MICU - Critical Care Medicine Curriculum

Educational Purpose

Critical care medicine encompasses the diagnosis and treatment of a wide range of clinical problems requiring intensive care by a coordinated team. The general internist should have a command of a broad range of conditions commonly seen in critically ill patients and must be familiar with the technologic procedures and devices used in the intensive care setting. The care of critically ill patients raises many complicated ethical and social issues, and the general internist must be competent in such areas as end-of-life decisions, advance directives, estimating prognosis, and counseling of patients and their families.

Learning Venue

A. Rotation Description: The critical care rotation at Upstate is one of the busiest and most educationally rewarding services. It is a senior resident (R2/R3) dominated rotation. The team structure usually consists of 4 senior residents (R2/R3, one of which may be an Anesthesia resident), an R1 on elective, a Pulm/CC fellow, and attending. Third and 4th year medical student may be on the team as part of an elective.

The day usually starts around 7am with the resident/intern pre-rounding on the sickest patients. Call is 24 hours and is every 3rd day. One of the four residents is on night coverage of the ICU from 9 pm-8 am for one week in a four week block. An electronic sign-out (WARD manager) is maintained by the ICU residents and is usually updated by the on call resident. The night resident and the resident who is post call will sign-out to the oncoming team. The fellow will usually arrive between 7:30am-8:00am and will begin rounds until the attending arrives and formal walk rounds start. The post call resident will leave after presenting new patients to the attending. The rest of the day involves attending the noon conference lecture and completing patient care issues. Admissions and transfers in the unit will continue throughout the day. Around 3-4pm, the team will round with the fellow in the afternoon to re-check on the patients after which the non-call resident will leave. Interns work from 7am-7pm Mon-Fri and take overnight call on Saturday.

I. **PGY-1**: Evaluates new ICU consults and transfers and presents to the fellow or attending. The intern is responsible to know the details about all the patients in the unit. The intern must actively read about common ICU issues.

II. **PGY2/3**: The resident is the focal point of the ICU team. He/she will do admissions and consults in the ICU and is expected to take an active role in the treatment and management of patients. Active reading around current ICU topics is required. The resident is expected to teach and supervise junior residents and students. The senior resident should actively seek out and supervise procedures. The PGY2/3 will do consults and admissions as required. While on the night service the resident will do consults and admission when the attending and fellow are not in house. All consults and admissions will be discussed by with the fellow or attending at night and will be presented to the attending in the morning. In this way the resident will receive feedback at night, and more detailed feed back in the morning.

B. Teaching Methods:

I. The primary method of learning during this rotation is being actively involved during bedside rounds with the attending

and fellow doing direct patient care. The attending and fellow will give lectures on severe sepsis, ventilator management, weaning from mechanical ventilator and other topics.

II. *Unique learning opportunities*:

-Basic Ventilator Management and Weaning

-Primary Interpretation of Tests

1) Hemodynamic monitoring
2) Pulse oximetry
3) Telemetry monitoring

-Ordering and Understanding Tests

1) Bronchoscopy
2) Computed tomography, magnetic resonance imaging of chest, abdomen, brain
3) Echocardiography
4) Electroencephalography

-End of life issues

III. *Patient characteristics*: Expect to see patients age 18 years and up usually with medical related issues and occasional post surgical patients.

IV. *Mix of disease/Core topics*

- Acute abdominal pain
- Acute chest pain
- Acute intoxication
- Acute liver failure
- Acute renal failure
- Altered mental status, coma
- Antibiotic management
- ARDS
- DKA
- Delirium Tremens
- Hypotension, shock
- Life-threatening arrhythmia
- Massive gastrointestinal bleeding
- Massive hemoptysis
- Morbid Obesity
- Multi Organ Failure Syndrome
- Obstructive Sleep Apnea
- Overdoses
- Pulmonary Hypertension
- Respiratory distress or failure – mechanical ventilation/non-invasive positive pressure ventilation
- Septic Shock
- Severe hypertension
- Severe Sepsis
- Status epilepticus
- Various malignancies
- Rational use of fluids and vosapressors

