues,Wed,Thur	11:00 am
Trauma Service Morning Report Conference	Mon-Fri	7:00 am
Trauma/EGS/ED Resuscitation Conference	Monday	11:00 am
Multidisciplinary Critical Care M & M	2nd Monday/month	3:00 pm
SECTION OF SURGICAL SCIENCES CONFERENCES:		
Surgical Grand Rounds	Friday	7:00 am
Department of Surgery M & M Conference	Wednesday	6:30 am
Section of Surgical Sciences Research Conference	Friday (optional)	12:00 pm

Fellows assigned to each unit should attend conferences specific for that unit's service as appropriate. Attendance of critical care educational conferences of other units is optional but encouraged as time permits.

Another significant component of fellow's education is their attendance of Division Faculty and Research Conferences. Fellows are encouraged to attend all Divisional faculty meetings and research conferences.

DIVISION OF TRAUMA & CRITICAL CARE RECURRING MEETINGS:		
Faculty Meeting	1 st & 3 rd Wednesdays of each month	1:00 pm
Research Conferences	2 nd & 4 th Wednesdays of each month	1:00pm

C. Administrative Component:

Administrative skills of the Surgical Critical Care and Acute Care Surgery fellows will be enhanced through a graded increase in administrative responsibilities with direct support and supervision from the Program Director and faculty within the Division of Trauma and Surgical Critical Care. Logistical support will be provided by the fellowship coordinator. Surgical Critical Care and Acute Care Surgery fellows will attend all divisional faculty meetings and retreats and will be actively involved in programmatic development. Additionally they will specifically be involved in:

1. Administration of educational conferences with direct support from critical care coordinator.

2. Resident rotation and on-call schedule for both junior residents and surgical critical care/anesthesia critical care residents. They will be in a supervisory role with specific attention to appropriate methods of conflict resolution and compliance with ACGME work hour regulations. Fellows will also assist with the process of evaluating residents and students in the ICUs during their rotations.
3. Process Improvement and Quality Assurance initiatives in both the SICU and TICU. They will participate in data driven management guideline development and implementation. They will participate in analysis of monthly quality indicators such as unit specific infection rates, self extubate, etc.
4. The fellows will manage the Multidisciplinary Surgical Critical Care/SICU Morbidity and Mortality conference (2nd Monday of the month) on a monthly basis and present selected information at the Department of Surgery M and M monthly (4th Wednesday of the month) (see below and appendix)
5. During their second year, fellows will be encouraged to assume administrative rolls for various portions of the Division's responsibilities. This will be under direct supervision and mentorship of a faculty member and subject to fellow's interests and expertise.

C1. Fellow's Administrative Roles in Educational Conferences

C1a. Acute Care Surgery Fellows Conference

- **Concept:** Weekly conference designed to provide Acute Care Surgery Fellows with in-depth knowledge of topics pertinent to the advanced delivery of care and operative management in trauma and emergency general surgery. The conference may alternate in format between Socratic topic reviews provided by invited speakers or trauma and EGS faculty, topic review seminars provided by the Acute Care Surgery fellows, and journal club format one week per month in which the 2nd year fellows pick articles to be discussed. The final Tuesday of the month will be reserved for actual review of cases of interest (Clinical Case Review) from the previous month (see below).
- **Scheduled topics:** The administrative fellows for this conference will select topics that generally cover general areas of complex management in Trauma and Emergency General Surgery. Topics should be presented at most on a yearly basis (ideally a 2 year cycle for most topics). If a journal club format is selected,

the fellow should select 2-3 articles that may “change practice” or are landmark articles in the field of trauma and emergency surgery.

- **Participants:** This is the second year fellow’s operative conference and is directed to them. All Division of Trauma and Surgical Critical Care faculty, fellows, R-4s on the Trauma and Emergency General Surgery Services will be invited. The junior residents and students will not be invited.
- **Attendance Policy:** No conflicting obligations are to be scheduled during conferences if at all possible. Availability of Trauma faculty and timing of conference generally should enable the Acute Care Surgery fellows to attend conferences the vast majority of the time. Occasional acute care situations that arise during conferences may require a specific fellow’s attention.
- **Administrative Responsibilities:**
 1. **Heather MacNew** will be the primary ADMINISTRATIVE DIRECTOR for this conference and responsible for this conference.
 2. **Dr. Addison May** will be the faculty supervisor.
 3. Valerie McSterling will provide administrative support and distribute schedules.
 4. The **administrative director** is responsible for determining the format each week, selecting the speakers, topics, or assigning journal club and articles for the conference with close assistance and supervision by Dr May.
 5. **If a Journal club format is selected, the articles/materials for each conference must be given to the fellow at the beginning of the preceding week’s conference.** They will give them to Nelda who will copy and distribute to each member’s box by Friday of that week.
 6. Attendance records will be maintained for RRC and CME documentation purposes
- **Clinical Case Review “standard operating procedure”**
 - The last Tuesday of the month will be used for review of interesting, complex , or problematic cases admitted to trauma or EGS from earlier in the month
 - For Trauma patients, presentations will begin with brief review of resuscitation tapes (unless this phase is superfluous to the case) but resuscitation and operative decision making is to be stressed in this format. EGS patient case presentations should include appropriate pre and intraoperative decision

making. may begin in the ED resuscitation bay and extend through operative and ICU management

- Any senior team member (senior resident, fellow, faculty) may identify potential patient cases during the month. The fellow on service will be responsible for ensuring an adequate number of cases are identified
- ***Fellows to produce 1 page synopsis with short reference list outline rationale for approach or decision making to be discussed at the conference***

C1b. Multidisciplinary Critical Care Fellows Conference

- **Concept:** Weekly conference designed to provide Critical Care Fellows with in-depth knowledge of topics pertinent to the advanced delivery of Critical Care Medicine. The conference may alternate in format between Socratic topic reviews provided by invited speakers or Critical Care Faculty, topic review seminars provided by the Critical Care Residents, and journal club format in which the first year fellows pick articles to be discussed. Handouts for the seminars and recent and/or landmark articles relevant to the topic will be selected and provided for review by attendees prior to the meeting.
- **Scheduled topics:** Ideally, topics will cover a broad range of subjects of importance to critical care. Topics should address those areas outlined in the “Educational Goals and Objectives for Surgical Critical Care” section of the manual. To allow flexibility and to maintain the ability to cover what is of greatest interest to the fellows at any given time, the formal schedule of topics will be only set 5 weeks in advance. At the beginning of each month, the following 5 weeks schedule will be put forth.
- **Participants:** This is the fellow's critical care conference and is directed to them. All Anesthesia CC and Trauma CC faculty, fellows, R-4s and anesthesia resident on the service will be invited. The junior residents and students will not be invited.
- **Attendance Policy:** No conflicting obligations are to be scheduled during conferences if at all possible. Availability of Critical Care faculty and timing of conference generally should enable the Critical Care fellows to attend conferences the vast majority of the time. Occasional acute care situations that arise during conferences may require a specific Critical Care fellow's attention. The Multidisciplinary Critical Care Residents Conference is specifically provided

for their education and therefore, faculty generally cover acute issues that arise at that time.

➤ **Administrative Responsibilities:**

1. **Chadi Abouassaly** will be ADMINISTRATIVE DIRECTOR for this conference.
2. **Dr. Addison May** will be the faculty supervisor.
3. **Nelda Fowlkes**, Dr May's Assistant will provide administrative support and distribute schedules.
4. The **administrative director** is responsible for determining the format each week, selecting the speakers, topics, or assigning journal club and articles for the conference with close assistance and supervision by Dr May.
5. **If a Journal club format is selected, the articles/materials for each conference must be given to the fellow at the beginning of the preceding week's conference.** They will give them to Nelda who will copy and distribute to each member's box by Friday of that week.
6. Attendance records will be maintained for RRC and CME documentation purposes

C1c. SICU/NICU Combined Critical Care Conference

- **Concept:** Didactic conference for residents and students rotating in the SICU and NICU. Each Tuesday, Wednesday, and Thursday (some Mondays) 2 – 30 minute lectures or a skills station from the Society of Critical Care Medicine's "Fundamental Critical Care Support" course will be given. Faculty and surgical critical care fellows provide lectures and supervisory role.
- **Participants:** Faculty, fellows, residents, students rotating in the SICU and NICU. Monday and Friday teaching in a Socratic style on rounds will be primarily encouraged.

➤ **Administrative Responsibilities:**

1. **Kirby Gross** will be ADMINISTRATIVE DIRECTOR for this conference.
2. **Drs. Addison May** will be the faculty supervisors.
3. **Nelda Fowlkes**, Dr May's assistant will provide administrative support and distribute schedules.

C1d. Multidisciplinary Surgical Critical Care/SICU Morbidity & Mortality Conference

➤ **Concept:** Intensivist/physician driven efforts to improve the delivery of care within the ICU realm are mandatory if patient care is to be maximized. Such efforts are complex, labor intensive and mandate involvement of multiple care groups and harmonious interfaces with broader systems within the hospital. To achieve this at VUMC, three separate but highly integrated processes take place under the authority of the Medical Director of the SICU. These three processes include 1) Process Improvement Committee 2) and quality assurance program and 3) monthly Morbidity and Mortality Conference for the SICU. The fellows will be involved in each of these aspects while in the SICU and throughout the year. Their participation is outlined below in two sections **PI/QA** and **M & M** conference.

➤ **MDSCC/SICU Morbidity and Mortality Report** (see appendix for detail)

Purpose: 1. to identify and discuss serious adverse events that may indicate process or knowledge deficiencies, 2. educate fellows regarding prevention of adverse events in complex settings, 3. identify and prepare for the MDSCC/SICU presentation in the Department of Surgery's M and M conference.

Methods:

- The Fellow responsible for the overall management of the conference will ensure that the fellows rotating each month understand the access to data, recording, and presentation methods.
- The SICU fellow each month will be responsible for the identification and management of the data on a daily basis.
- Utilize data collection sheets provided to record admission information and appropriate events on all patients with whom the ICU service is in consultation
- Monthly reports consisting of total admissions, morbidities and mortalities will be formatted for presentation at the last educational conference of each rotation.
- Data maintained in *Excel* file for management.

Presentation: The end of the month presentation will consist of three parts:

1. an overview of the morbidities and mortalities

2. a brief discussion of the morbidities with appropriate responsibility assessed for each M & M,
3. 30 to 45 minute presentation covering one topic represented by the M & M findings. The presentation should contain a literature review of the topic and two to three relevant articles for discussion. The literature should be prepared prior to the conference for distribution to the entire faculty and all fellows. A list of topics will be kept to avoid repetition over the course of a 12 to 24 month period.

Attendance: The attendance of the conference is mandatory for the attending of the week for the SICU, SICU fellow of the month and all residents present on rotation at the time of the conference. Invited guests will include the entire faculty for the SICU and any residents interested in the topic.

➤ **Administrative Responsibilities:**

1. **William Dutton** will be ADMINISTRATIVE DIRECTOR for this assignment.
2. **1st year fellows on SICU service** to collect M&M cases and responsible for presenting.
3. **Dr. Collier** as M & M and PI Director will be the faculty supervisor.
4. Dr. Collier's assistant will provide administrative support.

C1e. Trauma Service Morning Report Conference

- **Purpose:** The problem of safe and efficient transfer of care has increased over the past decade as resident work hour restrictions have been implemented, an ever increasing number of diagnostic tools has become available, and an increasing percentage of complex patients has become concentrated at fewer and fewer facilities. In an effort to accomplish these educational responsibilities, centralize information handling, and facilitate the management and transfer of patient care information, a formalized morning report system will be conducted. This will improve the quality of the information transferred during the sign-out process, enhance resident and physician extender efficiency, provide an open forum for discussing the diagnostic work-up and management of the acutely injured patient, and improve the quality of the resident didactic experience.

- **Concept:** Morning report is designed to improve faculty-fellow-resident interaction and educational opportunities, facilitate the management and transfer of patient care information, and allow a forum for the discussion of patient care and management without the constraints of ancillary staff and family presence. An organized sign out process will utilize the presence of post-call team members, a large chalk/marker board to organize and identify patient encounters (listed by alias), and a digital viewer allowing access to previous radiographic studies obtained over the previous 24 hour period.

- **Format and Structure:**
 - At the beginning of the report, the on-call team (whether for the day shift or a 24 hour call) and a “response team” will be identified.
 - The response team will respond to incoming trauma alerts while the morning report is being carried out.
 - The “response team” will consist of the on-call/back hall attending, the on-call junior resident, and physician extender.
 - After these are defined, the teams will identify any life-threatening issues or events requiring immediate attention. The appropriate personnel will be released to evaluate and address these priorities.
 - Cases scheduled for the operating theater or major bedside cases will be announced and briefly discussed as necessary.
 - At this time, all new trauma patient evaluations from the previous 24 hours will be discussed.
 - This will include an evaluation of the radiographic studies obtained and their interpretation (if available).
 - The brevity or length of each will be determined by the post-call fellow or chief resident.
 - Finally, major events that have occurred in the previous 24 hours, involving in-patients, will be announced and/or discussed.

- **Participants:**
 - The T1, T2, T3 attendings Monday-Friday. All other available faculty members are encouraged to attend.
 - All 2nd year fellows (unless on non-clinical/non-academic weeks).
 - On-service 1st year fellows.

- On-service residents and physician extenders.
 - Post-call attending, fellow (until presence mandated in “home” ICU), and chief resident is paramount to the success of this morning report process.
 - weekends and holidays - the post-call and on-call teams should be present.
- **Time:** Morning report will begin everyday at 7:00 a.m. except on Wednesday (7:30) and Friday (6:15). The report process will last approximately 45 minutes, except on Saturday and Sunday in which it will be limited to approximately 30 minutes.
- **Administrative Responsibilities:**
1. **1st year fellows on the TICU service** will provide administrative support for this conference.
 2. **Rick Miller** will be the faculty supervisor.
 3. Dr May's assistant will provide administrative support and distribute schedules.

