

COOPER UNIVERSITY HOSPITAL

CRITICAL CARE MEDICINE FELLOWSHIP PROGRAM CURRICULUM

2019-2020

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INTRODUCTION

The Cooper University Hospital Critical Care Medicine Fellowship is structured to provide a comprehensive core curriculum in critical care medicine. The program curriculum covers all aspects of adult critical care medicine and offers substantial academic opportunities for teaching and research. The goal of the fellowship is to develop critical care physicians who excel in delivering care to a wide variety of severely ill patients utilizing a multidisciplinary team approach. This is accomplished through supervised clinical service time, supervised performance of procedures, didactic conferences, and clinical/research-based conferences. Fellows also participate in interdisciplinary meetings and attend conferences at the regional and national level.

Diplomats that have completed an ACGME accredited residency will complete 2 years of fellowship training. Diplomats that have completed an Internal Medicine residency and subspecialty fellowship are eligible for completing the fellowship in one year. Clinical service time will be spent primarily on the different teams of the critical care service: the Green, Red, Blue, Orange and Purple services. These services encompass caring for patients in a Medical Surgical Intensive Care Unit (MS-ICU) and the Intermediate Care Unit (ICU), as well as any consults or overflow patients admitted to the Critical Care service that are located in the Coronary Care Unit (CCU), the Emergency Department (ED), Critical Care Admitting Area (CCAA) Unit, or the Post-operative Care Unit (PACU). Consultations will be performed on medical surgical floors, the PACU, and the ED. Electives are available in Anesthesia, Trauma, Nephrology, Pulmonary, Infectious Diseases, Point of Care Ultrasound, Cardiothoracic Surgery, and Scholarly Activity. Fellows in the two-year program will be expected to complete additional months on the Scholarly Activity working on research and quality improvement projects, and have the option to spend 4 weeks at another institution as an away elective.

The structure of Cooper University Hospital's Critical Care Medicine Fellowship ensures that fellows learn and practice cutting edge critical care medicine, hone clinical and interpersonal skills, and foster the professional relationships required to perform as a competent critical care physician.

The following curriculum outlines the service obligations, educational activities, and electives of Cooper's Critical Care Fellows.

MISSION STATEMENT: GOALS, OBJECTIVES, AND ACTIVITIES

The curriculum is designed, over the course of a two-year training program, to produce clinical intensivists who excel in the diagnosis and care of patients with critical illnesses. Specifically, fellows will achieve the following:

General

- Achieve clinical excellence in the diagnosis and management of critical illnesses.
- Gain thorough familiarity with the techniques and equipment that are essential to current critical care practice.
- Understand normal physiology and the underlying pathophysiology of critical illness.
- Acquire the knowledge and experience necessary for certification by the Subspecialty Board on Critical Care Medicine.
- Participate in scholarly, educational, and research activity.

Patient Care

- Demonstrate and provide appropriate, evidence based, direct care to patients with critical illness and injury, including life threatening trauma and multisystem organ failure.
- Demonstrate and provide appropriate, evidence based, direct care to post-operative patients from cardiothoracic, vascular, gastrointestinal, genitourinary, endocrine, orthopedic, neurosurgical, plastics, obstetrics and gynecology, and otorhinolaryngology (ENT).
- Demonstrate competency in:
 - Resuscitation skills including advanced cardiopulmonary resuscitation, crisis management, and acute trauma assessment and triage
 - Laryngoscopy and intubation techniques, including rapid sequence intubation in patients with critical illness or injury
 - Ventilator management skills including the use of volume and pressure modes, and lung protective ventilation strategies to adjust for elevated airway pressures
 - The use of non-invasive modes of ventilation and oxygenation
 - The performance of emergent consultation to emergency room, post-anesthesia recovery, med-surg wards, and other intensive care unitsICUs
- Demonstrate knowledge and competency with emergent airway management using bag and mask ventilation in the non-intubated, conscious and unconscious, paralyzed and non-paralyzed patients.
- Demonstrate the proper immobilization technique for intubating patients with potential cervical spine injury and the proper pharmacologic management for patients with elevated intracranial pressure.

- Demonstrate competency in the performance of bedside procedures, specifically central and arterial lines, intubations, chest tubes, paracentesis, thoracentesis, lumbar puncture, pulmonary artery catheters, and fiberoptic laryngotracheobronchoscopy.
- Demonstrate proper management of invasive monitoring devices, including devices for central venous, arterial, pulmonary arterial, and intracranial pressure assessment.
- Apply clinical criteria of brain death and basic principles of support for potential organ donors. Demonstrate proper performance of brain death certification.
- Demonstrate the proper assessment and management of patients with intracranial hypertension, including evaluation of data from ICP monitors or extra-ventricular drains.
- Demonstrate proper management for patients requiring large volume fluid and blood product resuscitation.
- Identify, evaluate, and prioritize current ICU patient care needs by participating in daily rounds on critically ill patients.
- Participate in a quality improvement project
- Demonstrate the proper use of point of care ultrasound in care for the critically-ill including, but not limited to knowledge of: basic cardiac ultrasound, lung ultrasound, FAST examination, diagnosis of deep vein thrombosis, placement of central venous and peripheral venous access under ultrasound

Medical Knowledge

- List and describe the most current evidence-based medical practices pertaining to the treatment and management of critically ill patients.
- Recognize the etiology, describe the pathophysiology, demonstrate the appropriate management and evaluate the outcomes of patients with:
 - Cardiovascular instability including arrhythmias, myocardial infarction, congestive heart failure, vascular abnormalities, and shock.
 - Respiratory failure including acute respiratory distress syndrome, chronic obstructive lung disease, respiratory muscle weakness, pneumonia, tension pneumothorax, and pulmonary embolus.
 - Acute and chronic renal insufficiency.
 - Central nervous system pathology including encephalopathy, meningitis, cerebral vascular accidents, trauma and brain death.
 - Metabolic, endocrine and electrolyte abnormalities.
 - Infectious diseases including sepsis and septic shock. Differentiate treatment plans for patients who are immunocompetent versus immunosuppressed.
 - Hematologic disorders including anemia, neutropenia, thrombocytopenia and thrombocytosis.
 - Acute allergic reactions and/or anaphylaxis.

- Gastrointestinal diseases including acute and chronic liver failure, pancreatitis, cholecystitis, gastritis, peptic ulcer disease, and upper and lower gastrointestinal hemorrhage.
 - Genitourinary pathology.
 - Trauma.
 - Thermal and exposure injuries.
 - Nutritional disorders.
 - Oncologic complications.
 - Life threatening geriatric illnesses.
 - Psychiatric disorders specific to the ICU context.
- Describe the strategies to manage ethical and legal dilemmas between patients, families, and staff in the ICU.
- List the risks, benefits, indications, and contraindications of bedside procedures such as central and arterial lines, intubations, chest tubes, paracentesis, lumbar puncture, pulmonary artery catheters, needle thoracostomy, and fiberoptic bronchoscopy.
- List the risks, benefits, indications, and contraindications for ICP monitor or external ventricular drain placement and describe the possible limitations and complications of these devices.
- List the risks, benefits, indications, and contraindications for insertion of esophagogastric balloon tamponade devices. Describe the uses and limitations of these devices.
- Interpret and integrate central venous and pulmonary artery catheter data in the context of other patient data and trends to generate a differential diagnosis and management and assessment plan for a patient.
- Demonstrate knowledge of electrocardiogram interpretation by listing the differential diagnosis, evaluating the ECG in relation to other patient data and trends, and describing subsequent steps in assessment and/or management.
- Demonstrate knowledge of ABG, VBG, and other laboratory data interpretation by listing the differential diagnosis, evaluating the data in relation to other studies and patient trends, and describing subsequent steps in assessment and/or management.
- List the indications for:
 - Use of a ventricular assist devices and describe their function.
 - Use of an intra-aortic balloon pump and describe its function.
 - Extra-Corporeal Life Support for both Cardiac and Respiratory Support (ECMO)
- Demonstrate critical thinking, appropriate knowledge and management of life sustaining measures and cardio-pulmonary support in the context of circulatory insufficiency and/or cardiovascular collapse.
- Demonstrate critical thinking, appropriate knowledge and management of weaning or discontinuing life sustaining measures and cardiopulmonary support when indicated.

- Demonstrate knowledge of the pharmacokinetics, pharmacodynamics, metabolism, and excretion of various drugs used in the ICU.
- List indications for:
 - The insertion of temporary transvenous cardiac pacemakers.
 - The management of intra-aortic balloon pumps for surgical and non-surgical patients in the ICU.

Practice-Based Learning and Improvement

- Identify the best practice patterns to facilitate care of the critically ill patient from the Cooper Health System operating procedures and patient interactions.
- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.
- Demonstrate motivation for improvement of:
 - Medical knowledge and patient care through participation in educational activities including core lecture series, educational workshops, educational modules, Journal Clubs, Research Conferences, and Morbidity & Mortality Conferences.
 - Procedural skills by completion of mandatory procedure logs verifying satisfactory performance with endotracheal intubation, central venous, pulmonary artery and arterial line insertion, chest thoracostomy insertion, and point of care ultrasound.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Identify systemic threats to patient safety through chart review. Describe measures to prevent adverse events and the barriers to implementation of such measures.

Systems Based Practice

- Describe the role of Critical Care Medicine within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of care for critically ill patients
- Develop proper documentation and billing skills.
- Foster enthusiasm for expansion of global medical knowledge through participation in quality improvement projects and clinical trials occurring on patients in the ICU.
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.

- Demonstrate awareness of the role of the Cooper Health Care System in regional health care delivery through compliance with standard operating procedures and participation in quality improvement initiatives.
- Orchestrate the pre- and inter-hospital transportation of critically ill patients through the Cooper Transfer System (COTS).

Professionalism

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including obtaining informed consent, implementing “Do Not Resuscitate” orders, withholding or withdrawing life support, and clarifying goals of care from advance directives or patient surrogates.
- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.
- Demonstrate sensitivity to cultural, age, gender and disability issues.

Interpersonal and Communication Skills

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Demonstrate effective use and leadership within a multidisciplinary team-based approach in the management of critically ill patients.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.
- Demonstrate proper written and verbal techniques for transfer of care both within and between services.
- Develop teaching skills through instruction of medical and procedural aspects of critical care medicine to first year fellows, house officers, medical students, and other health care professionals through bedside teaching as well as formal didactic sessions.
- Demonstrate effective communication with nurse managers in order to establish ICU admission and discharge plans for critically ill patients.
- Demonstrate the ability to orchestrate care with other medical and surgical services.

ACTIVITIES OF FIRST AND SECOND YEAR FELLOWS

Activities of First Year Fellows

Goals of the first year of critical care medicine fellowship are to:

- Develop expertise in the diagnosis and management of hospitalized patients with a wide spectrum of critical care problems in a compassionate, professional, and cost effective manner
- Become proficient in the procedures of airway management, endotracheal intubation, central vein catheter placement, arterial cannulation, placement of pulmonary artery catheters, point of care ultrasound, ventilator management
- Develop skills necessary to function as a consultant and work with other health care providers
- Develop medical knowledge including clinical and basic science pertinent to critical care medicine
- Develop skills of self-improvement including medical knowledge base, clinical skills and interpersonal skills.

To achieve these goals, fellows will participate in the following activities in their first year:

Patient Care Activities

- Participate in the critical care medicine rotation in the medical-surgical intensive care unit (MS-ICU PAV 4) for 5 to 7 months. Rotating through various team-based Critical Care Medicine services and night float.
- Participate in multidisciplinary rounds in the medical-surgical intensive care unit (MS-ICU PAV 4).
- Supervise residents and students rotating in the MS-ICU.
- Participate in the intermediate care unit (INCU) Rotation for 2 months.
- Participate in multidisciplinary rounds in the INCU.
- Participate in the consult rotation for 4 months. Supervise students and medicine resident rotating on consult rotation.
- Participate in the anesthesia rotation (0.5 to 1 month), unless the fellow has completed an Emergency Medicine ACGME accredited residency.
- Take 1-2 months of elective rotation (clinical electives or research).

Conferences

- Attend critical care conferences for 4 hours of weekly educational time. Didactic conferences include but are not limited to: board review, case simulations / Sim-Lab training, journal club, morbidity & mortality, didactic lectures, grand rounds, guest lecture events, and morning report.

- Present 1-2 journal clubs and 1 M&M conferences.
- Participate in interdisciplinary conferences (emergency medicine, surgery, cardiothoracic surgery)
- Attend institutional interdisciplinary conference series on topics such as research methods, biomedical techniques, biostatistics, and ethics.
- Perform a scholarly project.

Administrative Activities

- Participate and teach in procedural workshops for house officers, including but not limited to the CUH central line training course.
- Participate in ICU Quality Committee and Unit Based Council.
- Participate in hospital-based committees (Root Cause Analysis / Code / Ethics / Rapid Response/DOM QA-PI, Weekly Noontime Meeting with Critical Care Nursing Leadership).

Scholarly Activity

- Participate in a patient Safety and Quality Improvement project.

Activities of Second Year Fellows

Goals of the second year of the critical care medicine fellowship are to:

- Build on clinical skills, medical knowledge, and interpersonal skills developed in the first year of fellowship
- Develop skills in Trauma, advanced airway management, advanced hemodynamic support
- Participate in administrative and educational functions of the division
- Participate in a research project.

To achieve these goals, fellows will participate in the following activities in their second year:

Patient Care Activities

- Participate in the critical care medicine rotation in the medical-surgical intensive care unit and consults for 4 to 6 months. Rotate through red, blue, orange, purple and green teams.
- Participate in multidisciplinary rounds in the medical-surgical intensive care unit (MS-ICU PAV 4).
- Conduct and lead multidisciplinary rounds in the medical-surgical intensive care unit (MS-ICU PAV 4).
- Participate in a dedicated Junior Faculty rotation, serving the function of a junior attending intensivist under the supervision of a credentialed CUH ICU attending.
- Supervise residents and students rotating in the MS-ICU.

