CURRICULUM FOR INTERNAL MEDICINE RESIDENTS
UCHSC INTERNAL MEDICINE RESIDENCY PROGRAM
MEDICINE TEACHING SERVICE
ROSE MEDICAL CENTER

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I. EDUCATIONAL PURPOSE AND GOALS

The Medicine Teaching Service (MTS) at Rose Medical Center (RMC) provides a broad internal medicine experience in the care of the hospitalized patient and emphasizes not only disease processes and management, but the comprehensive management of the hospitalized patient. Additionally, the MTS provides an ambulatory experience in selected specialty and subspecialty clinics that provide exposure to patients and skills not necessarily encountered in a general medicine ambulatory setting, but which remain important to the practice of general medicine

Educational objectives for residents include

- Developing proficiency in the independent evaluation of patients through comprehensive history and physical examination, review of relevant existing data, information-gathering from other health care professionals, selection and interpretation of diagnostic testing, development of a problem-based assessment and plan, and implementation of that comprehensive plan of care under the supervision of attending physicians dedicated to the practice of evidence-based hospital medicine
- Developing communications skills that optimize patient care including verbal communications with primary care physicians, consulting physicians and non-physician providers, and patients and family members as well as written communication skills including but not limited to comprehensive, organized and focused admission notes, daily progress notes, procedure notes and discharge summaries.
- Establishing and cultivating precise, patient-safety oriented order-writing
- Developing competency in systems of care including multi-disciplinary rounds with non-physician providers, the use of instruments to assure evidence-based practice and a reduced rate of medical error, the identification and appreciation of and compliance with quality

initiatives championed by national organizations and Rose Medical Center
- Developing team-building and educational skills for interacting with other housestaff, nurses, and ancillary services
- Developing and broadening procedural competency in internal medicine
- Achieving skill in managing post-operative complications in a concurrent care model
- Fostering life-long learning skills and motivation

II. PRINCIPAL TEACHING METHODS

1. Supervised direct patient care
    - During the hospital-medicine component of the rotation, residents evaluate and care for patients admitted to the National Jewish Hospital Medicine teaching service from the Rose Medical Center Emergency Department, the outpatient general internal medicine and subspecialty practices at Rose Medical Center (RMC), and the outpatient subspecialty practices at National Jewish Health
    - During the ambulatory component of the rotation, residents evaluated and care for patients in at least two of the following ambulatory care settings: Orthopedics, Otolaryngology, Dermatology, Pulmonology, Cardiology, Rheumatology, Allergy/Immunology and General Internal Medicine/Primary Care. These clinics are located on-site at Rose Medical Center or at National Jewish Health, main campus.
    - Attending physicians and residents work together as the care plan is implemented and communicate daily regarding the patient's status and on-going plan of care. These interactions provide an important setting for teaching as clinical problems are encountered. The resident is expected to be the primary physician for his or her patients and drives the diagnostic evaluation, comprehensive plan of care and management decisions, patient, family and physician to physician communications, multi-disciplinary rounds and discharge planning for his or her patients.
    - The MTS consists of two inpatient teams, each composed of one resident (PGY-2 or PGY-3), one third-year medical student, and one teaching attending. The ambulatory component consists of one resident working directly with a specialty or subspecialty attending in the ambulatory setting.