C2. Other Administrative Roles for Fellows

C2a. 1st year fellows' call, vacation, meeting and time away schedule

- **Assignment:** The fellow assigned to this role is responsible for
- Completing the fellows call schedule each month
 - Working with administrative coordinator to manage and publish schedule
 - Ensuring compliance with ACGME resident work hour guidelines
 - Ensuring continuous coverage in-house at night
 - Communicating and problem solving with Program Director in a timely fashion of above goals cannot be met
 - Maintaining an excel log with administrative coordinator of the vacations, meeting, time away for the year
 - Should develop a draft plan for the year by July 31
- **Administrative Responsibilities:**
1. **Raeanna Adams** will be ADMINISTRATIVE DIRECTOR for this assignment.
 2. **Dr. May** as Program Director will be the faculty supervisor.
 3. Dr May's assistant will provide administrative support and distribute schedules.

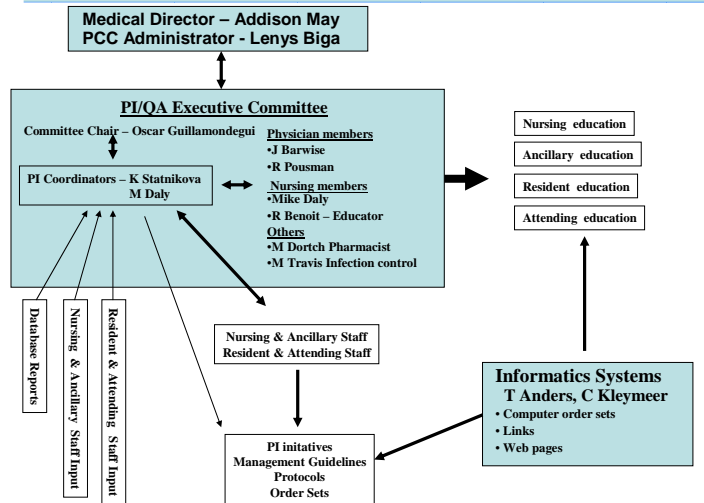
C2b. SICU resident and student call schedule and evaluation process

- **Assignment:** The fellow assigned to this task is responsible for completing the
 1. SICU resident call schedule
 - This includes determining the needs of the residents and developing schedule
 - Forwarding schedule to administrative coordinator (Dr. May's Assistant) to publish appropriately
 - Use previously developed template to ensure compliance with ACGME work hour restrictions
 2. SICU resident and student evaluation process
 - The fellow responsible for the process will ensure that fellows within the SICU for that month are aware of the evaluation process and complete in a timely fashion
 - Fellows provide draft copies to Dr Bryan Collier (or Dr May in his absence) for his review and completion.
- **Administrative Responsibilities:**
- 1. **Kirby Gross** will be ADMINISTRATIVE DIRECTOR for this assignment
 2. **Dr. May** as Program Director and Director of SICU and MDSCC will be the faculty supervisor.
 3. **Dr Bryan Collier** assists **Dr May** with the educational component and resident/student evaluations.
 4. Dr May's assistant will provide administrative support and distribute schedules.

C2c. SICU Process Improvement and Quality Assurance

The SICU has a well formed and established Process Improvement system and committee. All fellows are encouraged to attend the meeting but attendance is mandatory during their SICU rotation and when systems issues identified in M & M require presentation at the PI/QA level. The organizational structure is shown below.

MDSCC PI & QA Program Model



D. Research/Academic Development Component:

Beyond the development of an appropriate knowledge base in Surgical Critical Care, the fellowship will support and encourage the acquisition of skill sets and tools for successful academic careers. The administrative and managerial skills will be addressed in a separate section below. The fellows are encouraged to pursue academic and research interests. Productivity in these areas requires prospective consideration by the individual fellow shortly after beginning their fellowship with a gradually increasing participation in the development and implementation of various projects. Specific goals and expectations are outlined below:

D1. Research: To develop an understanding of multi-center, industry sponsored research each fellow will identify specific interests in one or more of the ongoing or upcoming projects within the Division during the first 3 months of their fellowship. They will be made a Co-PI on research project (Oct – Dec of 1st year) and will be encouraged to attend an investigator’s meeting and facilitate implementation and enrollment into the study.

- By the second 6 months of the first year each fellow should identify at least one research project (basic or clinical) in which they can actively participate. This may be an ongoing effort or a new effort of their own design. Each fellow must identify at least one faculty mentor for their project. Prospective projects require a greater period of time to complete. Projects that are appropriate for external funding will likely require development during the first year of fellowship for implementation or portability.

D2. Lectures and presentations: Each fellow is expected to create lectures and presentations that are of sufficient quality to present at regional presentations or grand rounds.

- Develop a minimum of 4 power point talks that can be given as Grand rounds, lectures, national conferences
- Give one VUMC General Surgery Grand Rounds
- Give 1-2 Critical Care conference
- Participate in the lecture series in each ICU
- Attendance at national meetings

To support these efforts, the fellowship provides office space, desktop computers for each resident and a

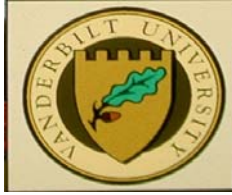
- laptop computer
- LCD projector
- image scanner
- digital camera

for the fellow's use. Additionally, each Surgical Critical Care resident will sent by the Division to a "board" review course and one national meeting per year.

D3. Reference library and reference system: To assist in future academic activities, each fellow is encouraged to develop a trauma and critical care reference library and reference system. The fellowship provides access to extensive reference materials and reference management systems to facilitate this.

D4. DO'S and DON'TS FOR DATABASE CREATION:

1. Develop database to achieve single line per patient if possible
2. All outcomes should be in columns. Do not separate into groups
3. Pts entry #s should be contiguous and not separated to divide into groups. (This can be achieved by sorting later)
4. 1st line is for column headings
5. 8 characters or less in column headings, no spaces. Do not use symbols or leave spaces
6. Leave missing data blank
7. set below detectable limit as either the limit, or some value between the limit and zero.
8. Do not put in letter characters in any string/number field. Assign negative numbers if needed or set another column to define that it does not apply.
9. make a definitions table/document as you create fields to display such things as units, definitions, etc.
10. Consider data as Scale (continuous), nominal (ie a name or categorical), or ordinal (nominal that have a natural order to them such as grading of cancer)
11. String characters that do not fall into nominal or ordinal definition will not be analyzable. Decide groupings up front if possible. Can you column with descriptive definitions but will not be used in analysis unless done post-hoc.
12. For dates – choose the method of display up front.



ACQUISITION OF THE ACGME/ABMS CORE COMPETENCIES DURING THE VUMC SURGICAL CRITICAL CARE AND ACUTE CARE SURGERY FELLOWSHIP

Surgical Critical Care and Acute Care Surgery specialties provide an ideal model for the acquisition of skills and knowledge to fulfill the six core competencies. These specialties mandate that 1) practitioners achieve high levels of medical knowledge and skills 2) practice is highly systems oriented and collaborative with multiple groups 3) practice is driven by evidence based medicine 4) physicians can communicate very efficiently and effectively to families regarding critical illness and death and to multiple team members to ensure appropriate direction of care 5) have well developed PI/QA systems to achieve highest level of care for this very complex patient group.

The VUMC Surgical Critical Care and Acute Care Surgery Fellowship assures that fellows achieve these core competencies through a highly integrated and intense program.

- 1) As outlined in detail above, fellows attain medical knowledge through a series of didactic and Socratic mechanisms as well as self directed reading programs. Skills and knowledge are assessed by faculty on a near continuous basis.
- 2) Communication skills are developed, enhanced, and evaluated via numerous mechanisms. ATLS, Crew training, participation in the direction of trauma resuscitations with weekly review of these resuscitations, direction of critical resuscitation efforts with faculty evaluation in the ICUs, direction of OR teams, communication with numerous medical teams, communication with 100s of families with critically ill family members,

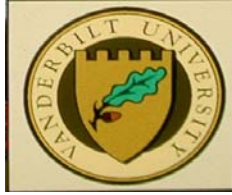
communication regarding withdrawal of support, etc all ensure that fellows achieve high levels of skill.

- 3) Professionalism is highly valued and reinforced throughout the program. This is done by evaluation of the fellows' behavior and skills by faculty and nurses, mentorship through fellows' participation in administrative duties.
- 4) Systems based practice is mandatory throughout these specialties. Fellows are involved in faculty meetings, retreats, PI/QA mechanisms and are actively involved in enhancement of systems based practice throughout their fellowship. The ICU and Trauma and EGS services are highly systems based and this permeates all aspects of care and training.
- 5) Practice based learning and improvement is again achieved through numerous integrated mechanisms. Fellows participate in all aspects of the Division of Trauma and Surgical Critical Care's efforts to develop and maintain evidence based "best-practice" medicine and be on the forefront of the delivery of acute care management. Fellows are involved in development and reviewing management and practice guidelines, order set development, PI/QA, educational and research initiatives that enhance knowledge, direct care, and improve outcomes.



POLICY ON RESIDENT MOONLIGHTING

The Division of Trauma and Surgical Critical Care concurs with the VUMC Office of Graduate Medical Education policies on moonlighting as outlined in the Vanderbilt House Staff Manual under the administrative section A., number 8. Any moonlighting by the residents in Surgical Critical Care must be approved by the Program Director and the Chief of the Division.



SUPPORT OF CRITICAL CARE FELLOWS

- **Financial**

- Salary for the first year of the fellowship is the VUMC – PGY6 level for the 2008-09 academic year.
- Salary for the second year of the two year fellowship is at the level of an Instructor of Surgery whose base salary is set by the Department of Surgery.

- **Administrative Support**

Nelda Fowlkes, Dr. May's assistant and coordinator for the fellowship, will be responsible for all your administrative needs. Please coordinate those activities directly with her. Dee Mewbourne, Administrative Officer, is responsible for coordinating the licensure process and other credentialing activities that will be necessary for your appointment to the medical staff and faculty to begin your second year.

- **Professional Expense Account:**

To enable appropriate academic development yet encouraging financial responsibility, the Division of Trauma and Surgical Critical Care provides support for travel to conferences, texts, etc. The fellows are provided \$5000 per year to cover the processes outlined below. Travel or expenses beyond this are to be approved by the Program Director and may require personal or outside funds.

- **Expenditures covered by the Professional Expense Account:**

- **Academic meetings:**

During the first year the Division will pay registration, lodging, and airfare expenses to one domestic trauma/critical care meeting as appropriate. These are usually EAST (Eastern Association for the Surgery of Trauma), AAST

(American Association for the Surgery of Trauma), WTA (Western Trauma Association), SCCM (Society of Critical Care Medicine).

Registration and airfare prepayment via the departmental procurement card is strongly recommended. This will decrease the amount of out-of-pocket expense one assumes when traveling.

If travel is by personal automobile reimbursement for mileage will be made according to the current University guidelines. Expense for family or others who may accompany you on such trips is a personal responsibility.

- **General Surgery Board Review Course**

Should you choose to attend a review course, the associated expenses may be allocated against your yearly Professional Expense Account.

Note: It is mandatory that the Vanderbilt Travel Authorization form be completed and approved prior to any business related travel. Please coordinate all your travel arrangements with Nelda so that the appropriate forms are completed and signed prior to your trip and expense reports are filed on a timely basis following your trip. Original receipts are required for all relevant travel expenses submitted for reimbursement.

- **Subscriptions**

As many journals are available on line through the Eskin Medical Library the Division no longer maintains a physical inventory of journals, however, individual faculty members subscribe to a variety of publications which may be made available for your use. Should you wish to subscribe to other than what is currently being received by the faculty please consult with Dr. May and we will proceed as appropriate.

- **Textbooks**

Two textbooks - 1 trauma, 1 critical care may be purchased via your Professional Expense Account. Beyond this, please consult with Dr. May. These purchases should be made through the Vanderbilt Medical Bookstore in Light Hall whenever possible. If the text you require is not in stock, it will be ordered for you and the office will be notified when it has arrived. Please see Nelda for the appropriate process and/or forms.

- **Expenses Covered in addition to the Profession Expense Account**

- **Memberships/Dues**

During the first year the Division will pay for individual memberships to the Eastern Association for the Surgery of Trauma (EAST) and Society of Critical Care Medicine (SCCM), to include application fee and yearly dues.

- **MCKAP EXAM**

The MCKAP exam dates normally occur in March each year. Exams will be ordered and Nelda will coordinate the examination session with your schedules.

- **ATLS**

You will be required to obtain ATLS Instructor Certification. If your provider status is not current, you will be enrolled in our yearly course in July and, upon satisfactory completion, arrangements will be made to enroll you in an instructor course. The Division will bear the expenses related to that certification process.

- **Other Certifications**

In addition you are required to maintain current status in BLS and ACLS. Fees associated with those activities will be borne by the Division.

- **Office Supplies/Equipment**

The Division will provide whatever supplies you require for your office. Missi Jarboe orders supplies for the Division; please feel free to touch base with Missi or Nelda with your requests.

Desktop computers will be provided and configured with all essential hardware/software by the Section's IT staff. Addition of any other peripheral software must first be approved by the Division and installed by the computer support staff.

- **Lab Coats/Pagers**

Initially you will be supplied with three (3) coats in the style of your choice. Replacement coats will be ordered as needed. Division provides laundry service through Chesley Cleaners. Pickup/delivery day is Monday.

Division provides our own pagers rather than GME as it allows for continuity into the second year.

- **Licenses**

The Division will pay for the following:

Medical License: Initial application fee and renewals

DEA License: Initial application and renewals.

Professional Tax: The state of Tennessee assesses a yearly professional tax for various occupations. The Division will pay that tax on your behalf.

IMPORTANT NOTE: *As the process for obtaining both a Tennessee Medical License and DEA certificate is rather lengthy, it should be initiated well in advance of beginning your second year. Dee will initiate and coordinate the process for you according to the following and your cooperation is appreciated in completing all paperwork in a timely fashion.*

December 1 application for Tennessee medical license
(DEA application will be submitted after license is
obtained)

February 1 application for medical staff appointment completed and
submitted

April 1 faculty appointment submitted

June 1 credentialing process complete

If you have active licensure in other states and wishes to maintain it, that
expense is a personal responsibility.