- Supervise fellows from other programs (hospitalist / gyn-onc) rotating in the ICU.
- Participate in the intermediate care unit (INCU) rotation for 1 month.
- Conduct and lead multidisciplinary rounds in the INCU.
- Participate in the consult rotation for 1 month. Supervise students and medicine resident rotating on consult rotation.
- Participate in trauma rotation, unless the fellow has completed an Emergency Medicine ACGME accredited residency.
- Take 4-6 months of elective rotation (including neurocritical care, point of care ultrasound, mechanical circulatory support, nephrology, infectious disease, interventional pulmonary, junior attending), among others

Conferences

- Attend critical care conferences encompassing between 2 to 4 hours of weekly protected educational time. Didactic conferences include but are not limited to: board review journal club, morbidity & mortality, didactic lectures
- Present 1-2 journal clubs and 1 M&M conferences.
- Present 1 fellow Grand Rounds presentation
- Participate in interdisciplinary conferences (emergency medicine, surgery, cardiothoracic surgery)
- Attend institutional interdisciplinary conference series on topics such as research methods, biomedical techniques, biostatistics, and ethics.
- Attend and obtain certification in Advanced Trauma Life Support (ATLS) course.

Administrative Activities

- Working with the Program Director in preparing Critical Care Conference Schedule.
- Participate and teach in procedural workshops for house officers, including but not limited to the CUH central line training course.
- Participate in ICU Quality Committee and Unit Based Council.
- Participate in hospital-based committees (Root Cause Analysis / Code / Ethics / Rapid Response/DOM QA-PI, Weekly Noontime Meeting with Critical Care Nursing Leadership).
- Participate in practice performance review committee for Critical Care Fellows

Scholarly Activity

- Participate in a research project(s) leading to abstract or manuscript preparation and/or submission to an institutional, regional, national, or international scientific/ educational organization.
- Patient Safety and Quality Improvement project.

EVALUATIONS

Fellow Performance

Fellows are oriented to the rotation expectations at the start of each week, and then receive formative verbal and written feedback. Quarterly, fellows receive summative written evaluations.

The designated supervising clinical faculty completes a weekly feedback form based on the core competencies. The weekly evaluations are discussed with the fellow by their supervising attending, available for on-line review by the fellow at their convenience, and are reviewed by the program director as well. These weekly evaluations are used by faculty to do quarterly evaluations of the fellows and given to them. Both evaluations are part of the fellow file and is incorporated into the semiannual performance review for directed feedback.

Fellows are also evaluated by nursing staff, participate in observed clinical evaluation exercises (CEXs) and perform peer and self-assessments as part of the overall evaluation process.

Program and Faculty Performance

Upon completion of the rotation, fellows complete a service evaluation form commenting on the faculty, facilities, and service experience. These evaluations are sent to the residency office for review and the attending faculty physicians receive anonymous periodic copies of completed evaluation forms. These evaluations are discussed with the attending's by the Division-Chief.

The Residency Curriculum Committee reviews these results annually.

CORE CRITICAL CARE MEDICINE ROTATIONS

The core critical care medicine rotations have color-based names within the CUH system and include Red, Blue, Green, INCU, Orange, Nights, and Purple. These services serve as one of the primary methods of teaching the fellows the practice of critical care medicine. The fellows provide direct patient care in the Medical-Surgical Intensive Care Unit (MS-ICU) as well as function as an admitting/ advising consultant in the rest of the hospital. They gain experience working with both medical and surgical patients, running a multidisciplinary team, and functioning individually. They care for patients both during the day and night, depending on the service. In total, the fellows spend 35 weeks of service time in their first year, and 25 weeks in their second year. The different services have color-based names within the CUH system and are described below:

RED SERVICE ROTATION

Description:

The Red Service is comprised of a multi-disciplinary team that includes a CCM attending physician, CCM fellow, a PGY-2 or PGY3 house officer, and an intern house officer. Often, a Doctor of Pharmacy with ICU-specific training is also part of the team. The Red Service cares for half of the patients geographically located within the Viner ICU on the 4th floor of the Roberts Pavilion Building at CUH. It is designed for fellows to experience running a multi-faceted academic team to care for critically ill patients. The Red service cares for patients with medical, neurologic, and surgical disease that require ICU-level monitoring or care. Notable exclusions to surgical disease include trauma patients, who are managed in a separate Trauma ICU, and cardio-thoracic surgery patients, who are managed by the Blue Service described below. In the Red Service rotation, fellows will develop the skills required to manage a multidisciplinary team and care for a wide variety of critically ill patients.

BLUE SERVICE ROTATION

Description:

The Blue Service is comprised of a multi-disciplinary team that includes a CCM attending physician, CCM fellow, a PGY-2 or PGY3 house officer, and an intern house officer. A Doctor of Pharmacy with ICU-specific training is also part of the team. The Blue Service cares for the other half of patients geographically located within the Viner ICU on the 4th floor of the Roberts Pavilion Building at CUH. The Blue Service is designed for fellows to experience running an academic team to care for critically ill patients. Like the Red Service, the Blue Service cares for patients with medical and surgical disease processes requiring ICU-level care. Patients have surgical disease processes including, but not limited to, general surgery, cardiac surgery, thoracic surgery, neurosurgery, ENT, and obstetric surgery. Fellows are the primary providers for the cardiothoracic population. They are expected to become proficient in the management of postoperative care for coronary artery bypass graft (CABG) surgeries, cardiac valve replacement and repair surgeries (aortic, mitral, and tricuspid), and aortic root repair surgeries. Fellows develop intimate familiarity with patients who have been placed on cardiopulmonary bypass and extracorporeal membrane oxygenation (ECMO). Fellows not only work with their service team as mentioned above, but also work closely with the cardiothoracic surgery attendings at CUH to develop management plans and execute procedures. Overall, in this the rotation, fellows will acquire skills they require to care for a wide variety of surgically-critically ill patients. The emphasis of this rotation is on a multidisciplinary approach to care for patients who have undergone a wide variety of surgical procedures.

2019 Cooper Critical Care Reading List

Objective: to provide targeted learning on high volume/high acuity rotations (**GREEN, ORANGE, NIGHT**) by reviewing landmark articles in critical care medicine. The fellow will build a framework of reference and understanding by reviewing (1) article per week. This article will be used to grow and organize the fellow's understanding of the medical literature as well as improve his/her ability to teach these concepts to various ICU learners (*nursing, APP students, APPs, medical students, residents*).

Outline:

- I. *Start of the Week:* The article will be provided from the *Approved Reading List* and reviewed by the fellow
- II. *Middle of the Week:* The article will be discussed with the service attending
- III. *End of the Week:* The fellow will be expected to provide a *brief* editorial of the article to highlight
 - a. **Hypothesis**
 - b. **Design**
 - c. **Strengths & Weaknesses**
 - d. **Outcomes**
 - e. **Clinical Application**
 - f. Highlight any "study specific" **physiology/pathophysiology** (if applicable)
 - g. **Teach**/present this *brief* editorial to the residents and students

ARDS

ARDS NET TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/10793162>.

PROCEVA TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/23688302>

ACURASYS TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/20843245>

ROSE TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/31112383>

ART Trial

<https://www.ncbi.nlm.nih.gov/pubmed/28973363>

CESAR TRIAL

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1766357/>

EOLIA TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/29791822>

CHEST IMAGING

Chest CT Signs in Pulmonary Disease (Pictorial Review)

<https://www.ncbi.nlm.nih.gov/pubmed/28212835>

CARDIOLOGY CRITICAL CARE

IABP SHOCK II TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/22920912>

SOAP II TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/20200382>

ENDOCRINE & CRITICAL CARE

NICE SUGAR TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/19318384>

GASTROENTEROLOGY & GI BLEED

TRANSFUSION STRATEGIES IN UPPER GI BLEEDING

<https://www.ncbi.nlm.nih.gov/pubmed/23281973>

PANTOPRAZOLE IN PATIENTS AT RISK FOR GI BLEEDING IN THE ICU

<https://www.ncbi.nlm.nih.gov/pubmed/30354950>

EARLY TIPS

<https://www.ncbi.nlm.nih.gov/pubmed/20573925>

INFECTION PREVENTION

PROTOCOLIZED CARE TO REDUCE CLABSI

<https://www.ncbi.nlm.nih.gov/pubmed/17192537>

3 SITES TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/26398070>

VAP PREVENTION: HOB POSITION

<https://www.ncbi.nlm.nih.gov/pubmed/10584721>

CHLORHEXIDINE BATHING

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4383133/>

NEPHROLOGY & CRITICAL CARE

CVVHD vs IHD in ACUTE RENAL FAILURE

<https://www.ncbi.nlm.nih.gov/pubmed/16876666>

BALANCE CRYSTALLOIDS vs NORMAL SALINE

<https://www.ncbi.nlm.nih.gov/pubmed/29485925>

NEUROLOGY & CRITICAL CARE

THERAPEUTIC HYPOTHERMIA-BERNARD 2002

<https://www.ncbi.nlm.nih.gov/pubmed/11856794>

THERAPEUTIC HYPOTHERMIA-HACA 2002

<https://www.ncbi.nlm.nih.gov/pubmed/11856793>

TTM TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/24237006>

INTERACT 2 TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/27276234>

PATCH TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/27178479>

TPA FOR ISCHEMIC STROKE

<https://www.ncbi.nlm.nih.gov/pubmed/7477192>

TPA 3- 4.5HRS IN ISCHEMIC STROKE

<https://www.ncbi.nlm.nih.gov/pubmed/18815396>

DAWN TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/29129157>

DESTINY TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/17690310>

DESTINY II TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/24645942>

NUTRITION & CRITICAL CARE

EARLY vs LATE FEEDING

<https://www.ncbi.nlm.nih.gov/pubmed/21714640>

EDEN TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/22307571>

OBSTETRICS & CRITICAL CARE

WOMAN TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/28456509>

CAP IN THE ICU

SMART-COP RISK STRATIFICATION FOR CAP SEVERITY

<https://www.ncbi.nlm.nih.gov/pubmed/18558884>

TRACHEOSTOMY

PERCUTANEOUS TRACHEOSTOMY, A COMPREHENSIVE REVIEW

<https://www.ncbi.nlm.nih.gov/pubmed/29214070>

PULMONARY EMBOLISM

PLEITHO TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/2471668>

SEDATION & DELIRIUM

DAILY INTERRUPTION OF SEDATION

<https://www.ncbi.nlm.nih.gov/pubmed/10816184>

<https://www.ncbi.nlm.nih.gov/pubmed/23180503>

DELIRIUM AS A PREDICTOR OF MORTALITY

<https://www.ncbi.nlm.nih.gov/pubmed/15082703>

SEPTIC SHOCK

SURVIVING SEPSIS CAMPAIGN

<https://www.ncbi.nlm.nih.gov/pubmed/28098591>

ADRENAL TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/29347874>

APROCCHSS TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/29490185>

PRISM TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/28320242>

PROCESS TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/24635773>

LACTATE CLEARANCE

<https://www.ncbi.nlm.nih.gov/pubmed?term=20179283>

VASOPRESSIN VS NOREPINEPHRINE

<https://www.ncbi.nlm.nih.gov/pubmed/18305265>

VENTILATOR WEANING

EXTUBATOIN AND HFNC/NIPPV

<https://www.ncbi.nlm.nih.gov/pubmed/27706464>

POST-EXTUBATOIN LARYNGEAL EDEMA

<https://www.ncbi.nlm.nih.gov/pubmed/17398307>

WEANING FROM MECHANICAL VENTILATION-YANG & TOBIN

<https://www.ncbi.nlm.nih.gov/pubmed/2023603>

PRESSURE SUPPORT VS UNASSISTED TRACH COLLAR

<https://www.ncbi.nlm.nih.gov/pubmed/23340588>

EARLY VS LATE TRACH

<https://www.ncbi.nlm.nih.gov/pubmed/20407057>

EARLY PHYSICAL THERAPY

<https://www.ncbi.nlm.nih.gov/pubmed/19446324>

SURGICAL CRITICAL CARE

CRASH-2 TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/20554319?dopt=Abstract>

PROPPR TRIAL

<https://www.ncbi.nlm.nih.gov/pubmed/25647203>

Every Minute Counts: MTP

<https://www.ncbi.nlm.nih.gov/pubmed/28452870>

Cervical Spine Collar Clearance in the Obtunded Adult Blunt Trauma Patient

<https://www.ncbi.nlm.nih.gov/pubmed/25757133>

PROVHILO Trail

<https://www.ncbi.nlm.nih.gov/pubmed/28632529>

POST-ICU SYNDROME

POST-ICU SYNDROME IN CRITICAL CARE SURVIVORS

<https://www.ncbi.nlm.nih.gov/pubmed/29787415>

ORANGE SERVICE ROTATION

Description:

The Orange Service is the evening consult service. The Orange service fellow arrives at the hospital during the early evening hours (18:00) and functions as a consultant for all new consults to the CCM service. Additionally, the fellow manages care in all critical care overflow areas as well as in the INCU. The fellow also responds to helipad alerts (arrivals of critically ill transfer patients), rapid responses, and Code Blue activations. As with the Green service (described below), the goal of this rotation is to foster autonomy, critical thinking, and procedural skill under the supervision of an attending physician.

NIGHT SERVICE ROTATION

Description:

Red and Blue Services are relieved of their clinical duties at 19:00 every evening and sign out to the Night Service. The Night team is comprised of an on-call attending intensivist, a CCM fellow, and 2 house officers. From the hours of 19:00 to 3:00 the following morning, the Night Service addresses the needs of the patients geographically located in the Viner ICU at CUH. The duties of the fellow include leading night time rounds, performing emergent and elective procedures, and teaching house officers in ICU medicine. Fellows are responsible for managing a multidisciplinary team to care for new patients and continue treatment plans enacted during morning rounds. The Orange Service (as detailed above) also signs out to the Night Service at 3:00 am, at which point the Night fellow becomes responsible for all critical care needs both inside and outside the geographical ICU. After the Orange service has signed out, the Night Fellow responds to all helipad alerts (arrivals of critically ill transfer patients), rapid responses, Code Blue activations, and sees all new consults. The Night fellow also cares for and manages patients located in CCM overflow areas as defined above. The Night fellow presents a case conference on Wednesday morning with the Blue Critical Care Attending. In this rotation, fellows acquire skills to care for the critically ill with a wide variety of disease processes and develop critical thinking to enact or change treatment plans as necessary. The emphasis of this rotation is fellows managing an Intensive Care Unit independently overnight. The fellows are supervised by an Attending at all times.

