Curriculum for UH 11 ICU Rotation at OSU University Hospital

Orientation: Within 24 hours of beginning this rotation, the staff physician will orient the fellow, housestaff, and students to this curriculum and define what additional expectations the staff may have for the members of the MICU patient care team.

General Goals

1. You will provide patient care that promotes health and that effectively treats illness.
2. You will acquire a body of biomedical, clinical, and cognate knowledge base of established and evolving critical care information relevant to the successful practice of sub-internal medicine and its subspecialties.
3. You will know and use certain principles of how to engage in the process of lifelong learning and improvement.
4. You will demonstrate effective interpersonal and communication skills.
5. You will demonstrate professionalism.
6. You will teach effectively when other learners are on the service with you.

Specific Goals

1. You will provide patient care that promotes health and that effectively treats illness.
   a. You will gather essential and accurate information about the patients whom you are asked to see using such resources as may be accessed.
      i. You will effectively assess the needs of the present situation for varying degrees of completeness of information to permit appropriate responses to patients' immediate, then longer term needs
      ii. You will perform competent histories, gathering this history, as appropriate, from patients, their families, and other health care professionals, to include:
         1. Taking a focused history from the patient
         2. Taking a focused history from family members and referring health care providers, especially in situations where the patient is too ill to provide any information
         3. Perform a detailed and pertinent review of current and past medical records (written and electronic)
         4. Review pertinent laboratory, radiologic, and physiologic monitoring (such as Swan Ganz Catheter) data
         5. Clarifying questions and concerns with the consulting physicians, other health care team members
      iii. You will perform competent physical examinations the extent of which are determined by the nature of the patients' problems
   b. You will make informed decisions about appropriate diagnostic, therapeutic, and preventive interventions based on patient information, patient preferences, up-to-date scientific evidence, and clinical judgment.
      i. You will develop and carry out appropriate management recommendations by writing an effective concise daily care note that includes the following separate and recognizable sections:
         1. History, with emphasis on that which relates to the critical care problems

and includes a review of current treatments pertinent to the critical care problems, such as medications, ventilator strategy, respiratory care, etc.
2. Pertinent physiologic monitoring data
3. Exam findings
4. Pertinent laboratory findings
5. Pertinent radiographic findings
6. Impressions, with a listing and thoughtful discussion of each critical care problem and any others that may have significant impact on the management of the critical care problem(s)
7. Recommendations for dealing with each of the critical care problems.

c. You will use information technology, such as electronic information searches, to support your patient care decisions.
d. You will work effectively with respiratory, pharmacy, dietary, and social service personnel who are available to the critical care team to provide patient-focused care.

Further specific details regarding overall goals for the housestaff are detailed as part of the web-based curriculum for the MICU. Further specific details regarding goals of the fellowship training program, including expectations for progressive responsibility, are outlined in the main pulmonary/critical fellowship curriculum, housed on the shared “Pulmo” drive in the fellowship folder.

Background.

The Medical Intensive Care Unit (MICU) is a “closed” unit of 25 beds. The Medical Intensive Care Unit Service Team has sole control of the patients for whom it is responsible, and does not co-manage patients with other hospital services. The Medical Intensive Care Unit Service Team consists of two Pulmonary/Critical Care attending physicians, one Pulmonary/Critical Care Fellow, four Internal Medicine second or third year residents, four Internal Medicine or Family Medicine first year residents, and zero to four medical students. The rotation on the Medical Intensive Care Unit Service Team is approximately one month in duration for all team members. The Fellow will be assigned to the 1140-1145 service (12 beds). The fellow will be primarily responsible for all fellow duties regarding the patients on the 1140-1145 service; the fellow will be available as time permits to assist with the care of patients on the 1190-1195 service.

Structure and Lines of Responsibility

Patient care orders are primarily written by the residents but the pulmonary/critical care fellow may also write orders as necessary to facilitate patient care plans being carried out in a timely fashion. Fourth year students acting as “sub-interns” must have all orders co-signed. The attending physician rarely writes direct patient care orders.

Patients admitted to the MICU are ultimately under the direct care and responsibility of a Pulmonary/Critical Care physician within the Pulmonary/Critical Care Division (an attending staff member board certified in both Pulmonary Medicine and Critical Care

Medicine). The attending physician also serves as the teaching and supervisory physician for the residents and fellows of the MICU ward team. The fellow is supervised and interacts directly with the attending on the service, and supervises and interacts directly with the residents, interns, and students. The attending physicians are assigned to the service on a bi-weekly basis, with the monthly schedule revised annually. The fellows and residents are given copies of the monthly attending schedule at the beginning of the academic year.

Patients may be admitted to the Medical Intensive Care Unit (MICU) by any of several means, i.e. outside hospital transfers, ECU admits, etc. When necessary, the physical MICU occasionally houses patients that are cared for by other critical care teams within the hospital when there is no physical space for their patients in their home units. In a reciprocal arrangement, when the numbers of patients under the care of the MICU team exceeds the number of beds in the MICU, MICU team patients are housed in other critical care units.

