Duke Pulmonary and Critical Care Medicine
Guidelines and Curriculum
http://pulmonary.medicine.duke.edu/

Rotation: Medical ICU, Durham Veterans Affairs Medical Center (DVAMC, 5A wing)

Contact names and phone number: Dr. Tim McMahon, or Sharon Waddell, 286-6946.

The educational goal and objectives of this rotation are to:
Learn the diagnosis and management of critical illness, including respiratory, general medical, and neurological critical care.
1. Develop proficiency in obtaining a comprehensive history and performing a thorough physical exam.
2. Provide safe and effective health care with compassion, consideration, professionalism, and courtesy.
3. Formulate in conjunction with the fellow/attending a thoughtful assessment and plan for your patients.
4. Gain proficiency in the basic procedures of internal medicine and critical care medicine, including but not limited to phlebotomy, arterial blood gas, arterial line placement, nasogastric tube placement, central venous line placement, intubation, thoracentesis, arthrocentesis, paracentesis, and lumbar puncture.
5. Record daily notes on patient’s condition.
6. Follow-up on studies and tests performed on patients.
7. Gain basic understanding of critical care management in sepsis, cardiac and respiratory failure, sedation practices, hemodynamic monitoring, and acute neurovascular disease such as strokes, intracerebral hemorrhages and hypertensive emergencies.

Teaching methods used to attain these goals include:
Review by the faculty and fellow of the resident’s history and physical examination, plan of therapy and evaluation of laboratory and other diagnostic data,
Role modeling by faculty practicing in clinical practice,
Didactic clinical conferences held four times per month,
Recommended reading lists
Hands-on performance and interpretation of the following procedures:
arterial lines
central lines
pulmonary artery catheters
thoracentesis
paracentesis
lumbar puncture
blood gases
scheduled review of radiological material
opportunities for interacting with other trainees within this discipline.
opportunities for interacting with other trainees from other disciplines.
Self-study and testing materials, including online procedural educational modules.
CONSULTS:
1. Please accommodate all consult requests as promptly as possible.
2. All consultations need to be documented in CPRS (MICU Consult Note) if you do not accept the patient to the ICU. The notes do not have to be lengthy but should include the pertinent story and assessment, why the patient did not meet criteria for admission to the ICU, and the measures you recommended to stabilize or improve the patient's clinical condition. Please identify your MICU Attending and the MICU fellow for cosignature on the Consult Note.
3. The ER MOD has the final say in decisions on ICU or floor admission from the ER, technically speaking. In cases of disagreement, involving the MICU fellow and/or attending and ER attending early on may be helpful, and nearly always a consensus can be attained. At a minimum, please let the on-service attending know about admissions with which you disagreed.
4. The consult should be discussed with the MICU Pulmonary/Critical Care Fellow. The fellow should always be included in the decision process.
5. If possible, eyeball the patient again within 15 mins upon his/her arrival to MICU.
6. If the patient is admitted to the Intensive Care Unit, give the attending physician a brief call. This is imperative if the patient is unstable and has a high probability of dying within the next 24 hours.
7. Complicated (comatose, resp. failure) stroke and TIA patients must be admitted to the MICU service for at least the first 24 hours. Uncomplicated TIA and stroke cases are admitted to CCU.
8. A cardiology consult must be called for newly positive troponins or other evidence of ACS.
9. The VA has a Rapid Response Team. The MICU resident sees the RRT patients only in cases where there is no satisfactory improvement or resolution of the concern after being seen by the core team (MICU RN and respiratory therapist). In that case the patient is handled just like a MICU Consult.

TRANSFERS FROM OUTSIDE HOSPITALS:
1. You will be contacted, via the MICU pager 904, by outside facilities thru the DVAMC transfer coordinator (TC) regarding the transfer of service connected (SC) and NSC veterans to the Durham VA Medical Intensive Care Unit. Generally we try to be as accommodating as possible but beds are often very tight. Communication is key and a decision on transfer is needed within 24 hours and typically faster depending on the particular medical problem. The paperwork must go through the TC / AOD (admitting officer of the day) and they should be notified of the decision as well. She/he will check on eligibility and the priority for transfer. Generally service-connected Veterans have priority over non-SC veterans during times of limited bed availability. Use CPRS’s “Transfer Communication Note.”
2. Please u the outside physician and, when a case is “accepted and pending” for transfer then update her/him daily on the status of bed availability. Patients in outside ICUs, regardless of clinical status, need to be transferred to the ICU and not the regular service. If in the meantime the patient is transferred to the regular floor at the outside institution, the transfer should be turned over to the Assistant Chief Medical Resident. Under no circumstances should a patient be accepted/transferred for “evaluation in the emergency department.”
3. The physician making the arrangements for the transport has to assure safety and stability of the patient. It is good practice to get an update on the patient’s status from the nursing staff at the outside ICU. Referring physicians are not always up-to-date on the current status of the patient prior to transfer. Life-flight arrangements are more difficult to make and require the involvement of Duke since the VA has no helicopter pad.

