

MEDICAL INTENSIVE CARE UNIT SERVICE

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Location: Harborview Medical Center
Faculty Contact: Kenneth P. Steinberg, MD
Address: Box 359762, 325 Ninth Ave.
Seattle, WA 98104
Phone: 206.731.3356
Email: steinkp@u.washington.edu
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OVERALL EDUCATIONAL PURPOSE

- A. To acquire knowledge and gain clinical experience of a broad range of acute, severe medical problems of critically ill adults in an intensive care unit. This includes learning to evaluate patients, identify problems, determine diagnostic possibilities, and treat patients in the intensive care unit.
- B. To gain experience in taking a lead role in the ICU by supervising the care provided by housestaff to critically ill adult medical patients.
- C. To gain experience in providing education to housestaff and nursing staff, both at the bedside and in didactic sessions, regarding the care of critically ill patients.
- D. To gain experience with issues pertaining to administrative management of intensive care units.
- E. To learn the principles of biomedical ethics and gain experience in medical ethical issues involving critically ill patients, including withdrawing and withholding life support and other end-of-life issues.
- F. To learn to work together with nurses, pharmacists, respiratory therapists and a variety of specialty and subspecialty physician, all contributing to patient care, in an interdisciplinary critical care setting.

TEAM STRUCTURE

- Pulmonary and Critical Care Medicine Attending
- Pulmonary and Critical Care Medicine Fellow
- Four Internal Medicine R3s
- Four Internal Medicine R1s (occasionally there will be one Family Medicine R1 + three Internal Medicine R1s)
- Occasionally there will be a Trauma Fellow from the Department of Surgery or an Anesthesia Critical Care Fellow rotating on the service for variable periods of time

PRINCIPAL TEACHING METHODS

Case discussion and review

The fellow will directly supervise the care provided by the housestaff to all patients in the MICU. All cases in the MICU are seen by the fellow and reviewed by the attending on at least a daily basis.

Rounds

Bedside teaching occurs daily on work rounds. In addition, Attending rounds, consisting of an interactive didactic session, are provided to the fellow and housestaff three times a week, generally on Monday, Thursday, and Friday. On Tuesday, there are Palliative Care or Death rounds.

Didactics

In addition to attending teaching rounds, there are multiple didactic teaching sessions scheduled throughout the week. Morning Report occurs on Monday, Tuesday, Wednesday, and Friday from 10-11AM and attendance by the residents is encouraged *if* work rounds are finished by 10:00AM. Department of Medicine noon conferences (including a monthly morbidity and mortality session) occur Monday, Tuesday, and Wednesday, and Cardiology Conference occurs on Fridays. On Wednesday there is a Multidisciplinary Critical Care Journal Club that includes the MICU, surgical critical care, and neurocritical care teams. On Thursdays, there are a series of conferences including Seattle Area Chest Grand Rounds, Intern Report, and the Respiratory Critical Care Conference. Please see the weekly schedule below for details.

EDUCATIONAL CONTENT

Mix of Diseases

Common diagnoses include:

- Acute respiratory failure secondary to obstructive lung disease, pulmonary infections, including tuberculosis and bacterial pneumonia, acute lung injury and ARDS, occupational and environmental lung disease, and iatrogenic respiratory diseases.
- Acute and severe organ failure, including renal, hepatic and coagulation failure.
- Sepsis, septic shock and multi-organ failure.
- Severe electrolyte and endocrinologic disturbances.
- Drug and alcohol overdose.
- Severe gastrointestinal hemorrhage, upper and lower tract.
- Critical obstetric and gynecologic disorders.
- Complications of HIV infection.

Patient Characteristics

Patients are representative of the large, multi-ethnic, county population served by Harborview. In addition, transfers to the MICU from outside facilities are common and make the population more representative of Washington State and the WAMI region as a whole.

Types of Clinical Encounters

The fellow and residents may initially evaluate seriously ill patients in the ED or on the inpatient wards. Occasionally they will be consulted by outside physicians requesting transfer. The chief medical resident, in concert with the Harborview Transfer Center (731-3597) and the Emergency Department, should generally handle requests for transfer from outside facilities. For patients in the ED, the senior medicine ED resident and ED attending determine who should be admitted to the MICU. For ward medicine patients, the MICU team is responsible for determining the appropriateness and priority of admission to the MICU within the boundaries of hospital policy. The fellow will evaluate new admissions with the R3 and/or the R1 admitting that day. The fellow will supervise the care provided by the residents and round on each patient at least daily.