VI. *Procedure Skills*

- Advanced cardiac life support
- Arterial puncture for arterial blood gas

- Mechanical ventilation (basic)
- Placement of arterial and central venous lines
- Placement of nasogastric tube
- Lumbar puncture
- External cardiac pacing
- Thoracentesis
- Paracentesis
- Insertion of temporary pacemaker (optional)
- Placement of endotracheal tube (optional)
- Placement of pulmonary artery catheter and it's utility (optional)
- Use of Ultrasound for the placement of central line and to guide thoracentesis and paracentesis

Recommended Reading

- Marino, P. L. (1998) *The ICU Book, 3rd edition*. This book is dated but contains useful principles and physiology about ICU related issues.
- www.thoracic.org/criticalcare/ is an excellent online resource for practice guidelines, treatment algorithms, hemodynamic monitoring and the unique ethics of the ICU.
- Up to date

Evaluations

Evaluations are based on the six core competencies. The intern/resident is evaluated by the Attending based on these attributes using an online evaluation system, *E-Value*. All residents should seek clear guidelines and expectations for reporting and learning at the beginning of their rotation. Residents should also seek verbal feedback after their first week.

Rotation-Specific Competencies

1) Patient care: At the end of the rotation the resident should be able to appropriately manage and triage very ill patients. They should be able to distinguish patients that require an intensive setting vs. one that can be managed on a floor.
2) Medical Knowledge: Be familiar with and able to interpret hemodynamic monitoring devices and the initial workup and management of the core topics listed above.
3) Professionalism
4) Interpersonal and communication skills: Be able to communicate and interact with other health care personnel. Fundamental in the ICU is an understanding of end of life care and the legal/ethical implications of care or withdrawal of care. Residents need to be effective and empathetic communicators with patients and their families.
5) Practice-based learning: Be able to use the necessary tools to find the most effective and proven management plans for their patients.
6) Systems based practice: Be able to utilize high tech services in a cost effective manner. Additionally residents will need to work closely with extended care providers, knowledgeable nursing staff, respiratory therapy and hospital administration.

Reviewed & Revised by: Robert J. Lenox, MD
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Medical ICU Residents & Fellows Expectations

Day team:

MICU Consult / Admissions:

Ensure there is a consult placed in EPIC by the consulting service (ED / any other service).
Patient should be seen within 30 minutes of the consult either by the resident or the fellow.
Should present the patient immediately to:

- your fellow (or attending – if fellow is in clinic) from 8am – 5 pm
- On call fellow after 5 pm – 8am
- If you cannot reach the fellow, page the attending.

8 am – 7 pm: Admissions go to on call team (team holding the consult pager)
Bounce back: Can be readmitted to the same MICU team if the attending or the fellow who took care of the patient before are on service
On acceptance or rejection: there should be documentation / note by the resident with the reasoning for rejection. If accepted – admission orders should be done immediately and H&P should be done as soon as possible.
Respiratory / Pulmonary Management from other ICU's: Should be seen by MICU.
Respiratory / Pulmonary Management from step down units: Should be seen by Pulmonary

Outside Hospital - Incoming Transfers:

Incoming transfers should be admitted under the attending on call

In Hospital Transfers:

<u>ICU - to - ICU:</u> Should go through attending - attending
<u>ICU - to - Medicine team:</u>
-Fellow presents the patient to Medicine team attending
-Transfer orders should be done immediately on acceptance by the Medicine team
-Transfer Summary should be done by the residents the same day.

ICU Rounds:

Residents should take care of the orders during the rounds.
Consults should be done either during the rounds or immediately after the rounds based on the urgency.
Ventilator Changes can be made by the fellow / attending. Orders should reflect the changes and should inform the respiratory therapist.