PURPLE SERVICE ROTATION

Description:

The Purple Service is the nocturnal service on weekends. The Service Exists to cover nocturnal needs for all ICU patients on Saturdays and Sundays of the calendar week. The team composition as well as the experience and goals of the rotation are similar to the Night service as outlined above. The main difference between the Night Service and the Purple Service, however, is that the Orange Service fellow does not have weekend responsibilities. On Saturday and Sunday, the Purple Service absorbs the responsibility of caring for all ICU patients as well as all new consults, helipad alerts, rapid responses, and Code Blue activations. As with the Night service, fellows lead evening rounds on both the Red and Blue service patients. They are responsible for managing a multidisciplinary team to care for new patients and continue treatment plans enacted during morning rounds. The emphasis of this rotation is on continuing plans for the critically ill, developing plans for new patients and handing off patients appropriately within the resources available on weekends in the hospital system.

Educational Content

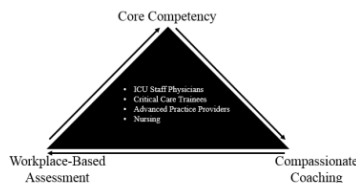
Patients seen during these rotations represent a wide range of adult critically ill patients. The population of patients admitted to the MS-ICU is represented by all genders, a wide variety of ethnic and socio-economic groups. Patients admitted to the MS-ICU have a wide range of critical illnesses that involves medical and post-surgical care. Patients come to the MS-ICU from the Emergency Department, floors, post anesthesia recovery unit (PACU), medical-surgical wards, Trauma admitting / Trauma ICU, and from outside institutions (transfers for escalation of care).

Common medical diagnoses include acute respiratory failure (ARDS), severe pneumonias, severe sepsis and septic shock, neurological emergencies, severe metabolic abnormalities, acute renal failure, gastrointestinal hemorrhages, severe acute pancreatitis and multiple organ failure. Patients with medical problems representing the following disciplines: cardiology, pulmonary, endocrine, rheumatology, gastroenterology, hematology, oncology, neurology, and nephrology are admitted to the MS-ICU. In addition, patients with multiple surgical diseases are admitted for post-operative care or for management of post-operative complications. Surgical patients include: cardiac surgery, thoracic surgery, gynecologic surgery, obstetrics, neurosurgery, and other surgical specialties.

Fellows will have ample exposure to patients requiring ventilator support (invasive and non-invasive), invasive hemodynamic monitoring, invasive cardiovascular support (Temporary pacemakers, IABP, ECMO), intracranial pressure monitoring, post cardiac arrest support with therapeutic hypothermia, renal replacement therapy (CVVH / IHD), plasma exchange therapy, and massive transfusion (MTP).

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Chart stimulated recall
- Case based discussion



Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Sign-out Rounds (SOR)

- Multidisciplinary Rounds (MDR)
- Didactic Conference (DC)
- Morbidity and Mortality Conference (MM)
- Journal Club (JC)
- Morning Report (MR)
- Research Conference (RC)

Methods of Evaluation

Assessment Methods of Fellows

- Faculty competency-based likert scale evaluation completed weekly
- Focused observation (CEX)
- Multisource (360) assessment (nursing)
- Faculty/staff meetings
- In-service Examination

Rotation Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision:

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities:

On these rotations, the fellows function as the key component of the critical care medicine (CCM) team whose primary objective is to care for patients with critical illnesses. The CCM team is a multidisciplinary team comprised of an attending, a fellow, residents, nurses, pharmacists, respiratory therapists and students. The team is led by the attending, which bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and progressively assumes more autonomous decision-making responsibilities. Fellows have a supervisory role on residents and students.

- The fellow will be responsible for: Initial evaluation of all patients to the MS-ICU. (F1, F2)
- Participate in daily clinical multidisciplinary rounds in the MS-ICU. (F1)
- Complete Daily Goal Sheets for patients during clinical rounds. (F1, F2)
- Conduct daily clinical multidisciplinary rounds in the MS-ICU. (F2)
- Supervision of house staff in the implementation of the management plan. (F1)
- Supervision of house staff and first year fellows during procedures in the MS-ICU. (F2)
- Orchestrate admissions and discharges from the MS-ICU in conjunction with the Nurse Administrator. (F2)
- Provide direct care to post-operative cardiothoracic patients. (F1, F2)\
- Perform consultations on critically ill patients in the wards, emergency department, PACU and other units. (F1, F2)

Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Edition. Parrillo & Dellinger, Editors. 2019.
- Fundamental Critical Care Support 5th edition. Society of Critical Care Medicine 2012.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others
- Manual of Perioperative Care in Adult Cardiac Surgery, Fifth Edition. R. M. Bojar. Blackwell 2011.
- NeuroICU Book, 1st Edition. K. Lee, McGraw 2012
- CAE Online Ultrasound Course

Competency Based Goals and Objectives

Patient Care

Goal

Prepare fellows to deliver excellent clinical and compassionate care to a wide variety of critically ill patients and to function as leaders of a multidisciplinary team that works together towards improving care of critically ill patients.

Competencies

First year

- Demonstrate knowledge of emergent airway management in patients with acute respiratory failure.
- Demonstrate competency in airway management including:
 - Bag-mask ventilation in non-intubated patients

- Endotracheal intubation with direct laryngoscopy
- Demonstrate knowledge of indications, contra-indications, and application of non-invasive positive pressure ventilation in the management of patients with acute respiratory failure.
- Demonstrate knowledge and competency in the application of mechanical ventilation in critically ill patients.
 - Initial settings of the ventilator
 - Basic modes of ventilation
 - PEEP and Auto-PEEP
- Demonstrate knowledge and competency in resuscitation skills including:
 - Advanced cardiopulmonary resuscitation after cardiac/respiratory arrest.
 - Hemodynamic support of patients with septic shock
 - Hemodynamic support of patients with other types of shock
- Demonstrate knowledge and competency in performing bedside procedures in critically ill patients.
 - Invasive arterial lines for blood pressure monitoring.
 - Central venous catheter placement
 - Placement of emergent dialysis catheters

Second year

All of the above plus:

- Demonstrate competency in airway management including:
 - Assessment and management of difficult airways with alternative airway support techniques (LMA, Combitube, Glide-scope and bronchoscopic intubation)
- Demonstrate knowledge and competency in the application of mechanical ventilation in critically ill patients.
 - Lung protective strategies of ventilation for ARDS
 - Use of alternative modes of ventilation: APRV, Inverse Ratio ventilation, Pressure Control Ventilation
- Demonstrate knowledge and competency in resuscitation skills including:
 - Implementation of targeted temperature management for neuroprotection of patients with cardiac arrest
 - Hemodynamic support of patients in the immediate post cardiovascular surgery period.
- Demonstrate knowledge and competency in performing bedside procedures in critically ill patients.

- Pulmonary artery catheter placement and interpretation of hemodynamic data obtained
- Placement of chest tubes for management of pneumothorax and/or pleural effusions.
- Temporary transvenous pacemaker.
- The use of Point of Care Ultrasound to do procedures and manage hemodynamics

Medical Knowledge

Goal

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences pertaining to the critically ill patient as well as the application of this knowledge to patient care.

Competencies

First year

- List and describe the most current evidence-based medical practices pertaining to the treatment of critically ill patients.
- State the etiology, describe the pathophysiology, demonstrate the appropriate management and evaluate the outcomes of patients with:
 - Cardiovascular instability including arrhythmias, myocardial infarction, congestive heart failure, vascular abnormalities, and shock.
 - Respiratory failure including acute respiratory distress syndrome, chronic obstructive lung disease, respiratory muscle weakness, pneumonia, tension pneumothorax, and pulmonary embolus.
 - Acute and chronic renal insufficiency.
 - Infectious diseases including sepsis and septic shock. Differentiate treatment plans for patients who are immunocompetent versus immunosuppressed.
 - Gastrointestinal diseases including acute and chronic liver failure, pancreatitis, cholecystitis, gastritis, peptic ulcer disease, and upper and lower gastrointestinal hemorrhage.
- List the risks, benefits, indications, and contraindications of bedside procedures such as central and arterial lines, intubations, chest tubes, pulmonary artery catheters, needle thoracostomy, and fiberoptic bronchoscopy.
- Demonstrate knowledge of electrocardiogram interpretation by listing the differential diagnosis, evaluating the ECG in relation to other patient data and trends, and describing subsequent steps in assessment and/or management.

- Demonstrate knowledge of ABG, VBG, and other laboratory data interpretation by listing the differential diagnosis, evaluating the data in relation to other studies and patient trends, and describing subsequent steps in assessment and/or management.
- List the indications for:
 - use of an intra-aortic balloon pump and describe its function.
 - Mechanical Circulatory Support device and describe its function
- State the etiology, describe the pathophysiology, demonstrate the appropriate pharmacological management and evaluate outcome of patients with circulatory insufficiency. Determine whether this pharmacological support is adequate or whether further fluid or mechanical circulatory support is needed.

Second year

All of the above plus:

- State the etiology, describe the pathophysiology, demonstrate the appropriate management and evaluate the outcomes of patients with:
 - Central nervous system pathology including encephalopathy, meningitis, cerebral vascular accidents and brain death.
 - Metabolic, endocrine and electrolyte abnormalities.
 - Hematologic disorders including anemia, neutropenia, thrombocytopenia and thrombocytosis.
 - Acute allergic reactions and/or anaphylaxis.
 - Genitourinary pathology.
 - Life threatening geriatric illnesses.
 - Obstetric disorders causing special ICU problems.
 - Post-operative management of patients with cardiovascular, thoracic and vascular surgery.
 - Differentiate Pericardial Tamponade versus Pericardial Effusion
 - Identify and treat Right Ventricular dysfunction
 - Refractory ARDS
 - Refractory Cardiogenic Shock
- Describe the strategies to manage ethical and legal dilemmas between patients, families, and staff in the ICU.
- List the risks, benefits, indications, and contraindications for ICP monitor or extra-ventricular drain placement and describe the possible limitations and complications of these devices.

- List the risks, benefits, indications, and contraindications for insertion of esophagogastric balloon tamponade devices. Describe the uses and limitations of these devices.
- Demonstrate knowledge of central venous and pulmonary artery catheter data interpretation by listing the differential diagnosis, evaluating the catheter data in relation to other patient data and trends, and describing subsequent steps in assessment and/or management.
- Demonstrate knowledge of Point of Care Ultrasound to manage the Critically Ill.
- Demonstrate knowledge of Point of Care Ultrasound to do bedside procedures
- List the indications for:
 - Inhaled nitric-oxide and describe its function.
 - Mechanical circulatory support and describe its function.
- Demonstrate knowledge of the pharmacokinetics, pharmacodynamics, metabolism, and excretion of various drugs used in the ICU.
- List indications for:
 - The insertion of transvenous temporary cardiac pacemakers.
 - The management of intra-aortic balloon pumps for surgical and non-surgical patients in the ICU.

Practice-Based Learning and Improvement

Goal

Develop fellow's the ability to investigate and evaluate the care of their patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First year

- Identify the best practice patterns to facilitate care of the critically ill patient from the Cooper Health System operating procedures and patient interactions.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Identify systemic threats to patient safety through fellows practice review committee (chart review of fellows practice patterns) and Morbidity and Mortality Conference

Second year

All of the above plus:

- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.
- Participate in fellows practice review committee (perform chart review), identifying areas for improvement
- Participate in weekly meeting with Critical Care Leadership to enable optimal functioning of Intensive Care Unit
- Participate in Surgical Morbidity and Mortality Conference

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. This includes an understanding of how their own practices affect others, and knowing how to partner with others to improve healthcare.

Competencies

First year

- Describe the role of Critical Care Medicine within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of care for critically ill patients
- Demonstrate enthusiasm for expansion of global medical knowledge through participation in quality improvement projects and clinical trials occurring on patients in the ICU.
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.
- Demonstrate awareness of the role of the Cooper Health Care System in regional health care delivery through compliance with standard operating procedures and participation in quality improvement initiatives.
- Demonstrate understanding of the role of a multidisciplinary critical care team in the delivery of care to critically ill patients in the MS-ICU.

Second year

All of the above plus:

- Develop proper documentation and billing skills.
- Orchestrate the pre- and inter-hospital transportation of critically ill patients through the Cooper Transfer System (COTS).
- Demonstrate ability to conduct and lead multidisciplinary rounds in the MS-ICU.
- Demonstrate ability to conduct and lead multidisciplinary rounds in the CCU

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows must demonstrate compassion, integrity and respect for others.

Competencies

First year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - obtaining informed consent
 - implementing “Do Not Resuscitate (DNR)” , “Do Not Intubate (DNI)” orders
 - withholding or withdrawing life support
- Demonstrate sensitivity to cultural, age, gender and disability issues.

Second year

All of the above plus:

- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - Clarifying goals of care from advance directives or patient surrogates.
- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First year

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.
- Demonstrate proper written and verbal techniques for transfer of care both within and between services.

Second year

All of the above plus:

- Develop teaching skills through instruction of medical and procedural aspects of critical care medicine to first year CCM fellows, interns and residents, medical students, and other health care professionals through bedside teaching as well as formal didactic sessions.
- Demonstrate effective communication with nurse managers in order to establish ICU admission and discharge plans for critically ill patients.
- Demonstrate the ability to orchestrate care with other medical and surgical services.

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INTERMEDIATE CARE UNIT AND DAYTIME CONSULTS ROTATION

Description

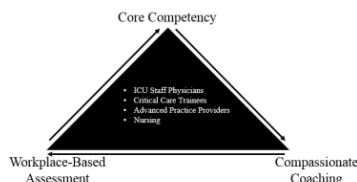
The Green Intermediate Care Unit (INCU) rotation exposes the fellow to chronically critically ill patients and the challenges of treating this particular population of patients. The rotation takes place in the Intermediate Care Unit an eight bed unit located on the 10th floor of the Kelemen building. The INCU is a “step down unit” with a nursing to patient ratio of 1:3. The INCU is capable of providing care to patients with a wide range of critical care diagnosis who require a level of care higher than the floor and serves as a transition for patients recovering from critical illness and can also be utilized to monitor acute problems that are expected to resolve quickly. On average in a two year program, first year fellows will complete 6 weeks on the Green INCU service, and second year fellows will complete 4 weeks on this rotation. For fellows completing a one-year program, 6 weeks on the Green INCU service are expected.