TRANSFERS FROM THE ER, and TRANSPORT TO DIAGNOSTIC/THERAPEUTIC STUDIES:
1. All patient transfers from the regular inpatient service and the emergency room to the Critical Care Units must be accompanied by an ACLS-certified physician, typically the assigned ICU resident. The transfer requires the presence of resuscitation equipment (i.e. defibrillator and mask ventilation equipment) deemed appropriate to deal with potential emergencies during the transfer process.
2. All transfers from the Critical Care Units to diagnostic/therapeutic procedure areas require as a minimum the presence of an ACLS certified nurse and, for medically unstable patients, the presence of the responsible ICU physician. The transfer requires the presence of appropriate resuscitation equipment as outlined above.
3. An unstable patient in need of immediate ICU care will be transferred and stabilized in the Surgical Intensive Care Unit (SICU) in those situations where no medical critical care beds are available in any of our medical ICUs (CCU, MICU). It is the responsibility of the house officer (CCU, MICU or SICU resident) assuming care for the patient to
stabilize and stay with the patient. Nursing support may be limited in those situations depending on patient acuity and workload in the SICU. In the meantime the nursing coordinator together with the physician staff in all ICUs will define a more stable ICU patient to transfer to an outside Intensive Care Unit in order to open a critical care bed for the patient in the SICU. The permission for transfer will be obtained through the Chief of Staff.

**CODES:** The MICU resident is the "procedure MD" during a code. Her/his position is at the right of the patient, at the level of the groin. His/her responsibilities are to obtain central venous access and draw lab samples. It is also very important to be familiar with the other team members' roles and responsibilities. The key information is summarized in the chart on page one of the CRT document posted in the workroom and available on the Shared drive accessible from VA computers.

**DIAGNOSTIC PROCEDURES:**
1. Always make sure that you have obtained written informed consent for the procedure. Please use iMed for consent forms whenever possible. Consent is good only for 1 procedure per form completed, but renewals up to 30 days may be written into the consent.
2. **Phone consent** must go through the MAS (three-way phone call). Complications of procedures need to be adequately documented in the patient’s digital record (i.e. pneumothorax post line placement). Each Procedure Note in CPRS must indicate the attending of record, even if the attending was not physically present.
3. Please avoid the use of femoral lines unless absolutely necessary, and in that case please justify in the procedure note the reason an internal jugular or subclavian site could not be accessed or attempted. Reevaluate on a daily basis the need to keep any femoral line, either replacing it with a CVC elsewhere or justifying its need in daily notes.
4. **Pulmonary artery catheter placement requires the presence of the pulmonary fellow.** If in doubt please contact your fellow for help/assistance of any procedure.
5. **Vascular radiology procedures:** Our ability to provide vascular procedures such as bronchial arterial embolization and TIPS can be limited by equipment and personnel in vascular radiology. If a patient is to be transferred specifically for one of these procedures, check with vascular first to see if we can provide it. If not, it is in the patient’s best interest to be transferred elsewhere. Our own patients who need to go to Duke for a procedure must be transferred first to a Duke inpatient service, after approval by the Chief of Staff’s office. This is the only way to maintain adequate critical care for an ICU patient between the VA and Duke.

