

INTERNAL MEDICINE SUBINTERNSHIP CURRICULUM

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CDIM SUBINTERNSHIP TASK FORCE

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INTRODUCTION

Medical school is a time of great transformation. In addition to learning the science of medicine, students must develop a core set of skills common to all physicians. One key element in this process is the subinternship (also known as the acting internship). The subinternship was developed out of necessity because of a shortage of interns during World War II. The subinternship has evolved into an integral component of medical school training. In 2000, ninety-eight percent of U.S. medical school offered an internal medicine subinternship and twenty percent required this rotation for graduation. Approximately seventy five percent of students nationally participate in a subinternship. [1] Unlike the third year clerkship, however, the subinternship has received little formal attention from medical educators. Subinternships frequently lack a formal curriculum with clearly defined objectives.[1] In many institutions, the subinternship has historically been defined by an “experiential curriculum” during which students assume many of the responsibilities and activities that they will experience during their first year as graduate medical trainees (interns). However, there is increasing evidence that undergraduate medical education – of which the subinternship can be seen as a culmination[2] – inadequately prepares students for the tasks of internship, including key professional competencies and skills[3, 4].

While internship forms the backbone of graduate medical education, it remains a time of physical and emotional distress for many. Changes in health care delivery in the United States have resulted in shortened lengths of stay, increased severity of illness, and increased administrative burdens for housestaff. These pressures have therefore forced interns to become increasingly dependent on their undergraduate education to help them successfully navigate the stresses of the first postgraduate year.

The core competencies of inpatient medicine have traditionally been introduced during third year clerkships. As medical schools attempt to integrate outpatient experiences into the third year curriculum, less time is now available for teaching inpatient medicine in the third year curriculum. Thus, as the need for training in inpatient medicine is increasing, decreasing resources are being devoted to its instruction during the medicine clerkship. Medical educators are thus challenged to transform the traditional “experiential” subinternship rotation into a rotation that explicitly addresses the needs of current medical students. The implementation of a structured subinternship curriculum will help educators provide students with training in important inpatient medicine competencies before starting post-graduate training.

The objective of this project is to create and disseminate a model curriculum that can serve as an educational roadmap for those teaching the subinternship rotation. Students,

Introduction

housestaff and attendings may all find these curricular guidelines helpful. Based on a recent survey by members of this task force which identified and prioritized the competencies that should be taught during a subinternship[5], this curriculum emphasizes the unique patient care skills and scenarios commonly encountered by interns and subinterns during inpatient rotations (including “cross-coverage” and ward emergency scenarios).

Undergraduate internal medicine education is a broad process that includes the third year clerkship, the subinternship, and experiences in subspecialty medicine. Thus, this document complements and expands upon those topics covered in the SGIM/CDIM Core Medicine Clerkship Curriculum Guide [5]. Our hope is that, by providing the subinternship rotation with defined goals and objectives, the application of this curriculum will help students better prepare for the enormous responsibility of caring for hospitalized patients during their first postgraduate year. This guide follows the format of the CDIM/SGIM curriculum for the internal medicine clerkship. It includes a compilation of course priorities termed “competencies” and “training problems” and lists specific knowledge, skills, and attitudes for each. We have also referenced skills from the CDIM/SGIM curriculum that are prerequisites for each priority [5].

CLINICAL COMPETENCIES

1) Communication

A. Rationale

Interns play a key role in communicating aspects of patient care to patients and healthcare providers, often in diverse clinical situations.

B. Prerequisites

Communication and relationships with patients and colleagues (CDIM/SGIM curriculum clinical core competency #4)

C. Specific learning objectives

1) *Knowledge. Subinterns should demonstrate knowledge of:*

- a) Local and national ethical and legal guidelines governing patient confidentiality with specific attention to:
 - i) Written documentation
 - ii) Verbal communication with the patient's family members
- b) Verbal and non-verbal clues of patient suicidality
- c) The importance of cultural issues governing health care decision making by patients
- d) Appropriate resources available in the inpatient and outpatient setting for the management of grief

2) *Skills. Subinterns should demonstrate the ability to:*

- a) Communicate effectively with patients and patient's family members
 - i) Utilize lay terms appropriate to the patient's level of education and explain scientific jargon
 - ii) Recognize and manage denial and grief
 - iii) Communicate abnormal results and "bad news" to patients in a sensitive manner
 - iv) Discuss end of life issues with patients and family members with attention to the patient's wishes and needs
 - v) Provide concise daily updates for patients and families regarding hospital course and rationale for ongoing or new treatment plans
- b) Clearly summarize the patient's reason for admission and rationale for clinical plan.
- c) Assess suicidality in a depressed or psychotic patient
- d) Be able to initiate a conversation with a patient about advance directives.
- e) Demonstrate the ability to clearly and concisely present oral and written summaries of patients to members of the health care team with attention to the inclusion of relevant information and synthesis of clinical information

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) The ability to effectively communicate with physician and non-physician members of the health care team and consultants

Clinical competencies

- i) Demonstrate an understanding of the importance of communicating with the patient's primary care physician (PCP) if the inpatient attending is different from the PCP
- b) Understand cultural sensitivities and patient wishes with regards to health care and incorporate this knowledge into discussions with the patient

2) Coordination of care

A. Rationale

Interns play a central role in coordinating a patient's care, both during hospitalization and upon transition from the inpatient to outpatient setting. This involves communication between the patient and his/her family, colleagues, consultants, members of the health care team, and other hospital personnel. Appropriate management and coordination is essential to ensure optimal patient care.

B. Prerequisites

Communication and relationships with patients and colleagues (CDIM/SGIM curriculum clinical core competency #4)

Coordination of care (CDIM/SGIM curriculum clinical core competency #10)

Community health care (CDIM/SGIM curriculum clinical core competency #14)

C. Specific learning objectives

1) *Knowledge. Subinterns demonstrate knowledge of:*

- a) How to contact members of the health care team, consultants, and other hospital personnel
- b) How to properly transfer care throughout a patient's hospitalization including end of day and end of service coverage

2) *Skills. Subinterns should be able to:*

- a) Appropriately utilize consultants
 - i) Identify a consultant's limits of participation in the care of a patient
 - ii) Request a consultation by identifying a specific question(s) to be addressed
 - iii) Discuss a consultant's recommendations with members of the health care team
- b) Effectively cooperate with physician and non-physician members of the health care team including:
 - i) Nursing staff
 - ii) Physician assistants and nurse practitioners
 - iii) Social workers
 - iv) Therapists (occupational, physical)
 - v) Pharmacists
 - vi) Nutrition support staff
 - vii) Discharge planners
- c) Identify housestaff on-call and cross-coverage schedules among housestaff
- d) Communicate transfer of patient's care responsibilities to other housestaff (e.g. "sign out")
 - i) On non-call days

Clinical competencies

- ii) Upon leaving service
- iii) Upon transfer of the patient between services
- e) Demonstrate proficiency in coordinating a comprehensive and longitudinal patient care plan
- f) Communicate plan with outpatient health care provider, arranging for follow-up when appropriate
- g) Coordinate care plan utilizing community resources when necessary

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Respect for all members of the health care team
- b) A willingness to assist other members of the health care team

3) Information management

A. Rationale

Interns face an extraordinary challenge in managing the huge amount of clinical information relevant to a patient's hospital admission. Accurate and timely acquisition, documentation, and transfer of clinical information are a prerequisite for safe and efficient hospital practice.