Educational Content

Patients seen in the INCU represent a wide range of adult critically ill patients. The population of patients admitted to the INCU is represented by both genders and a wide variety of ethnic and socio-economic groups. Patient's admitted usually fall within two general categories: 1) patients requiring some degree of monitoring that is higher than that offered on the general wards (i.e. Q2 neuro-checks) or 2) chronically critically ill patients on prolonged mechanical ventilation who do not require intensive care level care. The second group constitutes a unique group of patients for this rotation. Chronically critical ill patients represent a unique group of patients that has increased in number as a result of advances in caring for patients with critical illnesses which in the past were uniformly fatal. This group of patient's tends to be older in age and require prolonged mechanical ventilation as well as other prolonged organ support interventions (such of hemodialysis.) This particular group of patients has special medical needs and very particular health care needs with respect to discharge planning. During this rotation the fellows will learn how to care for them medically as well as learn how to work with a multidisciplinary team with the goal of weaning off mechanical ventilation and transitioning these patients to long term acute care facilities.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Chart stimulated recall
- Case based discussion



Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Multidisciplinary Rounds (MDR)
- Didactic Conference (DC)
- Morbidity and Mortality Conference (MM)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- Focused observations (CEXs)
- Multisource (360) assessment (nursing)
- Faculty/staff meetings
- In-service examination

Rotation Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities

The fellows function as the key element of the multidisciplinary INCU team comprised of an attending, a fellow, nurses, pharmacists, respiratory therapists and case managers. The team is led by the attending, who bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and gradually assumes more autonomous decision-making responsibilities.

The fellow will be responsible for:

- Initial evaluation of all patients admitted to the INCU. (F1)
- Participate in daily clinical rounds with CCM faculty, nurses and respiratory therapy, and write daily progress notes on all patients in the INCU. (F1)
- Conduct weekly multidisciplinary rounds with case management, nurses, respiratory therapists, physical therapy (F2)
- Communicate with receiving physicians at LTAC for discharged patients from INCU. (F2)
- Communicate written and verbally with accepting services when patients are being transferred out of the INCU. (F1)

Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others
- Manual of Perioperative Care in Adult Cardiac Surgery, Fifth Edition. R. M. Bojar. Blackwell 2011.
- NeuroICU Book, 1st Edition. K. Lee, McGraw 2012
- CAE Online Ultrasound Course

Competency Based Goals and Objectives

Patient Care

Goal

Fellows must be able to deliver excellent clinical and compassionate care to chronically critically ill patients including managing patients on chronic mechanical ventilation. Fellows must display competency in the weaning process, discharge planning and end of life care for these patients.

Competencies

First Year

- Demonstrate ability to manage long-term mechanical ventilation support in patients with tracheostomy.
- Demonstrate ability to provide long term care of patient with tracheostomy.
- Demonstrate ability to manage complications related to tracheostomies in patients with chronic respiratory failure.
- Demonstrate the ability to manage patients with respiratory failure with non-invasive and high flow oxygen

Second Year

All of the above plus:

- Demonstrate competency in evaluating weaning parameters and utilizing evidence-based weaning strategies for patients with long term ventilator dependent respiratory failure.
- Demonstrate understanding and competency in providing adequate nutritional support
- (enteral and parenteral) for chronically critically ill patients.
- Demonstrate competency in evaluating patients with failure to wean from mechanical ventilation.

Medical Knowledge

Goal

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences pertaining to the critically ill patient as well as the application of this knowledge to patient care.

Competencies

First Year

- List and describe the most current evidence-based medical practices pertaining to the treatment of chronically critically ill patients.
- State the etiology, describe the pathophysiology, demonstrate the appropriate management and evaluate the outcomes of patients with:
 - Chronic respiratory failure
 - Neuromuscular diseases: Myasthenia Gravis, Guillan-Barre Sx.
 - Complicated abdominal wounds /fistulas post operatively.
 - Anoxic brain damage
 - Persistent vegetative state
 - Drug overdoses / Poisoning
 - Advanced metastatic cancer
 - End stage COPD
 - Pulmonary fibrosis
 - Pulmonary hypertension

Second Year

All of the above plus:

- List the risks, benefits, indications, and contraindications for insertion of transtracheal oxygen delivery systems. Describe the uses and limitations of these devices.
- Demonstrate knowledge of causes of failure to wean from mechanical ventilation and describe subsequent steps in assessment and/or management.

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate care of patients in the INCU from the Cooper Health System operating procedures and patient interactions.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Identify systemic threats to patient safety through chart review.

Second Year

All of the above plus:

- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.
- Determine which patient population may not benefit from continued medical therapy
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the

system to provide optimal health care. This includes an understanding of how their own practices affect others, and knowing how to partner with others to improve healthcare.

Competencies

First Year

- Describe the role of the INCU within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of care for chronically critically ill patients
- Demonstrate enthusiasm for expansion of global medical knowledge through participation in quality improvement projects and clinical trials occurring on patients on Critical Care Service
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.
- Demonstrate awareness of the discharge process for long term acute care in patients on chronic mechanical ventilation
- Demonstrate understanding of the role of a multidisciplinary team in the delivery of care to critically ill patients in the INCU.

Second Year

All of the above plus:

- Develop proper documentation and billing skills.
- Orchestrate the discharge of chronically mechanically ventilated patients to long term acute care (LTAC) facilities.
- Orchestrate the pre- and inter-hospital transportation of critically ill patients through the Cooper Transfer System (COTS).
- Demonstrate ability to conduct and lead multidisciplinary rounds in the INCU.
- Participate in a quality improvement activity that involves critical care patients.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows must demonstrate compassion, integrity and respect for others.

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - obtaining informed consent
 - implementing “Do Not Resuscitate (DNR)” , “Do Not Intubate (DNI)” orders
 - withholding or withdrawing life support
- Demonstrate sensitivity to cultural, age, gender and disability issues.
- Assume responsibility for his/her own behavior, and be accountable to patients and superiors, consultants and must place the patient’s interest ahead of their own interests.

Second Year

All of the above plus:

- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.
- Demonstrate the ability to work effectively as a team member.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - Clarifying goals of care from advance directives or patient surrogates.

Interpersonal and Communication Skills

Goal:

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.

- Demonstrate proper written and verbal techniques for transfer of care both within and between services.
- Demonstrate time efficient dictation of discharge summaries for patients discharged from the INCU.

Second Year

All of the above plus:

- Demonstrate effective communication with nurse managers in order to establish INCU admission and discharge plans for critically ill patients.
- Demonstrate the ability to orchestrate care with other medical and surgical services.

GREEN CONSULT SERVICE ROTATION

Description

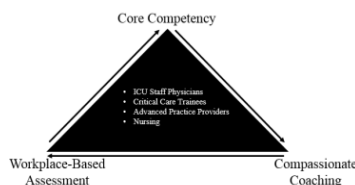
This rotation offers fellows the opportunity to focus on providing effective and comprehensive consultation on critically ill patients outside of the MS-ICU. Fellows will work directly with a supervising faculty and APPs to provide care to patients until they are transferred to the CCM team. In addition, the consult fellow will cover rapid responses throughout the hospital. On average in a two-year program, the first year fellow will complete 6 weeks on the green consult service, and the second year fellow will complete 4 weeks the green consult service. For fellows completing a one-year program, 6 weeks on the green consult service is expected.

Educational Content

Patients seen during the consult rotation represent a wide range of adult critically ill patients. The population of patients seen during the consult rotation is represented by both genders, a wide variety of ethnic groups and a variety of socio-economic groups. Fellows will be exposed to a wide range of critically-ill patients and will be providing consultation in different areas of the hospital. Patients seen during the Consult rotation will be located in the emergency department, post anesthesia care unit (PACU), operating rooms, medical and surgical wards, labor and delivery, trauma admitting, trauma ICU and CCU. Fellows will evaluate patients for potential transfer/ admission to the MS-ICU as well as follow some patients longitudinally with the primary team consulting critical care. The range of diseases represented is wide and encompasses all the patients described in the MS-ICU and INCU rotations.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Chart stimulated recall
- Case based discussion



Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Multidisciplinary Rounds (MDR)
- Didactic Conference (DC)
- Morbidity and Mortality Conference (MM)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- Focused observations (CEXs)
- Multisource (360) assessment (nursing)
- Faculty/staff meetings
- In-service examination

Rotation Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities

The fellows function as the key component of the critical care medicine (CCM) team whose primary objective is to care for patients with critical illnesses. The CCM team is a multidisciplinary team comprised of an attending, a fellow, residents, APPs, nurses, pharmacists, respiratory therapists and students. The team is led by the attending, who bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and gradually assumes more autonomous decision-making responsibilities. Fellows have a supervisory role on residents and students.

The fellow will be responsible for:

- Initial evaluation of consults for the CCM service in the following locations: ED, medical/surgical wards, PACU, CCU, and TICU. (F1, F2)
- Attend to Rapid Response calls 7:00am-7:00pm. (F1, F2)
- Coordinate transfer of Rapid Response patients to appropriate units if higher level of care

- indicated. (F2)
- Perform central venous access procedures on patients outside of the MS-ICU when Line
- Service consulted. (F1, F2)
- Make decisions regarding triage of patients and beds in the MS-ICU in coordination with
- Nursing Supervisors. (F2)

Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others
- Manual of Perioperative Care in Adult Cardiac Surgery, Fifth Edition. R. M. Bojar. Blackwell 2011.
- NeuroICU Book, 1st Edition. K. Lee, McGraw 2012
- CAE Online Ultrasound Course

Competency Based Goals and Objectives

Patient Care

Goal

Learn how to provide effective evaluation and consultation of critically ill patients in various settings outside of the intensive care unit.

Competencies

First Year

- Demonstrate appropriate, evidence based, evaluation and direct care of patients presenting to the ED with hypotension, hypoxia, and altered mental status.
- Demonstrate appropriate, evidence based, consultation and care to post-operative patients from cardiothoracic, vascular, gastrointestinal, genitourinary, endocrine, orthopedic, neurosurgical, plastics, obstetrics/gynecology and ENT.
- Demonstrate competency in initial evaluation and treatment of patients with suspected sepsis.
- Demonstrate ability to respond effectively to Rapid Responses on the medical and surgical floor.
- Demonstrate competency in placing central venous catheters in patients outside of the MS-ICU.

Second Year

All of the above plus:

- Demonstrate competency in evaluation and management of patients developing undifferentiated shock.
 - Demonstrate competency in establishing diagnosis and initiating treatment in patients developing acute respiratory failure.
- Demonstrate knowledge and competency in providing emergent consultation to emergency department, medical floor and other unit patients' acute neurological symptoms.
- Demonstrate knowledge and competency in providing consultation for management of mechanical ventilation in patients admitted to the coronary care unit.

Medical Knowledge

Goal

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences pertaining to the critically ill patient as well as the application of this knowledge to patient care.

Competencies

First Year

- Describe pathophysiology, initial diagnostic workup and current treatment options for patients presenting with:
 - Altered mental status.
 - Hypoxemia
 - Acute shortness of breath
 - Hypotension
 - Hypertensive Crisis
 - Hyperglycemic emergencies
 - Gastrointestinal hemorrhage
- Describe the pathophysiology, indications and potential post-operative complications for:
 - Peripheral vascular surgery
 - Carotid surgery
 - Abdominal Aortic Aneurysm repair
 - Neck surgery
 - Craniotomy, including brain mass removal and pituitary mass removal.
 - Oro-maxillary surgery
- Describe current guidelines for initial management of severe sepsis.

Second Year

All of the above plus:

- Describe pathophysiology, initial diagnostic workup and current treatment options for patients presenting with:
 - Status-epilepticus
 - Intracranial Hemorrhage
 - Refractory hypoglycemia
 - Severe electrolyte abnormalities
 - Advanced Cardiogenic Shock
 - Acute Respiratory Distress Syndrome Unresponsive to Conventional Medical Management
- Describe indications, potential complications and application of therapeutic Hypothermia post cardiac arrest.
- Describe the pathophysiology, indications and potential post-operative complications for: postoperative diabetes insipidus

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate care of the critically ill patient from the
- Cooper Health System operating procedures and patient interactions.
- List and describe the barriers to incorporation of evidence-based practices into patient
- care.
- Identify systemic threats to patient safety through chart review.
- Describe the role and impact of a Rapid Response Team within the Cooper Health system.
- Describe potential patient safety issues related to transfer of care within the Cooper
- Hospital System.

Second Year

All of the above plus:

- Interpret, critique, and evaluate medical literature.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.
- Utilize information derived Rapid Response Database to improve care for this patient population
- Utilize Project Impact Database to identify factors to improve care for patients outside of the MS-ICU

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. This includes an understanding of how their own practices affect others, and knowing how to partner with others to improve healthcare.

Competencies

First Year

- Describe the role of Critical Care Medicine within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of care for critically ill patients
- Describe basic concepts that apply to initial patient consult and procedural documentation and billing.
- Demonstrate enthusiasm for expansion of global medical knowledge through participation in quality improvement projects and clinical trials occurring on patients in the ICU.
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.
- Demonstrate awareness of the role of the Cooper Health Care System in regional health care delivery through compliance with standard operating procedures and participation in quality improvement initiatives.

Second year

All of the above plus:

- Develop proper documentation and billing skills.
- Describe proper utilization of the following billing levels:
 - Critical Care First Hour (99291)
 - Critical Care Additional 30 minutes (99292)
- Orchestrate the pre- and inter-hospital transportation of critically ill patients through the Cooper Transfer System (COTS).
- Demonstrate ability to orchestrate patient and bed triage in the MS-ICU by working with
- Nursing Supervisors.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows must demonstrate compassion, integrity and respect for others.

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - obtaining informed consent
 - implementing “Do Not Resuscitate (DNR)” , “Do Not Intubate (DNI)” orders
 - withholding or withdrawing life support

Second Year

All of the above plus:

- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - clarifying goals of care from advance directives or patient surrogates.

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.
- Demonstrate proper written and verbal techniques for transfer of care both within and between services.

Second year

All of the above plus:

- Develop teaching skills through instruction of medical and procedural aspects of critical care medicine to first year CCM fellows, interns and residents, medical students, and other health care professionals through bedside teaching as well as formal didactic sessions.
- Demonstrate effective communication with nurse managers in order to establish ICU admission and discharge plans for critically ill patients.
- Demonstrate the ability to orchestrate care with other medical and surgical services.