**INTUBATIONS:**
1. Uncredentialed medical residents do not have privileges to intubate patients primarily except in emergent situations where no RT, anesthesiologist, or pulmonary fellow is immediately available. It is possible to meet the VA requirements for gaining ET intubation privileges by training in the OR under the supervision of anesthesia attendings. This can be done efficiently in a few short mornings before MICU rounds and is highly recommended but not required. To arrange this, please contact Dr. Dana Wiener, Anesthesia, via Duke email.
2. Once approved, use every opportunity to intubate the patients yourself. Make sure they are adequately volume-loaded. Excessive benzodiazepines or propofol may provoke hypotension. The fellow and attending may use etomidate but not the residents.
3. As is the case for other events, the VA MICU fellow should be involved, and provides backup and typically can ensure an airway when your RT cannot. Please contact them early when the need for this is possible. If emergent, it is understood that the Pulmonary/CC fellow covering the Duke MICU can “cross the street” also be present temporarily in some cases, until the “VA” MICU fellow arrives.
4. **Upper-level anesthesia (“difficult airway”)** coverage is available during the day and variable at night. An experienced attending anesthesiologist can be called in from at home in more difficult situations. See the posted schedule at the residents’ desk in MICU; also posted on the S: drive server that is accessible to you on VA computers (folder S: MED/ PULM/ Anesthesiology/ Faculty Schedules). Look there if and when Anesthesia Dept. has not posted a paper copy yet, like on the first day of a month. Or call the hospital operator for the covering pager number; the pager number is also available through the RT. Call the anesthesiologist in if you anticipate problems rather than waiting for a problem to develop (it is understood that these can’t always be predicted). The anesthesia attendings expect and want to be called for difficult airway cases.
VENTILATOR MANAGEMENT:
1. Housestaff are responsible for all setting changes on ventilators. When physically making changes yourself, please also notify/discuss with the respiratory therapist and place the relevant order. All changes need to be clearly documented as orders in CPRS order section to avoid misunderstandings. If in doubt call your fellow and discuss the appropriate ventilator mode. If you have difficulties, call your fellow or attending for help.
2. A ventilator management protocol is in place and can be executed by RT under MD orders. However, you should still be aware of your patient’s current settings, the rationale, and objectives. Patients requiring extreme mech. vent. settings (e.g., inverse ratio I:E, PEEP >12) should not be managed primarily on this protocol but rather with each change discussed by MD team and RT together and entered as individual orders.
3. We do not provide non-invasive positive-pressure mask ventilation (NPPV) for respiratory failure (i.e. hypercapnia or refractory hypoxemia) on the regular floor. NPPV should be provided in the ICU because it is time- and personnel-intensive and ~one in four patients will ultimately require mechanical ventilation. The respiratory therapists are instructed to only provide NPPV on the floor for patients with stable, documented disease requiring either BiPAP or CPAP (such as OSA).

MISCELLANEOUS:
Progress notes. Where possible, strive to articulate diagnoses or working diagnoses in the A/P section, rather than simply naming signs and symptoms. Not only is this good form in medicine; it also helps the Medical Center accurately capture both the severity of illness (providing the most accurate and thus most constructive QA/QI feedback on patient outcomes), and the physician/housestaff and ICU workload.

Census cap. The MICU resident caps at 10 patients. Once you get to census = 9, please notify the attending, Chief Medical Resident, and CCU service in order to prepare diversion of any subsequent Medical ICU candidate patients, who will go typically to VA CCU Service.

Medication reconciliation upon transfer into and out of (or DC to home or SNF) must be thorough and fully documented.

Type and screen. When clinical staff (RNs or MDs) are the ones obtaining the specimen then ONE SF-518 needs to have patient information on the bottom and the upper right area needs to have name of individual who obtained the specimen printed and then signed with date and time of lab draw.

Massive bleeding (GI or other) protocol for transfusion: the restriction to “one unit at a time” can be quickly circumvented for emergencies by paging either the pathology resident on call or the blood bank director, Dr. Maureane Hoffman (cell 810-3868). Dr. Hoffman also encourages contact for ANY scenario in which timely availability of blood products appears to be or might become a problem.

Transfers to floor. Whenever possible, please try to avoid or minimize number of transfers on Saturday to the PRIME service, especially if the patient is complicated.

Code status. Establishing DNR status requires completion of a DNR Progress note in CPRS and a DNR order in CPRS. An identical order must be electronically entered and signed by the attending within 24 hours. There is no special form or paperwork need for the withdrawal of life support, other than good documentation within CPRS of relevant conversations with patient/family. Any single attending has authority to withdraw such care at the VA.

Insulin / blood glucose management orders can now be entered in a coordinated fashion via a new Orders tab in CPRS. “58: Inpatient insulin order set”.

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Fri. AM Conference. A weekly pulmonary/critical care led by the pulmonary fellow takes place at 9am Friday mornings. Your attendance is expected and encouraged unless you are on call.

Rescission of DNR status requires that all DNR orders in CPRS be cancelled, and that a “DNR-Revoked” note be written in CPRS and co-signed by attending. Please note that the template “Advance Directive – Rescind” is not what you want here and will not unflag the DNR in CPRS. Withdrawal of care does not require a second attending signature, provided that the patient and/or family are in agreement.

Potential organ donors. Please do contact CDS for any potential organ donors. CPRS indicates (upper right corner of cover sheet) in some cases those patients who have elected in advance to be organ donors.