B. Prerequisites

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)
Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

C. Specific learning objectives

1) *Knowledge. Subinterns should demonstrate knowledge of:*

- a) How to access the clinical information system in use at their hospital
- b) How "panic values" are communicated from the hospital laboratory to the responsible intern
- c) The necessity for a systematic method to track clinical/laboratory/radiologic data
- d) Patient confidentiality regulations governing medical records and clinical information

2) *Skills. Subinterns should demonstrate the ability to:*

- a) Prioritize tasks for daily patient care in order to efficiently utilize time
- b) Document the following in an organized and efficient manner:
 - i) Admission notes
 - ii) Daily progress notes
 - iii) Transfer notes
 - iv) On-call emergencies
 - v) Discharge summaries
- c) Systematically organize daily tasks (a.k.a. "the scut list")
- d) Use paper or electronic references to access evidence based medicine to solve clinical problems

Clinical competencies

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) A respect for patient's rights to confidentiality

4) Procedures

A. Rationale:

For fourth year medical students, the subinternship presents an opportunity to gain experience with procedures that are commonly performed by interns and residents.

B. Prerequisites:

Basic procedures (CDIM/SGIM curriculum clinical core competency # 11)

Advanced procedures (CDIM/SGIM curriculum clinical core competency # 15)

Bioethics of care ((CDIM/SGIM curriculum clinical core competency # 7)

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to describe:*

- a) The indications, contraindications, risks and benefits of each of the following procedures:
 - i) Venipuncture
 - ii) Intravenous catheter insertion
 - iii) Arterial blood sampling
 - iv) Nasogastric tube insertion
 - v) Lumbar puncture
 - vi) Urethral catheter insertion
- b) How the information obtained from these procedures will enhance the patient's care
- c) How to assess patients' competence to provide informed consent for a procedure
- d) Potential procedure related risks to the operator and the need for universal precautions

2) *Skills. Subinterns should be able to:*

- a) Recognize clinical situations where one or more procedures are indicated
- b) Effectively explain the rationale, risks and benefits for the procedure in language that is understandable by the patient
- c) Obtain and document informed consent, if necessary
- d) Recognize lack of skill or proficiency in performing one of the above procedures
- e) Personally perform, with supervision, the above procedures
- f) Write a procedure note
- g) Ensure that samples obtained are properly prepared for laboratory processing
- h) Teach procedure skills to third year medical students when appropriate

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Respect for patient autonomy and the principles of informed consent
- b) Concern for maximizing patient comfort
- c) Commitment to learning how to perform procedures in an efficient and cost-effective manner

TRAINING PROBLEMS

1) Abdominal Pain

A. Rationale

Abdominal pain is a frequent problem encountered by interns in hospitalized patients. An intern must thus be able to assess a patient who develops abdominal pain for the acuity and severity of the illness causing the pain and provide appropriate therapy.

B. Prerequisites

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Abdominal pain (CDIM/SGIM curriculum training problem # 7)

Gastrointestinal bleeding (CDIM/SGIM curriculum training problem #26)

C. Specific learning objectives

1) *Knowledge. Subinterns should be able to:*

- a) Describe common causes of abdominal pain in the hospitalized patient including:
 - i) Intestinal obstruction and pseudo-obstruction
 - ii) Gastritis and peptic ulcer disease
 - iii) Diverticulitis
 - iv) Obstipation/constipation
 - v) Ischemic colitis
 - vi) Peritonitis
 - vii) Acute appendicitis
 - viii) Biliary tract and liver disease
 - ix) Pancreatitis
 - x) Complications of procedures such as paracentesis, ERCP and post-catheterization hemorrhage
 - xi) Drug withdrawal or side effects
 - xii) Extra-abdominal causes of abdominal pain including pulmonary and cardiac causes
 - xiii) Metabolic syndromes such as hypo- or hyper- kalemia
 - xiv) Genito-urinary causes including urinary tract infections, pyelonephritis, renal calculi and pelvic disorders
 - xv) Retroperitoneal hemorrhage
- b) Describe the signs and symptoms specific to each of the above conditions
- c) Identify the most likely cause of abdominal pain in a specific patient
- d) Recognize that intraabdominal pathology may present atypically in immunocompromised patients
- e) Recognize early signs of shock in a patient with an intra-abdominal catastrophe

Training problems

2) *Skills. Subinterns should be able to:*

- a) Conduct a targeted history:
 - i) Rapidly evaluate the inpatient who develops abdominal pain while hospitalized:
 - ii) Consider the reason for hospitalization; co-morbidities; recent procedures and concurrent medications in this evaluation
 - iii) Conduct a focused chart review
- b) Conduct a physical examination:
 - i) Evaluate the patient for clinical stability
 - ii) Evaluate the patient for source of abdominal pain
 - iii) Evaluate the patient for peritoneal signs
 - iv) Perform serial physical examinations on the patient to assess for progression of disease
- c) Develop a management plan:
 - i) Provide appropriate resuscitative and supportive measures
 - ii) Demonstrate the ability to develop a differential diagnosis utilizing collected data
 - iii) Order appropriate laboratory and radiologic studies
 - iv) Request surgical and sub-specialty consultation as appropriate
 - v) Write an appropriately detailed cross-coverage or follow-up note to document the evaluation of the patient
 - vi) Provide appropriate nutritional support for patients who have impaired gastrointestinal motility or are unable to eat
 - vii) Provide analgesia when appropriate

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) A compassionate attitude towards patients with acute abdominal pain
- b) Sensitivity to the patient's pain while examining the patient
- c) Professionalism when communicating with colleagues and consultants

2) Acute Gastrointestinal Bleeding

A. Rationale

Acute gastrointestinal bleeding is a common clinical problem encountered by interns in the inpatient setting. Interns must be able to acutely stabilize, manage and seek appropriate consultation for patients with acute gastrointestinal bleeding.

B. Prerequisites

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Abdominal pain (CDIM/SGIM curriculum training problem # 7)

Gastrointestinal bleeding (CDIM/SGIM curriculum training problem #26)

Anemia (CDIM/SGIM curriculum training problem #9)

Liver disease (CDIM/SGIM curriculum training problem #28)

Training problems

C. Specific learning objectives

1) *Knowledge. Subinterns should be able to:*

- a) Describe common causes for acute gastrointestinal bleeding in the hospitalized patient including:
 - i) Upper GI bleeding
 - (1) Esophageal causes including varices, Mallory-Weiss tears
 - (2) Peptic ulcer disease and gastritis
 - ii) Lower GI bleeding including diverticular disease, arterial venous malformations, infectious diseases such as *clostridium difficile*, colorectal carcinoma, hemorrhoids and inflammatory bowel disease
- b) Describe the physical exam:
 - i) Parameters for the assessment of the patient's hemodynamic stability
 - ii) Findings suggestive of specific causes for gastrointestinal bleeding such as
 - (1) Stigmata of liver disease
 - (2) Skin manifestations of systemic disorders (such as petechiae or telangectasias) that may predispose to gastrointestinal bleeding
- c) Describe the contribution of co-morbidities, medications, reasons for hospitalization, recent or remote surgical procedures in the development of a logical differential diagnosis for the inpatient with acute GI bleeding
- d) Delineate appropriate resuscitative measures for the patient with consideration given to co-morbid illnesses
- e) Understand the role of therapeutic endoscopy in upper GI bleeds
- f) Understand the indications for using blood products including packed red blood cells, platelets and plasma derivatives
 - i) Describe the appropriateness of interventions such as nasogastric tube lavage for upper gastrointestinal bleeds; proctoscopy, radionuclide scans and selective angiography for localization of lower gastrointestinal bleeding
- g) Recognize situations in which it is necessary to seek support from resident emergently.
- h) Recognize indications for transfer to higher care units (e.g. the intensive care unit).

