

CURRICULUM ON GENERAL INPATIENT MEDICINE

Denver Health Internal Medicine Residency Program

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I. Educational Purpose and Goals

Management of hospitalized patients is essential for the training and practice of Internal Medicine. The General Internal Medicine rotations at Denver Health Medical Center (DH) allow Residents to refine history and physical exam skills, develop experience in selection of diagnostic tests, interact with allied health professionals, and learn management of a wide variety of diseases. These experiences provide exposure to common medical problems of hospitalized patients and allow residents opportunities to develop discharge care plans. Additionally, residents are exposed to uncommon medical conditions and have the opportunity to interact with subspecialists while managing patients with complex conditions.

II. Principal Teaching Methods

A. Supervised Direct Patient Care:

1. Residents encounter patients admitted to the General Internal Medicine services and participate in daily management rounds with a supervising attending. Residents assume primary care for the management and coordination of care for their patients, including performance of any necessary procedures (described further below). Faculty supervise admission histories, physical exams, daily management, and discharge plans.
2. Teaching/Work rounds are conducted daily seven days/week. Preferentially performed at the bedside, rounds begin at 9:00 A.M. and are completed in a timely fashion so housestaff can attend morning report and conferences. Teaching/work rounds emphasize fundamental skills pertaining to taking histories and doing physical examinations, appropriate diagnostic testing and other management issues, discussion of resource utilization, patient education and end-of-life care, and include short didactic discussions of the conditions encountered focusing on the differential diagnosis and appropriate evaluation. When the volume of patient care-related activities allows, formal didactic sessions are given by the attendings and/or by the residents.

3. Discharge planning is conducted on a daily basis via phone contact with Social Workers, Visiting Nurse Representatives, Respiratory Therapists, Rehabilitation Therapists, and Utilization Review personnel. Geographical multi-disciplinary rounds will be conducted with each medical team in the future.

B. Conferences

1. Morning Report is held five days/week at 7:00AM and is attended by all PGY-2s and PGY-3s, the Chief Medical Resident, and a faculty member (the Chief of Medicine on most days). It begins with a chest x-ray reading exercise (10 minutes) followed by a discussion of any problems that developed during the past 24 hours or the weekend. One or two patients are then discussed with the admitting resident presenting the case as an unknown. One session per week is led by a Nephrologist who focuses the discussion on disorders of acid-base or metabolism, hypertension, or other kidney diseases. All other sessions are led by the chief medical resident.
2. Noon conference is held four days/week from 12:00 to 1:00 PM. On Mondays and Tuesdays attendings provide lectures addressing selected topics included in the system-wide Internal Medicine Curriculum. During the last quarter of each year the conferences are given by PGY-3s on topics of their choice. Medicine Grand Rounds, held at the University of Colorado Health Science Center and televised to Denver Health, occurs on Wednesday. The Friday conference is a Clinical Pathological Case (CPC) discussion based on a Denver Health patient.

III. Educational Content

- A. Mix of Diseases. Residents on the General Internal Medicine Service encounter patients with a variety of medical conditions that are not sufficiently serious to require monitoring or treatment in the intensive care unit. These might include patients with pneumonia, COPD, asthma, deep venous thrombosis, pulmonary embolism, congestive heart failure, chest pain, syncope, hepatitis, pancreatitis, connective tissue disease, various types of cancer requiring intravenous infusion of chemotherapy, diabetes, infections such as pneumonia, pyelonephritis, cellulitis and meningoencephalitis, HIV-AIDS, intoxications and overdoses, hypertension, acute or acute on chronic renal failure. Because we treat a large number of patients from Mexico, Central America, Africa and Asia, a variety of infectious diseases are encountered that are uncommon in the United States.

B. Patient Characteristics: Patients admitted to the ward-based Denver Health General Medicine service come from the general population of the City and County of Denver and surrounding counties. The majority of patients are admitted from the Emergency Department. The patient population at Denver Health is 50% female, 50% Latino and approximately 20% African American. Many patients come from Mexico and Central America and smaller numbers come from Russia and a number of countries in Africa.