ELECTIVE ROTATIONS

ANESTHESIA ELECTIVE ROTATION

Description

The anesthesia rotation is offered in the first year of fellowship and is designed to provide the basis for a solid understanding and competency in all aspects of airway management. It is required for all fellows who have not completed an ACGME accredited Emergency Medicine Fellowship. Fellows spend most of their time in the operating suites under direct supervision of the anesthesia faculty. Fellows may also be supervised and instructed by anesthesia senior residents and clinical nurse anesthetists CRNA's.

In addition to direct patient care, this rotation includes a series of anesthesia based lectures and simulation modules in the Simulation Laboratory.

Educational Content

Patients seen during the Anesthesia rotation represent a wide range of adult patients. The population of patients seen during the Anesthesia rotation is represented by both genders, a wide variety of ethnic groups and a variety of socio-economic groups. Patients seen by the fellows will represent a wide range of patients requiring surgery with anesthesia. Fellows will be exposed to patients requiring general anesthesia as well as local anesthesia and will be exposed to patients undergoing elective surgery as well as emergent surgery.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Chart stimulated recall
- Case based discussion

Teaching/ Learning Activities for this rotation include:

- Direct Patient Care (DPC)
- Didactic Conference (DC)
- Simulation Laboratory (SIM)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- Multisource (360) assessment (nursing)
- In-service examination

Rotation Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities:

The fellow will be responsible for:

- Reporting to the OR board every morning to identify suite assignment.
- Attending all anesthesia didactic lectures during the rotation.
- Completing Simulation Laboratory module in airway management.

Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Miller's Anesthesia, Eighth Edition. Miller & Ronald. 2015
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others
- Manual of Perioperative Care in Adult Cardiac Surgery, Fifth Edition. R. M. Bojar. Blackwell 2011.
- NeuroICU Book, 1st Edition. K. Lee, McGraw 2012
- CAE Online Ultrasound Course

Competency Based Goals and Objectives

Patient Care

Goal

Develop the skills to provide airway management to patients under different situations and with the use of a wide variety of tools,

Competencies

First Year Fellow

- Demonstrate ability to evaluate patient's airway and predict difficult intubations.
- Demonstrate competence in maintenance of an open airway.
- Demonstrate ability to properly utilize airway management devices such as:
 - Oral airway
 - Laryngeal mask airway (LMA)
 - Combitube
 - Endotracheal tube
 - Laryngoscope with different blades (Macintosh, Miller)
- Demonstrate ability to perform Bag-mask ventilation in non intubated patients
- Perform Endotracheal intubation with direct laryngoscopy under supervision of faculty
- Demonstrate ability to identify proper endotracheal tube placement via different techniques.
- Understand management options for difficult airways.

Medical Knowledge

Goal

Develop knowledge in airway evaluation and maintenance of artificial airway support as well as endotracheal intubation.

Competencies

First Year Fellow

- Understand and describe the Mallampati classification of airways.
- Describe indications and potential complications for endotracheal intubation.
- Understand different types of drugs (dosing, effects, and potential adverse reactions) utilized as adjuncts for endotracheal intubation and airway management.
- Describe physiologic effects of positive-pressure ventilation on pulmonary and circulatory physiology.

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate airway management of the critically ill patient from the Cooper Health System operating procedures and patient interactions.
- Interpret, critique, and evaluate medical literature related to airway management.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Identify systemic threats to patient safety through chart review.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. This includes an understanding of how their own practices affect others, and knowing how to partner with others to improve healthcare.

Competencies

First Year

- Describe the role of anesthesia within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of airway management in critically ill patients
- Develop proper documentation of airway procedures.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows must demonstrate compassion, integrity and respect for others.

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Explain the risk/benefit of positive-pressure ventilation to family and the risk of intubation
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - obtaining informed consent
 - Implementing “Do Not Intubate (DNI)” orders
- Assume responsibility for his/her own behavior, and be accountable to patients and superiors, and must place the patient’s interest ahead of their own interests.
- Demonstrate sensitivity to cultural, age, gender and disability issues.

Interpersonal and Communication Skills

Goal:

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nurse managers and other operating suite personnel in addition to nursing staff, nurse anesthetists, peers, physicians and other health care professionals.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate proper written and verbal techniques for patient handoff between services

TRAUMA ELECTIVE ROTATION

Description

The trauma rotation is designed to expose the critical care medicine fellow to the evaluation and management of critically ill trauma patients. Cooper University Hospital is a designated Level 1 Trauma Center and is a regional referral center for complex traumatic injuries. The rotation is designed to offer fellows exposure to the initial evaluation and resuscitation of traumatic injuries (trauma on call in the trauma bay), and exposure to the longitudinal care of critically ill patients post-traumatic injury (rounds in the trauma intensive care unit). The trauma rotation is a senior fellow (F2) rotation. Internal Medicine Critical care fellows are required to complete at least 4 weeks of trauma rotation during their training. Emergency Medicine based Critical Care fellows can choose to do a trauma rotation in case they would like additional exposure.

Educational Content

Patients seen during the Trauma rotation represent a wide range of adult patients with traumatic injuries. The population of patients seen during the Trauma rotation is represented by all genders and a variety of ethnic and socio-economic groups. Most of the patients are adults. However, fellows will be exposed to pediatric patients suffering traumatic injury. Patients seen by fellows in this rotation will include patients with traumatic brain injury, spinal cord injuries, multisystem trauma, blunt trauma, and penetrating trauma. Patients will be seen during the initial phase of their resuscitation and then followed longitudinally in the Trauma ICU.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Case based discussion

Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Multidisciplinary Rounds (MDR)
- Didactic Conference (DC)
- Morbidity and Mortality Conference (MM)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out primarily by the attending physicians, with additional input from residents, students, and peers.

- Written global evaluation by faculty supervisor
- Multisource (360) assessment (nursing)
- In-service examination

Rotation Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations at the end of the rotation.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities

During the Trauma rotation, the fellows function as the key component of the trauma team whose primary objective is to care for patients with severe traumatic injuries. The Trauma team is a multidisciplinary team comprised of a trauma faculty attending, fellows, surgical and emergency medicine residents, nurses, pharmacists, respiratory therapists, and students. The team is led by the attending, which bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and has a supervisory role to residents and students.

The fellow will:

- Participate in daily multidisciplinary patient rounds in the TICU. (F2)
- Take call (six per rotation) with the trauma team and respond to all Trauma alerts. (F2)
- Participate in trauma resuscitations when taking call. (F2)
- Participate as assistant in percutaneous tracheostomy procedures done on critically ill patients by the trauma team. (F2)
- Attend daily Trauma morning report. (F2)

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Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Trauma, Eighth Edition. Moore, Feliciano, and Mattox. 2017.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others
- NeuroICU Book, 1st Edition. K. Lee, McGraw 2012
- CAE Online Ultrasound Course

Competency Based Goals and Objectives

Patient Care

Goal

Prepare fellows to provide initial evaluation and care to critically ill patients as a result of traumatic injuries.

Competencies

- Demonstrate knowledge and competency the initial evaluation and resuscitation of an acute trauma victim.
- Demonstrate the proper immobilization technique for intubating patients with potential cervical spine injury and the proper pharmacologic management for patients with elevated intracranial pressure.
- Demonstrate competency in the management of bedside surgical chest tubes.
- Apply clinical criteria of brain death and basic principles of support for potential organ donors. Demonstrate proper performance of brain death certification.
- Demonstrate the proper assessment and management of patients with intracranial hypertension, including evaluation of data from ICP monitors or extra-ventricular drains.
- Demonstrate proper management for patients requiring large volume fluid and blood product resuscitation.
- Understand indications, complications and technique of percutaneous tracheostomy.

Medical Knowledge

Goal

Develop knowledge of current protocols for initial resuscitation of patient's suffering traumatic injury and knowledge of longitudinal critical care needs of trauma victims.

Competencies

- Describe current guidelines for the initial approach to the management of multisystem trauma.
- Understand the pathophysiology and treatment of patients with:
 - Traumatic brain injury.
 - Skeletal trauma and compartment syndrome.
 - Chest trauma: blunt and penetrating.
 - Abdominal trauma: blunt and penetrating.
 - Crush injury.
 - Burns
 - Spinal cord injury
- Understand the pathophysiology, initial evaluation, resuscitation and long term care of burn victims.
- Describe the diagnosis and management of intraabdominal compartment syndrome.
- Describe indications and procedure for emergent cricothyrotomy, tracheostomy.
- Describe current guidelines for massive blood product transfusions in trauma patients.
- Understand current ATLS guidelines.
- Understand reversal agents for patients who are anticoagulated and have suffered traumatic injury

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

- Identify the best practice patterns to facilitate care of the trauma patient from the Cooper Health System operating procedures and patient interactions.
- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- List and describe the barriers to incorporation of evidence-based practices into patient care.

- Describe measures to prevent adverse events and the barriers to implementation of such measures.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. This includes an understanding of how their own practices affect others, and knowing how to partner with others to improve healthcare.

Competencies

- Describe the role of Trauma within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of care for critically ill trauma patients
- Develop proper documentation and billing skills.
- Demonstrate awareness of the role of the Cooper Health Care System as a Level 1 Trauma center in regional health care delivery.
- Demonstrate understanding of the role of a multidisciplinary critical care team in the delivery of care to critically ill trauma patients in the TICU.
- Demonstrate ability to participate as a member of a multidisciplinary team in the initial evaluation and resuscitation of acute trauma victims.
- Demonstrate ability to participate as a member of a multidisciplinary team in the initial evaluation and resuscitation of acute trauma victims.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows must demonstrate compassion, integrity, and respect for others.

Competencies

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - obtaining informed consent
 - implementing “Do Not Resuscitate (DNR)”, “Do Not Intubate (DNI)” orders
 - withholding or withdrawing life support

- clarifying goals of care from advance directives or patient surrogates.
- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.
- Demonstrate sensitivity to cultural, age, gender and disability issues.

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

- Demonstrate effective communication with nursing staff, peers, attending, referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.

NEPHROLOGY ELECTIVE ROTATION

Description

The nephrology rotation is required during the fellowship and can be done in the fellow's first or second year of fellowship. The rotation is designed to provide the basis for understanding acute kidney injury and chronic kidney injury in the critically-ill. Fellows will spend most of their time in the Intensive Care Unit and the Intermediate Care Unit under the direct supervision of the Nephrology faculty.

Educational Content

Patients seen during the Nephrology rotation represent a wide range of adult patients. The population of patients seen during the Nephrology rotation is represented by a wide variety of ethnic and socio-economic groups. Patients seen by the fellows will represent a wide range of patients requiring management of acute kidney injury and chronic kidney injury. Fellows will be exposed to patients requiring acute dialysis, continuous dialysis and chronic dialysis in the intensive care unit.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Case based discussion

Teaching/ Learning Activities for this rotation include:

- Direct Patient Care (DPC)
- Didactic Conference (DC)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- In-service examination

Rotation Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities

- Reporting on time to Nephrology Rotation, seeing consults independently, and rounding with the attending nephrologist
- Attending all nephrology didactic lectures during the rotation.

Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Edition. Parrillo & Dellinger, Editors. 2019.
- Critical Care Nephrology, Third Edition. Ronco et al. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others
- CAE Online Ultrasound Course

Competency Based Goals and Objectives

Patient Care

Goal

Develop the skills to provide renal management for patients with acute kidney injury and life threatening metabolic derangements who are critically-ill

Competencies

First and Second Year Fellow

- Demonstrate ability to evaluate acute kidney injury in the critically-ill
- Demonstrate competence in caring for patients with acute kidney injury
- Demonstrate the ability to evaluate life threatening metabolic derangements in the critically-ill (e.g. hypokalemia, hyperkalemia, hypophosphatemia, hyponatremia, hypernatremia, acidosis)
- Demonstrate competence in caring for patients with life threatening metabolic derangements
- Describe the indications for acute dialysis
- Learn how to order continuous renal replacement therapy
- Learn how to manage continuous renal replacement therapy

- Understand the different options for continuous renal replacement therapy
- Understand and describe the management of hypokalemia, hyperkalemia, hypophosphatemia, hyponatremia, hypernatremia, acidosis
- Describe indications and potential complications for renal replacement in the critically-ill.
- Understand different types of renal replacement therapy
- Describe physiologic effects of renal replacement therapy
- Manage patients with renal replacement therapy including the ordering and managing renal replacement therapy of in the critically-ill

Medical Knowledge

Goal

Develop knowledge about renal disease in the critically-ill

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate renal management of the critically ill patient in Cooper Health System
- Interpret, critique, and evaluate medical literature related to nephrology in the critically-ill.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Identify systemic threats to patient safety through chart review.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. This includes an understanding of how their own practices affect others, and knowing how to partner with others to improve healthcare.

Competencies

First Year or Second Year

- Describe the role of nephrology in the critically-ill at Cooper University Hospital
- Evaluate and demonstrate cost-effectiveness of acute kidney injury management in critically ill patients
- Develop proper documentation of renal replacement therapy.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows must demonstrate compassion, integrity and respect for others.

Competencies

First Year and Second Year

- Demonstrate proper performance of all expected professional responsibilities.
- Explain the risk/benefit of renal replacement therapy to family and the risk of renal replacement therapy
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - obtaining informed consent
 - Implementing “Do Not Dialyze Orders”
- Assume responsibility for his/her own behavior, and be accountable to patients and superiors, and must place the patient’s interest ahead of their own interests.
- Demonstrate sensitivity to cultural, age, gender and disability issues.

Interpersonal and Communication Skills

Goal:

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year and Second Year

- Demonstrate effective communication with critical care nurses and nephrology staff
Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.

INFECTIOUS DISEASE ELECTIVE ROTATION

Description

The Infectious Disease rotation will take place at Cooper University Hospital. During this rotation the critical care fellow will round with the Infectious Disease Consult service. Fellows will participate in daily clinical rounds and participate in the evaluation of hospitalized patients with a variety of infectious disease pathologies. It is anticipated that each fellow will spend one to two weeks on the clinical consultation service.

During this rotation, fellows are expected to improve their ability to examine inpatients with infectious disease disorders and coordinate and integrate information derived from radiographic studies and other testing. Fellows will develop an understanding of Minimal Inhibitory Concentrations (MIC), antibiotic choices, stewardship and pharmacologic dosing in the Intensive Care Unit. Serving as a consultant, fellows will enhance their communication skills with medical professionals, and with patients and their families through verbal and written communication.