2) *Skills. Subinterns should demonstrate the ability to:*

- a) Conduct a history
 - i) Conduct a targeted history considering the reason for hospitalization; co-morbidities; recent procedures; bleeding diathesis; pertinent family history and concurrent medications
 - ii) Conduct a focused chart review
- b) Conduct a physical examination:
 - i) Evaluate the patient for clinical stability
 - ii) Evaluate the patient for source of abdominal pain
 - i) Evaluate the patient for peritoneal signs
- c) Develop a management plan:
 - i) Rapidly provide appropriate resuscitative measures including intravenous fluid replacement and blood products as necessary
 - ii) Order appropriate laboratory and radiologic studies for the patient including
 - (1) Type and cross for blood

Training problems

- (2) Initial laboratory studies including a hemoglobin and/or hematocrit, BUN, platelet count, INR and laboratory studies appropriate to the patient's co-morbidities and differential diagnosis for gastrointestinal bleeding
 - iii) Perform nasogastric lavage on a patient with a suspected upper gastrointestinal bleed
 - iv) Request consultation from gastroenterology and surgical services as appropriate
 - v) Write orders for blood products and pre-medication as indicated
 - vi) Provide appropriate nutritional support for patients who are unable to eat
 - vii) Re-evaluate the patient frequently to assess response to treatment and progression of disease
- 3) *Attitudes and professional behavior. Subinterns should demonstrate:*
- a) An understanding and respect of the patient's wishes with regards to the administration of blood products and provide alternate options for resuscitation
 - b) The ability to communicate effectively with patients, family and consultants regarding the patient's condition

3) Acute Pulmonary Edema

A. Rationale:

Interns are often asked to evaluate patients in acute pulmonary edema, a life threatening and frequent cause of inpatient admissions. A methodical, thoughtful approach is essential for timely diagnosis and management.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Congestive heart failure (CDIM/SGIM curriculum training problem #13)

Chest Pain (CDIM/SGIM curriculum training problem # 6)

Cough (CDIM/SGIM curriculum training problem # 2)

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to:*

- a) Understand the pathophysiology behind both cardiogenic and noncardiogenic causes
- b) Recognize the etiologies of cardiogenic pulmonary edema including:
 - i) Myocardial ischemia
 - ii) Valvular disease (acute aortic insufficiency, mitral regurgitation, mitral stenosis)
 - iii) Renovascular hypertension
 - iv) Other underlying conditions that may precipitate pulmonary edema (fever, sepsis, thyroid disease, anemia)
- c) Recognize the etiologies of noncardiogenic pulmonary edema including:
 - i) ARDS
 - ii) Re-expansion pulmonary edema

Training problems

- iii) High altitude pulmonary edema
- iv) Neurogenic pulmonary edema
- d) Recognize the clinical symptoms and signs of pulmonary edema
- e) Assess the severity of a patient's condition based on clinical presentation, laboratory and radiographic data (ECG, CXR, ABG)
- f) Identify other conditions that may closely mimic acute pulmonary edema in clinical presentation (pulmonary embolus, pneumonia)
- g) Describe indications for emergent treatment regimens in acute pulmonary edema such as:
 - i) Oxygen
 - ii) Diuretics
 - iii) Vasodilators including nitroprusside and nitroglycerin
 - iv) Morphine
 - v) Inotropic agents such as dopamine and dobutamine
- h) Describe the mechanisms of actions of the above medications in the treatment of pulmonary edema
- i) Describe the major indications for intubation and mechanical ventilation
- j) Recognize situations in which it is necessary to seek support from resident emergently.
- k) Recognize indications for transfer to higher care units (e.g. the intensive care unit).

2) *Skills. Subinterns should demonstrate the ability to:*

- a) Conduct a history
 - i) Collect information pertaining to the patient's acute decompensation
 - ii) Perform a chart review to collect information about the patient's chronic medical condition, reason for admission and hospital course
- b) Conduct a physical examination
 - i) Evaluate for signs of hemodynamic stability
 - ii) Evaluate for signs of impending respiratory failure
 - iii) Perform a thorough cardiopulmonary examination
- c) Develop a management plan:
 - i) Create a differential diagnosis for acute pulmonary edema based on specific clinical situations
 - ii) Order and interpret laboratory/radiographic studies (ABG, CXR, ECG) to arrive at specific cause for acute pulmonary edema
 - iii) Provide appropriate emergent supportive care and follow-up care (measuring daily weights, urinary input-output)
 - iv) Communicating the patient's status with other health care professionals as appropriate
 - v) Provide appropriate nutritional prescriptions and counseling for patients with salt sensitive pulmonary edema

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Compassion when communicating acute changes in respiratory status to the patient and/or family members
- b) Respect for patient wishes with regards to mechanical ventilation and invasive procedures

Training problems

4) Acute Renal Failure

A. Rationale:

Acute renal failure is an important cause of morbidity and mortality in hospitalized patients. It may be the reason for admission to the hospital or it may develop during a hospital stay. Interns should be able to recognize patients who are at increased risk for acute renal failure due to underlying disease, medications or procedures. They should also be able to provide initial management for patients who develop acute renal failure.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Acute renal failure (CDIM/SGIM curriculum clinical core competency #21)

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to describe and define:*

- a) The differential diagnosis of acute renal failure, including pre-renal, renal, and post renal causes
- b) The utility of the urinalysis in the diagnosis of acute renal failure, including the significance of the following:
 - i) Proteinuria
 - ii) Red or white cells
 - iii) Casts
- c) The utility of the urine sodium and fractional excretion of sodium in the differential diagnosis of acute renal failure
- d) The utility of imaging modalities used in the: evaluation of acute renal failure, including:
 - i) Plain film of the abdomen
 - ii) Ultrasonography
 - iii) CT scanning
 - iv) Renal arteriography
- e) Indications for dialysis
- f) The indications for renal biopsy in the setting of acute renal failure as well as the risks and contraindications for renal biopsy

2) *Skills. Subinterns should demonstrate the ability to:*

- a) Conduct a history eliciting and interpreting symptoms that could indicate acute renal failure (uremia, volume overload)
- b) Conduct a physical examination detecting and interpreting signs of volume overload, uremia, and bladder outlet obstruction
- c) Develop a management plan
 - i) Create a differential diagnosis for acute renal failure for specific clinical situations

Training problems

- ii) Perform and interpret a urinalysis in a patient with acute renal failure
- iii) Use information from serum and urine laboratory studies and imaging studies to arrive at specific cause for acute renal failure
- iv) Explain the expected course of acute renal failure and the procedure of hemodialysis to patients and families
- v) Calculate a fractional excretion of sodium in a patient with acute renal failure
- vi) Perform arterial blood sampling, placement of intravenous catheters and performing bladder catheterization as necessary
- vii) Order appropriate fluid and electrolyte management, medication adjustment for decreased glomerular filtration rate, and supportive care
- viii) Order appropriate diets for patients with renal dysfunction
- ix) Provide nutrition counseling for patients with renal dysfunction

3) *Attitudes and Professional Behaviors: Subinterns should demonstrate:*

- a) Sensitivity to patients' and families' concerns and questions when confronted with a serious diagnosis such as acute renal failure
- b) Commitment towards understanding patients' preferences regarding life-sustaining treatments such as dialysis

5) Altered Mental Status

A. Rationale:

Interns are often asked to evaluate patients with sudden changes in mental status. A systematic evaluation of these patients is crucial for accurate diagnosis and management.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Altered Mental Status (CDIM/SGIM curriculum training problem # 20)

Depression (CDIM/SGIM curriculum training problem # 18)