2. Formal educational rounds
    - Each inpatient team is led by a teaching attending who is one of thirteen National Jewish Hospital Medicine faculty members. Patient-centered care rounds are scheduled daily for a minimum contact time of seven hours per week. Residents present cases and demonstrate competencies at the bedside including history and examination skills, procedural skills, communications skills, analytical and integrative decision-making skills and management skills. The attending physician models excellence in bedside interaction with patients and family.
    - Resident Morning Report is a key teaching conference that is held every day at the Denver Veterans Administration Medical Center (DVAMC) from 7 am – 8 am Monday through Friday. Attendance by residents and students is mandatory. The Chief Medical Resident (CMR) and the VAMC site director run this conference. Cases are presented and discussed in an interactive format with particular emphasis on history, physical examination findings, and differential diagnosis to expand knowledge base and cultivate a deeper understanding of the cases. These discussions are supported by the distribution of literature reviews and original articles addressing specific questions raised.
3. Conferences and didactics
    - Daily noon conference as per the UCDHSC internal medicine residency program. Monday & Tuesday conferences are generally in a didactic format on core curriculum topics in the Goodstein 3 Conference Room. Thursday and Friday conferences are a compilation of journal club, housestaff meeting, autopsy conferences, CPC, and morbidity and mortality conference.
    - Department of Medicine Grand Rounds is teleconferenced into Goodstein 3 from the School of Medicine every Wednesday at 12 noon.
    - Tumor Board occurs every Wednesday morning from 8am-9am and is a multidisciplinary gathering of medical oncologists, pathologists, surgeons, radiation oncologists, and other subspecialists. A case is presented by the MTS once monthly at this conference.
    - RMC Medical Grand Rounds is held each Tuesday afternoon at 12:15pm covering a year-long curriculum of topics. Generally, RMC Grand Rounds conflicts with Tuesday noon conference, but is available on days where noon conference is cancelled.

- Friday afternoon lecture: Friday afternoon lectures focus on topics and experiences not covered by core curriculum including (i) "teaching how to teach" an interactive program led by the CMR instructing residents in the basics of medical education and how to teach their medical students, interns and fellow residents, (ii) "coding, billing and compliance" which covers the documentation required to meet CMS criteria for coding and billing physician services, (iii) "simulation center" case based scenarios at the UCDHSC clinical simulation center.

III. EDUCATIONAL CONTENT

1. Patient and disease mix
    - The patient population seen by the MTS ranges across all ages (adolescent to geriatric), cultures, and socioeconomic levels. Patients admitted to the teaching service represents a unique patient mix including (i) patients representing a cross-section of the central Denver population brought to the Rose Medical Center emergency department by EMS, (ii) patients from the community with established relationships with specialty and subspecialty providers who admit to Rose Medical Center and (iii) tertiary referral cases from National Jewish Health. Additionally, the rotation offers the opportunity to see both inpatients and ambulatory patients. The medical conditions encompass the full breadth of internal medicine
    - Examples of common medical conditions encountered that residents are expected to master include but are not limited to evaluation and management of
        1. Neurology: acute stroke and transient ischemic attack, intracranial bleeding, delirium, dementia, peripheral neuromuscular diseases
        2. Cardiology: chest pain, acute coronary syndrome, valvular heart disease, acute myocardial infarction, congestive heart failure, atrial and ventricular dysrhythmias, syncope, coronary artery disease, pulmonary hypertension, cor pulmonale and infiltrative and restrictive cardiomyopathies
        3. Pulmonology/Critical Care: asthma, COPD, interstitial lung disease, lung cancer, dyspnea, cough, respiratory failure, thromboembolic disease, hypotension, hypoxia, toxic ingestions
        4. Endocrinology: diabetes mellitus including diabetic ketoacidosis, thyroid disease, adrenal diseases,

hyperlipidemia, osteoporosis, metabolic bone disease

5. Oncology: neutropenia and fever, evaluation of suspected malignancy, complications of cancer and its therapies
6. Rheumatology: systemic lupus erythematosus, rheumatoid arthritis, scleroderma, polymyositis, septic arthritis, crystal-induced arthritis, osteoarthritis, complications of immunosuppressive therapy
7. Nephrology: complications of end-stage renal disease, acute renal failure, electrolyte abnormalities and acid/base abnormalities
8. Infectious Diseases: use of antimicrobial agents in a wide array of settings including human immunodeficiency virus infection, community-acquired pneumonia, intra-abdominal infection, urinary tract infection, meningoencephalitis, and osteomyelitis
9. Gastroenterology: gastrointestinal bleeding, liver and biliary tract disease, pancreatitis, and peritonitis
10. Hematology: anemia, thrombocytopenia, thrombocytosis, neutropenia, thromboembolic disease, transfusion medicine, and coagulopathy
11. Orthopedics/Sports Medicine: joint pain, structural joint disease, impaired mobility, management of the post-operative orthopedic patient
12. Otorhinolaryngology: sinus disease, ear pain, loss of hearing, vertigo, hoarseness
13. Dermatology: rash, dermatitis, hives, skin cancer, benign skin lesions, skin infections
14. Allergy/Immunology: rash, hives, anaphylaxis, food allergies, rhinitis, sinusitis, asthma, dermatitis