Educational resources:
1. http://criticalcare.duhs.duke.edu/ Website with relevant didactic material and links to relevant articles.
2. Reading list by topic:

ARDS


Non-invasive ventilation

Central venous catheter use and placement


**Insulin therapy in the ICU**

**Sepsis**


**RBC transfusion or erythropoietin in the ICU**


**Ventilator weaning**


**DVT prophylaxis**

**Sedation and neuromuscular blockade in the ICU**


**Nosocomial ICU infections**


**Neurological critical care**
Critical Care Neurology, a review. *AJRCCM* 2001;164:341-5.


**ICU outcomes**

**Acute renal failure**


**The disease entities likely to be encountered on this rotation include:**
- shock (cardiogenic, septic, hypovolemic)
- encephalopathy, delirium
- hypoxemic and hypercarbic respiratory failure
- acute stroke syndromes
- acute coronary syndromes
- status epilepticus
- acute renal failure
- acute liver failure
- acute gastrointestinal bleed
- disseminated intravascular coagulopathy

**The characteristics of the patients seen on this rotation include:** Critically ill adults, average age 63. All patients are veterans, the majority male. Most patients have multiple medical comorbidities in addition to critical illness. Neurologically critical patients are also admitted to the VA MICU routinely.

**The types of clinical encounters with these patients include:**
- acute inpatient admissions
- critical care inpatient consultations requested by other teams

**The procedures performed:**
- arterial lines
- central venous lines
- pulmonary artery catheters
- thoracentesis
- paracentesis
- lumbar puncture
- arterial blood gas
- endotracheal intubation

**The services provided include:**
- Diagnostic testing for acute and chronic complaints
- Therapeutic Interventions and Advice
• Psychosocial Support and Counseling
• Nutritional Support
• Physical and Occupational Therapy
• Spiritual Services
• Pain Management and Palliative Care
• Patient Education and Counseling

The trainees will be evaluated by: Written evaluation

Supervision of the trainees by faculty is accomplished by:
• Review by the faculty of the resident’s history and physical examination, plan of therapy and evaluation of laboratory and other diagnostic data
• Direct Observation of Resident’s History and Physical Examination
• Direct Observation of Procedures and Skills
• Case Review and Discussion at Conferences and Morning Report

Assumption of graduated responsibility for the care of patients is monitored by:
• Review by the faculty of the resident’s history and physical examination, plan of therapy and evaluation of laboratory and other diagnostic data
• Direct Observation of Resident’s History and Physical Examination
• Direct Observation of Procedures and Skills
• Case Review and Discussion at Conferences and Morning Report

Concerns for and training to respond to the patients cultural, socioeconomic, ethical, occupational, environmental, and behavioral problems are addressed by:
• Consultative support by spiritual leaders, ethics counsels
• Consultative support by psychology and psychiatry colleagues
• Consultative support by social workers, occupational counselors and colleagues with expertise in environmental hazards

Leadership skills are developed by:
• Role Modeling by Faculty
• Delegation of Teaching Roles to Trainees
• Opportunities for mentor-relationships between trainees of different levels of training

Training in basic science underpinning of disease is addressed by:
• Case Discussion with Expert Faculty Comment

Training in the critical appraisal of the literature is addressed by:
• Case-based conferences
• Morning rounds review of evidence

Evaluation of the trainees’ documentation of their observations in the medical record is monitored by:
• Direct Review with comment and co-signature by attending faculty
• Feedback on individual write-ups (either verbal or in writing)
Evaluation of the trainees professional interpersonal relations and humanistic care of patients is assessed by: Direct Observation of provider-patient interactions with feedback on performance (either verbal or in writing)

Trainees are provided the opportunities to interact with support health care professionals by:
- Multidisciplinary Team Structure in the clinical environment (providers of different specialties caring for patients together in the context of a single environment or multidisciplinary team)
- Multidisciplinary Team Conference (cases discussed in a multidisciplinary setting)
- Multidisciplinary Team Rounds
Core Competencies on the VAMC MICU Rotation

**Patient care** – Your main goal while on the MICU rotation is to provide care that is compassionate, appropriate, and effective for the treatment of the health problems of the critically ill patients.

The residents on the team should work together as advocates for each patient cared for by the MICU team. MICU patients frequently have complex histories and medical problems. Take ownership for the care of your patients and strive to provide them the best possible care. This will often involve coordinating consultations, diagnostic tests and therapy.