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to describe and define:*

- a) Delirium as a time-limited alteration in level of awareness
- b) The distinction between dementia and delirium
- c) The common causes of delirium (especially those found in the geriatric population), including:
 - i) Medications (opioids, benzodiazepines, anticholinergics, tricyclics, H2 blockers)
 - ii) Metabolic (hypoglycemia, hypo/hypernatremia, uremia, hypoxia, hypercapnea, hypothyroidism)
 - iii) Toxins (alcohol, carbon monoxide)
 - iv) Infectious (bacteremia, meningitis)

Training problems

- v) CNS (subdural hematoma, CVA, postictal states)
- d) Environmental and pharmacological interventions used to manage delirium including haloperidol, mellaril and benzodiazepines
- e) Side effects of medications commonly used to treat delirium
- f) Recognize dementia as a risk factor for malnutrition

2) *Skills. Subinterns should be able to:*

- a) Conduct a history
 - i) Establish a baseline mental status and timeline of mental decline via a chart review and/or discussions with family or caretakers
 - ii) Perform a rapid and thorough baseline medical history
 - iii) Perform a thorough evaluation of medication administration records
- b) Conduct a physical examination: Recognize important physical findings, including:
 - i) Bradycardia and hypertension suggesting increased ICP (Cushing's triad)
 - ii) Fever or tachycardia suggesting infection
 - iii) Hypothermia suggesting sepsis hypothyroidism
 - iv) Pinpoint pupils and bradypnea suggesting opioid use
 - v) Neck resistance to passive flexion suggesting subarachnoid bleed or meningitis
 - vi) Evidence of hypoxia
 - vii) Focal neurological deficits
 - viii) Cutaneous lesions suggestive of systemic diseases
 - ix) Perform a mini-mental status examination
 - x) Determine a Glasgow Coma Scale when appropriate
 - xi) Assess a patient's short and long term risk for aspiration
- c) Develop an appropriate management plan:
 - i) Order appropriate laboratory testing in the diagnosis of delirium
 - ii) Order appropriate radiological studies in the diagnosis of delirium
 - iii) Obtain timely input from supervising housestaff and/or faculty
 - iv) Order appropriate medications and discontinue or adjust medications that may contribute to delirium
 - v) Provide appropriate precautions for the patient at risk for aspiration
- d) Write a "cross-coverage" note

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) A non-judgmental attitude towards patients suffering from altered mental status secondary to drug or alcohol withdrawal
- b) Professionalism when communicating with ancillary support staff when collecting further information

6) Arrhythmias

A. Rationale:

Interns commonly face the problem of evaluating and treating arrhythmias, a source of inpatient morbidity and mortality. Interns should be able to develop appropriate diagnostic and treatment plans for patients with cardiac arrhythmias.

Training problems

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Diagnostic decision making (CDIM/SGIM curriculum clinical core competency # 1)

Congestive heart failure (CDIM/SGIM curriculum training problem # 13)

Chest pain (CDIM/SGIM curriculum training problem # 6)

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to describe and define:*

- a) The types of arrhythmias commonly encountered in the inpatient setting, including:
 - i) Premature atrial/ventricular contractions
 - ii) Ventricular arrhythmias (tachycardia, fibrillation, torsade de pointes)
 - iii) Atrial arrhythmias (fibrillation, flutter)
 - iv) Supraventricular tachyarrhythmias
 - v) Atrioventricular blocks
 - vi) Bradycardias
- b) Distinguishing “benign” from significant arrhythmias
 - i) Recognition of “benign” arrhythmias such as isolated premature atrial or ventricular contractions
 - ii) Recognition of the significance of persistent or sustained premature atrial or ventricular contractions and the need to test for electrolyte abnormalities
- c) Describe the clinical symptoms associated with cardiac arrhythmias – palpitations, hemodynamic instability, chest pain, shortness of breath
- d) Understand the clinical scenarios which may result in various arrhythmias
 - i) Myocardial infarctions: any arrhythmia
 - ii) Nodal blocking medications such as Calcium channel blockers and beta blockers: bradyarrhythmias
 - iii) Electrolyte abnormalities resulting in various arrhythmias
 - iv) Anti-arrhythmic medications which may result in *torsades de pointes*
 - v) Infections, thyroid disease, pulmonary disease, myocardial infarctions, cardiomyopathy, alcohol use, valvular heart disease, pericarditis, electrolyte abnormalities which may result in atrial fibrillation
- e) The appropriate diagnostic workup for patients with arrhythmias (ECG, echocardiogram, telemetry or Holter monitoring, electrophysiologic studies)
- f) The risk associated with cardiac arrhythmias based on a patient’s history, physical exam and ECG, determining the need for urgent treatment
- g) The need for appropriate referral to cardiologist/electrophysiologist
- h) Therapeutic options in treating arrhythmias (pharmacologic, electrical cardioversion, pacemakers, defibrillators, electrical catheter ablation)
- i) The need for anticoagulation in management of certain arrhythmias
- j) The pharmacology and side effects of medications commonly used to chemically cardiovert a patient in atrial fibrillation

Training problems

- k) Pharmacology and side effects of medications commonly used to treat supraventricular tachycardia
- l) Utility and appropriate implementation of continuous cardiac monitoring
- m) Recognize situations in which it is necessary to seek support from resident emergently.
- n) Recognize indications for transfer to higher care units (e.g. the intensive care unit).

2) *Skills. Subinterns should be able to:*

- a) Conduct a history:
 - i) Identify symptoms of cardiac arrhythmias including chest pain, palpitations, dyspnea and anxiety
 - ii) Collect information about comorbidities that may contribute to the development of an arrhythmia
- b) Conduct a physical examination:
 - i) Evaluate vital signs for hemodynamic stability
 - ii) Identify irregular and regular rhythms
 - iii) Evaluate for signs for pulmonary edema
 - iv) Evaluate for signs of valvular heart disease
- c) Develop a management plan:
 - i) Interpret ECG and/or telemetry rhythm strips in diagnosing cardiac arrhythmias
 - ii) Develop a diagnostic plan for evaluating a patient's arrhythmia
 - iii) Determine appropriate medication for the rate control of tachyarrhythmias
 - iv) Determine the appropriate management (atropine vs. pacing) for the patient with a symptomatic bradyarrhythmias
 - v) Obtain appropriate consultation from supervising housestaff, faculty and consultants
 - vi) Communicate the patient's history and status effectively with members of the health care team and cross coverage team

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Recognition that anxiety and fear may accompany or cause arrhythmias
- b) Compassion when assessing and treating the patient with an acute arrhythmia.

7) Chest pain

A. Rationale:

Interns are often asked to evaluate patients who complain of chest pain. Given the potentially serious nature of this symptom, a thoughtful approach to the evaluation of chest pain is warranted.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)
Test interpretation (CDIM/SGIM curriculum clinical core competency #5)
Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)
Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)
Chest Pain (CDIM/SGIM curriculum training problem # 6)

Training problems

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to describe and define:*

- a) The historical, physical examination, electrocardiographic, laboratory and radiographic findings of serious cardiopulmonary etiologies of chest pain, including:
 - i) Acute coronary syndromes
 - ii) Pulmonary embolism
 - iii) Pneumothorax
 - iv) Aortic dissection
 - v) Pericarditis
- b) Non-life threatening causes of acute chest pain including:
 - i) Esophageal reflux and spasm
 - ii) Peptic ulcer disease
 - iii) Pneumonia
 - iv) Musculoskeletal strain
- c) The role of laboratory testing in the diagnosis of chest pain
 - i) Evaluation of the hemoglobin
 - ii) Evaluation of cardiac enzymes
- d) The role of radiological studies in the diagnosis of chest pain
- e) Appropriate clinical situations in which a patient should be transferred to telemetry monitored unit or intensive care unit
- f) Recognize situations in which it is necessary to seek support from resident emergently.