First Year Expense Summary

Department Responsibility	Professional Expense Account
<ul style="list-style-type: none">➤ Medical License Application & Renewal – <i>TN only</i>➤ DEA Application and Renewal➤ TN Professional Tax Assessment➤ MCKAP Examination Fee➤ Office Computer & Supplies➤ Lab Coats (3) & Laundry➤ Pager➤ Membership: EAST, SCCM (<i>application fees & dues</i>)➤ ATLS Instructor Course Fee (<i>as applicable</i>)	<ul style="list-style-type: none">➤ Travel:<ul style="list-style-type: none">○ 1 <i>National Trauma or Critical Care Meeting/yr</i>○ <i>Surgery Board Review Course</i>➤ Textbooks – 1 Trauma & 1 Critical Care➤ Subscriptions

MONITORING OF CRITICAL CARE RESIDENT STRESS

Critical care resident stress is monitored in several ways:

1. In-depth daily contact with faculty and director of the program.
2. Routine performance evaluations performed by faculty and nursing staff.
3. Maintenance of an “open door” policy in which the resident may approach the Program Director at any time.
4. Frequent interactions with fellows outside of the hospital on a casual and social basis.

Any evidence of mental or emotional stress including dependencies which may interfere with the resident's performance are immediately discussed and brought to the fellow's attention. These are managed confidentially and in accordance with the University policy. Resident on-call duties and in-hospital town requirements are strictly outlined and communicated to both residents and staff and are compliant with the new guidelines set forth by the ACGME regarding resident work hours.

• RESIDENT HEALTH AND WELLNESS

The health and wellness of all house staff is supported by the Department of Health and Wellness which offers a variety of integrated services organized through four programs 1) the Vanderbilt Occupational Health Clinic 2) Health Plus (provides health promotion activities) 3) The Physicians Wellness Program and Employee Assistance Program and 4) the Vanderbilt Child Care Centers (comprehensive descriptions available on-line and through the Vanderbilt House Staff Manual). To assist house staff in the management of stress, the House Staff Advisory Council has developed a residency stress support group program in collaboration with the Center for Professional Health. A variety of management programs and support groups are available through this program as outlined in the Vanderbilt House Staff Manual.

OTHER MISC. INFORMATION

- **Computer Support**

Computer support is provided by the computer team from the Section of Surgical Sciences: Eric Howard, Paul Lang, and Sam Warren. Computers are configured for you with appropriate log-ins and the Microsoft Office components, i.e. Word, Excel, Access, Internet Explorer along with Starchart. Computers are “locked” and additional software cannot be installed unless installed by the computer team. Should you require anything additional please advise Nelda and we will obtain that for you from the appropriate resources.

Note: Strongly suggested that you back-up all documents on the computer to the F: drive. The F: drive is backed-up nightly and can be accessed anywhere on campus.

- **E-mail**

E-mail is provided via Microsoft Outlook and supported by the Medical Center Informatics team. Any problems with your e-mail should be reported to the HELP desk, x- 34357, not the Section team.

- **VUMC Support of Resident Education**

THE ESKIND BIOMEDICAL LIBRARY

The Eskind Biomedical Library is adjacent to the Main Hospital tower. Specific information is provided in the table below.

The Eskind Biomedical Library is adjacent to the Main Hospital tower. Specific information is provided in the table below.

LIBRARY INFORMATION:	
Total number of titles:	84,845
Total number of Journal Subscriptions:	2,412
Number of titles added during the last 12 months:	1,700

What is not apparent from simply reporting these numbers is the accessibility of this information to all medical personnel in the institution. The Eskind Digital Library (<http://www.mc.vanderbilt.edu/diglib>) makes available numerous journals, on-line, and easily searchable from any computer in the Medical Center, (or at home).



EVALUATION PROCESS FOR THE SURGICAL CRITICAL CARE AND ACUTE CARE SURGERY FELLOWSHIP

Faculty Evaluation of Resident/Fellow

Descriptions of the process of evaluation:

Surgical Critical Care residents and Acute Care Surgery fellows are evaluated through both formal and informal mechanisms. Both of these mechanisms are critical components of the complete evaluation process.

The formal mechanism includes quarterly written evaluations of the Surgical Critical Care residents by each of the Surgical and Anesthesia Critical Care faculty members and by representatives of the nursing and ancillary staff for the various ICUs. Evaluations are collected and summarized by the Program Director and discussed in the Divisional faculty meeting. The Program Director provides a summation to each Surgical Critical Care resident in a scheduled, confidential quarterly meeting. During these quarterly meetings, each resident is also asked to offer their own observations regarding their progress. This would be equivalent to what educators call "summative evaluation." A written summation of these quarterly reviews are shared with the fellow and entered as a part of the fellow's permanent file.

Evaluation Criteria:

Written evaluations cover several dimensions that include the following:

1. Patient care
2. Medical and cognitive knowledge
3. Practice-based learning and improvement
4. Interpersonal and communication skills

5. Professionalism
6. System-based practice

The informal evaluation process is an important, “real-time” process that allows fine-tuning of clinical skills, knowledge base, behavioral issues, etc. These micro-evaluations typically take place in the clinical setting, as close in time as possible after specific behaviors (desirable or undesirable) are observed which warrant comment. The importance of these informal evaluations is that to be effective, feedback should be given closely in time after the behavior that is to be modified. This type of evaluation would be what educators refer to as “formative evaluation.”

Each fellow will receive a letter of completion following their 1st and/or 2nd year of the program.

To assist with the evaluation of the acquisition of cognitive knowledge, the Adult Multidisciplinary Critical Care Knowledge Assessment Program examination is given each year to help the fellows prepare for the examination for the Certificate of Added Qualifications in Surgical Critical Care. Performance is reviewed and didactic educational initiatives are adjusted as needed.

B. Program Director

The Program Director meets at least annually and additionally on an “as needed” basis with the Director of the Core Surgery Program. A formal review is provided annually. Additionally, the Program Director meets on a regular basis with the Chairman of the Department of Surgery regarding his performance and evaluation.

C. Program/Faculty

As part of the quarterly evaluation process, each resident will be asked to complete written evaluations of various aspects of the Surgical Critical Care Residency Program, individual rotations, and individual faculty. Both strengths and weaknesses are stressed. This will be made as anonymous as possible but the small size of the program makes this difficult. Feedback to the Program Director remains confidential when needed. At the end of the fellowship, each resident will be asked to fill out an

Exit Evaluation form (available on site) that asks some specific questions about our teaching strengths, the program's soundness, etc.

D. Efficacy of Program

The efficacy of the program is monitored through resident performances on the MCKAP, the Surgical Critical Care Boards, and subsequently professional performance after completion of the program.

1st YEAR FELLOWS EVALUATION FORM

Name of Fellow:

Date

Please rate your opinion of this fellow by choosing a number on the scale of 1 (worst) to 5 (best). Please note any additional comments, observations, and recommendations.

- 1) Supervision/direction of patient care in ICU meets satisfaction of weekly attending?
1 2 3 4 5

- 2) Availability is appropriate to the degree required for adequate management in each ICU?
1 2 3 4 5

- 3) Displays adequate level of participation as well as direction of ICU rounds?
1 2 3 4 5

- 4) Adequately manages care of critically ill patients within each ICU while on-call at night?
1 2 3 4 5

- 5) Exhibits appropriate judgment/skills and application of protocols required for supervision of invasive procedures in areas of:

- central lines – (month one)
- bronchoscopy and broncho-alveolar lavage – (month one)
- percutaneous tracheostomies – (month two to four)
- chest tube placement – (month one)
- airway management – (month one to three)

1 2 3 4 5

- 6) Meets attendance requirements for conferences specific to assigned unit/service each month?

1 2 3 4 5

- 7) Meets attendance requirements for fellows' conferences?

1 2 3 4 5

- 8) Fulfills administrative duties to your satisfaction?

1 2 3 4 5

Quarterly Summary of Surgical Critical Care Fellow's Evaluation

Name of Fellow: _____

Date _____

Please place an "X" in the appropriate column for each category below:

	Needs Improvement	Meets Expectations	Exceeds Expectations	Comments
Personal Skills				
Initiative				
Integrity				
Dependability				
Communication				
Acceptance of Criticism				
Interpersonal 1. Superior 2. Subordinate 3. Family 4. Support/Staff				
Administrative Skills				
Educational Skills				
Technical Skills				
Clinical Judgment				
Investigative & Research Skills				
Cognitive Knowledge				
Neurologic				
Pulmonary				
Cardiovascular				
Hematologic				
Hepatic				
Nutrition				
Endocrine				
Gastrointestinal				
Infectious				

Comments:

Name of Evaluator

1st YEAR FELLOW'S EVALUATION OF PROGRAM

Use the following key for your responses, unless directed otherwise:

1 2 3 4 5
Strongly Disagree Neutral Strongly Agree

A. Morning Rounds

1. The time spent discussing patient problems from an educational standpoint is about right.

- a. Surgical Critical Care 1 2 3 4 5
- b. Neuro 1 2 3 4 5
- c. Trauma 1 2 3 4 5

2. In general, would you prefer to make rounds longer, shorter or no change?

- a. Surgical Critical Care _____
- b. Neuro _____
- c. Trauma _____

3. Too much time is spent discussing disease process; I would prefer to make these work rounds.

- a. Surgical Critical Care 1 2 3 4 5
- b. Neuro 1 2 3 4 5
- c. Trauma 1 2 3 4 5

4. The most junior member should present the patient.

- a. Surgical Critical Care 1 2 3 4 5
- b. Neuro 1 2 3 4 5
- c. Trauma 1 2 3 4 5

5. More time should be spent discussing ethical and social issues.

- a. Surgical Critical Care 1 2 3 4 5
- b. Neuro 1 2 3 4 5
- c. Trauma 1 2 3 4 5

6. I am as involved as I would like to be in decisions regarding diagnosis & management.

- a. Surgical Critical Care 1 2 3 4 5
- b. Neuro 1 2 3 4 5
- c. Trauma 1 2 3 4 5

If not, would you prefer more or less involvement? _____

B. Lectures (Didactic teaching)

1. The structure of the lecture schedule is about right.

a. SICU/NICU Combined Critical Care Conference

1 2 3 4 5

b. Multidisciplinary Combined Critical Care Residents Conference

1 2 3 4 5

c. Trauma Video Resuscitation Conference

1 2 3 4 5

If not, should there be more or less structure? _____

2. The level of complexity of the lectures is about right.

a. SICU/NICU Combined Critical Care Conference

1 2 3 4 5

b. Multidisciplinary Combined Critical Care Residents Conference

1 2 3 4 5

3. Trauma Video Resuscitation Conference

1 2 3 4 5

If not, are they too complex or too simple? _____

What other topics would you like to see included?

4. I get to participate as much as I would like to in the didactic lectures.

a. SICU/NICU Combined Critical Care Conference

1 2 3 4 5

b. Multidisciplinary Combined Critical Care Residents Conference

1 2 3 4 5

c. Trauma Video Resuscitation Conference

1 2 3 4 5

If not, what would you change?

5. I usually learn something from this conference.

a. SICU/NICU Combined Critical Care Conference

1 2 3 4 5

b. Multidisciplinary Combined Critical Care Residents Conference

1 2 3 4 5

c. Trauma Video Resuscitation Conference

1 2 3 4 5

6. I believe my knowledge base has improved through the conferences.

a. SICU/NICU Combined Critical Care Conference

1 2 3 4 5

b. Multidisciplinary Combined Critical Care Residents Conference

1 2 3 4 5

c. Trauma Video Resuscitation Conference

1 2 3 4 5

7. I believe my patient management skills have improved with the conferences.

c. SICU/NICU Combined Critical Care Conference

1 2 3 4 5

d. Multidisciplinary Combined Critical Care Residents Conference

1 2 3 4 5

e. Trauma Video Resuscitation Conference

1 2 3 4 5

C. General Aspects of the Rotation

1. I feel the junior resident has the right amount of responsibility.

1 2 3 4 5

If not, is it too much or too little? _____

2. I feel the fellow/senior resident has the right amount of responsibility.

1 2 3 4 5

If not, is it too much or too little? _____

3. I generally get the right amount of technical experience during the rotation.

1 2 3 4 5

If not, is there too much or too little, and in what areas is there an imbalance? _____

4. I feel that there is the right amount of supervision for technical procedures during the rotation.

1 2 3 4 5

If not, offer suggestions for improvement _____

5. I think the nursing staff provides valuable assistance to the fellows.

1 2 3 4 5

6. Expectations of me (my role) were made clear at the start of the program.

1 2 3 4 5

7. I am given feedback when I do something right.

1 2 3 4 5

8. I am given feedback when I do something wrong.

1 2 3 4 5

9. The feedback I receive is given in a constructive way.

1 2 3 4 5

10. I am able to approach the attendings when I have problems.

1 2 3 4 5

11. I get as much help dealing with the stress of the fellowship as I need.

1 2 3 4 5

12. The atmosphere of the fellowship is supportive of me as an individual.

1 2 3 4 5

D. Teaching Experience

1. I identified this as an area of interest for me prior to the start of the program.

1 2 3 4 5

2. I get adequate opportunity to hone my teaching skills.

1 2 3 4 5

3. I get adequate supervision and mentoring of my teaching activities.

1 2 3 4 5

4. Are there any areas within education that you would like to explore in more depth? (Small group teaching, lecture techniques, teaching adjuncts, etc?)