Educational Content

Patients seen during the Infectious Disease rotation will be adult patients with a wide range of disease processes. The population of patients seen during the Infectious Disease rotation is represented by all genders and a wide variety of ethnic and socio-economic groups. Common disease states encountered during this rotation include septic shock, infective endocarditis, community acquired pneumonia, hospital acquired pneumonia, ventilator associated pneumonia, fungemia, central line associated blood stream infection, urinary tract infectious (complex and simple), empyema, infections in immunocompromised hosts, among others

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Chart stimulated recall
- Case based discussion

Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Didactic Conference (DC)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- In service examination

Rotation and Attending Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibility

In the Infectious Disease Rotation, fellows function as the key component of the Infectious Disease consult team whose primary objective is to provide consultation on hospitalized patients with a diverse range of infections. The team is led by the Infectious Disease attending, who bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and an Infectious Disease fellow if they are on service. Fellows have a supervisory role to residents and students.

The fellow will be responsible for:

- Initial evaluation of new Infectious Disease Consults. (F1)
- Participation in Infectious Disease daily clinical rounds. (F1)
- Supervision of house staff in the implementation of the management plan. (F1)
- Organization of Infectious Disease Team, with distribution of patients and new consults to house-staff as appropriate. (F2)

Educational Materials

- Principles and Practice of Infectious Diseases: 2-Volume Set Mandell, Douglas, Bennett, Editors. Elsevier 2015
- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

Competency Based Objectives

Patient Care

Goal

The goal of the Infectious Disease rotation is to teach fellows basic and advanced skills in diagnosing and managing a variety of infectious diseases present in hospitalized patients. Fellows will be exposed to a wide variety of Infectious Disease pathology.

Competencies

First Year

- Apply current evidence based guidelines for antibiotic choice in septic shock
- Apply current evidence based guidelines for the management of infective endocarditis
- Apply current evidence based guidelines for the empiric treatment of infections in the critically-ill
- Apply current evidence based guidelines for the management of fever of unknown origin
- Demonstrate knowledge of diagnostic tests utilized in the work up of hospitalized patients with severe sepsis or septic shock
- Demonstrate basic understanding of interpretation of minimum inhibitory concentration tests and apply these results in caring for hospitalized patients.

Second Year

All of the above plus:

- Demonstrate knowledge of and apply antibiotic stewardship practices in caring for patients

- Demonstrate and understanding of infection control practices in infectious disease outbreaks and apply them to patient care

Medical Knowledge

Goal

Fellows will demonstrate knowledge of physiology, pathophysiology, diagnosis, and therapy of problems pertinent to infectious disease in the critically ill.

Competencies

First Year

- List and describe the most current evidence-based medical practices pertaining to the treatment of hospitalized patients with infectious disease requiring ICU level care.
- State the etiology, describe the pathophysiology, demonstrate the appropriate management, and evaluate the outcomes of patients with:
 - Septic Shock or Severe Sepsis
 - Infective Endocarditis
 - Pneumonia causing Acute Respiratory Failure
 - Urinary Tract Infections
 - Hospital Acquired Infections

Second Year

All of the above plus:

- Describe evidence based strategies for antibiotic stewardship and de-escalation
- Describe evidence based practices for infection control

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate care of the critically ill patients with infectious disease pathologies from the Cooper Health System operating procedures and patient interactions.

- Identify systemic threats to patient safety through chart review.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Interpret, critique, and evaluate medical literature as it relates to infectious disease.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.

Second Year

All of the above plus:

- Interpret, critique, and evaluate medical literature as it relates to infectious disease.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Competencies

First Year

- Describe the role of the Infectious Disease Consult service within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of evaluation for hospitalized patients with infectious diseases
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.
-

Second Year

All of the above plus:

- Develop the proper documentation and billing skills.
- Demonstrate the ability to conduct and lead infectious disease rounds.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate sensitivity to cultural, age, gender and disability issues.
- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.

Second Year

All of the above plus:

- Demonstrate the ethical principles in relation to patient care and confidentiality, including:
 - Maintaining confidentiality of infectious disease diagnoses per patient or patient surrogate wishes

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.

- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.

Second YearAll of the above plus:

- Develop teaching skills through instruction of medical aspects of infectious disease medicine, interns, residents, medical students, and other health care professionals through bedside teaching as well as formal didactic sessions.
- Demonstrate the ability to orchestrate care with other medical and surgical services.

PULMONARY ELECTIVE ROTATION

Description

The Pulmonary rotation will take place at Cooper University Hospital. During this rotation the critical care fellow will round with the Pulmonary Consult Service. Fellows will participate in daily clinical rounds, participate in the evaluation of hospitalized patients with a variety of pulmonary pathologies, participate in diagnostic / therapeutic fiberoptic bronchoscopy procedures and perform a variety of pulmonary procedures. It is anticipated that each fellow will spend at least two weeks on the clinical consultation service.

During this rotation, fellows will hone their ability to examine inpatients with pulmonary disorders and coordinate and integrate information derived from pulmonary function testing, radiographic studies, bronchoscopy, and other pulmonary and non-pulmonary tests in assessing individual pulmonary inpatients. Serving as a consultant, fellows will enhance their communication skills with medical professionals and with patients and their families through verbal and written communication.

Educational Content

Patients seen during the pulmonary rotation will be adult patients with a wide range of pulmonary diseases. The population of patients seen during the pulmonary rotation is represented by both genders and a wide variety of ethnic groups and a variety of socio-economic groups. Common disease states encountered during this rotation include COPD, Pulmonary Hypertension, Interstitial Lung disease, Lung Cancer, Pleural diseases and immunologic lung diseases.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Case based discussion

Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Didactic Conference (DC)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- In service examination

Rotation Evaluation by Residents

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Lines of Responsibility

In the pulmonary rotation, the fellows function as the key component of the pulmonary consult team whose primary objective is to provide consultation on hospitalized patients with a diverse range of pulmonary illnesses. The team is led by the pulmonary attending, who bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and pulmonary fellow. Fellows have a supervisory role to residents and students.

The fellow will be responsible for

- Initial evaluation of new pulmonary consults. (F1)
- Participation in pulmonary service daily clinical rounds. (F1)
- Supervision of house staff in the implementation of the management plan. (F1)
- Performance of various pulmonary procedures in intubated patients. (F1)
- Organization of pulmonary team, with distribution of patients and new consults to house-staff. (F2)
- Set up and orchestration of procedures with pulmonary technicians, respiratory therapist and pulmonary faculty. (F2)

Educational Materials

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Fishman's Pulmonary Diseases and Disorders, Fifth Edition. Grippi et al. 2015.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

Competency Based Objectives

Patient Care

Goal

The goal of the pulmonary rotation is to teach fellows basic and advanced skills in diagnosing and managing a variety of pulmonary diseases present in hospitalized patients. The pulmonary rotation will provide fellows with exposure to fiberoptic bronchoscopy and advanced pulmonary interventions.

Competencies

First Year

- Apply current evidence based guidelines for the management of acute exacerbations of asthma and COPD.
- Demonstrate knowledge of diagnostic tests utilized in the work up of hospitalized patients with shortness of breath,
- Demonstrate basic skills in performing diagnostic fiberoptic bronchoscopy in intubated patients.
- Demonstrate basic understanding of interpretation of pulmonary function tests and how to utilize these results in caring for hospitalized patients.
- Demonstrate understanding in the indications and application of non invasive positive pressure ventilation in the management of acute and chronic respiratory failure.
- Demonstrate competency in utilizing various oxygen delivery systems (nasal cannula,
- Venturi masks, face masks, High-Flow Nasal Oxygen, ect.) in the management of acute respiratory failure.
- Demonstrate the ability to examine the lung with ultrasound

Second Year

All of the above plus:

- Complete 15 (fifteen) fiberoptic bronchoscopies in critically ill patients.
- Demonstrate competence in placing pigtail chest tubes under ultrasound guidance.

Medical Knowledge

Goal

Fellows will demonstrate knowledge of physiology, pathophysiology, diagnosis, and therapy of problems pertinent to pulmonary and critical care medicine.

Competencies

First Year

- List and describe the most current evidence-based medical practices pertaining to the treatment of hospitalized patients with pulmonary diseases.
- State the etiology, describe the pathophysiology, demonstrate the appropriate management, and evaluate the outcomes of patients with:
 - Acute Respiratory and Chronic Respiratory Failure.
 - ARDS
 - Status Asthmaticus
 - COPD and COPD Exacerbation
 - Bronchopulmonary infections:

Second Year

All of the above plus:

- State the etiology, describe the pathophysiology, demonstrate the appropriate management and evaluate the outcomes of patients with:
 - Pleural Diseases: Empyema, Massive Effusion, Pneumothorax, Hemothorax.
 - Pulmonary hemorrhage and massive hemoptysis.
 - Pulmonary mechanics and gas exchange.
 - Interstitial lung diseases.
- Describe current diagnostic criteria for diagnosis by BAL of VAP.

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate care of the hospitalized patients with pulmonary pathologies from the Cooper Health System operating procedures and patient interactions.
- Identify systemic threats to patient safety through chart review.
- List and describe the barriers to incorporation of evidence-based practices into patient care.

Second Year

All of the above plus:

- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Competencies

First Year

- Describe the role of the Pulmonary Consult service within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of evaluation for hospitalized patients with pulmonary diseases
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.

Second Year

All of the above plus:

- Develop proper documentation and billing skills.
- Orchestrate the performance of various pulmonary procedures in hospitalized patients
- Demonstrate ability to conduct and lead pulmonary rounds.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate sensitivity to cultural, age, gender, and disability issues.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - Obtaining informed consent
 - Implementing “Do Not Resuscitate (DNR)”, “Do Not Intubate (DNI)” orders
 - Withholding or withdrawing life support

Second Year

All of the above plus:

- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - Clarifying goals of care from advance directives or patient surrogates.

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nursing staff, peers, attending and referring
- physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.
- Demonstrate proper written and verbal techniques for transfer of care both within and between services.

Second Year

All of the above plus:

- Develop teaching skills through instruction of medical and procedural aspects of
- pulmonary medicine interns, residents, medical students, and other health care professionals through bedside teaching as well as formal didactic sessions.
- Demonstrate the ability to orchestrate care with other medical and surgical services.

RESEARCH ELECTIVE ROTATION

Description

The Research Rotation is designed to foster and encourage the scholarly activity of discovery in our critical care fellows. The time spent on research and specific projects will be tailored to each individual fellow in accordance to their interests and future career plans. All fellows are required to complete at least one research project and prepare that project for submission to an institutional, regional, national, or international organization. Several opportunities exist within the various research operations in the Division of Critical Care Medicine. These include, but are not limited to: human shock, cardiac arrest research, bedside ultrasound, clinical trials (industry sponsored) and database research.

Understanding research is critical to the training of modern subspecialists aspiring to academic careers. Fellows seeking research careers can obtain block research time for laboratory experiences or to participate intensively in the research projects performed at one of the clinical laboratories. Fellows who will not have investigative careers will be expected to participate in various clinical trials run by the faculty.

Research activities provide the fellow with an understanding of the principles of medical research and more importantly how to critically review existing research. The fellow will become familiar with the methods and problems inherent in performing and interpreting clinical and basic science research.

Educational Content

Research activities performed during working hours and not involving direct patient care (such as chart review, preparatory reading, manuscript preparation or data analysis) are expected to be performed at an appropriate Cooper facility, such as the fellow's office, Cooper library or in the Education and Research building.

It is suggested that a suitable project be identified during the fellow's first-year, and that IRB approval be obtained toward the end of the first-year, so that implementation may begin immediately during the second year.

Essentially all medical research, including retrospective chart review and case reports comes under the purview of the Institutional Review Board of Cooper University Hospital. All research must have IRB approval. Retrospective chart review is often deemed "low risk research" by the IRB, but nevertheless requires their approval. The IRB provides simple forms for obtaining this approval, and an expedited process, but it is essential to comply.

Commented [n4]: Should we change name to be "Scholarly Activity" to also include QI projects? If not, should we add another QI Project section?

Fellows participating in clinical outcomes studies must be familiar with the methods used to acquire data and should participate in a meaningful way in the analysis of such data.

The nature of the research performed by each fellow will vary, both in subject and in type. Some fellows may choose to design and implement a randomized controlled trial or other prospective study, while others may be a sub investigator for an existing trial that has been designed either in-house, or by a major pharmaceutical company. Other fellows may choose to perform retrospective case series analyses, and others may choose to publish case reports or small series of our own patients. Still others may choose to do poster presentations at local or national meetings, or podium presentations. Other fellows may choose to write solicited or unsolicited review articles. Case reports may be published full-length, or as a letter to the editor.

Teaching Methods

The research project should be designed under the supervision of a faculty mentor. The fellow will have the benefit of direct feedback from his/her faculty mentor, and will be directed to appropriate resources.

Cooper University Hospital is fortunate to have a large, clinical research program with significant resources for enrolling patients, including clinical nurse coordinators, CMSRU faculty with statistics experience and an active, and a responsive IRB.

Methods of Evaluation

Assessment Methods of Fellows

Written evaluation regarding research progress by faculty supervisor

Publications/presentations within the fellow's portfolio

The fellow's research will ultimately be evaluated and critiqued by outside sources. This is especially true of materials submitted for publication. The fellow is evaluated by his/her faculty mentor in the areas of initiative, perseverance, originality, quality of literature review, protocol design, integrity, protection of human subjects and writing skills.

Rotation Evaluation by Residents

Direct feedback to program director.

The program evaluates itself by considering the quantity and quality of the research produced by the fellow.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the research proposal and monitor the project. At the conclusion of the project the attending will review the data and assist the fellow in abstract, manuscript preparation.

Commented [n5]: GK suggested that we assign research mentors to each fellow on the start of the fellowship. Dr. D and Christa may be fulfilling this role, I'm not sure

Fellow Responsibilities

During the research rotation the fellow will work directly with a faculty member as their mentor.

The faculty mentor will be the sponsor of any IRB project and will be ultimately responsible for supervising and teaching the fellow.

The fellow will be responsible for:

- Preparing and submitting a research protocol to the IRB. (F1)
- Providing regular updates of his/her progress to faculty mentor. (F1)
- Completing a research project and presenting it in a local, national, or international forum. (F2)
- Preparing and submitting a manuscript with research results if applicable. (F2)

Educational Materials

- *How to do Clinical Practice Research: Haynes: Clinical Epidemiology, 3rd ed., 2006*
- Critical care and other medical journals available through CMSRU Library website.
- Cooper has an active IRB office with many online resources that the fellow will wish to consult.
- The fellow is also required to complete the NIH-sponsored course on Protection of Research Subjects.