2) *Skills. Subinterns should be able to:*

- a) Conduct a history:
 - i) Obtain a history which helps to distinguish the above etiologies of chest pain
 - ii) Perform a focused chart review
- b) Conduct a physical examination: Recognize important physical findings, including:
 - i) Abnormal vital signs (differential blood pressure, hypotension, tachypnea, tachycardia)
 - ii) Signs of tension pneumothorax including tracheal deviation and absent breath sounds
 - iii) Pulmonary rales and friction rubs
 - iv) Pericardial rubs
 - v) Murmurs of aortic insufficiency and acute mitral regurgitation
 - vi) Abdominal tenderness
- c) Develop a management plan:
 - i) Acquire and interpret an electrocardiogram
 - ii) Access the AHA/ACC guidelines for the evaluation and treatment of patients with acute coronary syndromes (<http://www.acc.org/clinical/topic/topic.htm>)
 - iii) Provide appropriate treatment and/or analgesia for patients without an acute coronary syndrome
 - iv) Obtain timely input from supervising housestaff and/or faculty
 - v) Write a “cross-coverage” note
 - vi) Plan the transfer of a patient to a telemetry monitored unit or intensive care unit when appropriate

Training problems

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Compassion towards patient's wishes with regards to resuscitation and mechanical support

8) Drug Withdrawal

A. Rationale:

Many inpatient admissions are complicated by intentional or unintentional withdrawal from tobacco, alcohol, or other drugs of abuse. Interns are responsible for recognizing and managing withdrawal symptoms in acutely ill medical inpatients.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Substance abuse (CDIM/SGIM curriculum training problem #16)

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to describe and define:*

- a) History findings that identify patients admitted for reasons other than detoxification at risk for withdrawal from alcohol or other substances of abuse
- b) The symptoms and physical exam findings of different stages of alcohol withdrawal
- c) The timing of and risk factors for alcohol withdrawal seizures and delirium tremens (DTs)
- d) Non-pharmacologic treatment of alcohol withdrawal, including modifying environmental stimuli
- e) The need for early, aggressive treatment of withdrawal to prevent the development of complications
- f) The indications for short-term nicotine replacement therapy in medical inpatients unable leave the ward to smoke but uninterested in smoking cessation
- g) The impact on hospital length-of-stay and discharge planning in initiating methadone therapy for narcotic withdrawal

2) *Skills. Subinterns should be able to:*

- a) Conduct a history and physical:
 - i) Recognize the clinical signs and symptoms of alcohol stimulant (cocaine, amphetamine) and opioid withdrawal
 - ii) Use of the Clinical Institute Withdrawal Assessment (CIWA) instrument to classify patients into stages of alcohol withdrawal
- b) Develop a management plan:

Training problems

- i) Treat alcohol withdrawal seizures, uncomplicated withdrawal, and Delirium Tremens (using benzodiazepines, beta or alpha blockers, anti-convulsants and/or vitamins and minerals)
- ii) Treat stimulant withdrawal using appropriate pharmacologic and non-pharmacologic methods

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) A compassionate and non-judgmental attitude towards patients with active substance abuse

9) Electrolyte Disorders

A. Rationale

Electrolyte abnormalities are common in hospitalized patients and may occur due to underlying disease or as a consequence of treatment. Severe electrolyte disturbances may be life-threatening; therefore interns must be able to recognize clinical situations where electrolyte disturbances are likely to occur. Interns should be able to develop appropriate treatment plans for patients with electrolyte disorders.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Fluid, electrolyte, and acid-base disorders (CDIM/SGIM curriculum training problem #8)

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to describe:*

- a) The differential diagnosis of the electrolyte abnormalities, including:
 - i) Hyponatremia (congestive heart failure, cirrhosis, thiazide diuretics, SIADH, adrenal insufficiency, hypothyroidism, primary polydipsia, beer drinker's potomania, pseudohyponatremia)
 - ii) Hypernatremia (water loss, central or nephrogenic diabetes insipidus, osmotic diuresis)
 - iii) Hypokalemia (alkalosis, hyperinsulinemia, beta-agonists, hypokalemic periodic paralysis, vomiting, diarrhea, diuretics, hyperaldosteronism, hypomagnesaemia, amphotericin)
 - iv) Hyperkalemia (hemolysis, acidosis, insulin deficiency, aldosterone deficiency, rhabdomyolysis, renal failure, renal tubular acidosis, spironolactone, NSAIDS, cyclosporine)
 - v) Hypocalcaemia (hypoparathyroidism, hypomagnesaemia, vitamin D deficiency)
 - vi) Hypercalcemia (malignancy, hyperparathyroidism, adrenal insufficiency, hyperthyroidism, drugs, Vitamin D intoxication, milk-alkali syndrome, granulomatous diseases)

Training problems

- vii) Hypophosphatemia (malabsorption, vitamin D deficiency, hyperparathyroidism, respiratory alkalosis, alcohol withdrawal)
- viii) Hyperphosphatemia (renal failure, hypoparathyroidism, rhabdomyolysis, tumor lysis syndrome, bisphosphonates, vitamin D toxicity)
- ix) Hypomagnesaemia (alcohol abuse, diuretics, amphotericin, cisplatin, cyclosporine, recovery from ATN, diabetic ketoacidosis, hypercalcemia)
- x) Hypermagnesemia (renal failure, magnesium ingestion, tumor lysis syndrome)
- b) Signs and symptoms associated with each of the above disorders
- c) Clinical consequences associated with the above disorders
- d) Indications for the urgent and non-urgent correction of the above disorders
- e) The rational use of laboratory tests to identify the causes of the above disorders
- f) EKG findings of each disorder

2) Skills. Subinterns should demonstrate skill in:

- a) Conduct a history:
 - i) Obtain from patients and correctly interpret symptoms that could indicate an underlying electrolyte disorder, and they should be able to obtain and interpret the significance of the patient's medication history
- b) Conduct a physical examination:
 - i) Assess volume status, elicit deep tendon reflexes, assess muscle strength, perform a mental status examination and test for Trousseau's and Chvostek's signs
- c) Develop a management plan:
 - i) Work through the differential diagnosis for the electrolyte disorders above in order to arrive at a specific diagnosis
 - ii) Develop an efficient plan for using laboratory tests (including serum, urine and EKG) to determine the cause of the above electrolyte disorders
 - iii) Succinctly summarize a case and form a clinical question for a subspecialty consultant such as a nephrologist or endocrinologist if necessary
 - iv) Correctly order and perform the following procedures as necessary
 - (1) Arterial blood sampling
 - (2) Intravenous catheter insertion
 - (3) Urethral catheter insertion
 - v) Write orders for the correction of specific electrolyte disorders, including attention to the following:
 - (1) Hyponatremia: prescribe the following interventions as appropriate with careful attention to avoiding overcorrection:
 - (a) Fluid restriction
 - (b) Volume repletion
 - (c) Diuresis
 - (2) Hypermnatremia
 - (a) Correctly calculate free water deficit
 - (b) Write fluid replacement
 - (c) Avoid overcorrection
 - (3) Hypokalemia
 - (a) Estimate potassium deficit
 - (b) Understand indications for IV replacement