E. Research

1. I had a specific program of experimental/clinical investigation in mind before I started the fellowship.

1 2 3 4 5

2. There are adequate resources available to me to allow me to pursue my research interests.

1 2 3 4 5

3. I get adequate mentoring and supervision of my research.

1 2 3 4 5

F. Specific Attendings/Fellows

Please rate the attendings and fellows according to the following keys:
 1 2 3 4 5
 N/A = didn't have a chance to observe

Faculty Member	Supervision	Teaching on Rounds	Didactic Teaching
John Morris, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Bryan Collier, DO	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Bryan Cotton, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Jose Diaz, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Oscar Guillamondegui, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Jeffrey Guy, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Addison May, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Rick Miller, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Bill Riordan, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A

Comment [SSS1]: Insert Riordan in all tables with faculty

Please rate the attendings and fellows according to the following keys:
 1 2 3 4 5
 Severely Deficient About Right Outstanding
 N/A = didn't have a chance to observe

Faculty Member	Approachability	Technical Skills	Availability	Knowledge
John Morris, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Bryan Collier, DO	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Bryan Cotton, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Jose Diaz, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Oscar Guillamondegui, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Jeffrey Guy, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Addison May, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Rick Miller, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A
Bill Riordan, MD	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A	1 2 3 4 5 N/A

G. What do you think are the best one or two attributes of the fellowship?

H. If you could make any changes that you wished in the fellowship, what would they be?

Acute Care Surgery Fellow's Evaluation

Name of Fellow:

Date:

Please rate your opinion of this fellow by choosing a number on the scale of 1 (worst) to 5 (best). If a score is a 3 or lower, please provide constructive feedback and recommendations.

Clinical Performance

EGS:

1. Application of evidence-based principles to complex management

1 2 3 4 5

2. Clinical decision-making in the management of complex patients

1 2 3 4 5

3. Technical skill and surgical decision-making

1 2 3 4 5

4. Competency in the direction of emergency general surgery service

1 2 3 4 5

5. Appropriately seeks advice and guidance in complex cases

1 2 3 4 5

6. Collegiality

1 2 3 4 5

TRAUMA

1. Application of evidence-based principles to complex management

1 2 3 4 5

ACS Fellow Evaluation
Page 2

2. Clinical decision-making in the management of complex patients

1 2 3 4 5

3. Technical skill and surgical decision-making

1 2 3 4 5

4. Competency in the direction of trauma service

1 2 3 4 5

5. Appropriately seeks advice and guidance in complex cases

1 2 3 4 5

6. Collegiality

1 2 3 4 5

ACADEMIC, ADMINISTRATIVE, EDUCATIONAL PERFORMANCE

1. Initiative in development of supplemental skill sets (supplemental skill sets determined & defined in conjunction with mentor and program director)

1 2 3 4 5

2. Performance on projects outlined and developed for the fellow (as determined by mentor & program director)

1 2 3 4 5

RATE FELLOW'S POTENTIAL AS FUTURE FACULTY

1 2 3 4 5



CERTIFYING EXAMINATION PROCESS

Certifying Examination in Surgical Critical Care

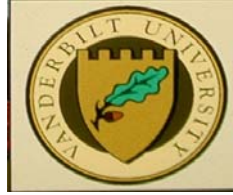
General Information and Timeline

- The application form must be completed using the web-based form on the ABS web site www.absurgery.org. However, the form will need to be printed for signature and sent to the ABS.
- The application process requires a log-in using:
 - ABS Identification Number
 - Birth Date
 - Social Security Number
- Print the completed on-line application. Sign and date the application and obtain the signature of your program director. Make copies for your records and mail originals with other materials to ABS office.
- Other Materials required to accompany application:
 - Copy of Full and Unrestricted State Medical License
 - Report of Critical Care Experience Form – 50 cases. An activity report of surgical cases will be generated quarterly in excel format to be used for completion of this component. *(Completed on-line, then printed for mailing purposes)*
 - Application Fee of \$175

Please refer to ABS web site for complete details and instructions regarding application requirements at www.absurgery.org.

Timeline:

October	First Quarter Surgical Case Report from Kelly Dillehay
January	Second Quarter Surgical Case Report
April	Third Quarter Surgical Case Report
June	Fourth Quarter Surgical Case Report
July 15	Deadline for completed application
October	ABS Test Date



EDUCATIONAL GOALS AND OBJECTIVES FOR THE SURGICAL CRITICAL CARE FELLOWSHIP

You have just completed reading a detailed description of your work environment, the persons with whom you will interface, the conferences you will be expected to attend (and prepare for), and the patients in whose care you will participate. We realize that you now come to us with a rich background in your general surgical education, and have some hopes and expectations about what you will learn during the course of your surgical critical care residency. This list of goals and objectives enumerates what we expect you to have achieved, with our help, by the end of the year. You may use this list to gauge your progress as the year passes. We will also observe you to be sure you have achieved these goals and objectives by the conclusion of your year. During your quarterly evaluations, the program director will note any areas where you need to progress. We anticipate that you will make rapid progress along this list, and realize that you may have already achieved many of these. What follows is what the Vanderbilt Surgical Critical Care faculty considers what a well-trained surgical intensivist should know and be able to do. These are the specific education goals for the Fellows as it pertains to your acquisition of knowledge in Surgical Critical Care.

A. CARDIOVASCULAR

1. Hemodynamic monitoring
 - a. Indications
 - b. Assessment
 - c. Therapy

- d. Available technology
 - e. Technical aspects
 - i. Site selection
 - ii. Methodology
 - f. Complications
 - i. Diagnosis
 - ii. Treatment
2. Adequacy of cardiac output/assessment of function
- a. Evaluation of perfusion
 - b. Categorization of low flow states
 - c. Oxygen supply/demand balance
 - d. Myocardial oxygen supply/demand balance
 - e. Evaluation of preload, afterload, and contractility
 - f. Reproduce and use formulae for RVEDV, SVR, PVR, R&LVSWI
3. Treatment: gain understanding and describe management of
- a. Hypoperfusion, including pressors/volume and rationale
 - b. Hypertension, including pharmacology of treatment
 - c. Acute myocardial infarction, including risk factors, diagnosis, preoperative assessment, anesthesia techniques, and acute management
 - d. dysrhythmias: diagnosis and treatment of atrial, ventricular, and nodal tachycardia, bradycardia, and heart blocks including pharmacologic and electrical management
 - e. heart failure: diagnosis and pharmacologic and mechanical (including assist devices) treatment
4. Critical Care Skills: demonstrate proficiency in cardiopulmonary resuscitation, cardioversion/pacing, insertion and interpretation of data from arterial, central venous, and pulmonary artery catheter.

B. PULMONARY

1. Define the differences between respiration and ventilation.

2. Discuss lung and chest wall mechanics, including total lung capacity, tidal volume, functional residual capacity, vital capacity, critical closing volume
3. Define ventilatory failure and discuss the various categories of ventilatory failure.
4. Define other pertinent measurements in the ventilated patient: peak airway pressure, pulmonary compliance (static and dynamic), minute ventilation.
5. Recognize the harmful effects of excessive O₂ concentrations, volume, and peak airway pressure. Be able to balance ventilation parameters in complicated patients to minimize pulmonary damage. Outline protective ventilation strategies.
6. Define auto peep, air trapping, and West lung zones. Understand PEEP transmission, relationship to PCWP, and measure PEEP transmission at bedside.
7. Discuss the action, mechanism, dosage and side effects of medications whose primary site of action is the lung. Discuss the side effects of other medications which may affect the lung.
8. Explain the impact of nutrition on respiration and ventilation.
9. Discuss the salient features, characteristic radiographic findings and treatment strategies for: obstructive and restrictive pulmonary disease, ARDS, pulmonary embolism, aspiration, bronchopleural fistula, respiratory tract infections, empyema, inhalation injury, pulmonary contusion, pneumothorax, and hemothorax.
10. Mechanical ventilation
 - a. Define basic parameters of ventilation: PEEP, TV, FI_{O2}, rate, pressure support, continuous positive airway pressure, IMV, CMV, Volume Control, and PRVC.
 - b. Define BIPAP, static and dynamic compliance, pressure control ventilation, inspiratory pressure, I/E ratio.
 - c. Discuss the various modes of mechanical ventilatory support, along with their advantages and risks.
11. Interpretation of arterial and mixed venous blood gases

- a. State normal values for arterial and mixed venous pH, PCO₂, PO₂, percent saturation and bicarbonate
- b. Identify and discuss respiratory acidosis and alkalosis. Explain the relationship between minute ventilation, PCO₂ and pH.

12. Endotracheal Intubation

- a. Describe the sequence for patient intubation, including the use of paralytic and sedative agents and proper tube placement
- b. Describe the procedure for emergency cricothyrotomy.
- c. Discuss the pros and cons of tracheostomy in the ICU patient. Discuss the relative merits of open tracheostomy, cricothyrotomy and percutaneous tracheostomy, and appropriate times for implementation of the various surgical airways.
- d. Discuss the complications of intubation, including tracheomalacia, sinusitis, barotrauma and others.

13. Weaning

- a. Describe methods for weaning a patient from mechanical ventilation.
- b. Discuss parameters which indicate readiness to extubate an individual patient.
- c. Discuss weaning of patients with restrictive and obstructive airways disease, myasthenia gravis

14. Discuss suspicion for and diagnosis of ventilator associated pneumonia

- a. Rational for quantitative cultures
- b. Importance of and rational for the selection of appropriate empiric therapy

15. Critical Care Skills: demonstrate proficiency in

- a. endotracheal intubation
- b. bronchoscopic techniques and qualitative cultures
- c. surgical airway establishment
- d. familiarity with ventilator modes

- e. Be able to discuss abnormal blood gases with regards to pathophysiology, other organ interactions and treatment strategies.

C. NEUROLOGIC

1. Demonstrate understanding of the metabolic requirements of the brain, O₂ consumption, glucose utilization, cerebral blood flow, the relationships of ICP, CVR and MAP, the relationship of CBF to cerebral functions, and the factors affecting ICP
2. Pathophysiology
 - a. Intracranial hypertension
 - i. Intracranial blood volume
 - ii. Increased CSF volume
 - iii. Cerebral edema (cytotoxic vs. vasogenic edema)
 - iv. Growing mass lesion (i.e., tumor, hematoma)
 - v. Loss of CNS autoregulation
 - b. Spinal Cord Impairment
 - i. Functional and physiological consequences of anatomical disruption
 - ii. Spinal cord lesions, cord syndromes, and loss of sympathetic tone
 - c. Discuss advantages of various methods of measuring intracranial pressure
 - d. Describe management algorithms for intracranial hypertension and cerebral perfusion pressure, and discuss the relative advantages and liabilities of different treatment strategies.

D. RENAL

1. Demonstrate understanding of applied physiology, including glomerular filtration, tubular absorption, renal blood flow and autoregulation, renin-angiotensin system, role of catecholamines, eicosanoids and other vasoactive substances, measurement of renal blood flow.

2. Demonstrate understanding of the assessment of renal function, including the use of: GFR, creatinine clearance, serum creatinine, serum urea nitrogen, sodium balance and ECF, water balance, acid-base balance, potassium balance
3. Demonstrate understanding of the pathophysiology of acute renal failure, including diagnosis, etiology, and differentiation from pre, renal and postrenal types, and differentiation from chronic renal failure.
4. Produce a clinical algorithm for approaching “renal failure”
5. Discuss the prevention, treatment, and prognostic considerations in acute renal failure.
6. Demonstrate familiarity with indications for and relative advantages of renal replacement modalities, including hemodialysis, peritoneal dialysis, hemofiltration, CVVH, CVVHD.
7. Demonstrate understanding of and ability to manage the changes in drug metabolism and excretion which take place during renal failure.
8. Outline a plan of nutritional management for a patient in acute or chronic renal failure.

E. GASTROINTESTINAL

1. Discuss the etiologies of upper gastrointestinal bleeding in the critically ill patient. Demonstrate familiarity with the pathogenesis, diagnosis, management, and prevention of stress gastritis. Discuss the relationship of prevention strategies to nosocomial pneumonia
2. Discuss the acute management of variceal bleeding, and the treatment of elevated portal pressure: vasopressin alone and with nitrates, octreotide, emergent transjugular portosystemic shunts
3. Understand the diagnosis and management of the spectrum of antibiotic associated colitis and colonic complications of ulcerative colitis, from simple diarrhea to fulminant colitis and toxic megacolon.

4. Understand and discuss the risk factors, pathophysiology, diagnosis and treatment of: osmotic diarrhea, secretory diarrhea, exudative diarrhea, hypermotility states, and high filtration states.
5. Understand and discuss gut mucosal barrier function, particularly its role in multiple organ system dysfunction syndrome.
6. Discuss the role of enteral nutrition, role of essential gut nutrients and selective gut decontamination
7. Understand the diagnosis, etiology, and pathophysiology, stratification of risk and severity, and management of acute pancreatitis.
8. Hepatobiliary Disease
 - a. Cirrhosis: understand the pathophysiology and management of ascites, ascitic leaks, ascitic infection, encephalopathy, and the hepatorenal syndrome
 - b. Postoperative acute cholecystitis: discuss the incidence, risk factors and pathophysiology, diagnosis and management
9. Critical Care Skills: demonstrate the ability to
 - a. evaluate the abdomen in the ICU using physical examination and diagnostic testing modalities
 - b. Utilize gastrointestinal intubation and endoscopic techniques in the management of the critically ill patient.

F. INFECTIOUS DISEASE

1. Understand the factors predisposing the critically ill patient to infections, including immunosuppression, breakdown of normal barriers, iatrogenic procedures.
2. Discuss the immunosuppression of critical illness, and the roles of malnutrition, humoral immune deficiency, cellular immune deficiency, granulocytopenia, and immunosuppressive disease states
3. Understand the importance and techniques of prevention of nosocomial infections, including hand washing, body substance isolation, and indications for patient and personnel isolation. Discuss methods of

reducing the colonization of devices, fluids, catheters, and ventilators, and approaches to the analysis of outbreaks in an ICU.

4. Discuss the nature, timing, appropriate indications and agents used for antibiotic prophylaxis.
5. Discuss the identification, diagnoses, and management of infections, including specimen collection and transport, culture methods, and sensitivity testing for bacterial, viral, and atypical infections
6. Demonstrate familiarity with the selection of and pharmacokinetics of antibiotics for infections commonly encountered in the ICU. Discuss common and uncommon complications of antibiotic therapy
7. Understand the role that HIV plays in the ICU setting, including identifying the high risk patient, the legalities of HIV testing, immunologic identification of HIV positivity, management of HIV positive and AIDS patients, awareness of the CDC recommendations for universal precautions, management of the health care personnel exposed to the AIDS virus, and the ethical aspects of AIDS management.
8. Discuss the indications for prophylaxis, presumed or empiric therapy for fungal and viral infections.
9. Discuss antibiotic prophylaxis for special conditions: prosthetic valves, grafts, and immunosuppression.
10. Be familiar with indications and results of hyperbaric oxygen therapy for anaerobic infections.
11. Critical Care Skills: demonstrate proficiency in techniques of isolation, identification and management of outbreak of resistant strains, infection control procedures, monitoring, collecting and analyzing the incidence of infections.

