Learning Goals and Objectives - Residents
Medical Intensive Care Unit (MICU) Service
Harborview Medical Center

MEDICAL INTENSIVE CARE UNIT
Location: Harborview Medical Center
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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 learn the principles of biomedical ethics and palliative care and gain experience in these issues involving critically ill patients and their families, including setting goals of care, withdrawing and withholding life support, pain and symptom control, delivering bad news, and other end-of-life issues.

C. To learn to work on a multidisciplinary team with nurses, pharmacists, respiratory therapists, social workers, palliative care experts, and a variety of specialty and subspecialty physicians, all contributing to patient care.

D. To gain experience with issues pertaining to administrative management of intensive care units including triage and bed control.

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 and attending 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 housestaff three times a week, generally on Monday, Tuesday, and Thursday. Palliative care or death rounds occur on Friday.

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 conference) 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.
- Severe 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 WWAMI region as a whole.

Types of Clinical Encounters
The residents may initially evaluate seriously ill patients in the ED or on the inpatient wards. The chief medical resident, in concert with the Harborview Transfer Center (744-3597) 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 generally 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 and should be notified early (even while the patient is still in the ED) of unstable patients. On days when the fellow is off-duty, the attending will fill that role.

Procedures (see more below under explicit responsibilities)
Procedures most frequently encountered during this rotation include placement of arterial, central venous and pulmonary artery catheters, paracentesis, thoracentesis, insertion of gastroesophageal balloon tamponade tubes, and lumbar puncture. 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 immediately of any procedural complications. The fellow or attending must be notified prior to placement of a pulmonary artery catheter and with rare exception will supervise the placement of the 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. The MICU service is part of a multi-disciplinary team that includes nurses, pharmacists, respiratory therapists, nutritionists, and social workers. Residents interact regularly with all these team members and make multi-disciplinary rounds that include nurses, pharmacists, respiratory therapists, and nutritionists.

Rotation Specific Schedule

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<th>Time</th>
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<td>7:30 AM</td>
<td>X-ray rounds</td>
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<td>8:00 AM</td>
<td>Attending rounds</td>
<td>Work rounds</td>
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<td>11:00 AM</td>
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<td>Multi-disciplinary</td>
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<td>Critical Care Journal</td>
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<td>Club†</td>
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<td>12:30 PM</td>
<td>Dept of Medicine Teaching</td>
<td>Chief of Medicine Rounds or</td>
<td>Dept of Medicine Teaching</td>
<td>SACGR§</td>
<td>Cardiology</td>
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<td>Conference</td>
<td>M&amp;M Conf.</td>
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<td>Intern’s Report</td>
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<td>Late afternoon</td>
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* The 2\textsuperscript{nd} and 4\textsuperscript{th} Fridays of Attending Rounds are dedicated to palliative care or death rounds.
† Multidisciplinary Critical Care Journal Club occurs with the Surgery & Neurosurgical ICU teams at 11AM-12PM
§ SACGR = Seattle Area Chest Grand Rounds
¥ RCCC = Respiratory Critical Care Conference
‡ Afternoon rounds are recommended and generally occur with the on-call team and the fellow.
Call and Weekend Responsibilities
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 also will not work more than 24+6 hours at a time. This means leaving the hospital by 1:00 PM of their post-call day (if arrived at 7:00am the prior day). Each resident will receive at least one continuous 24-hour period without clinical responsibilities every week, on average (four days off during the rotation). 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 assistance with MICU procedures during the day. However, the MICU R3 should call the MICU attending for routine admissions and questions about current patients. For assistance with routine procedures such as a central line or pulmonary artery catheter placement, arterial line placement, or SB tube placement, the MICU R3 should call the on-call fellow directly.

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 R3, 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 (LCNW), our regional organ procurement organization. The coordinator from LCNW might contact you to ask you about your patient if appears 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: declaration of brain death, organ donation in brain dead patients, and organ donation in patients undergoing withdrawal of life support (Death after Cardiac Donation, or DCD).

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.
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

- **The ICU Book.** Marino PL. Baltimore, Lippincott, Willimas, & Wilkins, 1998. *Commonly used by residents but tends to have more of a surgical perspective on critical care than does the Lanken or Lange texts listed above.*

Pathologic materials
All pathology specimens obtained in the process of patient care should be reviewed by the residents and fellow with a pathologist.