Training problems

- (c) Write replacement orders
 - (4) Hyperkalemia
 - (a) Appropriately determine the correct modality of treatment (kayexalate, insulin, beta agonists, bicarbonate)
 - (b) Call nephrology consultant as appropriate for hemodialysis with severe hyperkalemia
 - (c) Modify diet as appropriate
 - (5) Hypocalcaemia: write orders for oral replacement or IV replacement as indicated
 - (6) Hypercalcemia: Appropriately prescribe calcium lowering medications as indicated by degree of hypercalcemia
 - (7) Hypophosphatemia: Write orders for phosphate repletion
 - (8) Hyperphosphatemia Appropriately prescribe oral calcium solutions for patients with chronic renal failure
 - (9) Hypomagnesemia (order magnesium replacement)
- 3) *Attitudes and professional behavior. Subinterns should demonstrate:*
- a) Motivation towards learning how to recognize and treat their patients' electrolyte disorders

10) Fever

A. Rationale:

Fever is a common symptom seen in hospitalized patients – both on the intern's service and in the cross-coverage of patients. The intern should be able to appropriately evaluate and treat fever in the hospitalized patient

B. Prerequisites

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Nosocomial infection (CDIM/SGIM curriculum training problem #24)

Pneumonia (CDIM/SGIM curriculum training problem #22)

HIV infection (CDIM/SGIM curriculum training problem #12)

C. Specific learning objectives

1) *Knowledge. Subinterns should be able to define and describe:*

- a) The common sources of bacteremia in febrile in-patients including:
 - i) Intravascular catheters
 - ii) Endocarditis
 - iii) Decubitus ulcer
 - iv) Pneumonia
 - v) Urinary tract infection
 - vi) Abscess

Training problems

- b) The most likely causative organisms for nosocomial infections in the febrile inpatient in each of the above scenarios
 - c) The most appropriate antibiotics for each of the most likely sources of infections
 - d) Subinterns should recognize less common causes of fever in hospitalized patients, including:
 - i) Clostridium difficile infection
 - ii) Deep venous thromboses
 - iii) Sinusitis (in patients with nasogastric tubes)
 - iv) Gout
 - v) Tumors
 - vi) Drugs
 - e) Subinterns should recognize the common infectious causes of fever in patients with AIDS as predicted by CD4 counts:
 - i) Pneumonia (any)
 - ii) Tuberculosis (350)
 - iii) Pneumocystis carinii pneumonia (100-200)
 - iv) Toxoplasmosis/Cryptococcus/Cytomegalovirus/Mycobacterium avium complex (<50)
 - f) Subinterns should understand the significance of fever in patients taking steroids and in patients with neutropenia (absolute neutrophil count <500)
- 2) *Skills. Subinterns should be able to:*
- a) Conduct a history and focused chart review which helps to differentiate among etiologies of fever, including:
 - i) Localizable symptoms
 - ii) The presence and duration of an indwelling catheter
 - iii) History of valve replacement, HIV, intravenous drug use, medication use
 - b) Conduct a physical examination: assess for the presence of indwelling catheters, phlebitis, heart murmurs, pulmonary rales, an acute abdomen, and decubitus ulcers
 - c) Develop a management plan:
 - i) Order appropriate body fluid cultures and radiologic studies in evaluating the various causes of fever
 - ii) Identify patients who warrant empiric antimicrobial therapy
 - iii) Identify the most appropriate antibiotic therapy for the clinical situation at hand
 - iv) Adjust antibiotic dosage based upon age, renal function and obesity
 - d) Subinterns should demonstrate an understanding of the risks of inappropriate antimicrobial therapy
- 3) *Attitudes and professional behavior. Subinterns should demonstrate:*
- a) Motivation towards learning how to recognize and treat the causes of fever in a hospitalized patient
 - b) Understanding of risks associated with catheters and other short-term indwelling medical devices (e.g. naso-gastric tubes) in inpatients

Training problems

11) Glycemic Control

A. Rationale:

Type 2 diabetes is a complicating factor in approximately 40% of hospital admissions. An understanding of diabetes management in the hospital setting is essential for the safe delivery of health care to this population.

B. Prerequisite:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Diabetes mellitus (CDIM/SGIM curriculum training problem # 14)

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to:*

- a) Understand the common acute metabolic complications of diabetes, defined as follows:
 - i) Diabetic ketoacidosis
 - (1) Plasma glucose >250 mg/dl with 1) arterial pH <7.30 and serum bicarbonate level <15 mEq/l
 - (2) Moderate ketonuria in the presence of functioning kidneys and/or ketonemia
 - ii) Hyperglycemic hyperosmolar state
 - (1) Impaired mental status and elevated plasma osmolality in a patient with hyperglycemia
 - (2) This usually includes severe hyperglycemia (e.g., plasma glucose >600 mg/dl) and elevated serum osmolality
 - iii) Uncontrolled diabetes
 - iv) Hyperglycemia associated with volume depletion
 - v) Persistent refractory hyperglycemia associated with metabolic deterioration
 - vi) Recurring fasting hyperglycemia >300 mg/dl that is refractory to outpatient therapy or an A1C level \geq 100% above the upper limit of normal.
 - vii) Hypoglycemia with neuroglycopenia [Blood glucose <50 mg/dl and coma, seizures, or altered behavior (e.g., disorientation, ataxia, unstable motor coordination, dysphasia) due to hypoglycemia]
- b) Understand the common causes for acute deterioration in diabetic control including infections, medication alterations, progressive or acute renal insufficiency, steroid use and myocardial infarction
- c) Understand that the main glycemic objective in a hospitalized diabetic is to avoid both excessive hyperglycemia (glucose >200) and hypoglycemia. "Tight control" is a long term, outpatient goal
- d) Understand the pharmacology of and complications of commonly used diabetic medications (insulin, sulfonylureas, metformin, and thiazolidinedione agents)
- e) Understand indications for discontinuation or initiation of diabetic medications during a hospital admission

Training problems

- f) Recognize co morbid conditions that will affect glycemic control and insulin requirements (specifically, renal and hepatic insufficiency and acute infections)
- g) Recognize the effects of non-diabetic medications such as steroids and pentamidine on glycemic control

2) *Skills. Subinterns should be able to:*

- a) Conduct a history:
 - i) Assess for symptoms of hyperglycemia and hypoglycemia
 - ii) Assess for symptoms of underlying conditions (e.g. infection, myocardial infarction, metabolic disturbances) that may have resulted in hyper or hypo-glycemia
- b) Conduct a physical examination
 - i) Evaluate volume status and hemodynamic stability
- c) Develop a management plan
 - i) For patients with acute metabolic complications of diabetes. Include initial emergent supportive care, diagnostic work-up, and follow-up care
 - ii) For patients with hyperglycemia that is indirectly related to their primary reason for admission
 - iii) For diabetics who are not receiving oral or intravenous nutrition
 - iv) For hyperglycemia in patients on oral agents
 - v) Write a sliding scale for insulin based upon the patient's comorbidities (renal and hepatic insufficiency, acute illness, concomitant medications) and estimated insulin requirements
 - vi) Manage diabetes mellitus in the peri-operative setting
 - vii) Adjust hypoglycemic medications for in-hospital caloric intake which may differ from outpatient caloric intake
 - viii) Write an appropriate diet for a diabetic accounting for caloric needs
 - ix) Provide nutritional counseling for patients with diabetes

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Compassion towards the patient diagnosed with diabetes
- b) Recognition of the social, economic and emotional impact of this diagnosis
- c) Recognition of the importance of dietary counseling for the self-management of diabetes

12) Hypertensive Emergencies

A. Rationale

Although hypertensive emergencies are uncommon, they have the potential for significant morbidity and mortality. Therefore, it is important that interns be able to recognize and treat hypertensive emergencies. Interns frequently encounter issues around hypertension and hypertension treatment in hospitalized patients with important comorbidities such as acute stroke, congestive heart failure, coronary artery disease, renal insufficiency, or diabetes mellitus.