The attending will be responsible for the actual logistics of transfer/admission requests to the MICU, however the fellows should actively participate in such decision making to assist in learning the criteria for such decision. Patients may be admitted from any of several sources:

1) Via the Emergency Department: Patients may either be accepted by Emergency Department or other Ohio State University Medical Center physicians in transfer from other hospitals to be evaluated in the emergency department or may arrive to the Emergency Department from the surrounding community. When it is determined by emergency department physicians that MICU admission is likely indicated, the emergency department physician is to contact the medical intensive care unit attending and the transfer center/bed control to discuss the patient and arrange for admission. The attending will then discuss the patient with the fellow and the Housestaff team.

2) Direct transfers from outside hospitals: The outside physician caring for the patient contacts the MICU attending physician to discuss the patient and arrange for admission. The transfer center/bed control will assist with such phone calls, and the attending will then discuss the patient with the fellow and the Housestaff team.

3) Transfers from other Ohio State University Medical Center units or services: Transfer may be initiated by physicians caring for the patients or by the pulmonary inpatient consultation service, with the approval of the patient's current physicians of record. Often the primary care inpatient team may ask the fellow to physically assess the patient and provide any assistance necessary to stabilize the patient prior to transfer to the MICU. Either the MICU attending physician or the MICU fellow may receive the initial contact, but only the MICU attending can formally accept the patient to the MICU and is responsible for discussing the admission with the Transfer Center to arrange for appropriate bed

placement. It is expected that the MICU team as a whole will care for 100-130 patients over the course of a month's time.

Additional MICU Fellow Responsibilities **on call** (5 pm to 8 am) include rounding on UH/James/Ross/Dodd consult patients, evaluating any new consults, and assisting with patient care in the MICU. After making initial assessments on the above-mentioned patients, the MICU fellow is expected to inform the attending on call, who will then see the patient and go over the plan of action with the fellow. Fellow **on call** take calls from MICU resident physicians with information or updates on patients on the MICU service and on the consult services. The fellow is expected to be available for such calls by telephone and/or pager, but is **not** expected to spend overnights in the hospital. The fellow is expected to be physically available, as is the attending physician on call, if any patient requires the direct bedside attention of a team member more experienced than the medical resident or if the demands of the on-call resident team are taxed beyond their capabilities. Fellow on call must be present for any intubation performed by the Housestaff in the MICU and for any Swan Ganz catheters placed. Fellow on call may be required to be physically present for other procedures such as CVL's or thoracentesis if the resident on call has not been deemed competent to perform these procedures independently.

A second fellow will be assigned to round at OSU East on the consult patient and patient being co-managed in the ICU. At the conclusion of the rounds the East fellow will update the UH fellow on call. OSU East is covered at night by an in-house internist, who may consult the pulmonary service if needed to assist with ICU patient. The on call fellow may get notified of non-emergent consults which can then be relayed to the OSU East consult service to evaluate the next day. Fellows on call are not required and should not be consulted to evaluate patients at OSU East who have not yet been evaluated by the in-house internist.

Faculty round daily face-to-face with the residents and fellow(s) on the Medical Intensive Care Unit, at the patient's bedside with input sought from other members of the MICU team including nursing, pharmacy, dietary, etc. During rounds, the patients' conditions and plans for testing and therapy are discussed among all team members. Faculty are expected to engage in teaching both during and outside of rounds, using both didactic and other means of education directed at fellows, residents, and medical students. Faculty are expected to be continuously available to supervise patient care and procedures, answer questions, and make patient care decisions. Between the hours of 5 pm and 8 am on weekdays and over weekends and holidays, there is a designated on-call attending who is expected to be continuously available by telephone and/or pager and who will supervise and direct patient care. The residents, fellows and faculty receive the on-call list on a monthly basis and have access to it in the MICU and also via the hospital's web page. Lists of beeper numbers and home numbers of the faculty are distributed regularly, are available in the MICU, and available via the hospital operator.

Educational Goals

In order to become truly competent in critical care, the fellows will be expected to achieve a great breadth of knowledge to care for the wide variety of problems encountered in the ICU. These critical care rotations will allow the fellows to become clinically competent in many of the areas outlined in the overall fellowship curriculum document (section B), with particular focus areas:

A. Areas of clinical competency

- Physiology, pathophysiology, molecular biology, diagnosis, and therapy of disorders of the cardiovascular, respiratory, renal, gastrointestinal, genitourinary, neurologic, endocrine, hematologic, musculoskeletal and immune systems as well as of infectious disease.
- Electrolyte and acid base physiology, pathophysiology, diagnosis and therapy.
- Metabolic, nutritional, and endocrine affects of critical illnesses.
- Hematologic and coagulation disorders secondary to critical illness.
- Critical obstetric and gynecologic disorders.
- Management of the immunosuppressed patient.
- Management of anaphylaxis and acute allergic reactions.
- Management of select post-operative sub specialty surgical critical care patients who are admitted to the MICU (ENT, etc)
- Care of critically ill OB/GYN patients
- Pharmacokinetics, pharmacodynamics, drug metabolism and excretion in critical illness.
- Use of paralytic agents.
- Ethical, economic and legal aspects of critical illnesses.
- Psychosocial and emotional affects of critical illnesses.
- Iatrogenic and nosocomial problems in critical care medicine.
- Personal development, attitudes and coping skills of physicians and other health care professionals who care for critically ill patients.