Procedures

Procedures most frequently encountered during this rotation include placement of arterial, central venous and pulmonary artery catheters, fiberoptic bronchoscopy, paracentesis, thoracentesis, insertion of gastroesophageal balloon tamponade tubes, lumbar puncture, and endotracheal intubation. The fellow or attending will be available to assist and supervise procedures performed by the housestaff and should be called prior to any anticipated high-risk procedures and notified of any procedural complications. The fellow or attending must be notified prior to placement of a pulmonary artery catheter

Services

Harborview Medical Center is a tertiary care center and Level I trauma care center. HMC has a wide range of services available for participation in patient care including a full mix of surgical, anesthesia, neurology, radiology, and medical subspecialty services available for consultation.

Rotation Specific Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday	Sat/Sun
7:30 AM	X-ray rounds*	X-ray rounds	X-ray rounds	X-ray rounds	X-ray rounds	
8:00 AM	Attending rounds	Palliative Care/Death Rounds	Work rounds	Attending rounds	Attending rounds	X-ray rounds
8:30 AM	Work rounds			Work rounds	Work rounds	Work rounds
11:00 AM			Multi-disciplinary Critical Care Journal Club [†]			
12:30 PM	Dept of Medicine Teaching Conference	Chief of Medicine Rounds or M&M Conf.	Dept of Medicine Teaching Conference	SACGR [§] (12:15 PM) Intern Report	Cardiology Conference	
1:30 PM				RCCC [¥]		
Late afternoon [‡]	Afternoon rounds [‡]	Afternoon rounds [‡]	Afternoon rounds [‡]	Afternoon rounds [‡]	Afternoon rounds [‡]	Afternoon rounds

* X-ray rounds take place in the MICU workroom

† Multidisciplinary Critical Care Journal Club occurs with the SICU and NCCS teams at 11AM-12PM

§ SACGR = Seattle Area Chest Grand Rounds

¥ RCCC = Respiratory Critical Care Conference

‡ This is an approximate time for afternoon rounds which generally occur with the on-call team and the fellow.

Call and Weekend Responsibilities

The MICU fellow will not take in-house call but will be available during evenings and nights for consultation by the MICU team and will come in to the hospital on an as needed basis. The MICU fellow will receive at least one continuous 24-hour period without clinical responsibilities every week, on average. Many fellows will choose to accomplish this by taking off every other weekend. Total hours of duty will not exceed an average of 80 hours per week over the course of the rotation. Residents (R3s and R1s) take in-house call every fourth night. Total hours of duty will not exceed an average of 80 hours per week over the course of the rotation. Residents must also not work more than 30 continuous hours at a time. The R3 and R1 on one team should not take the same day off if possible. The other R3s, the fellow, or the attending will assist the R1 with patient management issues and procedures when their designated R3 is off.

On weekends when the MICU fellow is off, the Pulmonary and Critical Care Medicine Consult Service fellow will provide on-call coverage and assist with MICU procedures during the day. However, the MICU R3 should call the MICU attending for routine admissions and questions about current patients. If in the judgment of the attending, a situation exists where the involvement of the fellow would benefit patient care and the fellow's education, the attending would then call the fellow. This may mean the fellow will have to go in to the hospital, either for a procedure or to help manage an unstable situation. For back-up for routine procedures such as a central line, arterial line, or SB tube placement, the MICU R3 would call the fellow directly.

When the pulmonary consult fellow has the weekend off, the MICU fellow will be available for emergency consults and procedures for the consult service. During weekday evenings (after 5pm), the MICU fellow takes first calls for the pulmonary consult service, which are then staffed by the pulmonary consult attending.

Rapid Response Team

Starting in 2005 Harborview Medical Center initiated a Rapid Response Team (RRT) to assess patients on the acute care floors who have had a significant change in their clinical status. The floor nurses have specific criteria for which they should initiate a Rapid Response call. The primary members of the RRT are a stat nurse and lead respiratory therapist. The patient's primary team will also be notified at the same time. In the event that

the RRT needs an assessment by a critical care physician, the stat nurse will call the MICU fellow, or at night the MICU R3. As the fellow, if you are called, you are being asked to assist the RRT in patient assessment, triage, and management. Those patients may or may not come to the MICU team.

Brain Death Determination & Organ Donation

All patients who meet certain pre-determined criteria (low GCS, plan for withdrawal of life support, etc) have an automatic referral by the nurse to LifeCenter Northwest, our regional organ procurement organization. The coordinator from LCNW might contact you to ask you about your patient if it's apparent that the patient is progressing towards brain death or withdrawal of life support. Information about brain death determination and the organ donation process are available on the HMC intranet (<https://hmcweb.washington.edu/ADMIN/APOP/MedicalStaff/>) and in Organ Donation binders on each unit. Ask your attending for help with these issues.