B. Prerequisites

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)
Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Training problems

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Hypertension (CDIM/SGIM curriculum training problem # 10)

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to:*

- a) Define hypertensive emergency and describe the signs and symptoms of conditions associated with it:
 - i) Hypertensive encephalopathy
 - ii) Acute congestive heart failure
 - iii) Acute aortic dissection
 - iv) Eclampsia
 - v) Acute coronary syndromes
 - vi) Acute renal failure
 - vii) Food or drug interactions with monoamine oxidase inhibitors
 - viii) Drug ingestion (cocaine, amphetamine, phencyclidine) or withdrawal (antihypertensive agents, especially Clonidine)
- b) Describe the mechanism of action, routes of administration, dose, time of action and uses of the following drugs in the treatment of the above hypertensive emergencies:
 - i) Nitrates: nitroprusside and nitroglycerine
 - ii) Beta-blockers including labetalol
 - iii) Hydralazine
 - iv) Diazoxide
 - v) Phentolamine
- c) Describe the concept of blood pressure autoregulation and its relevance to the treatment of hypertensive emergency
- d) Describe appropriate long-term choice of antihypertensive medication for patients with the following underlying conditions:
 - i) Diabetes mellitus
 - ii) Renal insufficiency
 - iii) Coronary artery disease
 - iv) Congestive heart failure
 - v) Obstructive airways disease
 - vi) Renovascular disease
 - vii) Pheochromocytoma
- e) Identify low cost antihypertensive medications
- f) Describe situations where nonhypertensive inpatients may have elevated blood pressure (pain, alcohol withdrawal, drug ingestion, medication effect, drug interaction)

2) *Skills. Subinterns should be able to:*

- a) Conduct a history:
 - i) Obtain and interpret a history of symptoms that could indicate hypertensive emergency (chest pain, headache, blurred vision, dyspnea, change in mental status)

Training problems

- b) Conduct a physical examination identifying and interpreting physical findings relevant to hypertension (hypertensive retinopathy, elevated jugular venous pressure, lung crackles, S3, S4, edema, abdominal bruit)
- c) Develop a management plan:
 - i) Choose antihypertensive therapy for patients with comorbidities listed in C1f.
 - ii) Identify abnormal EKG findings including ischemia, hypertensive urgency and left ventricular hypertrophy
 - iii) Identify situations that could result in elevated blood pressure, including pain, alcohol withdrawal, drug intoxication, and drug interactions
 - iv) Identify appropriate treatments for the clinical situations described in 2ci

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Sensitivity towards the patient's prospective hypertension treatment, including the issues of behavior change and medication cost, convenience and side effects

13) Nausea and Vomiting

A. Rationale

Inpatients frequently develop nausea and vomiting during hospitalization. Interns will be called upon to evaluate and manage either their own patients or cross-coverage patients who develop nausea and vomiting.

B. Prerequisites

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Abdominal pain (CDIM/SGIM curriculum training problem # 7)

Gastrointestinal bleeding (CDIM/SGIM curriculum training problem # 26)

Substance abuse (CDIM/SGIM curriculum training problem #16)

Fluid, electrolyte and acid-base disorders (CDIM/SGIM curriculum training problem #8)

Diabetes mellitus (CDIM/SGIM curriculum training problem #14)

C. Specific learning objectives

1) *Knowledge. Subinterns should demonstrate:*

- a) A knowledge of the signs and symptoms of various diseases that may present with nausea and vomiting including
 - i) Gastrointestinal processes such as intestinal obstruction, peptic ulcer disease, pancreatitis and biliary tract diseases
 - ii) Metabolic derangements including DKA, uremia, electrolyte and acid base disturbances
 - iii) Withdrawal from drugs of abuse including alcohol and drugs
 - iv) Side effects of common medications utilized in the inpatient setting including narcotics, antibiotics and NSAIDS

Training problems

- v) Post-procedural or surgical complications that can result in nausea or vomiting including ERCP, post-operative ileus and anesthesia
- vi) Infections such as urinary tract infections
- vii) Psychiatric causes such as anxiety
- viii) Central nervous system disturbances such as increased intracranial pressure
- b) A knowledge of appropriate diagnostic laboratory and radiologic studies to order for the evaluation of the patient with nausea and vomiting
- c) A knowledge of medications utilized to treat symptoms of nausea and vomiting
- d) A knowledge of appropriate measures for the protection of the airway in a patient with impending airway compromise from nausea and vomiting

2) *Skills. Subinterns should be able to:*

- a) Conduct a history to elicit symptoms which may elucidate the cause of a patient's nausea and/or vomiting
- b) Conduct a physical examination to assess the patient for clinical stability
- c) Develop a management plan:
 - i) Synthesize data collected into an appropriate differential diagnosis for the patient. Such a differential should differentiate the patient who requires further acute work up versus symptomatic management
 - ii) Order appropriate diagnostic testing
 - iii) Provide appropriate resuscitative measures with consideration given to the patient's co-morbidities, concurrent medications, recent procedures and hospital course
 - iv) Prescribe nutritional support as indicated by the patient's caloric needs and ability to eat
 - v) Recognize scenarios when consultation with colleagues or consultants is necessary

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Compassion towards the patient suffering from nausea and vomiting particularly due to pain or anxiety
- b) The ability to communicate effectively with colleagues and consultants

14) Pain Management

A. Rationale:

Many inpatient admissions involve pain management, either from acute medical conditions or pre-existing chronic pain syndromes. Interns should be proficient in managing pain in hospitalized patients.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Substance abuse (CDIM/SGIM curriculum training problem #16)

Training problems

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to describe and define:*

- a) Non-pharmacologic therapy for pain
- b) The WHO Analgesic ladder for the management of pain
- c) Indications for the usage of patient controlled analgesia
- d) Side effects of common pain medications including NSAIDS, Tramadol, hydrocodone, morphine, fentanyl and codeine

2) *Skills. Subinterns should be able to:*

- a) Conduct a history and physical examination to elicit signs and symptoms that distinguish between narcotic tolerance, dependence, pseudo-addiction, and addiction
- b) Develop a management plan:
 - i) Apply the WHO analgesic ladder to the management of acute pain
 - ii) Calculate equal-analgesic doses of common narcotics
 - iii) Convert narcotics from enteral to parenteral doses (and the reverse) using equal-analgesic doses
 - iv) Utilize patient controlled analgesia (PCA) in the management of acute pain, including how to determine the loading dose, continuous rate, PRN dose, four-hour maximum, and dosing interval for both narcotic naïve patients and patients already on maintenance doses of chronic narcotics
 - v) Identify treat, and prevent narcotic associated side effects including nausea, constipation, and central nervous system effects

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) A non-judgmental approach to patients with request for analgesia
- b) Compassion for a patient who suffers from pain

15) Respiratory Distress

A. Rationale:

Interns are often asked to evaluate patients in respiratory distress. A methodical, thoughtful approach is essential for timely diagnosis and management.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

COPD (CDIM/SGIM curriculum training problem #11)

Congestive heart failure (CDIM/SGIM curriculum training problem #13)

Cough (CDIM/SGIM curriculum training problem #2)

Chest pain (CDIM/SGIM curriculum training problem #6)

Training problems

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to describe and define:*

- a) The symptoms and signs as well as risk factors for:
 - i) Pulmonary embolism
 - ii) Pneumothorax
 - iii) COPD exacerbation
 - iv) Asthma exacerbation
 - v) Pneumonia, including aspiration
 - vi) Pleural effusion
 - vii) Acute myocardial infarction
 - viii) Congestive heart failure
- b) Determine the diagnostic workup and treatment of patients with suspected pulmonary embolism
- c) Describe indications for emergent treatment regimens in pulmonary embolism
- d) Assess the severity of a patient's asthma/COPD based on clinical presentation and arterial blood gases
- e) Recognize the importance of objective measurements of lung function in asthma/COPD management
- f) Describe indications for emergent treatment regimens in congestive heart failure
- g) Assess the severity of a patient's heart failure based on clinical presentation and laboratory/radiographic data
- h) Describe the major indications for intubation
- i) Describe the major indications for chest tube insertion
- j) Describe the clinical and laboratory signs of impending respiratory failure
- k) Recognize situations in which it is necessary to seek support from resident emergently.
- l) Recognize indications for transfer to higher care units (e.g. the intensive care unit).