C. Learning Venues:

1. Facility: General Internal Medicine patients are preferentially housed on the 9th or 8th floors of the main hospital unit. The unit is 30 years old and still includes three 4-bed rooms. The 9th floor was recently completely renovated and renovation of the 8th floor is scheduled to be finished by July 2007. This will eliminate all 4-bed rooms. When the number of patients exceeds capacity on the two Medicine floors they are housed in a newly completed addition with dedicated computers for each single-patient room. On the 8th and 9th floors numerous computers are positioned at central locations. Each is linked to the Lifetime Clinical Record that includes all in-patient and out-patient records for all patients cared for in the Denver Health system, all laboratory results ever obtained, access to copies of dictated radiology, pathology, ECG, echocardiogram, heart catheterization and operative reports, and web-based access to UpToDate, MedLine and a variety of other informational databases.
2. Procedures: Residents insert central venous lines, nasogastric tubes and endotracheal tubes and have the opportunity of performing paracenteses, thoracenteses, lumbar punctures, and arthrocenteses. Residents also interpret all imaging studies and laboratory tests. Digitized images are available on all Medical floors and printed images of older studies are available in the Radiology department.
3. Physician Order Entry and Standardized Order Sets. More than forty-five standardized order sets are in use. Each was prepared internally using an evidence-based medicine approach. Physician Order Entry has expanded to the medicine wards and additional standardized order sets are being developed specific to patient needs.
4. Ancillary Services: Residents interact with subspecialists in Hematology/Oncology, Gastroenterology/Hepatology, Nephrology, Neurology, Surgery, Neurosurgery, Rheumatology, Endocrinology, Infectious Disease, and Dermatology, and with Clinical Pharmacists who attend daily work rounds. Residents regularly meet with Social Workers, Physical Therapists and Utilization Review personnel.

5. Structure of the Rotation:

- i. Teams: The Service consists of three PGY-1s, one PGY-2 or 3, one Attending, and up to two 3rd year medical students and one 4th year medical student doing a subinternship.
- ii. Duty Hours and Admission Guidelines: All schedules are structured to limit duty hours to < 80 hours per week, each week, and ≤ 30 consecutive hours. Teams admit daily with admissions being distributed amongst four teams from 7 AM to 7 PM and preferentially given to “on call” interns from 7 PM to 7 AM. Every resident is given one day off each week. Interns are given every 6th day off. The Chief of Medicine reviews each resident's compliance with these mandates on a monthly basis (see attachment). In accordance with ACGME rules, residents admit no more than 10 new patients and 4 transfers in a 24 hour period and 16 new patients in a 48 hour period. Interns are limited to 5 new patients and 2 transfers in 24 hours and 8 patients in a 48 hour period.
- iii. Rounds: PGY-1s begin work at 7:00 AM examining their patients and collating the data collected over the previous 12 hours. PGY-2s and 3s review new patients from the previous night and the more complicated patients, providing back-up to the PGY-1s on less complicated ward patients. Attending work/teaching rounds begin at 9:00 and are held preferentially at the bedside. Rounds (including viewing of all radiological studies with the attending) continue until all patients are seen or until 11:00 AM, giving time for the residents to get to noon conference. Rounds may resume after 1:00 PM if all patients were not seen prior to the 11:00 AM cut off.
- iv. Clinics: All Residents attend their continuity clinics one half-day/week during their assignment on the Medicine Service.
- v. Interpretive skills that are reinforced or learned on general ward medicine services include:
 1. Serum electrolytes and routine chemistry panel
 2. Urinalysis and microscopic examinations of urine
 3. Liver function tests
 4. Coagulation studies
 5. Arterial blood gases
 6. Electrocardiogram
 7. Interpretation of chest x-ray and other radiological studies
 8. Peripheral smear
 9. Spirometry

vi. Consultative and Interactive skills:

1. Medicine Subspecialists
2. Primary Care Community Physicians
3. Surgeons
4. OB/GYN physicians (for pregnant women being concurrently cared for by both services).
5. Pathologists (for histology interpretation and consultation for special testing)
6. Psychiatry
7. Orthopedic Surgery
8. Nursing staff
9. Physical Therapy
10. Occupational Therapy
11. Respiratory Therapy specialists

IV. Principal Ancillary Educational Materials

- A. Residents are assigned targeted reading in primary literature sources by the Attendings
- B. Internet access to numerous web-based medical information sources (e.g., UpToDate, Medline, Pubmed) is available from every computer in the hospital. This access includes all on-line journals available at the Dennison Medical Library at the University of Colorado Health Sciences Center. Internet access also includes drug information programs, electronic textbooks, secured e-mail for inter-system notification of primary care physicians when their patients are admitted and discharged, and a variety of patient education materials.