G. METABOLISM AND NUTRITION

1. Demonstrate the ability to assess nutritional status, including nutritional history, physical examination, and laboratory studies.
2. The relationship of the following should be appreciated in regard to theory

of test, time period assessed by the test, means of obtaining the test, confounding factors, and efficacy as a nutritional status monitor: allergy skin testing, hematocrit/hemoglobin, red cell morphology, total lymphocyte count, albumin, pre-albumin, retinol binding protein, transferrin, nitrogen balance, blood glucose, glycohemoglobin A-1C, magnesium, phosphorus, calcium, prothrombin time, liver enzymes, acute phase proteins, anthropometrics, and calorimetry.

3. Define normal nutritional needs in terms of caloric needs and composition of nutritional sources, vitamins, minerals and trace elements, and dietary formulation.
4. Discuss ways to estimate resting energy expenditure (REE) using the Harris-Benedict equation and indirect calorimetry.
5. Demonstrate the ability to assess a nutritional regimen using nitrogen balance and REE and RQ measurements.
6. Discuss the significance of dietary omega-3, omega-6 fatty acid intake, and long and medium chain triglycerides.
7. Discuss the proper roles, indications and contraindications for, and complications of oral diets, gastric feeding, jejunostomy feeding, peripheral vein feeding, and central vein feeding.
8. Critical Care Skills: Perform a nutritional assessment, formulate and execute a nutritional support plan for each of the following patient types:
 - a. Patients with organ failure/dysfunction including renal, hepatic, respiratory and cardiac dysfunction;
 - b. Patients with special nutritional problems, including morbid obesity, pregnancy, major burn injury or trauma, alcohol dependence, and diabetes mellitus.

H. HEMATOLOGY AND COAGULATION

1. Demonstrate familiarity with the basic science of coagulation, including the coagulation cascade, endothelial vasoactive response, platelet kinetics and function, fibrinolysis and inhibition of coagulation

2. Know the indications for and complications associated with component transfusion
3. Demonstrate familiarity with the management and complications of massive transfusion.
4. Discuss blood salvage techniques.
5. Discuss the complications associated with transfusion, including red-cell and non red-cell related hemolysis, allergic reactions, febrile reactions, anaphylactoid reactions, pulmonary hypertension, graft vs. host disease, and post-transfusion purpura.
6. Discuss the infectious complications associated with transfusion, including bacterial contamination, viral infections (HIV, CMV, EBV, and hepatitis).
7. Be familiar with the immunosuppressive effect of transfusion.
8. Critical Care Skills: demonstrate proficiency in diagnostic evaluation of hemostatic integrity, criteria for administration of all components, diagnosis and treatment of transfusion reactions, and safety practices regarding handling of blood components and exposure to blood.

I. ENDOCRINE

1. Demonstrate an understanding of the pathophysiology and management of diabetes mellitus in the critically ill patient.
2. Demonstrate an understanding of the pathophysiology, diagnosis and management of thyroid storm and myxedema coma in the critically ill patient.
3. Demonstrate an understanding of the pathophysiology, diagnosis and management of acute and chronic adrenal failure in the critically ill patient, and the role for perioperative steroid coverage.
4. Discuss the diagnosis and management of a patient in the ICU with pheochromocytoma, including preoperative and postoperative considerations.

5. Discuss the pathophysiology, evaluation and management of states of insufficiency and excess of the posterior pituitary, including SIADH and diabetes insipidus.
6. Importance of glucose control in critically ill.

J. MUSCULOSKELETAL SYSTEMS AND THE SKIN

1. Be aware that alterations in mental status must be considered in evaluation, and the most common complications of musculoskeletal injury are neurologic or vascular injuries.
2. Demonstrate examination of the extremities, with attention to assessment of movement, sensory and motor nerve function, and peripheral vascular examination.
3. Discuss the pathogenesis, physiologic derangements, diagnosis (including measurement of compartment pressures) and management of complications seen in patients with rhabdomyolysis.
4. Demonstrate understanding of the management of skin surrounding wounds, drains, fistulas or stomas.
5. Discuss the pathogenesis, prevention, and management of pressure sores, including wound management and the use of special beds for patients at risk for pressure sores and the morbidly obese.
6. Discuss ICU associated myopathy and neuropathy.

K. IMMUNE SYSTEM

1. Discuss the physiology of the immunologic response to critical illness, in terms of normal host defenses, barriers, humoral defenses, cellular mechanisms, mediators and cytokines, and the major histocompatibility antigens.
2. Discuss mechanisms of immune dysfunction in the critically ill patient, including tissue injury, GI bacterial translocation, stress hormones, mediators, suppressor factors, suppressor cells, hypoxia, ischemia, nutritional deficiency, and sepsis syndromes/SIRS.

3. Discuss the role of immunomodulation in the critically ill patient, including nutritional pharmacotherapy (arginine, glutamine, etc.) immunologic blockade, antiendotoxin, eradication of septic focus, mediator inhibition, anti-TNF strategies, il-1 receptor antagonist, il-6 antibodies, strategies directed to neutrophil and endothelium, leukocyte receptor antagonist, oxygen radical strategies, antiproteases, and no inhibition.

L. OBSTETRIC AND GYNECOLOGIC ISSUES

1. Be familiar with physiologic responses to pregnancy, including changes in the following systems:
 - a. respiratory
 - b. cardiovascular
 - c. hepatic
 - d. renal
 - e. central nervous system
 - f. smooth muscle
 - g. connective tissue
 - h. hormonal changes
 - i. hematologic
 - j. immunologic
2. Demonstrate familiarity with stabilization and resuscitation of the pregnant patient, especially with respect to respiratory and cardiac function
3. Demonstrate familiarity with hypertensive disorders in pregnancy, including chronic hypertension, preeclampsia/eclampsia
4. Demonstrate familiarity with obstetric concerns, including placental abruption, placental previa, uterine rupture, postpartum hemorrhage, premature labor, fetal distress and puerperal sepsis.

M. TRAUMA, THERMAL, ELECTRICAL AND RADIATION INJURIES

1. Demonstrate understanding of the epidemiology, and pathophysiology of trauma as a disease, including the current epidemiology of blunt and

penetrating trauma, the concept of trauma systems, and general concepts of funding for trauma management and education.

2. Demonstrate proficiency in the initial and secondary surveys.
3. Demonstrate the ability to initiate ongoing resuscitation and evaluation of the multiply injured patient.
4. Understand basis for controversies in management, (evaluation of abdominal trauma by serial observation or lavage, the role of CT in retroperitoneal injuries, early fixation of pelvic fractures), newer concepts in trauma management: staged celiotomy, 'damage control', vascular shunts, etc. Demonstrate the ability to manage drug and alcohol withdrawal, and pain and sedation in the trauma patient.
5. Discuss injury severity indices in the trauma patient (AIS, ISS, ATI, TS, and RTS), TRISS methodology, and the limitations of APACHE scores in trauma patients.
6. Be familiar with the pathophysiology and management of thermal injury, and smoke inhalation syndromes, including fluid support, escharotomy, and recognition and management of burn wound infections. Discuss special considerations for the burned pediatric patient.
7. Demonstrate familiarity with wound management techniques in burned patients, including methods and timing for skin grafting.
8. Discuss definitions, prevention, pathophysiology, diagnosis, and treatment of hypothermia and frostbite.
9. Discuss the incidence, pathophysiology (surface, internal current), factors determining the outcome (voltage, amps, resistance, type of current, duration, and pathway), clinical presentation and management of electrical injuries, including lightning injuries.
10. Discuss management of skin contamination, radiation skin burns, acute radiation syndromes and injury, internal contamination, and prevention of contamination of health care providers.

N. MONITORING AND MEDICAL INSTRUMENTATION

1. The resident should know when the clinical assessment is more (or less) reliable than data obtained from medical monitoring devices.
2. The cellular basis for production of electrical membrane changes which are monitored as signals should be fully understood as are the different techniques used in monitoring various physiologic states.
3. Clinical/laboratory use of specific monitoring devices should be understood in regard to: theory of device operation and calibration, common sources of error during clinical use, checks of data reliability, proposed clinical use (indications), and evidence of efficacy.
4. Understand the technical features and limitations of monitoring physiologic parameters, including ECG, EEG, temperature, pulse and heart rate, blood pressure, twitch monitoring of neuromuscular blockade, blood flow, blood and tissue oximetry, capnography, gastric tonometry.
5. Discuss clinical scoring instruments for documenting neurologic status, severity of illness or injury. The underlying theory, method of scoring, limitations, and efficacy for use, should be understood for each of the following:
 - a. Acute Physiologic and Chronic Health Evaluation (APACHE)
 - b. Glasgow Coma Scale (GCS)
 - c. Injury Severity Score (ISS)
 - d. Ramsay Sedation Score
 - e. Revised Trauma Score (RTS)
 - f. Therapeutic Intervention Score (TIS)
6. Critical Care Skills
 - a. Calibrate and use as many of the above-noted transducers, amplifiers, recorders and scoring instruments as possible throughout your training.
 - b. Realize that there are few isolated data points upon which a diagnosis can be made with certainty. The clinical use of monitoring involves an appreciation of information trends which suggest

development of favorable or unfavorable physiologic states. Regardless of the monitoring system employed, there remains a continuing need to verify the reliability of clinical data so misinterpretations can be avoided.

O. CRITICAL PEDIATRIC SURGICAL CONDITIONS

1. Respiratory: most arrests are respiratory and in-hospital (vs. adult). May be due to upper airway obstruction from mechanical (foreign body aspiration) or inflammatory (epiglottitis) causes. Lower causes include status asthmaticus.
2. Describe the special needs of children with respect to size of support and monitoring devices, drug, blood product, and fluid dosages.
3. Discuss the special psychological needs of children, especially with respect to age differences and family interactions.
4. Critical Care Skills: the critical care resident should understand the differences in management between children and adult intensive care patients as necessitated by size, organ maturity, usual absence of chronic disease, and age-related disorders. These differences should be incorporated into intensive care management plans for children.

P. PHARMACOKINETICS AND EVALUATION OF DRUG METABOLISM AND EXCRETION

1. Discuss the drug use and selection process
2. Demonstrate familiarity with basic pharmacokinetic principles:
 - a. Enteral, Pulmonary and Topical Administration of drugs - Absorption
 - b. Parenteral administration of drugs
 - c. Distribution
 - i. Calculating the volume of distribution
 - ii. Concept of volume of distribution
 - iii. Using volume of distribution to calculate dosage

- iv. Compartmental models of drug distribution
 - d. Elimination/Metabolism
3. Demonstrate familiarity with drugs requiring special pharmacokinetic considerations
 4. Demonstrate understanding of the impact of special patient considerations on drug dosing and metabolism
 5. Critical Care Skills:
 - a. Establish and monitor drug therapy to achieve therapeutic goals while minimizing toxicity.
 - b. Identify expected changes in absorption, metabolism and excretion in clinical situations noted above.

Q. ETHICAL & LEGAL ASPECTS OF SURGICAL CRITICAL CARE

1. Demonstrate an understanding of the basic principles of medical ethical models
2. Demonstrate an understanding of the role of legal issues in critical care decision making.
3. Critical Care Skills: demonstrate understanding of and the ability to obtain informed consent and refusal, participate in end-of-life decision-making, Do-not Resuscitate orders, establishing futility, withholding and withdrawing life support, establishing brain death, counseling patient & family, and request for organ donation

R. PRINCIPLES AND TECHNIQUES OF ADMINISTRATION AND MANAGEMENT

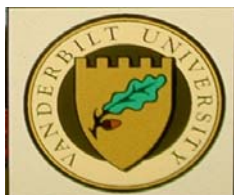
1. Verbalize understanding of total quality management, including the following concepts:
 - a. ICU leadership as visionaries
 - b. Empower healthcare associates to identify systems problems
 - c. Development of a healthcare team
 - d. Collaborative management

2. Define mission of ICU service, with respect to the following:
 - a. Clinical care models
 - i. Consultative
 - ii. Primary Care
 - iii. Matrix
 - b. Define lines of authority
 - i. Role of attending of record
 - ii. Role of ICU attending
 - iii. Role of specialty consultant
 - iv. Role of ICU fellow
 - v. Role of ICU resident
 - vi. Role of Chief resident
 - vii. Role of primary team
3. Critical Care Skills: demonstrate proficiency in the following skills:
 - a. Establish lines of communication with ICU attending, primary attending, and chief surgical resident
 - b. Establish plan for conflict resolution, understanding that attending of record has ultimate authority
 - c. Establish triage plan, and identify resource personnel for triage with admission and discharge authority must be clearly defined
 - d. Develop algorithm for "full unit policy", with coverage for ICU boarders and criteria for readmission to primary unit
 - e. Develop strategies for common efficiencies, including tools such as critical paths, equipment standardization, cost-effective analyses, and research protocols

S. BIostatistics & Experimental Design

1. Experimental design and evaluation of literature
 - a. Analysis of existing articles
 - b. Objective and Hypothesis testing
 - c. Study Design

- d. Validity, bias and power
- 2. Fundamentals of Biostatistics in Medical Research
 - a. Descriptive Statistics
 - b. Statistical Inference
 - c. Analyzing Diagnostic Tests
 - i) Sensitivity: ability of a test to detect a disease.
 - ii) Specificity: test negative when the disease is not present.
 - iii) The positive predictive value is the chance of having the attribute if the test is positive.
 - iv) Negative predictive value: exclude the attribute if the test is negative.
 - d. Confidence Intervals (Limits)
 - e. Common Regression Analyses
 - f. Critical Care Skills
 - i. Research Funding
 - a. Applying for grants
 - b. Corporate sponsorships
 - ii. Contract negotiations
 - iii. Animal rights issues
 - iv. Writing proposal for institutional review board
 - v. Manuscript preparation
 - vi. Abstract submission
 - vii. Slide preparation
 - viii. Lecture technique
 - ix. Computer literacy



POLICIES FOR THE SUPERVISION OF RESIDENTS AND FELLOWS

A. NOTIFICATION AND INVOLVEMENT OF FACULTY

Trauma Service: Care of all patients on the Trauma Service is to be under the supervision of a faculty member within the Division of Trauma and Critical Care. In general, faculty members are present on rounds to supervise and direct discussions regarding plan of care and to provide educational input. If an individual faculty member responsible for the patient's care is not present when the plan of care is established during rounds then faculty should be contacted as early as possible upon the completion of morning rounds to discuss the patient's plan of care. Faculty members responsible for the patient's care are to be notified when any of the following occur:

- All consultations and admissions. If any patient being evaluated is unstable and the faculty is not present, then the faculty should be notified immediately
- Any time the established plan of care cannot be completed
- Any significant decline in any patient's clinical status (unless decline is anticipated and previously included within an established plan of care)
- The death of any patient (planned or unplanned)
- Any time invasive procedures must be performed on a patient
- When patients proceed to the OR. No patient may proceed to the OR without faculty notification or availability

If the faculty member responsible for the patient's care cannot be reached (as directed by the guidelines above) or cannot be immediately available as needed for

the clinical setting, then the on-call attending should be notified. A faculty member is present in-house 24 hours per day, 7 days per week for the direct supervision of patient care. In the event that circumstances dictate that care must be rendered to unstable patients without the presence of supervising faculty, then the most senior resident should proceed, utilizing good clinical judgment, to ensure the patient's safety and best interests.