Deaths:
Death note by resident / fellow is mandatory (whoever pronounces)
Death Certificate should be signed the same day (whoever pronounces)

Procedures:
Requires in-room supervision if the proceduralist is not certified.
Consent should be obtained unless its emergent.
Check with the bedside nurses for any policy before starting the procedure (example: transduction / manometry prior to vein dilation for central line)

Multidisciplinary ICU Conference:
It is mandatory for the MICU residents to attend the conference unless there is a patient care emergency.
Residents should present per assigned schedule.
Residents should discuss the case with their respective attending or fellow prior to the presentation

ICU notes:
Use the ICU template
Assessment Plan:

- Organ system based stepwise documentation is preferred
- Should reflect the decisions made during the presentation / rounds (rather than copy pasting the previous note), should include all the lab abnormalities – medical terminology.
- Residents should document whom they discussed with or presented to. (Attending / fellow)
- Notes should be done before 7 pm. If not able to finish the notes on time, please notify your fellow or attending

Night Team:

MICU Consult / Admissions:
Ensure there is a consult order by the consulting service (ED / any other service) in EPIC.
Patient should be seen within 30 minutes of the consult either by the resident or the fellow.
Resident should present the consults immediately to the on call fellow (irrespective of the diagnosis)
If fellow cannot be reached, residents should page the on call attending. (For emergencies & sick patints)
On acceptance or rejection: there should be documentation / note by the resident with the reasoning for rejection. If accepted – H&P should be done as soon as possible.
Any unexpected change in goals of care (in the middle of the night) or hemodynamic status or ventilator changes or procedure difficulty or death should be notified to the fellow on call.
7 pm – 8 am:

- Attending of record for the overnight admissions should be attending on call
- However patients can be admitted to either of the teams (MICU 1 or MICU 2 WITH ATTENDING OF RECORD BEING ONE PERSON – WHOEVER IS ON CALL AND THE NOTE SHOULD BE ASSIGNED TO THE ATTENDING OF RECORD), preferably sicker on presentation should be admitted to team with attending on call.

- Bounce back: Can be readmitted to the same MICU team if the attending or the fellow who took care of the patient before are on the service
- In the following morning at 8 am, the attending of record should be changed to the team attending and the H&P should be reassigned to the team attending (if the team attending is not the same as on call attending)

Respiratory / Pulmonary Management from other ICU's: Should be seen by MICU.
Respiratory / Pulmonary Management from step down units: Should be seen by Pulmonary
Sunday Overnight Admissions and Rejections:
-Admissions should be assigned to the attending on call.
-Rejections should be assigned to the next day on call attending.

In Hospital Transfers:
ICU - to - ICU: Should go through attending – attending

Deaths:
Death note by resident is mandatory (whoever pronounces)
Death Certificate should be signed the same day (whoever pronounces)

Procedures:
Requires in-room supervision if the proceduralist is not certified.
Consent should be obtained unless its emergent.
Check with the bedside nurses for any policy before starting the procedure (example: transduction / manometry prior to vein dilation for central line)

ICU notes:
Use the ICU template
Assessment & Plan: Should reflect the decisions made during the presentation, should include all the lab abnormalities – in medical terminology
Residents should document the fellow / attending name that they discussed with or presented to.

Fellows:

Pre round

- Mange vent / SBT - Ventilator Changes can be made by the fellow / attending. Orders should reflect the changes and should inform the respiratory therapist.
- Order diagnostic work up as needed
- Consults
- Emergent procedures as needed

Orient residents
- Presentation during rounds
- Placing orders
- Ordering labs, imaging
- Consultation requests

Supervise Residents:

- Procedures

Should call to inform attending

- Unexpected death
- Change in goals of care
- Young very sick patients
- Leaving Against Medical Advice Cases
- Ventilator Difficulty
- Major hemodynamic changes

Reviewed and Revised by: Dr. Birendra Sah
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