2) *Skills. Subinterns should be able to:*

- a) Conduct a history identifying symptoms of respiratory distress and potential causes
- b) Conduct a physical examination:
 - i) Detect and interpret physical examination signs of pulmonary embolism, pneumothorax, congestive heart failure, asthma/COPD, pneumonia and other pulmonary processes, acute myocardial infarction, acute coronary syndrome, ischemia and unstable angina
- c) Developing a management plan for patients with respiratory distress,
 - i) Include emergent supportive care (such as oxygen therapy) when necessary.
 - ii) Create a differential diagnosis for respiratory distress based on specific clinical situations
 - iii) Interpret laboratory/radiographic studies (ABG, CXR, ECG) and other measures such as calculation of A-a gradient to arrive at specific cause for respiratory distress
 - iv) Recognize clinical scenarios when rapid consultation with a supervising resident, fellow or attending is needed
 - v) Recognize a patient in whom respiratory failure is imminent and in whom intubation may be required
 - vi) Appropriately activate the emergency cardiac/respiratory arrest team when needed

Training problems

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Sensitivity to patients' and/or family members' concerns and questions regarding intubation, mechanical ventilation, and chest tube insertion

16) Seizures

A. Rationale:

Interns may encounter patients with an admitting diagnosis of seizure or patients who develop seizures during a hospital stay. In order to treat these patients successfully, interns should understand common causes and first line treatments for seizures. In addition, interns should be able to recognize and understand the significance of status epilepticus.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

C. Specific Learning Objectives

1) *Knowledge. Subinterns should be able to:*

- a) Describe toxic/metabolic causes of seizures, including hypoglycemia; acute hyponatremia; hypocalcemia; hypomagnesemia; uremia; hepatic encephalopathy; hyperthyroidism; hypothyroidism; cerebral anoxia; withdrawal from alcohol, benzodiazepines, or barbiturates
- b) Recognize medications that may cause seizures, including quinolones, metronidazole, isoniazid, tricyclic antidepressants, lithium, cyclosporine, lidocaine, theophylline
- c) Recognize drugs of abuse that may cause seizures, including amphetamines, cocaine, phencyclidine and alcohol
- d) Describe brain diseases that may cause seizures, including structural brain lesions, Alzheimer's Dementia, encephalitis, meningitis, trauma, subarachnoid hemorrhage, neurocysticercosis
- e) Describe the potential consequences of status epilepticus, including rhabdomyolysis, metabolic acidosis, aspiration, respiratory failure and neuronal death

2) *Skills. Subinterns should demonstrate specific skills, including:*

- a) Conduct a history
 - i) Elicit from patients and observers symptoms and observed behaviors that characterize seizures, including auras, seizure precipitants, automatisms, tonic-clonic movements, myoclonic movements, incontinence, and postictal symptoms (somnolence, confusion, headache)
- b) Conduct a physical examination

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- i) Rapidly assess a patient who is having a seizure, including assessment of airway patency, respirations, and hemodynamics
 - ii) Recognize tonic, clonic, tonic-clonic, and myoclonic movements and tongue or oral mucosal injuries related to seizures
 - iii) Perform a complete neurological examination including assessment of mental status
 - iv) Recognize signs of increased intracranial pressure
 - c) Develop a management plan
 - i) Interpret information obtained from the history and physical examination of a patient with seizures to correctly classify the type of seizure and generate a differential diagnosis for the specific clinical circumstances
 - ii) Appropriately order and interpret tests used in the evaluation of seizures, including:
 - (1) Serum and urine chemistries (Glucose, electrolytes, calcium, magnesium, BUN, creatinine, liver function tests, toxicology screens)
 - (2) Cerebrospinal fluid analysis
 - (3) EEG
 - (4) Brain imaging
 - iii) Recognize laboratory test abnormalities that may result from seizures, including metabolic acidosis and leukocytosis
 - iv) Counsel patients about state requirements for limitations on driving following a seizure
 - v) Develop a treatment plan for inpatients with seizures, including
 - (1) Correction of metabolic abnormalities
 - (2) Treatment of alcohol or benzodiazepine withdrawal
 - (3) Discontinuation of seizure-inducing medications
 - (4) Appropriate use of anticonvulsant medications
 - (5) Order appropriate measures for placing a patient on seizure precautions
- 3) *Attitudes and professional behavior. Subinterns should demonstrate:*
- a) Understanding towards patients' concerns about seizure-related limitations on driving or other activities

17) Shock

A. Rationale:

Despite aggressive treatment, the mortality associated with shock remains staggeringly high. Interns are often emergently asked to evaluate patients in shock. Prompt recognition of shock states is crucial for timely diagnosis and management.

B. Prerequisites:

History taking and physical examination (CDIM/SGIM curriculum clinical core competency #3)

Test interpretation (CDIM/SGIM curriculum clinical core competency #5)

Communication and relationships with colleagues (CDIM/SGIM curriculum clinical core competency #4)

Therapeutic decision making (CDIM/SGIM curriculum clinical core competency # 6)

Altered Mental Status (CDIM/SGIM curriculum training problem # 20)

Congestive Heart Failure (CDIM/SGIM curriculum training problem # 13)

Training problems

Chest Pain (CDIM/SGIM curriculum training problem #6)

Fluid, Electrolyte, and Acid-Base Disorders (CDIM/SGIM curriculum training problem # 8)

C. Specific Learning Objectives:

1) *Knowledge. Subinterns should be able to:*

- a) Understand the broad mechanisms of shock (hypovolemic, cardiogenic, distributive)
- b) Recognize the etiologies of hypovolemic shock including:
 - i) Fluid loss
 - ii) Hemorrhage
- c) Recognize the etiologies of cardiogenic shock including:
 - i) Acute myocardial infarction
 - ii) Cardiomyopathies
 - iii) Arrhythmias
 - iv) Congenital heart disease and other structural abnormalities
 - v) Obstructive disorders such as pulmonary embolism, constrictive pericarditis, tension pneumothorax, severe pulmonary hypertension
- d) Recognize the etiologies of distributive shock including:
 - i) Sepsis and septic shock
 - ii) Anaphylactic shock
 - iii) Neurogenic shock
- e) Recognize the clinical symptoms and signs of each type of shock
- f) Assess the severity of a patient's condition based on clinical presentation, laboratory and radiographic data
- g) Understand the importance of timely initial management of shock patients

2) *Skills. Subinterns should be able to:*

- a) Conduct a history and physical examination identifying the symptoms of shock as well as probable causes of shock
- b) Develop a management plan:
 - i) Create a differential diagnosis for shock and determine type of shock based on specific clinical situations
 - ii) Interpret laboratory/radiographic studies to arrive at specific cause for patients in shock
 - iii) Include initial emergent supportive care, diagnostic plan, and follow-up care

3) *Attitudes and professional behavior. Subinterns should demonstrate:*

- a) Compassion towards patients and family members when discussing life or limb threatening conditions or acute changes in clinical status
- b) Respect for patient's wishes with regards to resuscitation and end of life care

Training problems

References

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