Multidisciplinary Surgical Critical Care Service: All patients seen in consultation by the MDSCC service (see consultation policy) are to be staffed by the Critical Care faculty on-call for the SICU. Faculty round daily with the Critical Care team and are available for all patient care issues. The on-call Critical Care faculty should be notified when any of the following occur:

- New consultations and any non-cardiothoracic admission to the SICU that is unstable. If any patient being evaluated is unstable and the faculty is not present, then the faculty should be notified immediately
- Any time the established plan of care cannot be completed
- Any significant decline in any consult patient's clinical status (unless decline is anticipated and previously included within an established plan of care)
- The death of any consult patient (planned or unplanned)
- Any time invasive procedures must be performed on a consult patient

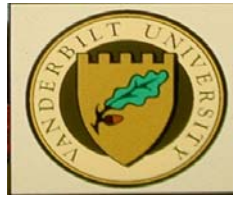
Occasionally, residents from the MDSCC service may be asked to assist in the management of a patient without formal consultation of the MDSCC service. This may be appropriate under the conditions that the patient is hemodynamically stable. Involvement of the MDSCC service residents in invasive procedures mandate notification of the Critical Care faculty prior to initiating such procedures.

If, for any reason, immediate involvement of faculty is required before the on-call faculty can be contacted or present, then the in-house Trauma faculty should be notified. In the event that circumstances dictate that care must be rendered to unstable patients without the presence of supervising faculty, then the most senior

resident present should proceed, utilizing good clinical judgment, to ensure the patient's safety and best interests.

B. RESIDENT SUPERVISORY GUIDELINES

Junior residents on either the MDSCC service or the Trauma service are supervised by more senior residents (ie. Trauma senior resident or Critical Care resident). The policies outlined above (see NOTIFICATION AND INVOLVEMENT OF FACULTY) should be utilized by the junior residents as a guide for when they should notify their more senior resident. In the event that the supervising resident cannot be notified or appropriately involved in a timely fashion, then the junior residents should notify faculty immediately.



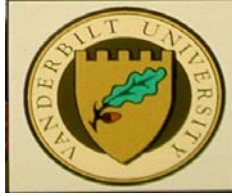
EXPECTATIONS OF RESIDENTS REGARDING CONFLICT RESOLUTION

Any issues or concerns regarding education, call schedule, work hours, interpersonal relationships, etc. that develop during the Surgical Critical Care residency should be addressed in a professional manner. The Critical Care Faculty is committed to the education and well being of the residents and to excellence in the care of our patients. Standard, professional procedure in conflict resolution calls for:

1. a clear and concise expression of the issue at hand.
2. appropriate attempt to find a resolution to the problem.

These steps should be undertaken with the involved parties first. In almost all situations, those individuals immediately responsible for an issue should be given the opportunity to rectify the situation before others are involved. If full resolution cannot be attained, then the issue must be put forth to those in supervisory roles in a “real-time” manner. Retrospective conflict resolution is fraught with problems and is frequently inaccurate. The Critical Care Residents within the SICU and TICU function as the immediate supervisor for Anesthesia and General Surgery residents for issues regarding call schedules, lecture schedules, etc. If you are unclear of the appropriate supervisor, please communicate directly with Dr. May.

If issues are not communicated to the appropriate persons, then they must be assumed to be of insufficient merit to address. If a full resolution of an issue is not attained to everyone’s satisfaction, then it must be communicated to Dr. May (Program Director) at that time. Dr. May will make every possible effort to resolve the conflict to the satisfaction of all parties. If further redress is needed, progression along established supervisory lines and/or policies delineated in the Vanderbilt House Staff Manual should be followed.



**ADMINISTRATION ORGANIZATION OF
THE SECTION OF SURGICAL SCIENCES,
THE DIVISION OF TRAUMA AND SURGICAL CRITICAL CARE,
AND THE FELLOWSHIP IN SURGICAL CRITICAL CARE**

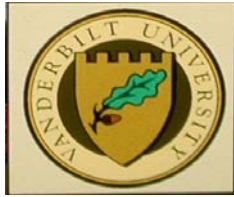
The Surgical Critical Care Fellowship is under the auspices of the Division of Trauma and Surgical Critical Care, within the Department of General Surgery, and the Section of Surgical Sciences. The Section of Surgical Sciences encompasses all of the surgical subspecialties.

Section of Surgical Sciences	Chairman –Daniel Beauchamp, MD
Department of General Surgery	Chairman – Naji Abumrad, MD
Division of Trauma & Surg Critical Care	Chief – John A. Morris, MD

The Division of Trauma and Surgical Critical Care encompasses a number of clinical components including the Trauma Service, the Critical Care Consultation Service, the Burn Service, and the Emergency General Surgery Service. Additionally, the Medical Directorship of the SICU and the Trauma units are under the auspices of this Division. The Program Director for the Fellowship in Trauma and Surgical Critical Care is Addison K. May, MD. This program interacts closely with the Anesthesia Critical Care Fellowship.

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Jose J. Diaz, MD, CNS, FACS, FCCM	Associate Professor of Surgery & Medicine Surgical Co-Director of Adult Nutrition Support Services	Pager: 835-4002 Assistant: Penny Northcutt Extension: 6-0189
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GENERAL VUMC INFORMATION

CHARACTERISTICS OF VUMC

Vanderbilt University Medical Center is a tertiary and quaternary academic medical center dedicated to excellence in education, patient care, and research. It is comprised of the Medical School, the Nursing School, the Hospital, the Children's Hospital, The Vanderbilt Clinic, the Child and Adolescent Mental Health Center, the Stallworth Rehabilitation Hospital, and the Vanderbilt-Ingram Cancer Center, designated in 2001 by the National Cancer Institute as a Comprehensive Cancer Center. Vanderbilt University Medical Center is a JCAHO approved 671 bed acute care hospital that serves a diverse patient population. The hospital provides care for a large number of critical ill and injured patients and maintains numerous specialized intensive care units including

- 1) Surgical Intensive Care Unit,
- 2) Trauma Intensive Care Unit,
- 3) Burn Intensive Care Unit,
- 4) Neurological Intensive Care Unit,
- 5) Medical Intensive Care Unit,
- 6) Coronary Care Unit,
- 7) Obstetrical Intensive Care Unit,
- 8) Neonatal Intensive Care Unit, and
- 9) Pediatric Intensive Care Unit.

Each ICU has specifically trained nursing and ancillary personnel supporting care 24 hours per day, seven days per week. Vanderbilt University Medical Center serves as the Level I Trauma Center for all of central Tennessee and serves as the Transplant Center for this region. Additionally, a busy, four helicopter transportation program handles over 2,800 flights per year transporting critically ill or injured patients to

VUMC from around the region. In fiscal year 2001, Vanderbilt admitted 31,852 hospital patients, served 641,790 outpatient visits, and cared for 63,999 patients in its emergency room. In the last ten years VUMC's research funding by the National Institutes of Health nearly doubled, and in surgery it has tripled. Robust growth of VUMC over the last decade has resulted in well over 10,000 employees.



APPENDIX I
SPECIFIC CURRICULAE FOR
FELLOW'S ACADEMIC NICHE DEVELOPMENT

I. Critical Care Clinical Nutritional Support Curriculum:

During the second year of the Trauma/Surgical Critical Care Fellowship, the fellow has the opportunity to expand his/her knowledge to include clinical nutrition. During this time the curriculum will be three fold.

The first will be a clinical approach to inpatient and outpatient nutritional support. Participation with physician directed TPN rounds as well as unit specific nutrition team evaluation will occur during the first 6-8 months. During this time, experience with outpatient TPN administration will also occur. The final months of the year, the fellow will have the opportunity to assume a leadership position with TPN and nutritional support rounds.

Secondly, a clinical research project will be completed during this year, including oral presentation at the national level and publication submission in a peer reviewed journal. Appropriate mentoring will be available.

Finally, administrative duties will entail contribution to the development and execution of nutritional protocols throughout Vanderbilt Hospital. This interaction completes the fellow's abilities to continue nutritional support at the attending level in a leadership role. In addition, the three parts of the curriculum will provide the tools to successful national certification through the American Society for Parenteral and Enteral Nutrition (ASPEN).

Clinical nutrition focus during 2nd year of Trauma/Surgical Critical Care fellowship

- I. Clinical
 - A. TPN rounds participation - > 10 times by Jan 31
 - B. Leader of TPN rounds – latter half of year per Dr. Jensen
 - C. Participation outpatient TPN clinic - > 5 times by Jan 31
 - D. Ongoing participation with trauma unit Registered Dietitian
- II. Research - clinical research project with appropriate mentoring
 - A. Oral presentation at national meeting
 - B. Publication submission to peer-reviewed journal
- III. Administrative – Development and execution of nutrition protocols
- IV. Preparation and registration for examination of CNSP (fall following 2nd year) – Certified Nutrition Support Physician

Developed by Bryan Collier, DO, CNSP, FACS
Surgical Critical Care and Acute Care Surgery Fellow 2003 - 2005

**SPECIFIC CURRICULAE FOR
FELLOW'S ACADEMIC NICHE DEVELOPMENT (cont)**

II. Curriculum for Goal Directed Ultrasound and Echocardiographic Examination in Critical Care and Trauma:

The goal of the program is to train surgical critical care fellows both from a didactic and practical standpoint, how to perform goal-directed ultrasound and echocardiographic examinations in an intensive care and trauma setting.

Didactic portion includes:

1. The basic science of ultrasound
2. Anatomy of the areas being examined and what a normal exam looks like.
3. Standard views which need to be obtained in each exam
4. The FAST exam: what does it tell you? It's role in the trauma bay and ICU
5. Echo: how will we use it and what will we be looking for?
6. TTE-vs- TEE
7. The Care of the equipment

Practical portion includes:

1. Each fellow will perform 10 exams with faculty observation
2. Each fellow will perform 50 ultrasound and 50 echo examinations, which should be reviewed by faculty.
3. There will be a library of videotapes containing both normal exams and a variety of pathologies which can be reviewed.
4. After completion of both portions of the course, each fellow will receive a Certificate of completion of the course in Goal-directed ultrasound and Echo.

Background:

In developing this course we tried to determine if there were any guidelines established for the training of surgical critical care fellows in ultrasound and echocardiography. After an exhaustive search we discovered there were no established guidelines. In 1995 Rozycki et al published a landmark article in the Journal of Trauma, demonstrating in a prospective fashion that surgeon-performed ultrasound exams had equal accuracy to those performed by radiologists. Since then there have been hundreds of articles on the use of ultrasound and echocardiography in the ICU demonstrating their utility, but unfortunately no articles on guidelines for training. Since we had no framework from which to build we decided to try to establish a program for training in ultrasound and echocardiography.

Developed by Paul Kerr, DO
Surgical Critical Care Fellow 2005-2006

**SPECIFIC CURRICULAE FOR
FELLOW'S ACADEMIC NICHE DEVELOPMENT (cont)**

III. Curriculum for development of Surgical Infectious Diseases Niche:

GENERAL AREAS OF INTEREST FOR SURGICAL INFECTIOUS DISEASES:

- general pathogenesis of common surgical bacteria
- general AB coverage and characteristics
- infections within the acute care surgery set
 - secondary peritonitis
 - tertiary peritonitis
 - peritonitis in critically ill patients and issues of source control
 - the high risk patient for failed source control
 - necrotizing soft tissue infections
 - necrotizing pancreatitis
- nosocomial infections
- bacterial resistance
- infections in the immunocompromised
- glucose and infections
- pathogenesis of sepsis

TALKS

- 1 fellow's conference \1 acute care conference each year
- Grand rounds quality
- Topics within outline above

INFECTION RELATED RESEARCH PROJECT

- nosocomial infections
- antibiotic use and antibiotic resistance
- glucose related issues and infection
- bronchoscopic diagnosis
- adequacy of empiric coverage with protocols
- compliance with de-escalation
- prediction of failure source control in peritonitis
- others: xigris in peritonitis, gender and infection

DEVELOPMENT OF CURRICULUM FOR SURGICAL RESIDENTS:

- develop lecture series\curriculum
 - pathogens surg imp
 - ABC's of AB RX
 - approach to crit ? Inf pt
 - peritonitis
 - ssti
 - nec pancreatitis
 - nosocomial
 - line
 - pneumonia
 - surgical site

- C. Diff
- inf in immunocomp\tx
- resistance
- crop rotation
- prophylaxis

ACADEMIC DEVELOPMENT

- SIS membership
- consultative service

ADMINISTRATIVE

- crop rotation
- glucose project\merger data



APPENDIX II

Clinical Management Guideline: Standard Trauma Resuscitation

Global Communication is the key to a well organized and efficient trauma resuscitation. Individual conversations must be kept at a minimum and in general only **ONE** voice should be heard by ALL trauma resuscitation team personnel. All information is to be communicated for every member of the team to hear. This information is directed by the trauma team leader.