- You will see a broad variety of problems while on the service some of which are listed above.
- Important diagnostic tests and urgent therapy (IV fluids, antibiotics etc.) should be ordered promptly and carried out expeditiously.
- Care should involve prompt history and physical as soon as a patient arrives from the emergency department or from the floor. You will need to assess acutely how ill the patient is and begin upon a course of diagnosis and therapy. Do not rely upon the history or diagnosis given by the ED! Your admission and daily notes should reflect your own assessment and exam.
- The MICU team will assess each patient at least twice daily and whenever needed for a change in status with daily examination and documentation with medical chart notes.
- Housestaff should spend as much time as possible at the patient’s bedside. Exams should be careful and accurate. A sick patient deserves a doctor close at hand.
- Care should be delivered with sensitivity and caring. Treat all patients and their families with the utmost respect.
- Resident are expected to communicate information about patient’s progress (or lack thereof) with patients’ family or decision making surrogate.

**Medical knowledge** - Housestaff are to use the MICU experience to review pertinent parts of the established and evolving biomedical, clinical, and sciences as pertinent in the care of patients on MICU.

- MICU is a time for patient-focused learning. Reading should be primarily based around the problems your patients have (although housestaff should read broadly on topics as their schedule allows). Textbooks of medicine (Harrison’s), systematic reviews from key journals (NEJM), ACP journal club reviews, guidelines from national organizations are all reasonable sources of information. A key reading list is provided above.
- There is a Duke University Critical Care Website that contains a file of commonly used critical care articles as well as a core lecture series. See link above.
- Medicine Department noon conferences, and the Friday VA Pulmonary/CC conference should be attended if possible during the MICU month as these provide a source of core-curriculum. Patient care is the priority.
**Practice-based learning and improvement** – While on MICU, housestaff should remain mindful of the quality of the care they provide. This involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, and improvements in patient care.

- When errors are noted, these should be reported through the error-reporting systems in place. When in doubt, the attending or MICU Director should be notified.

- If there are systems improvements that the housestaff discover, particularly in the realm of safety, these should be shared with the chief resident or MICU director.

- Application of medical knowledge should be an active pursuit while on MICU. Critical appraisal behind the medical evidence (or lack-thereof) should be an important part of the rotation.

**Interpersonal and communication skills** – Housestaff on the MICU service should always practice the most respectful and clear communication with colleagues, staff, patients and families. The goal is effective information exchange for the betterment of patient care.

- There may be times on MICU when one’s patience will be tried by a consultant who is yelling into the phone, by another floor or ED consult or by a family who is scared and frantic about a loved one. Always take the upper-hand when communicating with others.

- Do your best to remain empathetic. Listening is often the best tool you can use. Echo the emotion of the person with whom you are communicating. Take a deep breath and try to learn why the other person is so worried, frustrated, scared etc.

- If communicating with others is a skill where you need to improve, talk with the chief resident (sooner rather than later) or your attending. These skills can be learned. There are many helpful books that teach communication skills (*Getting to Yes*, *Difficult Conversations: How to Discuss What Matters Most*, *Crucial Conversations* are three resources that may be helpful).

- Effective communication and hand-offs with other housestaff are critical for patient care and safety. On the MICU rotation, interns and residents should be able to provide a concise, clear presentation of each patient. This is a skill that should be practiced over the course of the rotation. Residents should help their students learn to give excellent oral presentations of their patients.

- Questions to consultants should be clearly articulated with pertinent history provided. Think in advance about why you are calling (for a second opinion, for a procedure, to help make the diagnosis, for expert opinion, for a therapy that needs approval…).

- The written medical record is an important part of the MICU experience. Each new patient needs an admission note on the chart to be available for the attending and any consultants to review.

- Daily notes must be written by a team member and should clearly reflect any new events that have occurred. The physical exam and pertinent labs should always be included in the note.
Whenever possible, communicate directly with the PCP to review events of the MICU hospitalization and plans for transfer from the MICU.

**Professionalism** – The VAMC MICU rotation, as with all of your Internal Medicine rotations, demands a high level of professionalism as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

- Professional attire and demeanor are expected. Scrubs may be worn while in MICU.
- Refer to patients respectfully by their last names (Mrs. Smith).
- Treat all confidential medical information in accordance with HIPAA. Patient records and outside documents should be maintained in the chart outside the patient room. Documents should not be left in workrooms, call rooms, or any conference rooms used for rounds.
- Learn the names of the nurses with whom you work and always treat them as colleagues and members of the care team– it goes a long way.
- Be respectful of your colleagues. If one of your peers is overwhelmed, ask what you can do to help.

**Systems-based practice** Manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value

- Resident teams will partner with Patient Resource Managers, Social Workers, nurses, physical and occupational therapists, pharmacists, respiratory therapists and other health professionals to provide comprehensive and effective care for patients on DVAMC MICU.
- MICU teams are expected to communicate and partner with referring physicians within and outside of the Durham VA to ensure safe and effective transitions of care for our patients.

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