Competency Based Goals and Objectives

Patient Care

Goal

Develop the skills needed to conduct ethical clinical research, understanding the basic tenets of patient protection during research.

Competencies

First year

- Describe patient rights and protections when participating in clinical research projects.

Second Year

All of the above plus:

- Demonstrate ability to obtain informed consent for clinical trials in critically ill patients.

Medical Knowledge

Goal

Develop the knowledge required to conduct sound clinical and basic research. Develop an understanding of the scientific method, basic statistical tools and the skills to analyze and present data.

Competencies

First Year

- Describe basic tenets of ethics in research.
- Understand basic principles of informed consent.
- Describe basic concepts of clinical trial design.
- Understand and apply the following statistical tools in research:
 - Samples and populations
 - Hypothesis testing and P values
 - Sample size calculation
 - Comparison of means

Second Year

All of the above plus:

- Understand and apply the following statistical tools in research:
 - Correlation and regression
 - Survival Analysis
 - Logistic Review

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify potential research questions that could to could care of the critically ill patient in the Cooper Health System.
- Identify systemic threats to patient safety participating in clinical research through chart review.

Second Year

All of the above plus:

- Interpret, critique, and evaluate medical literature.
- Discuss biostatistics and debate experimental design.
- Describe measures to prevent adverse events in patients as a result of participation in clinical research.
- Utilize information derived from research studies to identify areas for improvement in the delivery of care to critically ill patients in the MS-ICU.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Competencies

First Year

- Describe the role of research within the Cooper Health System.
- Describe the role of the IRB within the Cooper Health System.
- Demonstrate enthusiasm for expansion of global medical knowledge through participation in research projects and clinical trials occurring on patients in the ICU.
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.
- Demonstrate understanding of the role of a multidisciplinary critical care team in the conduct of clinical research in critically ill patients in the MS-ICU.

Second Year

All of the above plus:

- Develop proper documentation for patients enrolled in clinical trials.
- Develop proper documentation for basic research experiments.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Understand conflict of interest including scientist-scientist relationship and scientist-industry relationship.
- Demonstrate integrity in reporting clinical and research findings to supervisors.
- Definition and consequences of scientific misconduct and/or fraud including self-deception, fabrication, falsification and plagiarism.

Second Year

All of the above plus:

- Demonstrate ethical interactions with pharmaceutical representatives and be unbiased in prescribing habits.

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.

Second Year

All of the above plus:

- Demonstrate ability to prepare and successfully submit a research protocol for IRB approval.
- Demonstrate the ability to clearly and concisely present results of research projects in oral form (oral presentation).
- Demonstrate the ability to prepare an abstract, manuscript with research results.

POINT OF CARE ULTRASOUND ROTATION

Description

The Point of Care Ultrasound rotation will take place at Cooper University Hospital. During this 2-4 week rotation the critical care fellow will round and scan under the supervision of an attending who is skilled in point of care ultrasound. The rotation is broken up into four distinct entities, with independent scanning, supervised scanning, image review and echocardiography review with the cardiology service. The fellows' point of care ultrasound images will be reviewed and critiqued in a 1:1 session and an image review conference. It is anticipated that each fellow will be competent in basic point of care ultrasound and have an image library to demonstrate this competency by the end of their rotation. The fellows will review echocardiograms with the cardiologists each afternoon after scanning with a sonographer in the morning.

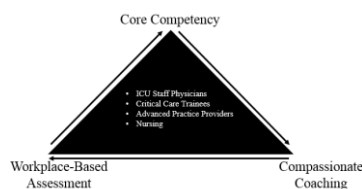
During this rotation, fellows are expected to improve their diagnostic ultrasound capability in critically-ill patients. They will be expected to learn how to integrate point of care ultrasound into the care of the critically-ill. They will enhance their communication skills by relaying their findings to treatment teams and participating in image review sessions

Educational Content

Patients seen during the Point of Care Ultrasound rotation will be adult patients with a wide range of Medical and Surgical Diseases. The population of patients seen during the rotation is represented by genders, a wide variety of ethnic groups and a variety of socio-economic groups. Common disease states encountered during this rotation include Shock, Pulmonary pathologies (Acute and Chronic Respiratory Failure, COPD, Pleural Effusions, Pulmonary Hypertension, Pulmonary Embolism), Cardiac pathologies (CHF, Acute Myocardial Ischemia, Demand Ischemia, Cardiomyopathies, Endocarditis, Valvular disease), GI pathologies (Pancreatitis, Upper GI Bleed, Lower GI Bleed, Cholecystitis) and Vascular pathologies (Deep Vein Thrombosis, Upper Extremity Thrombosis).

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning (using CAE online education, acquiring of images)
- Chart stimulated recall
- Case based discussion



Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)
- Didactic Conference (DC)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:

- Written global evaluation by faculty supervisor
- Image Review

Rotation and Attending Evaluation by Fellows

- Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.
- Fellow evaluations are reviewed at the annual program evaluation meeting.
- Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The attending will supervise unit-based procedures. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities

In the point of care ultrasound rotation, the fellows function an adjunct member of the critical care team whose primary objective is to provide sonographic information on critically-ill patients. The fellow works closely with the attending, cardiac sonographers and senior level fellows. Fellows have a supervisory role on residents and students.

The fellow will be responsible for:

- Bedside sonography (F1, F2)
- Participation in Echocardiogram Reviews. (F1, F2)
- Responsible for integrating findings into bedside care. (F1,F2)
- Performance of various ultrasound guided procedures. (F1,F2)
- Organization of image review conference (F1,F2)

- Maintain the equipment (F1, F2)
- Supervision of Junior Fellow, Residents, Medical Students. (F2)
- Upload and label images into image review system (F1, F2)
- Present at Ultrasound Case Conference
- Developing Image Portfolio based on American College of Chest Physician Guidelines (F1, F2)

Educational Materials

- Point of Care Ultrasound, Soni et al. Elsevier 2015.
- Comprehensive Critical Care Ultrasound, Samuel Brown et al., Society of Critical Care Medicine 2015
- Textbook of Clinical Echocardiography, Sixth Edition. Otto. 2018.
- Critical Care Journals available through CMSRU online library.
- CAE Online Ultrasound Course
- University of Toronto Transesophageal Echocardiography Online Simulator (http://pie.med.utoronto.ca/TEE/TEE_content/TEE_probeManipulation_intro.html)
- Lung Ultrasound. Chest. 2015 Jun;147(6):1659-1670. doi: 10.1378/chest.14-1313.
- Critical Care TEE Chest. 2015 Nov;148(5):1323-1332. doi: 10.1378/chest.15-0260.
- Sepsis Cardiomyopathy. Ann Intensive Care. 2011; 1: 6 doi: 10.1186/2110-5820-1-6

Competency Based Objectives

Patient Care

Goal

The goal of learning ultrasound in the critically ill patient is to use it as a real-time point of care method to answer clinical questions that will lead to a better understanding of the underlying disease process and changes in management. The rotation will provide fellows with exposure to a broad range of patients and teach them the utility and limitations of point of care ultrasound. The final endpoint should be a trained critical care physician that can use ultrasound as an adjunct to the evaluation of a specific problem (hypotension, respiratory distress, oligoanuria, and difficult vascular access) in the critically ill patient

Bedside critical care ultrasound differs from radiology ultrasound in that it serves primarily as a bedside screening tool looking for limited number of emergency clinical problems and situations as opposed to organ based evaluation.

The training candidate should start out by improving skill in various organ specific ultrasound techniques. Once individual components are mastered, the candidate should

move on to more problem-based evaluation such as hypotension, respiratory distress, chest pain, acute abdomen, cardiac arrest, and oligoanuria

Competence is composed of an individual's knowledge, skills, and attitude to ensure excellent performance in a certain situation. We will use guidance from American College of Surgery (ACS), American Institute of Ultrasound in Medicine (AIUM), American College of Chest Physicians and the Society of Critical Care Medicine to determine competence for trainees.

Competencies

First Year

- Apply current evidence based guidelines for the use of sonography in the critically-ill
- Demonstrate knowledge of utility and limitations of point of care ultrasound in the critically-ill
- Demonstrate competency in using ultrasound to perform bedside procedures including, but not limited to Central Lines, Peripheral IVs, Arterial Lines, Paracentesis, Chest Tubes and Thoracentesis
- Demonstrate basic skills in performing point of care ultrasound
- Demonstrate basic understanding of interpretation of sonography tests and how to utilize these results in critically-ill
- Demonstrate the ability to obtain 5 basic views of the heart (Parasternal Long Axis, Parasternal Short Axis, Apical 4-Chamber, Apical 5 Chamber, Subcostal). The images must include both ventricles, a clear view of the septum, and pericardium. Pericardial effusion present or absent, right ventricle enlarged or not visible, and RV/LV contractility poor, normal, or hyperdynamic are to be documented,
- Utilizing ultrasound in cardiac arrest / standstill
- Demonstrate the ability to recognize pleural effusions, pneumothoracies, consolidation, atelectasis and interstitial syndromes in the lungs (A profile, B profile, A/B profile), M-Mode (seashore sign)
- Demonstrate the ability to do a FAST exam
- Demonstrate the ability to diagnose a Deep Vein Thrombosis
- Demonstrate the ability to image the IVC to determine size and respiratory variability

Second Year

All of the above plus:

- Complete an image portfolio
- Demonstrate knowledge of use of ultrasound to guide lumbar puncture
- Demonstrate knowledge of advance cardiac imaging techniques, color and spectral Doppler
- Demonstrate knowledge of resuscitating patients using bedside sonography
- Demonstrate knowledge of algorithms used in critically ill including, but not limited to FATE, RUSH, BLUE protocols
- Demonstrate knowledge of the limitations of bedside sonography
- Demonstrate the ability to review images of junior fellows, residents and students
- TEE
- Advanced assessment of valves

Medical Knowledge

Goal

Fellows will demonstrate knowledge of point of care ultrasound and its utility and limitations in the critically-ill

Competencies

First Year

- List and describe the most current evidence-based medical practices pertaining to the use of point of care ultrasound in the critically-ill
- Be able to identify the following pathologies
- Systolic Dysfunction – Mild, Moderate, and Severe
- Pericardial Effusion
- Right Ventricular Enlargement
- Pleural Effusions
- Pneumothorax
- Lung Point
- B-Lines
- A-Lines
- Shred Sign
- Positive FAST Exam
- Deep Vein Thrombosis
- Adequate Location to Place Internal Jugular Triple Lumen Catheter
- Axillary Vein
- Inferior Vena Cava

- Aorta
- Inferior Vena Cava Collapsibility Index

Second Year

All of the above plus:

- Mild, Moderate and Severe Systolic Dysfunction
- Pericardial Tamponade
- Severe Valvular Regurgitation
- Velocity Time Integral
- Derivation of stroke volume / cardiac output
- Right Ventricular Systolic Pressure
- Wall Motion Abnormality
- Gallbladder Disease
- Aortic Disease
- Carotid Disease
- Loculated Pleural Effusion
- Hydronephrosis

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients using point of care ultrasound, to improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year

- Identify the best practice patterns to facilitate care of the critically-ill patients within the Cooper Health System operating procedures and patient interactions.
- List and describe the barriers to incorporation of evidence-based practices into patient care.

Second Year

All of the above plus:

- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Competencies

First Year

- Describe the role of the Point of Care Ultrasound within the Cooper Health System.
- Evaluate and demonstrate cost-effectiveness of point of care ultrasound for the critically-ill
- Develop proper documentation skills

Second Year

All of the above plus:

- Develop proper billing skills.
- Demonstrate ability to perform and supervise junior trainees doing a point of care ultrasound examination

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

Competencies

First Year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate sensitivity to cultural, age, gender and disability issues.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - Obtaining informed consent when necessary

Second Year

All of the above plus:

- Demonstrate the practice of ethical principles in relation to patient care and confidentiality

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year

- Demonstrate effective communication with nursing staff, peers, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.
- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.

Second Year

All of the above plus:

- Develop teaching skills through instruction of point of care ultrasound to interns, residents, medical students, and other health care professionals through bedside teaching as well as formal didactic sessions.

CARDIAC SURGERY ELECTIVE ROTATION

Description

The Cardiac Surgery rotation will take place at Cooper University Hospital. During this rotation the critical care fellow will observe cardiac surgery in the operating room, observe perfusion, cardiac anesthesiology and round on cardiac surgery patients in the Intensive Care Unit. The fellows will see new consults with the nurse practitioner and present the patients to the Cardiac Surgery Attending. Fellows will observe cardiac surgery procedures, participate in the evaluation and treatment of cardiac surgery patients with a variety of cardiac surgery pathologies. It is anticipated that each fellow will see on at least 20 new patients during the two weeks they are on the rotation.

During this rotation, fellows are expected to improve their ability to examine inpatients with cardiac pathology at the bedside and coordinate and integrate information derived from cardiac catheterization, radiographic studies and pulmonary function studies. Serving as a consultant, fellows will enhance their communication skills with medical professionals, and with patients and their families through verbal and written communication. Fellows will also have the opportunity to practice and gain instruction with trans-esophageal echocardiography, under the direct supervision of a cardiothoracic surgery trained attending anesthesiologist.

Educational Content

Patients seen during the Cardiac Surgery rotation will be adult patients with a wide range of Cardiac diseases. The population of patients seen during the Cardiac Surgery rotation is represented by all genders, a wide variety of ethnic and socio-economic groups. Common disease states encountered during this rotation include Coronary Artery Disease not amenable to medical treatment, Mitral Regurgitation, Mitral Stenosis, Infective Endocarditis, Aortic Regurgitation, Aortic Stenosis and Aortic Dissections.

Teaching Methods

- Clinical experience in a supervised, mentored clinical setting
- Critique of patient presentations
- Self-directed learning
- Chart stimulated recall
- Case based discussion

Teaching/ Learning Activities for this rotation include:

- Teaching-Management Rounds (TMR)
- Direct Patient Care (DPC)

Methods of Evaluation

Assessment Methods of Fellows

Evaluation of the fellow's successful completion of the above goals will be carried out through:
Written global evaluation by faculty supervisor

Rotation and Attending Evaluation by Fellows

Fellows complete a comprehensive evaluation of this rotation and faculty in New Innovations on a semi-annual basis.