Individuals with direct patient contact, or those who will have possible contact with bodily fluids, will observe Universal Precautions, instituted prior to the patient's arrival if possible. This will include:

Essential

- Gown
- Head Cover
- Shoe Cover
- Gloves
- Eye Protection
- Mask

Optional:

Lead apron – preferable for those at head of bed, primary nurse and PCT.

Sterile gowns and gloves, head covers and mask plus sterile barriers **SHOULD BE USED WHEN PERFORMING ALL STERILE PROCEDURES** such as chest tube insertion, central line placement and diagnostic peritoneal lavage, ED thoracotomy or wound explorations. Additionally, Foley catheters should be placed sterilely and in the Trauma Resuscitation Bay prior to transport to CT scan for Trauma gram.

Trauma Resuscitation Team: Personnel

1. Trauma Team Leader (TTL) – PGY⁴ Surgical Resident
2. Trauma Attending / Fellow (TA/TF) –
3. Primary MD (PMD) – PGY² Surgical Resident, PGY – 1 or 2 ED resident rotating on Trauma Service
4. Primary Airway MD (PAMD) – PGY 2/3 ED resident
5. ED Attending (EDA)
6. Primary Nurse (PN)
7. Secondary Nurse (SN) or Paramedic (P)
8. Scribe Nurse (Scribe)
9. Patient Care Technician (PCT)
10. Radiology Technicians (RT)
11. Trauma Nurse Practitioner (TNP) – present at night, occasionally during day
12. Medical Student (MS) MS 3 or 4, ½ time

Trauma Resuscitation Team – Positioning

EDAPAMD

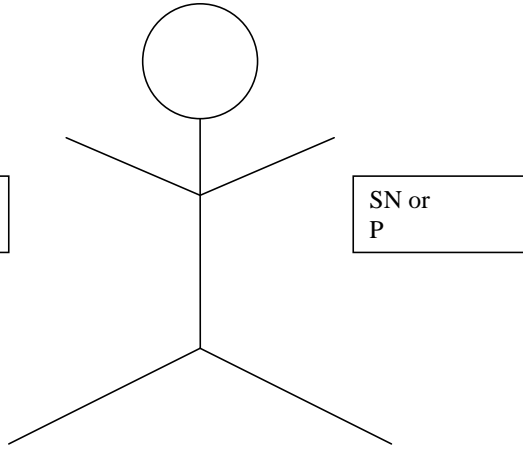
TNP

PMD
PN

SN or
P

PCT

Scribe Nurse
TTL
TATF



Trauma Resuscitation Team Personnel: Responsibilities

- 1. Trauma Team-Leader (TTL):** A Senior (PGY-4) Surgical Resident will be the team leader and directs the overall resuscitation. He/She will be identified by a green surgical head cover. The TTL will initiate the primary survey and assume responsibility for life saving procedures such as assisting with airway management including surgical airway, emergent chest tube placement, and ED thoracotomies. The TTL may pass the responsibility of directing the resuscitation to the Trauma fellow or Trauma Attending if personally performing such advanced procedures. The TTL is responsible for the majority of communication except during intubation when it is allocated to the PAMD & ED Attending.
- 2. Trauma Attending or Fellow (TA or TF)** – The Trauma Attending or Fellow will be overall responsible for the resuscitation and supervising the Trauma Team Leader. If the Trauma Attending or Fellow is not present, the ED Attending will assume this role and responsibility. TA/TF is the designated trauma triage officer directing flow of patients to the OR, CT and ICU. TA/TF must be in close communication with the Trauma Charge Nurse for bed allocation and bed availability.
- 3. Primary MD (PMD)** – A Second Year Surgical or Emergency Department Resident rotating on the trauma service will perform their portion of the primary survey (BCD) assisted as necessary by the trauma team leader. This MD will then perform the secondary survey from the neck down, which will include assuring that two large bore IV's are in place and functioning, blood has been obtained for T&S or C and labs, and that the placement of nasogastric tubes and Foley catheters has been carried out. The TTL may also assign the PMD to perform invasive procedures such as central line placement, chest tube insertions, wound explorations and assisting with ED thoracotomies.

4. **Primary Airway MD (PAMD)** - A 2nd or 3rd year ED resident will be responsible for assessing the adequacy of the trauma patient's airway and in concurrence with the EDA and TTL determine the need for intubation (if not already performed by pre-hospital personnel). If the patient is awake and conscious, the PAMD should briefly inquire about allergies, pre-existing medical problems and medications. If intubation is necessary the PAMD & or EDA confirms and communicates to the PN, RSI medication doses. Once intubated and PAMD confirms and globally communicates ETT color change, saturations, ETT size and position. The PAMD is also responsible for C-spine stabilization, head examination of the secondary survey including pupillary and verbal response of a neurologic examination, control of bleeding from scalp lacerations and insertion of either an NG or OG.

5. **ED Attending (EDA)** – Will be responsible for the airway and supervising the PAMD. In the absence of the TA or TF, the EDA will be overall responsible for the resuscitation and supervising the TTL. The EDA is also responsible for all ED staffing, equipment and triage into the ED. The EDA will also assume the role of TTL during the resuscitation of multiple patients.

6. **Primary Nurse (PN)** - This is a nurse who will give direct patient care by helping perform the primary assessment, including assisting with airway management if necessary or starting O₂ with a high flow mask. Monitoring devices such as EKG's and O₂ sat monitors should be promptly placed, and the blood pressure should be frequently monitored. The PN will then assure that 2 large bore IV's are in place and functioning, or will place such IV's (14 or 18 gauge). The PN will assist as needed with the secondary assessment, NG, Foley or log-rolling the patient and then prepare the patient to leave the resuscitation room by making available O₂ or ventilators, securing all IV bags and by preparing appropriate monitoring for transport. The PN is also responsible for administering any medications for rapid sequence intubation, antibiotics, steroids or medications for pain and analgesia.

7. **Secondary Nurse (SN)** – The SN or P will assist the PN with all of the above **Or Paramedic (P)** mentioned duties. The SN or P will obtain the first B.P. from the left arm and call out the reading for everyone to hear. This person is also responsible for transporting the patient to CT, O.R. or TICU and having the Gold Key available for the elevator leading directly to the O.R.

8. **Scribe Nurse (Scribe)** This nurse is primarily responsible for keeping records, assuring that all standard tests or other labs as ordered by MD, are completed. (Blood sent to the blood-bank for T and S or C, blood & urine for lab testing, CT scans ordered, Trauma gram ordered, etc.) This nurse will also assist in direct patient care in times of hemodynamic instability or managing multiple simultaneous trauma admissions. The Scribe Nurse will also assist with preparation for transport from the resuscitation room if all their primary responsibilities are complete. The Scribe Nurse is also responsible for noise control and ensuring only those personnel directly involved in patient care are in the trauma bay. All others will be asked to leave the area.

9. **Patient Care Technician (PCT)** - The PCT's primary responsibility should be to assure that blood and or urine are sent for appropriate tests. PCT's will also be responsible for errands such as the retrieving Emergency Blood from the Blood Bank or assisting with transportation. They should perform all other tasks as directed by the Primary Nurse, such as placing monitors, removing clothes, and gathering patient's valuables for safe keeping and helping log roll the patient.

10. **Radiology Technicians (RT)** - The RT should be present at all trauma resuscitations and be prepared to perform the standard chest x-ray and pelvis x-ray in cases of blunt trauma as directed by the Trauma Team Leader. Both of these x-rays should be processed through the PACS system as soon as possible and be available prior to transportation to CT scan for Trauma gram. In cases of penetrating trauma, the RT's should be initially prepared to perform AP films over

the areas where there may be retained foreign bodies. These films should be processed and lateral cross table films planned according to the results of the initial films. A radio-opaque marker or the tip of a paper clip should mark all penetrating wounds. The Trauma Team Leader will direct the RT's on the studies to be obtained and on the order in which they should be obtained. The XR machine should be on the left side of the patient in room 1 and on the right in rooms 2 and 3.

11. **Trauma Nurse Practitioner (TNP)** - The TNP will be available to assist with trauma resuscitations at night and occasionally during the day depending on the acuity and volume of the TNP service. The TNP will initiate filling out the trauma history and physical, call the OR for operative intervention, assist the PN, SN or P with resuscitation efforts including management of the Level I transfuser. The TNP will make bed arrangements with the charge nurse on 10N and communicate with the liaison concerning bed assignments and family issues. Once the patient's stat name has been placed in the computer, the TNP will initiate placing Wiz orders.
12. **Medical Student (MS)** - The role of the MS is commensurate with their abilities as determined by the trauma service. The MS will be assigned tasks by either the TTL or PMD which may include: assistance in removal of clothing, log rolling, femoral vein blood draw and insertion of a Foley catheter.
13. **Service Center Personnel** – Shall remain outside the trauma bay to assist in providing additional supplies needed for the resuscitation.
14. **Environmental Services** - Shall remain outside the trauma bay to assist with needed cleaning issues.
15. **Vanderbilt University Police Department** – In the event of a violent crime, a VUPD officer will be available for safety issues and crowd control.

Trauma Resuscitation: Sequential Management

0. Crew resource management- identification process
1. Move patient from stretcher to Trauma Bay Bed
2. Primary Survey
 - a. Assess airway by PAMD – may ask patient a few questions regarding past medical history and allergies if airway is intact.
 - b. Breathing by PAMD & PMD
Circulation by PMD
PN/SN/P – IV's/EKG/SATS/1st B.P.
 - c. Disability by PAMD – pupils/ GCS
PMD – move all 4 extremities
 - d. Exposure/Environment by SN, MS, PCT completely undress, cover with warm blankets
3. EMS/Flight Crew report
4. CXR/ +1- pelvis XR/ FAST exam
5. Assess need for pain / sedation / enter standing orders
6. Secondary Survey including assessing the need for NG/OG
7. Roll patient / palpate entire spine from occiput to sacrum
8. Rectal exam
9. Assess need for Foley catheter
10. Full range of motion all extremities
11. Traumagram versus OR

STANDARD TRAUMA RESUSCITATION: DETAILED DESCRIPTION

Crew Resource Management – Identification process. Trauma Resuscitation Team members should identify themselves by name and roles. Most importantly the TTL, PMD, PAMD, PN and scribe need to introduce themselves to the entire team prior to the arrival of the patient.

Pre hospital personnel including Emergency Medical Services or the air transport team will bring the patient into the Trauma Resuscitation room and quickly move the patient to the resuscitation bed with the assistance of the Primary Nurse, Primary MD and PCT's as available. After securing an adequate airway and the primary survey is performed, the pre hospital primary care provider should be encouraged to give the entire team a report including mechanism of injury, pre hospital vital signs, Glasgow coma scale, treatments and response to such treatments and any pertinent past medical history. A complete report should not exceed 60 seconds in length. Courtesy towards EMS and Air-Transport Personnel **MUST BE MAINTAINED**. Other conversations during the report should be kept to a minimum. The Scribe Nurse should record all information as reported to the trauma team.

Primary and Secondary Survey:

The PAMD should begin the primary assessment immediately upon the patient's arrival to the resuscitation bed and should verbalize findings to the entire trauma team. The Primary MD will complete the primary survey after an adequate airway is secured. The TTL directs the resuscitation based on the PAMD and Primary MD's assessment and determines the need for additional access or airway management. If life threatening conditions are present, for example- **establish a surgical airway, chest tube placement, emergency thoracotomy**, the TTL will assume a position to deal with these issues. During this time, the TTL may relinquish their responsibility to the TA or TF and communicate this process to the entire team.

Primary Survey:

Airway: The Primary Assessment of the Airway should be performed by the PAMD & EDA who are positioned at the head of the bed. Collaboration between the PAMD / EDA and TTL regarding definitive airway management should be made expeditiously. If intubation is not deemed necessary the primary nurse should place O₂ by hi-flow mask on all patients.

Breathing:

The PAMD and PMD should assess breathing jointly. The Primary Nurse should place the pulse oximeter on the patient. During this primary assessment, any life threatening conditions discovered should be immediately treated. For example a suspected tension pneumothorax should be treated by needle decompression followed by an emergent chest tube.

Circulation:

The Primary Nurse should place EKG leads and the SN or P obtain an initial blood pressure to assess circulation and report these results to the TTL and Scribe. If not already present, the Primary Nurse should also place 2 large bore IV's. The Primary MD should assess peripheral pulses, skin color and mental status and determine if central venous access is indicated. Blood for laboratory evaluation should be obtained during assessment of the circulation by the Primary MD or personnel assigned by the TTL.

Disability:

Disability should be assessed during the primary assessment by noting the level of consciousness, pupil examination, and ability to move all 4 extremities.

Exposure and Environment:

The patient should be undressed for complete examination. Once the examination is complete, the patient should be **covered with warm blankets**. Warm IV fluids should be given via the Level I transfuser in all multi trauma patients.

SECONDARY SURVEY:

The PMD should continue with the secondary assessment. This should include rapid examination of the entire patient's anterior surface followed by log rolling the patient off the back board, examination of the back and flanks, and performing the rectal exam. The entire spinal column from occiput to sacrum must be inspected and palpated for deformity, ecchymosis, step off and pain. The patient must be log rolled in both directions to adequately examine both flanks and axillary regions. Again, findings must be verbalized to the entire team. The patient will remain on the back board until arrival in the Trauma Unit or operating room.

The Trauma Team Leader determines the need and exact sequence of placement of additional IV's, the timing of laboratory assessment, and the radiologic assessment required. Trauma x-rays should be completed immediately following examination of the back. These typically include- chest x-ray and pelvic x-ray for blunt trauma and the appropriate AP and cross table lateral films for penetrating trauma. If the patient is hemodynamically stable and there is no evidence of major pelvic trauma, the pelvic x-ray can be deleted and replaced with the pelvic portion of the CT trauma gram.