2. There is a strong emphasis on residents understanding, appreciating, and respecting the psychosocial, relational, and religious dimensions of illness---e.g. intra-family dynamics, the burden of chronic illness, cultural influences
3. Residents interface with other medical disciplines with a concurrent model, namely, that care is continued together without transfers to other services. Other disciplines include
    - General surgery and surgery subspecialties (especially neurosurgery, orthopedic surgery, vascular surgery, podiatry, and otorhinolaryngology)
    - Obstetrics/gynecology
    - Rehabilitation medicine

4. Residents admit patients to the National Jewish Hospital Medicine Service at Rose Medical Center, a 292-bed community teaching hospital (licensed for 420 beds) with a full complement of ancillary services.
5. Outpatient clinics are based at Rose Medical Center (Dermatology, Otorhinolaryngology, Orthopedics, Primary Care) and National Jewish Health (Pulmonary, Cardiology, Rheumatology, Allergy/Immunology), a UCDHSC affiliated academic medical center with nationally-recognized expertise in Pulmonary Medicine, Mycobacterial Disease and Allergy and Immunology.
6. Experience is gained and reinforced for the following common procedures
    - Arterial puncture
    - Central venous catheter placement
    - Basic and advanced cardiac life support
    - Lumbar puncture
    - Nasogastric tube placement
    - Paracentesis
    - Thoracentesis
    - Arthrocentesis
    - Punch skin biopsy
7. Laboratory interpretation and analysis skills learned and reinforced include
    - Serum electrolytes
    - Routine complete blood counts
    - Liver enzymes
    - Coagulation studies
    - Arterial blood gases
    - Drug levels
    - Peripheral blood smear
    - Gram stain analysis of sputum and other body fluids
    - Laboratory analysis of body fluids (pleural fluid, ascites, synovial fluid, CSF)
    - Routine urinalysis and urine microscopy
    - Urine electrolytes and osmolality
    - Microbial detection by culture, PCR methodology, and serology
    - Spirometry
    - Pulmonary function testing
    - Radiographic studies
    - Electrocardiograms
8. Imaging interpretation and analysis skills learned and reinforced include
    - Chest radiographs
    - Abdominal radiographs

- Musculoskeletal diagnostic imaging
- Computed tomographic (CT) scans
- Magnetic resonance imaging (MRI) scans
- Nuclear medicine scans including lung scans and bone scans
- Positron emission tomography (PET)

9. Residents interact with and learn from other medical care providers including
    - Physical, occupational, and speech therapy
    - Case management
    - Nursing
    - Nutritional services
    - Pharmacy
    - Respiratory therapy
10. Structure of the rotation
    - The rotation is divided into two components a Hospital Medicine component and an Ambulatory component. Each week, two of the four residents will rotate into the ambulatory components of the rotation, while the other two will participate on the hospital medicine inpatient service component. Residents alternate weeks between the hospitalist and ambulatory components
    - The daily schedule of the inpatient component follows the format outlined below

	Mon/Tues	**Wed**	**Thurs/ Fri**	**Sat/Sun**
7:00 - 8:00	Morning Report	Morning Report	Morning Report	
8:00- 9:00	Pre-round	Tumor Board	Pre-round	Pre-round
9:00- 9:30	Multidisciplinary Rounds	Multidisciplinary Rounds	Multidisciplinary Rounds	Multidisciplinary Rounds
9:30- 11:00	Patient Care	Patient Care	Patient Care	Patient Care
11:00- 12:00	Attending Rounds	Attending Rounds	Attending Rounds	Attending Rounds
12:00- 1:00	Noon Conference (core topics)	Medical Grand Rounds	Journal Club/ CPC/M&M/ Housestaff meeting	
1:00- 7:00	Patient Care	Patient Care	Patient Care	Patient Care

    - The ambulatory component follows the format outlined below. Ambulatory Clinic time encompasses a focused experience in 2-3 disciplines over the course of the month long rotation. The rotation attempts to place housestaff in the Ambulatory clinics

that most appropriate to their individual career development goals

	Mon	Tues/Wed/Thurs	Fri	Sat/Sun
7:00 -8:00		Morning Report	Morning Report	
8:30-12:00	OFF	Ambulatory Clinic	Ambulatory Clinic	OFF
12:00-1:00		Noon Conference/ Medical Grand Rounds	Journal Club/ CPC/M&M/ Housestaff meeting	
1:00-5:00		Ambulatory Clinic	Friday lecture	

- The rotation does NOT have an overnight, call component
- The rotation is fully compliant with ACGME required duty hour restrictions.