Fellow evaluations are reviewed at the annual program evaluation meeting.

Direct feedback to program director.

Supervision

The attending physicians participating in this rotation will be responsible for the direct supervision of the fellow at all times. The attending will review and confirm the historical and physical findings that have been documented by the fellow/resident. The attending will review and discuss the care plan and recommendations and review pertinent testing results with the fellow. The ultimate responsibility for the care of the patient lies with the attending physician.

Fellow Responsibilities

In the Cardiac Surgery rotation, the fellows function as part of the cardiac surgery team whose primary objective is to provide consultation on hospitalized patients with a diverse range of cardiac illnesses. The team is led by the cardiac surgery attending, who bears final responsibility for patient management or recommendations for management. The fellow works closely with the attending and the nurse practitioners. Fellows have a supervisory role on residents and students.

The fellow will be responsible for:

- Initial evaluation of new cardiac surgery consults. (F1)
- Participation in cardiac surgery rounds. (F1)
- Participation in cardiac surgery procedures (F1)

Educational Materials

- Manual of Perioperative Care in Adult Cardiac Surgery, Fifth Edition. R. M. Bojar. Blackwell 2011.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care

Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others www.ctsnet.org/residents

- University of Toronto Transesophageal Echocardiography Online Simulator (http://pie.med.utoronto.ca/TEE/TEE_content/TEE_probeManipulation_intro.html)

Competency Based Objectives

Patient Care

Goal

The goal of the cardiac surgery rotation is to teach fellows basic skills in diagnosing and managing a variety of cardiac surgery conditions in post-operative patients. The cardiac surgery rotation will provide fellows the exposure to essential cardiac surgery procedures, post-operative care and the workup required for a patient to have cardiac surgery.

Competencies

First Year and Second Year

- Apply current evidence based guidelines indication for cardiac surgery
- Demonstrate knowledge of diagnostic tests utilized in the care of post-operative cardiac surgery patient
- Demonstrate basic skills in performing transesophageal echocardiogram
- Demonstrate basic understanding of interpretation of cardiac catheterization and how it is used in the workup of cardiac surgery patients
- Demonstrate basic understanding of pacemakers and how they are used in the care of post-operative care surgery patients
- Demonstrate understanding of cardiopulmonary bypass
- Demonstrate understanding of the Society of Thoracic Surgery Database

Medical Knowledge

Goal

Fellows will demonstrate knowledge of physiology, pathophysiology, diagnosis, and therapy of problems pertinent to cardiac surgery and critical care medicine.

Competencies

First Year and Second Year

- List and describe the most current evidence-based medical practices pertaining to the treatment of post-operative cardiac surgery patients.
- State the etiology, describe the pathophysiology, demonstrate the appropriate management and evaluate the outcomes of patients with:

- Coronary Artery Bypass Surgery
- Aortic Valve Replacement
- Mitral Valve Repair or Replacement
- Endocarditis
- Transapical Aortic Valve Replacement Surgery

Practice-Based Learning and Improvement

Goal

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Competencies

First Year and Second Year

- Identify the best practice patterns to facilitate care of the hospitalized patients with cardiac disease from the Cooper Health System operating procedures and patient interactions.
- Identify systemic threats to patient safety through chart review.
- List and describe the barriers to incorporation of evidence-based practices into patient care.
- Interpret, critique, and evaluate medical literature. Discuss biostatistics and debate experimental design.
- Demonstrate self-evaluation of patient care skills and medical knowledge by identifying specific sub-optimal patient outcomes on daily rounds, describing the care received by the patient, and comparing the care received to the current standard of care.
- Describe measures to prevent adverse events and the barriers to implementation of such measures.

Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Competencies

First Year and Second Year

- Describe the role of the Cardiac Surgery within the Cooper Health System.

- Evaluate and demonstrate cost-effectiveness of evaluation for hospitalized patients with cardiac surgery
- Demonstrate consultation skills by identifying a specific need or question and contacting the appropriate medical, surgical, or support service to provide efficient and effective patient care.

Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

Competencies

First Year and Second Year

- Demonstrate proper performance of all expected professional responsibilities.
- Demonstrate sensitivity to cultural, age, gender and disability issues.
- Demonstrate the practice of ethical principles in relation to patient care and confidentiality, including:
 - Obtaining informed consent
 - Implementing “Do Not Resuscitate (DNR)”, “Do Not Intubate (DNI)” orders
 - Withholding or withdrawing life support

Interpersonal and Communication Skills

Goal

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and working with patients, their families, and professional associates.

Competencies

First Year and Second Year

- Demonstrate effective communication with nursing staff, peers, nurse practitioners, physician assistants, attending and referring physicians, consultants, and other health care professionals including respiratory therapists, nutritionists, pharmacists, physical therapy, and study technicians.
- Establish a collegial rapport with patient and family and demonstrate patient and attentive listening to their concerns.

- Demonstrate effective discussion of patient diagnoses, prognosis, and management plan (including risks, benefits, and side effects) with patient and family using simple, easily understood language.
- Demonstrate proper written and verbal techniques for transfer of care both within and between services.

CONFERENCES AND LECTURES

CRITICAL CARE MEDICINE JOURNAL CLUB

Description

Journal Club is held once per month. An article from the current literature is selected and distributed several days at least one week in advance by pdf. Journal club articles are divided equally between basic science and clinical articles with a focus on critical care.. The fellow reviews the article, critically appraises the methods used, and whether the methods and the results support for stated conclusions. Another article is chosen by the Division Head of Critical Care is discussed at length in separate individual session with fellows. Clinical application of the results is also made, as well as a global statement on the validity of the conclusions reached, and there in the degree to which the conclusions of the paper are generalizable to other clinical populations of patients, such as those in on a daily basis.

Educational Content

Our experience has been that Journal Club is an excellent preparation for board exams, particularly the basic science component. Also, Journal club teaches fellows to critically evaluate the medical literature.

Teaching Methods

Learner-centered model

Methods of Evaluation

Assessment Methods of Fellows

Self-directed study. See *Educational Resources* below.

Direct observation with feedback and correction from faculty and members of the audience.

Evaluation by the Fellows

Direct feedback to program director.

Level of Supervision

First-year fellows should have titles approved by the program director or by the intensivists covering consults that month.

Educational Resources

- Critical care and other medical journals available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

CRITICAL CARE MEDICINE CASE CONFERENCE

Description

Case conference is an important area of fellowship training. Case conference takes place on a weekly basis. Case conference involves the formal presentation of a patient with an instructive disease. The case is presented informally, using the electronic medical record in EPIC. A suitable differential diagnosis should be given in each step in the presentation. For instance, the fellow would give a list of differential diagnoses based upon the history alone, then upon the history and physical exam, then upon the history and physical and other data available on "Day One." Finally, the fellow would narrow down the list to just a few entities. It is important for the fellow to consider rare diagnoses, even if it is clear that these are not what the patient actually has.

Educational Content

Following the presentation of the case, there should be a discussion of a particularly interesting aspect of the case. Sometimes this will center upon the diagnosis, particularly when the diagnosis was not immediately evident, or if the patient has a rare condition or a rare presentation of a common condition. In other cases, the discussion will center upon treatment.

The fellow should be prepared to discuss pertinent medical literature related to the interesting aspect of the case. These conferences also provide a forum to obtain the professional opinions of the faculty regarding difficult management cases. Similarly, these conferences provide a forum for fellows to seek assistance from their colleagues regarding cases with difficult management or diagnostic issues.

Teaching Methods

- Case based learning. The importance of case conference as a learning method for the fellow cannot be overemphasized. The fellow will remember these cases and the literature that has been discussed throughout their career.
- Direct feedback from small group of peers and mentors.
- Self-directed learning and case presentation.

Methods of Evaluation

Assessment Methods of Fellows

Direct feedback from facilitating faculty

Evaluation by the Fellows:

Annual program evaluation review

Level of Supervision

The first year fellow is expected to review his/her presentation with the critical care attending who is on service at the time.

The second-year fellow may request assistance if needed.

Educational Resources

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

COMBINED CRITICAL CARE-EMERGENCY MEDICINE CONFERENCE

Description

This combined conference takes place quarterly on the third Tuesday or Thursday of every third month between 1 and 2 p.m. The purpose of this conference is to discuss topics of mutual clinical interest to intensivists and emergency medicine physicians.

Educational Content

The basis for these conferences is typically an interesting patient that has both critical care and emergency medicine. Sometimes, a topic is chosen for discussion without a case. Conference is moderated by Dr. Emily Damuth (Faculty in both Critical Care Medicine and Emergency Medicine).

Teaching Methods

- Didactic lecture.
- Case based discussion.
- Small group discussion and opining.

Methods of Evaluation

Assessment Methods of Fellows

Direct observation.

Evaluation by the Fellows

Direct feedback to program director.

Level of Supervision

Attendings and fellows participate together in this conference.

Educational Resources

- Critical care and emergency medicine journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, Annals of Emergency Medicine, and many others.

BASIC SCIENCE LECTURE SERIES

Description

The basic science lecture occurs once per month for the two years of fellowship.

Educational Content

The purpose is to provide understanding of the fundamentals of pathophysiology that underlie the practice of modern critical care. The lecture topics are based on ABIM Core Curriculum for Critical Care Medicine Board examination. . We have found that these lectures (in conjunction with review of basic science articles during journal club) provide an excellent preparation for critical care board exams, and hence for the practice of critical care. Faculty members and fellows alike share in the preparation and delivery of the lectures. The range of topics required by the ABIM – Critical Care Medicine curriculum is quite broad; it is anticipated that the fellow will supplement each lecture with the outside reading to achieve the level of detail required.

Teaching Methods

- Didactic lectures
- Self-directed learning

Methods of Evaluation

Assessment Methods of Fellows

In-training exam and critical care board exams.

Evaluation by the Fellows

Direct feedback

Annual Program Evaluation

Educational Resources

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Edition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

CORE CLINICAL LECTURE SERIES

Description

The core clinical lecture series occurs twice per month for the two years of fellowship.

Educational Content

The purpose is to provide understanding of the fundamentals of pathophysiology that underlie the practice of modern critical care. The lecture topics are based on ABIM Core Curriculum for Critical Care Medicine Board examination. We have found that these lectures provide an excellent preparation for critical care board exams, and hence for the practice of critical care. Faculty members and fellows alike share in the preparation and delivery of the lectures. The range of topics required by the ABIM – Critical Care Medicine curriculum is quite broad; it is anticipated that the fellow will supplement each lecture with the outside reading to achieve the level of detail required.

Teaching Methods

- Didactic lectures.
- Self-directed learning (absolutely required given the breadth and depth of topics).

Methods of Evaluation

Assessment Methods of Fellows

Ultimately, this knowledge base is assessed on the in-training exam and on the critical care board exam.

Evaluation by the Fellows

Direct feedback

Semiannual evaluation form

Level of Supervision

Since critical care attendings are present for these lectures, the level of supervision is high, in order to guard against an erroneous statement.

Educational Resources

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Edition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

SIMULATION LABORATORY SESSIONS

Description

Simulation Lab sessions occur at every month for the two years of fellowship at the CMSRU Simulation Center. Fellows must navigate simulated clinical scenarios with other fellows as a team.

Educational Content

The purpose is to provide experiential learning and reinforce clinical knowledge and procedural skills in a protected setting. Fellows are presented with case scenarios that they must manage as a group. Following the case, they receive direct feedback and didactic teaching from faculty who observed the simulation. The range of topics is broad and reflects the knowledge base required in caring for critically ill adult patients. Scenarios include management of acute respiratory failure, sepsis, intracranial hemorrhage, post cardiac surgery hemorrhage, tracheostomy dislodgement, cardiac arrest, among others.

These sessions are also used to provide fellows with hands on experience performing rare procedures (on manequins, mock ups, etc.), such as cricothyrotomy and pericardiocentesis, among others.

Teaching Methods

- Participation in simulated patient case scenarios.
- Direct feedback and didactic teaching following simulation.

Methods of Evaluation

Assessment Methods of Fellows

Fellows receive verbal feedback from faculty observers immediately following participation in simulated scenarios.

Evaluation by the Fellows

Direct feedback

Semiannual evaluation form

Level of Supervision

Direct observation by faculty participating in simulation.

Educational Resources

- Critical Care Medicine: Principles of Diagnosis and Management in the Adult, Fifth Addition. Parrillo & Dellinger, Editors. 2019.
- Critical care journals and textbooks available through the Cooper Medical School of Rowan (CMSRU) Library website including Critical Care Medicine, Intensive Care Medicine, CHEST, Journal of Critical Care Medicine, Critical Care Clinics, and many others

ULTRASOUND CONFERENCE

Description

The purpose is to provide understanding of the fundamentals of ultrasound and its use in the critically-ill. Faculty members and fellows alike share in the preparation and delivery of the lectures. The range of topics will vary, but will cover the breadth needed for a fellow to achieve competency in point of care ultrasound and for them to pass the critical care echocardiography boards.

Teaching Methods

- Didactic lectures.
- Self-directed learning (absolutely required given the breadth and depth of topics).

Methods of Evaluation

Assessment Methods of Fellows

Ultimately, this knowledge base is assessed echocardiography board exam and bedside supervision by faculty

Evaluation by the Fellows

Direct feedback

Semiannual evaluation form

Level of Supervision

Since critical care attendings are present for these lectures, the level of supervision is high, in order to guard against an erroneous statement.

Educational Resources

- Textbook of Clinical Echocardiography Otto, Catherine 6th edition

EXAMPLE SCHEDULES

Example schedule for one week blocks over the course of twelve weeks

1st year fellow	Shadow	Green INCU	Anesthesia	Green Consults	Vacation	Red	Blue	Research	Nephrology Elective	Orange	Nights	Vacation
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EXAMPLE MONTHLY CRITICAL CARE MEDICINE CONFERENCE SCHEDULE

Monday	Tuesday	Wednesday	Thursday	Friday
2 Board Review	3 Journal Club	4	5 Basic Science Lecture	6 Ultrasound Conference
9 Board Review	10 Case Review M & M	11	12 Core Clinical Lecture	13 Mechanical Ventilation
16 Board Review	17 Simulation Lab	18 Dellinger Rounds	19 ICU/ED Interdisciplinary Conference	20 Ultrasound Conference
23 Board Review	24 Fellows Conference	25 Kavi Rounds	26 Grand Rounds	27 Mechanical Ventilation
30 Board Review				

Revised 2/16/19