B. Procedural skills

- Establishment of airway
- Maintenance of open airway in nonintubated, unconscious, paralyzed patients.
- Oral and nasotracheal intubation
- Breathing, ventilation
- Ventilation by bag or mask
- Mechanical ventilation using pressure cycled and volume cycled mechanical ventilators
- Use of reservoir masks and CPAP masks for delivery of supplemental oxygen, humidifiers, nebulizers and incentive spirometry
- Weaning and respiratory care techniques
- Management of pneumothorax (needle insertion and drainage systems)
- Maintenance of circulation
- Arterial puncture and blood sampling
- Insertion of central venous, arterial and pulmonary artery balloon flotation catheters
- Basic and advanced cardiopulmonary resuscitation

- Cardioversion
- Diagnostic and therapeutic procedures including thoracentesis, flexible fiberoptic bronchoscopy and related procedures.
- Calibration and operation of hemodynamic recording systems.

C. Interpretative skills
- Chest roentgenogram
- Computed axial tomograms
- Radionuclide scans
- Pulmonary angiograms

D. Monitoring and Supervising
- Critical care units, in particular patient flow and staffing issues

E. Indication, limitations, and complications
- Parenteral nutrition
- Monitoring/bioengineering including utilization, zeroing, calibration of transducers
- Pericardiocentesis
- Transvenous pacemaker insertion
- Peritoneal dialysis
- Peritoneal lavage
- Intracranial pressure monitoring

F. Analysis of data pertaining to the following:
- Cardiac output determination by thermodilution
- Evaluation of oliguria
- Management of massive transfusions
- Management of hemostatic defects
- Interpretation of antibiotic levels and sensitivities
- Monitoring and assessment of metabolism and nutrition
- Calculation of oxygen content, intrapulmonary shunt, and alveolar arterial gradients
- Pharmacokinetics

G. Teaching Methods

The attending physician on service will be primarily responsible for the teaching of the fellow. Teaching will be performed using a variety of methods including daily bedside rounding with discussion of pertinent patient findings, daily review of roentgenogram with discussion of pertinent radiologic findings, and daily teaching rounds on which discussion of current or past patients will be augmented with recent reviews of similar cases/findings from the medical literature. The attending physician will be expected to direct the fellow to outside sources of information, which the fellow can then utilize to further his/her own knowledge base.

The pulmonary fellow will be expected to augment his/her own knowledge of critical care medicine through reading of current textbooks and review of recent medical journals. Current pulmonary, critical care and internal medicine textbooks are available in

the medical library which is accessible on-line from computers that are readily available in each hospital and in the fellows' office. In addition, an on-line fellow's curriculum is readily available on the local server, "Pulmo", with access from any of the hospital network computers including those in the fellow's office. The fellows have access to literature searching software and numerous on-line databases through these libraries. Fellows have access to computers with internet connections and there are several valuable web-based educational resources:

General search engine: http://www.ncbi.nlm.nih.gov/PubMed/

Critical Care links:

American Thoracic Society (ATS)	http://www.thoracic.org/
American College of Chest Physicians	http://www.chestnet.org/
Society of Critical Care Med	http://www.sccm.org
American Academy of Sleep Med	http://www.asda.org/

Conferences

The fellowship conference schedule is outlined in the overall fellowship curriculum as well as located on the shared drive on the main server. In addition to the usual conferences, there is a standing MICU conference series:

	Monday	Tuesday	Wednesday	Thursday	Friday
Wk 1	Orientation	Off	Endotracheal Intubation	Respiratory Failure	Mechanical Ventilation
Wk 2	Shock in the ICU	Swan Ganz Catheters	Multi-drug resistant organisms in the ICU	Ventilator Liberation	Coma and Brain Death evaluation in the ICU
Wk 3	Ventilation Wet Lab	GI Bleed	Sepsis	ARDS	Ethics
Wk 4	Delirium	Off	Nutrition in the ICU	Renal Replacement Therapy	OFF

The lectures are given by pulmonary/critical care staff, and the fellows are also assigned to give one of the MICU giving the lectures per month. The topic for the fellows is agreed upon by the fellow and faculty at the onset of the month. Faculty monitor the fellow's lectures and provide feedback on their teaching skills.

Evaluation

Feedback is given the fellow at the end of the rotation via a face-to-face discussion with the attending. Attendings also fill out an evaluation of each fellow as detailed in the

policy entitled: Evaluation and Promotion of Residents. Faculty also supervise Mini CEX examinations of the fellows during the month with each attending completing one such exam during their two week block; thus fellows should have at least two such exams during each month. In addition, MICU nurses provide a “360 composite evaluation” of each MICH fellow at the end of the month. Fellows provide an evaluation of the attending and of the rotation at the end of each month.

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