V. Methods of Evaluation

- A. Resident Performance: Faculty meet monthly with the Chief of Medicine, the Denver Health Residency Director, and the Chief Medical Resident to discuss and fill out a standardized resident evaluation form (see attached). The evaluation is sent to the residency office for review and placement in the Resident's file where it is used to formulate the semiannual performance review with the Director of the Residency program.
- B. Procedures: Residents submit written documentation of all procedures performed during the rotation to the Medicine Residency Office.
- C. Program and Faculty Performance: The Residents meet monthly with the Chief of Medicine, the Director of the DH Residency Program, and the Chief Medical Resident to evaluate the program and faculty utilizing a structured evaluations form. Copies of the forms are returned to each

Attending, the Division Heads of Cardiology and Pulmonary / Critical Care Medicine, and the Chief of Medicine where they are kept in the Attending's personnel file and used in their annual evaluations.

VI. Institutional Resources: Strengths and Limitations

- A. Strengths. Denver Health is the only Public Hospital in the City and County of Denver. It also serves as the tertiary referral center for the Community Health Center of Denver, the first Community Health Center in the country. Accordingly, the patient base cared for is extraordinary. Forty-seven percent of the faculty have NIH funding, much of which is for clinical research. The faculty has won numerous system-wide awards for teaching excellence. Over the past several years the Divisions of Pulmonary and Critical Care Medicine, Rheumatology, Neurology, and/or Nephrology have been listed in the U.S. News and World Report as being in the top 50 programs in the country.

- B. Weaknesses: Denver Health has no organ transplant program and does not perform open heart surgery or provide radiation therapy. All of these services are available at the University Hospital. In addition, the Cardiac Catheterization lab currently does not perform all invasive procedures. New Cardiac Catheterization and Electrophysiology labs were opened in 2005 and there are plans to begin an invasive cardiology program in July 2007. Although higher patient volume provides a unique opportunity for residents to become familiar with the expected demands of post-residency practice, this workload can impede residents' learning opportunities.

VII. Rotation Specific Competency Objectives

- A. Patient Care
 - 1. History taking. Residents at all levels of training will obtain a thorough history by soliciting patient information and consulting other sources of primary data in a logical and organized fashion. History taking will be hypothesis driven and be adapted to the instability of the patient and the available time. The resident will inquire about the emotional aspects of the patient's or family's experience and about end-of-life issues while demonstrating flexibility based on patient need and reception to these questions. Residents will recognize verbal and nonverbal cues from the patient.

 - 2. Physical Exam. Residents at all levels of training will perform a comprehensive physical examination describing the physiological and anatomical basis for normal and abnormal findings. Performance of

the physical examination will also be hypothesis driven and adapted to the instability of the patient and the available time.

3. Charting. Residents at all levels of training will record data in a legible, thorough, systematic manner.
4. Procedures.
 - a. PGY-1s and PGY-2s will demonstrate knowledge of procedural indications, informed consent, contraindications, necessary equipment, specimen handling, patient after-care, and risk and discomfort minimization. They will correctly identify the meaning of test results. PGY-1s will initially observe and then perform procedures prior to the completion of the first training year.
 - b. PGY-3s will demonstrate extensive knowledge and facility in the performance of procedures while minimizing risk and discomfort to patients. They will assist their junior peers in skill acquisition.
5. Medical Decision Making, Clinical Judgment, and Management Plans. All residents will demonstrate improving skills in assimilating information that they have gathered from the history and physical exam.
 - a. PGY-1 residents will be able to identify patients' problems and develop a prioritized differential diagnosis. Abnormal findings will be related to altered physiology. They will understand their limitation of knowledge and seek the advice of more advanced clinicians. PGY-1 residents will begin to develop therapeutic plans that are evidence- or consensus-based. Residents will establish an orderly sequence of testing based on their history and exam findings. Specific organ dysfunction will be anticipated based on known side effects of therapy. Residents will also understand the correct administration of drugs, be familiar with drug-drug interactions, and with expected outcomes.
 - b. PGY-2 residents will also integrate medical facts and clinical data while weighing alternatives and patient preferences. They will regularly incorporate risks and benefits when considering testing and therapies. They will present up-to-date scientific evidence to support their hypotheses. They will consistently monitor and follow-up patients appropriately, develop plans to avoid or delay known treatment complications and be able to identify when illness has reached a point where treatment no longer contributes to improved quality of life.