Principal Educational Materials Used

Recommended Readings

The MICU team has a small library maintained by the Section of Pulmonary and Critical Care Medicine located in the MICU and there is a hospital library available 24 hours a day. The Division syllabus containing selected articles relevant to the rotation is maintained there.

Electronic Syllabus

In addition, a continuously amended web-based syllabus contains pertinent, recent articles from the literature organized by subject. The syllabus can be accessed from the Department of Medicine Residency website: <<http://depts.washington.edu/uwmedres/>> via the link to the HMC MICU Syllabus. It can also be accessed directly from the UW Libraries Electronic Reserves at <<https://eres.lib.washington.edu/eres/coursepage.aspx?cid=2157>>. Computers providing direct access to literature searches and other on-line resources are located in the MICU physician workroom.

Suggested Textbooks

- Principles of Critical Care. Hall JB, Schmidt GA, Wood LDH (eds). New York, McGraw-Hill, 1998. *A large, comprehensive textbook that is good for looking up specific topics. Probably considered the best textbook of medical critical care.*
- The Intensive Care Unit Manual. Lanken PN (ed). Philadelphia, W.B. Saunders, 2001. *Much smaller than a large textbook but still an excellent condensed source of information. Good for teaching basic principles especially for housestaff.*
- Lange Current Critical Care Diagnosis and Treatment. Bongard FS, Sue DY (eds). New York, McGraw-Hill, 2003. *Another smaller but excellent condensed source of information that differs only in style from Lanken's Intensive Care Manual.*

Pathologic materials

All pathologic materials obtained in the process of patient care should be reviewed directly by the residents and fellow.

METHODS USED IN EVALUATING RESIDENT AND PROGRAM PERFORMANCE

At the end of the rotation, the fellow and residents are evaluated in writing and their performance reviewed with them verbally by every attending he or she has interacted with for a significant amount of time. The evaluator rates the resident/fellow on a nine-point scale in each component of clinical competence (i.e. patient care, medical knowledge, practice based learning improvement, interpersonal and communication skills, professionalism, system based learning, educational attitudes, leadership, overall clinical competence).

The fellow and residents are given the opportunity to evaluate in writing the quality of the curriculum and the extent to which the educational goals and objectives of the rotation have been met. The resident also evaluates the teaching competence of each attending and fellow with whom s/he has interacted for a significant amount of time.

EXPLICIT LINES OF RESPONSIBILITY FOR CARE OF PATIENTS ON THIS SERVICE

- A. The attending physician of record for all patients on the MICU is a Pulmonary and Critical Care Medicine attending. Attendings examine and review the care of each patient at least once daily and write daily progress notes.
- B. The MICU fellow will be available to supervise, teach, assist and/or perform invasive procedures in patients covered by the MICU team. These procedures include but are not limited to central venous catheterization, pulmonary artery catheterization, arterial catheterization, thoracentesis, paracentesis, lumbar puncture, tracheal intubation, closed tube thoracostomy, and balloon tamponade of bleeding esophageal varices.

Procedures are generally done by the R1, if appropriate for their training and experience, with direct supervision and/or assistance by the R3, the MICU Fellow, or the MICU Attending. Even if "signed off" on a procedure, the acuity of patients in the ICU is high such that R1s must be supervised (by an R3 experienced in the procedure, fellow, or attending) for all procedures. Possible exceptions to this are arterial lines and paracenteses if the R1 is experienced in those procedures and the patient is not at particularly high risk (e.g. coagulopathic). Housestaff should seek assistance if the procedure is not going as planned and/or if more than 3 attempts have occurred. For all procedures, the attending (when in-house) should be notified prior to performing in order to allow for on-site supervision and billing. Invasive procedures should not be done post call but rather by the non-call residents/interns, the fellow, or the attending.