11. Educational resources include
    - Meditech, the hospital's information system for current patient care data
    - Micromedex drug information
    - "Up to Date" access provided in the 4th floor conference room as well as in the Health Resources Library
    - Imaging studies, available on a PACS network with terminals in key patient-care areas
    - Radiologists, available for imaging consultation and review
    - Pathologists, available for review of peripheral blood smears and tissue biopsies
    - The Health Resources Library, available 24/7 for access to journals (both in print and/or electronic format) and search programs
    - Patient education materials

IV. EVALUATION METHODS

1. Resident performance
    - A written evaluation of each resident is completed by every National Jewish Hospital Medicine attending they work with. Additional input is solicited from the ambulatory clinic attendings and the Chief Medical Resident (CMR). A composite evaluation is then tabulated and reconciled and entered electronically into the New Innovations web-based resident evaluation program for placement into the resident's file.
    - Specific feedback is given regarding history and physicals, order-writing, progress notes, procedure notes, and discharge summaries by the individual attending

physicians based upon their direct observations of the resident's performance
    - Residents electronically record completed procedures. The supervising physician verifies the resident understands the procedure's indications, contraindications, complications and interpretation.
    - Residents with deficiencies in performance are provided with direct feedback on a weekly basis by the site director and the CMR during the rotation.
2. Attending physician and program performance
    - A monthly written evaluation is completed by each resident that assesses the overall educational quality of the program and provides an opportunity for individualized feedback regarding the teaching of attending physicians.
    - Resident feedback is used to maintain high-quality performance and determine which NJHM attendings are assigned to the MTS and which ambulatory clinics partner with the MTS.

V. INSTITUTIONAL RESOURCES: STRENGTHS AND LIMITATIONS

1. Strengths
    - Faculty. National Jewish Hospital Medicine faculty are dedicated to the practice of inpatient medicine with expertise in not only internal medicine, but the development of systems of care to assure that communications among providers is optimized and that evidence based care is implement uniformly across the practice group. Moreover, the NJHM faculty are present in the hospital at all times and available to teach and support the resident throughout the entire day, every day of the rotation.
    - Facilities. Rose Medical Center is a state-of-the-art facility that has won numerous awards for excellence. It is a full service hospital with recognized programs of excellence in critical care medicine, oncology, cardiothoracic surgery, vascular surgery, and joint replacement. National Jewish Health, which hosts approximately half of the ambulatory clinics, is a nationally-recognized leader in respiratory medicine and immunology whose faculty are internationally-recognized leaders in their fields and care for tertiary referral cases from across the United States
    - Patients. Patients admitted to the MTS represents a uniquely broad and interesting patient mix. Moreover combining the specialty and subspecialty ambulatory experience with the inpatient experience creates an exceptionally rich and varied clinical experience.

2. Limitations
    - Ambulatory and Hospital Medicine experiences create a diffuse focus during the rotation and limit the ability of the resident to develop expertise in any single ambulatory discipline which in turn limits housestaff autonomy in the ambulatory setting