The PMD should perform a detailed head to toe examination while x-rays and other procedures are being performed and findings communicated.

Consultants should be notified early upon recognition of injuries that need their evaluation. Fractures should be splinted and wounds dressed appropriately.

The TTL will then determine where and when the patient should be moved from the resuscitation room to complete their workup. It may be determined that an unstable patient requires transport out of the resuscitation room prior to completing the full work up for operative intervention or to continue the resuscitation in the Trauma Intensive Care Unit.

PERSONNEL and Their Responsibilities for the Resuscitation of Multiple Patients.

A Primary Nurse, Primary MD, Surgical Resident, ED Resident and a Trauma Team Leader (PGY 4 Surgical Resident, Trauma Fellow, Trauma Attending or ED Attending) should be available to resuscitate each patient.

The TTL may direct multiple resuscitations simultaneously. The Scribe Nurse (scribe) may record the details of multiple resuscitation simultaneously. The Trauma Team Leader will prioritize radiologic studies and direct the radiology techs accordingly.

Individual patients will be identified by their STAT name when multiple patients are being cared for simultaneously. The Trauma Team Leader, Trauma Attending or Trauma Fellow will decide when patients are stable for transfer out of the resuscitation room.

Only the Trauma Attending in conjunction with the Emergency Department Attending will determine if Vanderbilt should go on diversion for Trauma.

Specifics for Penetrating Trauma

All ballistic wounds should be marked prior to radiologic intervention with a paperclip. For gunshot wounds to the torso, and patients that are not agonal, three films taken one after the other from the chest through the pelvis will allow trajectory determination. In non hypotensive patients, if a foreign body is seen on the AP films then a lateral film will help determine its exact location.

Additional Important Points

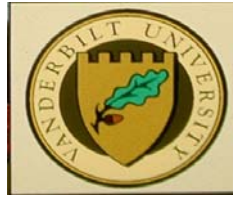
*** EVERY PERSON TAKES RESPONSIBILITY FOR THEIR OWN SHARPS**

- Disposal of sharps is the responsibility of the person using the sharp instrument. A large sharp instrument. A large sharp box will be readily accessible in each Trauma Room.
- No XRs are obtained during insertion of any IV access, especially central line insertion.

- If the patient's initial B.P. is within normal limits, repeat B.P. will be obtained every 5 minutes. If the patient is hypotensive (SBP < 100) the obtain BP every ONE minute.

If a death occurs in the Trauma Bay during a Trauma Alert and the patient arrived via EMS, it is the responsibility of the ED staff to communicate this information to family members. If the patient arrived by air transport, the Trauma Service will perform this duty as long as the TTL, TA or TF is available and not scrubbed in the O.R. or actively resuscitating other critically ill patients.

Practice management guidelines (PMG) have been developed by the division of Trauma, Burns and Surgical Critical Care in an attempt to standardize and optimize care. They are based on a combination of accepted surgical practice and recent contributions to the medical literature. PMG's are intended to provide guidelines to the management of the majority of patients and are not proposed as rules, policies or as a substitute for good clinical judgment. Deviations from the PMG's are necessary and expected; all exceptions should be documented in the medical record and discussed with the Attending Physician.



APPENDIX III

Curriculum for the Application of Directed Ultrasound and Echocardiographic Examination in Critical Care and Acute Care Surgery

The use of intensivist directed, real-time, bedside ultrasound/echocardiographic evaluation in the management of critically ill and injured patients is being recognized as a useful adjunct to current critical care management. The goal of the Surgical Critical Care and Acute Care Surgery curriculum is to ensure that our faculty and fellows are trained in the use and application of new tools and technologies and continuously seek to improve the care of critically ill and injured patients. To that end, a curriculum for the application of directed ultrasound and echocardiography examination in critical care has been developed.

The specific goal of this curriculum is to train surgical critical care fellows both from a didactic and practical standpoint, how to perform goal-directed ultrasound and echocardiographic examinations in an intensive care and trauma setting. The document below provides an outline of the course curriculum as well as specific details regarding the handling and maintenance of our equipment as outlined here:

- A. Course introduction**
- B. Course curriculum**
- C. Documentation of study performance**
- D. Certification**

E. Standard operating procedure (SOP) for the use and maintenance of equipment

F. Resources

A. Course introduction:

The ultrasound and echocardiography curriculum for critical care fellows utilizes a combination of scheduled didactic sessions and hands-on mentored experience with the use of the equipment in clinical settings. The didactic portion will occur during scheduled fellow's conference time slots. Fellows will be required to attend these didactic sessions prior to moving into the clinical portion of the curriculum. The fellows will be responsible for ensuring adequate performance of examinations as provided in the outline below. It will be expected that fellows will seek appropriate mentoring, perform necessary exams, and record data into a shared database. Fellows who complete the didactic training and complete and record necessary exams will receive a certificate of completion from the department of Trauma.

B. Course Curriculum:

The didactic portion of this course will be held in 6 sessions grouped at the beginning of the academic year. The didactic portion will cover the information outlined below:

- Physics and technical considerations
 - Physics
 - define ultrasound
 - demonstrate the relationship of sound waves used in imaging to those of higher or lower frequency with other properties
 - develop a working knowledge of frequency, sound speed, wavelength, intensities, and decibels
 - demonstrate the interaction of sound waves with tissue
 - reflection

- attenuation
- scatter
- refraction
- absorption
- impedance
- discuss the generation and detection of ultrasound waves
- describe the Doppler phenomenon
- review pulse-Echo principles
- discuss beam formation/focusing
- Bioeffects and safety
 - thermal and non-thermal effects on tissue
 - relative effects of grayscale, M-mode, pulsed wave Doppler, color flow imaging, power imaging, and harmonics
 - contrast agents
- Imaging applications/equipment operation
 - Transducer choice frequency: grayscale/Doppler, understanding trade-offs of penetration versus resolution.
 - Optimal grayscale probe made up the optimal Doppler probe
 - shape: linear, sector, curved
 - approach: external, endocavitary, et cetera.
 - Display: grayscale, M-mode, pulsed wave Doppler, color/power imaging
 - image orientation: standard images in different planes
 - image optimization: power output, gain, time/gain compensation
 - image recording options: electronic, film, paper, videocassette
 - interventional techniques
- Artifacts
 - understanding the underlying principles: straight narrow sound beams, simple reflection, constant sound speed
 - beam width artifacts, side lobes, slice thickness
 - multiple reflection artifacts: mirror image/reverberations

- tissue characteristics: shadowing/enhancement
 - refractive artifacts
 - Doppler artifacts: pulse wave, color imaging (includes aliasing)
- Quality Assurance
 - equipment Q & A program
 - phantoms: spatial and contrast resolution
 - sonographer/position based Q & A program
- Clinical Uses of Ultrasound
 - General considerations
 - examination protocols
 - protocols for each route the examination should be well understood. Published protocols will be reviewed and are subject to local modification.
 - Basic cross-sectional/ultrasound anatomy and the range of normal sonographic findings as related to age and sex for each of the anatomic areas listed below
 - General diagnostic criteria used to evaluate tissue characteristics and distinguish normal from abnormal (e.g. cystic versus solid)
 - techniques for ultrasound guided invasive procedures
 - reporting skills/requirements
 - Specific Applications
 - Chest
 - pleural fluid determination
 - ultrasound guided thoracentesis
 - determination of pneumothorax
 - Cardiac
 - evaluation of pericardial effusion
 - goal-directed, ultrasound-guided resuscitation
 - adjunct use in shock

- Trauma
 - abdominal sonography for trauma
 - thoracic ultrasound evaluation of pneumothorax/hemothorax
 - cardiac evaluation of pulseless electrical activity arrest
 - Abdominal
 - Shock determination
 - Bladder scan
 - paracentesis
 - Central Vascular Catheter Placement
 - internal jugular or femoral lines
 - peripheral IV
 - arterial cannulation
- Minimum Required exams for certification
- 50 FAST exams w/ CT or operative confirmation
 - 50 Cardiac exams w/ at least 20 TEE
 - 20 Chest exams w/ at least 10 invasive procedures
 - 25 Catheter placements
 - 10 jugular
 - 5 femoral
 - 5 arterial

C. Documentation of Study Performance:

Each US exam will be recorded in a shared database by each fellow. The database may be accessed by the F:drive as outlined in fellow's orientation. For each patient, record patient demographics including name and medical record number, in addition to examining physician.

Our ultrasound machine has the capability to record short clips of data, and will store them in conjunction with each individual patient. There is a mode on the machine that allows for playback of the saved clips. Alternatively, these can be downloaded

to a magnetic optical disk. We do have a blank disk that is reusable that came with the machine. However, none of our desktop computers have the capability to play this media format. Currently, we are searching for an affordable drive that we can use to transfer our examinations from the ultrasound machine to a desktop computer in order to incorporate these studies into Power Point presentations for display.

D. Certification:

VUMC fellows certification: There currently is no national Critical Care US certification. Fellows successfully completing the Vanderbilt Trauma and Critical Care US course will receive a certificate of completion from the Vanderbilt University Medical Center Surgical Critical Care and Acute Care Surgery Fellowship program. Fellows with a special interest may complete additional training and apply for RDMS certification and sit for one of the basic exams.

Other certification options:

- 1) The American College of Surgeons through the Committee of Emerging Surgical Technology (CESTE) has historically offered three levels of credentialing: basic, advanced, and instructor. There was a CD-ROM based curriculum, with standards set for didactic courses, CME credits, and case numbers required to obtain certification. However, certification through the ACS is no longer be available.
- 2) The American College of Emergency Physicians has set standards for emergency ultrasound credentialing, and offers a year-long postgraduate fellowship in ultrasonography. This credentialing process is more involved because it encompasses the broadest range of applications: OB-GYN, vascular, thoracic, echocardiography, abdominal, and trauma.
- 3) The American Registry of Diagnostic Medical Sonography offers certification (RDMS) after completion of accepted CME-approved didactic course and varying levels of case completion. There are many subspecialties within RDMS certification that have varying requirements with regard to case numbers.

E. Standard Operating Procedures for the Use and Maintenance of Equipment:

The Trauma and Surgical Critical Care Patient Care Center has purchased an Acuson Cypress ultrasound machine for use in the Trauma and Surgical Intensive Care units. This standard operating procedure manual was developed to answer questions regarding its use, storage, maintenance, and data collection. This machine features a battery unit that allows the machine to be transported without power disruption from one place to another. The machine comes with an internal magnetic optical drive that can burn magnetic optical discs in DICOM format (standard radiology format for transmitting images). Overall size is comparable to portable EKG machines, slightly taller. We have been using the machine in the trauma intensive care unit to familiarize ourselves with it and to troubleshoot potential problems.

E1. Access

Currently, the ultrasound machine is stored in a locked closet in the SICU. The SICU charge nurse has a key for access 24 hours a day. Use is limited to surgical critical care fellows, trauma faculty, and anesthesia critical care faculty while they are rotating through the Surgical Intensive Care unit. This machine is not to be loaned out to anyone else under any circumstance.

E2. Storage

There is a closet set aside for the machine to be stored in the Surgical Intensive Care unit. This is across the hall from unit manager's office. This closet has access restricted by key access. Keys are maintained by the charge nurse and procedure support nurse.

E3. Cleaning

The ultrasound machine comes with multiple probes, and aside from the transesophageal probe, these are very easy to clean. Cleaning should be done with a damp cloth or paper towel. Disinfectant (example, alcohol or chlorhexidine) can be

used, but the preference is that we not get any of this material on the actual transducing surface of the probe. There is a thin, rubber surface that could be degraded over time if subjected to any abrasive substances. Clearly, the machine must be kept clean of any potential biohazard in an effort to prevent potential infectious organism transmission. The transesophageal probe requires a different cleaning process. The transesophageal probe requires a different cleaning process that will be similar to what is done with our endoscopes, and protocolization of this technique is currently pending.

E4. Managing the probes

The machine comes with several probes. There is a linear probe, a cardiac probe, transesophageal probe, and an abdominal probe. There also is a separate valvular probe, but I anticipate that we will make little use of his probe. The advantages of the probes are as follows:

Linear probe-this can be used for her central line placement, assessment of pneumothorax, assessment of potential deep venous thrombosis.

Cardiac probe-this is our transthoracic echocardiogram probe. It also can be used for repeat fast exam, volume status determination, bladder scan. We have also used this probe to perform ultrasound-guided thoracentesis. Of note, the orientation of this probe is 180 degrees different from the emergency department probe.

Abdominal probe-this gives the greatest detail for intra-abdominal organs, however the size limits its use for her fast examinations. It does however give the best resolution for looking at the liver, kidneys, and spleen. He can be used to assess the bladder as well in the setting of urinary retention or post renal obstruction.

Transesophageal probe-this is primarily a cardiac probe. Special care must be taken with this probe with regard to cleaning and storage. We are developing a system to keep this within a plastic lock box in the closet in the surgical intensive care unit but this has not been finalized as of yet. As we gain expertise in cardiac ultrasonography, we will be making greater use of this probe. Many of our patients

are unsuitable candidates for transthoracic echocardiography, and that is my expectation for where this probe will be used.

The probes stay with the machine. The reason that they should stay with the machine is that one may require multiple probes to evaluate multiple different aspects on a single patient.

Exquisite care should be taken in caring for the probes, as these are the most expensive parts of the machine. These probes cost anywhere in the thousands of dollars, particularly the transesophageal probe.

E5. Troubleshooting

For issues that arise with the machine, the procedure support nurse should be contacted first. Additionally, there are two contact people that we can call for problems with the ultrasound machine, or technical questions. Dan Bertone is the main person that we can call. His card is attached to the actual machine. Telephone number: (615) 202-0108, email: daniel.bertone@siemens.com. Mike Smyth is the regional sales Representative for Siemens, and he is our backup person. Telephone number (615) 972-0079, email: smyth.mark@siemens.com.

G. Resources:

- a. Manual of Emergency and Critical Care Ultrasound (Paperback)
Vicki Noble, Nicholas Sutingco, Bret Nelson
- b. Ultrasound for Surgeons: The Basic Course – CD ROM by the ACS

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