- c. PGY-3 residents will demonstrate the above and, in addition, will demonstrate appropriate reasoning in ambiguous situations. Residents at this level of training will not overly rely on tests and procedures. PGY-3 residents will continuously revise assessments in the face of new data.

6. Patient counseling

- a. PGY-1 residents will be able to describe the rationale for a chosen therapy and major medication side effects in terms understandable by the patient. They will assess patient/family understanding and provide more information when necessary.
- b. PGY-2 residents, in addition to the above, will be able to explain the pros and cons of competing therapeutic interventions. PGY-2 residents will be expected to counsel patients regarding adverse habits, and educate patients and families for enhanced compliance. They will be able to effectively communicate with critically ill patients and engage patients and families in end of life discussions.
- c. PGY-3 residents, in addition to the above, will effectively communicate with patients making life-style modifications.

B. Medical Knowledge.

1. PGY-1 residents will consistently apply current concepts in the basic sciences to clinical problem solving. They will use information from the literature and other sources including electronic databases. PGY-1 residents will demonstrate satisfactory knowledge of common medical conditions sufficient to manage urgent complaints with supervision. Residents must exhibit sufficient content knowledge of common conditions to provide care with minimal supervision by completion of the PGY-1 year.
2. PGY-2 residents will demonstrate a progression in knowledge and analytical thinking in order to develop well-formulated differential diagnoses for multi-problem patients. They will also demonstrate socio-behavioral knowledge.
3. PGY-3 residents in addition to the above will demonstrate appropriate habits to stay current with new medical knowledge, and will exhibit knowledge of effective teaching methods.

C. Interpersonal and Communication Skills.

1. PGY-1 residents will develop and refine their individual style when communicating with patients. They will strive to create ethically sound relationships with patients, the physician team and supporting hospital personnel. They will create effective written communications through accurate, complete, and legible notes. They will exhibit listening skills appropriate to patient-centered interviewing and communication. Residents will recognize verbal and nonverbal cues from patients.
2. PGY-2 and PGY-3 residents will also exhibit team leadership skills through effective communication as manager of a team. PGY-2 residents are expected to assist junior peers, medical students, and other hospital personnel to form professional relationships with support staff. Residents will respond to feedback in an appropriate manner and make necessary behavioral changes.

D. Professionalism

All residents will demonstrate integrity, accountability, respect, compassion, patient advocacy, and dedication to patient care over self-interest. Residents will demonstrate a commitment to excellence and continuous professional development. They will be punctual and prepared for teaching sessions. Residents will demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, and informed consent. Residents are expected to show sensitivity and responsiveness to patients' culture, age, gender and disabilities.

E. Practice Based Learning and Improvement

1. PGY-1 residents will use the web-based resources to critically appraise medical literature and apply evidence to patient care. They will use hand-held computers, desktop PC's and Internet electronic references to support patient care and self-education. They will model these behaviors to assist medical students in their own acquisition of knowledge through technology. They will begin to understand the importance of a systems-based approach to reducing medical errors and improving quality of care.
2. PGY-2 residents will, in addition, consistently seek out and analyze data on practice experience, identify areas for improvement in knowledge or patient care performance and make appropriate adjustments. They will regularly demonstrate knowledge of the impact of study design on validity or applicability to individual practice. They will recognize the importance of the systems-based approach to reducing medical errors and improving quality of care.

3. PGY-3 residents will additionally model independent learning and development.

F. Systems Based Practice.

1. PGY-1 residents will be sensitive to health care costs while striving to provide quality care. They will begin to effectively coordinate care with other health care professionals as required for patient needs.
2. PGY-2 residents, in addition to the above, will consistently understand and adopt available clinical practice guidelines and recognize the limitations of these guidelines. They will work with patient care managers, discharge coordinators and social workers to coordinate and improve patient care and outcomes.
3. PGY-3 residents, in addition, will enlist social and other out-of-hospital resources to assist patients with therapeutic plans. PGY-3 residents are expected to model cost-effective therapy.