- C. R1s are responsible for writing an admission history and physical, daily orders, and progress notes on their primary patients. Admission H&Ps should be in the chart by the start of rounds in the morning. On days the R1 is off, patient responsibility and documentation falls to the R3. Post-call the R1s are responsible for having an admit note on the chart but do not have to write a progress note on new patients. The R3 will write either an "admission addendum" for new patients who have an admit note dated on the post-call day or a full progress note on new patients who have an admit note dated the prior (on call) day. Progress notes on old patients will be written by one of the other teams in order to facilitate the post-call R1 and R3 being able to leave within the 30 hour limit. There must be a full note for each calendar day. All patients who have had a unit length of stay > 5 nights should have an interim summary dictated by the R3 at the time of transfer
- D. The MICU fellow will make work rounds with the MICU team on a daily basis, except on a day off, and participate in didactic teaching rounds (attending rounds) for the housestaff, which are generally held on Monday, Thursday, and Friday from 8:00-8:30 am. The MICU fellow will be expected to conduct 1-2 of these attending rounds during their rotation.
- E. The MICU fellow will be responsible for supervising and teaching the members of the MICU team, specifically the R3s and the R1s. He or she will also be responsible for assisting in the clinical decision making and care plan development for patients covered by the MICU team.
- F. The MICU fellow will help in the monitoring and interpretation of data obtained from invasive and noninvasive monitoring of MICU patients. This includes, but is not limited to, central hemodynamic measurements, respiratory function, gas exchange including tissue oxygen delivery and utilization, continuous arterial and venous oxygen saturation, metabolic studies performed for nutritional support or respiratory function, neuromuscular function in chemically paralyzed patients, cardiac rhythm, and sedation. In addition, laboratory, clinical and radiographic monitoring of multiple organ functions will be supervised by the fellow.
- G. When the service is very busy, or another team member has a day off, it may be necessary for the MICU fellow to help with the primary care of MICU patients including writing orders and progress notes. Generally, however, this documentation is performed by the other housestaff (R3s and R1s).
- H. The MICU fellow will help with family and patient care conferences on MICU patients.
- I. The MICU fellow may attend monthly Critical Care Advisory Committee and Infection Control Committee meetings as a guest for the purpose of being introduced to the administration of critical care medicine.

- J. The senior resident will call the MICU fellow for all admissions to the MICU team as well as for any unexpected significant deterioration in clinical status including the need for emergent surgery, pulmonary artery catheterization, establishment of DNAR status, and death. The MICU fellow will use their own discretion about calling the attending for these issues. When the fellow has the day off, or cannot be reached, the R3 should notify the attending directly.
- K. The MICU fellow should coordinate the MICU team's participation in the weekly Multidisciplinary Critical Care Journal Club held on Wednesdays from 11:00 – 12:00 PM.
- L. The MICU fellow will be responsible for performing bronchoscopies on the MICU patients, especially when performed to rule out ventilator-associated pneumonia.
- M. The fellow will make afternoon or evening rounds with the on-call team at approximately 5:00 PM. All MICU housestaff remaining in the hospital, except for the post-call team, should round briefly with the fellow. If housestaff finish early and plan to leave the hospital before 5:00 PM, they should sign out to their on-call peer. The goal of these afternoon rounds is to update the fellow and to improve patient care and cross-cover management of patients by setting a plan for the evening.
- N. Orthopedics, OMFS, and urology do not have admitting privileges to the ICU. The MICU team commonly cares for these patients as long as they have critical care needs but the surgical service is expected to follow closely. Once they can leave the ICU, the surgical service resumes care with medical consultation if necessary. In addition, the neurology team may look to the MICU R3 for assistance with lines and management during nights or times when the pulmonary consult service is not available. If too busy, the MICU R3 will notify the MICU fellow, and you will triage the situation.
- O. The nurses are now taking a larger role in rounds, including bedside presenting. For old patients the R1 will start with a brief patient identification and overnight events. The nurse will then present pertinent vital signs, labs, and exam findings by systems. The intern should then present an assessment and plan. For new admits, the R1 will present a standard H&P but leave the Assessment and Plan until after the nurse presents his/her part. In either case, the assessment and plan is the time for the R1 to synthesize the situation and lay out a plan. Particularly for complicated patients and early in the year, it is recommended that the R3 and/or fellow review the assessment and plan with the R1 prior to rounds.

In the ICU the assessment and plan are typically presented by problem. Sometimes, for very complicated patients or depending on the attending's preference, the A/P will be presented by organ system. In either case, the resident should come up with an assessment that includes some sense of the disease processes (i.e. "put it all together").
- P. Code status. Although attempts should be made to determine any prior wishes regarding resuscitation, trying to obtain a new code status from a patient or family during the rush of admission generally does not provide the appropriate time or setting. Patients should be considered full code unless previous wishes to the contrary are known and known to still be in effect. The code discussion should be held in conjunction with senior members of the team and in a setting that allows assessment of the patient's overall goals of care, Any change to code status must be communicated by the resident to the fellow/attending at that time (i.e., not wait until the morning).

ATTACHMENTS

None

CROSS REFERENCES

- Department of Medicine Residency website: <<http://depts.washington.edu/uwmedres/>>
- Housestaff MICU Orientation Materials: <<http://depts.washington.edu/uwmedres/places/harborview/orientation/micuresor.htm>>
- MICU Syllabus: <<https://eres.lib.washington.edu/eres/coursepage.aspx?cid=2157>>

REVISIONS

9/04, 11/04, 8/06