METHODS USED IN EVALUATING RESIDENT AND PROGRAM PERFORMANCE
At the end of the rotation, the 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 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 residents 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. 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.

C. 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. There must be a note for each calendar day.

D. When the service is very busy, or another team member has a day off, it may be necessary for other team members (R3s, other R1s, MICU fellow, MICU attending) to help with the primary care of MICU patients including writing orders and progress notes.

E. 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. These procedures include but are not limited to central venous catheterization, pulmonary artery catheterization, arterial catheterization, thoracentesis, paracentesis, lumbar puncture, and balloon tamponade of bleeding esophageal varices. 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. not coagulopathic). Housestaff should seek assistance if the procedure is not going as planned 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 onsite supervision and billing.

With rare exception, pulmonary artery catheterization will be supervised by the fellow or attending. Responsibility for endotracheal intubation at HMC in general rests primarily with the department of anesthesia. Of note, in the event of an intubation that is expected to be or becomes difficult, it is policy for the anesthesia attending to be called (744-8800). It the anesthesia resident is too busy or doesn’t think to make this call, it is appropriate for the MICU team (resident or fellow) to do so.

F. Invasive procedures will not be done by the post-call team but rather by the on-call or non-call residents/interns, the fellow, or the attending.

G. 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, change of service due to unexpected clinical event, establishment of DNAR status, and death. When the fellow has the day off, or cannot be reached, the R3 should notify the attending directly.
H. If housestaff finish early and plan to leave the hospital before 5:00 PM, they should check with their colleagues to ensure the workload is manageable, and then sign out to their on-call peer. In other words, R1 to R1 sign-out as well as R3 to R3 sign-out is important.

I. It is recommended that the on-call team make afternoon rounds with the fellow (or the attending if the fellow is not available). The goal of the 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. The goal is for the care plan to continue throughout the day and night regardless of the covering physician.

J. All patients who have had a unit length of stay > 5 days (i.e. more than 1 call cycle) should have an interim summary typed or dictated by the R3 at the time of transfer. It is also encouraged that patients who are in the ICU for a shorter period but have a complicated course also have an interim summary completed. In any case, the progress note for the day of transfer should be thorough regarding major events and the plan of care. Verbal communication to the receiving team is also of great importance.

K. Beds are always tight. Please plan your transfers out of the ICU as soon as possible in the morning and notify the ward teams as soon as possible. All medicine transfers should be called in before noon. Exceptions do occur, though, but must first be discussed with the chief medical resident.

L. 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 generally resumes care with medical consultation if necessary. Occasionally these patients are transferred to a Medicine ward team. The Chief Medical Resident can help with this triage 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 should notify the MICU fellow who will triage the situation. Finally, in rare cases a pediatric patient (14-18 years old) may be admitted to the MICU service—these are usually drowning victims. Be sure to call your fellow/attending for guidance in these cases.

M. Please make an effort to identify and contact the patient’s primary care provider within the first 24 hours of admission and keep them informed of changes in clinical status and discharge plans.

N. The nurses are now taking a larger role in rounds, including bedside presenting. For existing 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 presentation and the nurse may also provide an update on vital signs, labs and exam findings since admission. In all these presentations, 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.

General presentation guidelines: After the nurse’s part, add any exam or lab findings
that are significant but weren’t mentioned. Sometimes the nurse isn’t available so you
need to be ready to present all the data. Be efficient---we only need to hear data once
so avoid the temptation to just repeat data already presented. After the data have been
presented (by the RN or you) by organ system, then present your assessment/plan by
problem/diagnosis. At times, for instance for very complex patients or depending on
attending preference, the assessment/plan may be requested by system. In either
case, come up with an assessment that includes some sense of the disease processes
(i.e. “put it all together”). Your notes should reflect the same general structure.

O. Next of kin must be notified after a patient dies or has a significant change in clinical
status. If there is difficulty reaching someone, Social Work should be notified so that
they can help locate and contact next of kin.

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., don’t 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>

LATEST REVISIONS
6/08