VI. SPECIFIC COMPETENCY OBJECTIVES BY TRAINING LEVEL

1. Patient care
    - Residents at all levels will obtain a thorough history from patients, family members and friends, medical records, other medical professionals, other institutions, and other data sources with attention to the specifics of symptoms, the chronology and pace of illness, and interventions made prior to admission. Questions are asked in a way that patients can easily understand and that ensures all relevant information is procured. The interview is accomplished with appropriate attention to the time available, respect for the patient, and sensitivity to patient confidentiality.
    - Residents at all levels will perform a comprehensive physical examination and document this in a meticulous, organized fashion with relevant positives and negatives.
    - Residents at all levels will identify active problems and use data gathered in the history and physical examination to produce a prioritized assessment including focused differential diagnosis and specific plans of treatment.
    - Residents will dictate the history and physical examination (H&P) in a timely fashion.
    - Residents will write an admission H&P that emphasizes the assessment, differential diagnosis, and plan.
    - Residents at all levels will write concise, problem-based progress notes, procedure notes, and cross-cover notes as indicated.
    - Residents will perform procedures under supervision with demonstrated knowledge of indications, contraindications, risks, specimen-handling, patient care during and immediately after the procedure, and management of complications. Residents will demonstrate competency in the performance of procedures and will be able to supervise less-experienced residents.
    - PGY-1 residents will be able to independently identify important problems and initiate a treatment plan. They will recognize their limitations and request assistance when needed. They will demonstrate appropriate drug

prescribing skills with proper names, dosage, route of administration and attention to drug-drug interactions.

- PGY-2 and PGY-3 residents will demonstrate and efficiently communicate more extensive differential diagnosis, a more careful weighing of risks and benefits of diagnostic testing and drug therapy, and consideration and incorporation of current evidence from the medical literature. They will be able to tailor a standard approach to the individual patient. They will be able to recognize and negotiate the balance between aggressive and futile care and the need for consideration of end-of-life issues.
- PGY-1 residents will be able to communicate to patients and families the rationale for recommended diagnostic and therapeutic interventions and the updated status of the patient. They will be able to function as the patient's advocate during the hospitalization.
- PGY-2 and PGY-3 residents will additionally be able to articulate to the patient and family the implications of input from consulting physicians, delineate the direction of care including discharge planning, and concisely summarize the patient's status. They will be able to unify conflicting recommendations from consultants. They will be able to anticipate adverse developments and complications and be proactive in preventing them. They will be adept at revising and updating differential diagnosis as new data is obtained.

2. Medical knowledge
    - PGY-1 residents will utilize sound concepts in pathophysiology to guide treatment decisions. They will demonstrate sufficient medical knowledge to interact constructively with other physicians and staff and provide independent care to patients by the end of the PGY-1 year. They will demonstrate an active intellectual pursuit of the science of medicine.
    - PGY-2 and PGY-3 residents will demonstrate advanced analytic thinking, disease-specific information, a working knowledge of current evidence from the medical literature applied to clinical problems, and the ability to critically evaluate individual papers from the literature. PGY-3 residents will demonstrate the ability to articulate and teach about pathophysiologic concepts and commonly encountered clinical problems.
    - PGY-1 residents will develop and demonstrate empathic, caring, positive relationships with patients, other physicians, and hospital ancillary staff. They will cultivate excellence in written and verbal communication,

and be active listeners when needed. They will seek and apply constructive feedback in specific competency areas without defensiveness or hostility.

- PGY-2 and PGY-3 residents will demonstrate proficiency in the diplomatic handling of "difficult" interactions and be able to effectively negotiate conflict resolution. They will exhibit team leadership skills and will be sensitive to the challenges and needs of junior team members such as medical students and PGY-1 residents. They will respond to and apply constructive feedback in all areas including broad philosophic dimensions.

3. Professionalism
    - Residents at all levels will demonstrate integrity, honesty, compassion, respect for diverse ethnic, religious, and cultural differences, accountability, self-assessment, a willingness to listen to and affirm differing opinions, taking responsibility for and proper handling of errors, patient-advocacy, and a drive to continually improve in knowledge and practice. The patient's best interest will always be paramount.
4. Practice-based learning and improvement
    - Residents at all levels will use library resources, web-based technology, lectures, conferences, discussions with faculty, and independent reading to constantly seek to deepen understanding and modify diagnostic and therapeutic approaches in light of the most current evidence. They will recognize their weaknesses and strive to eliminate them.
5. System-based learning
    - PGY-1 residents will be cognizant of health care costs while providing the best possible care for their patients. They will begin to appreciate and use hospital-based as well as community-based resources to assist their patients. They will apply patient safety principles as they implement care.
    - PGY-2 and PGY-3 residents will understand and apply clinical practice guidelines appropriately. They will appreciate the societal and global dimensions of health care. They will recognize opportunities for improvement in hospital care systems.

This document is adapted from the MSU Internal Medicine Residency curriculum.