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OBJECTIVES FOR ALL COMMON CLINICAL PROBLEMS

Revised August 30 2018

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Anemia

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. Classification of anemia based on red cell size:
    - Microcytic:
        - Iron deficiency
        - Thalassemic disorders
        - Sideroblastic anemia
    - Normocytic:
        - Acute blood loss
        - Hemolysis
        - Anemia of chronic disease
        - Chronic renal insufficiency/erythropoietin deficiency
        - Bone marrow suppression (e.g. bone marrow invasion, aplastic anemia)
        - Hypothyroidism
        - Testosterone deficiency
        - Early presentation of microcytic or macrocytic anemia (e.g. early iron deficiency anemia)
        - Combined presentation of microcytic and macrocytic anemias
    - Macrocytic:
        - Ethanol abuse
        - B12 deficiency
        - Folate deficiency
        - Drug-induced
        - Reticulcytosis
        - Liver disease
        - Myelodysplastic syndromes
        - Hypothyroidism

2. Morphological characteristics, pathophysiology, and relative prevalence of each of the causes of anemia

3. The meaning and utility of various components of the hemogram (e.g. hemoglobin, hematocrit, mean corpuscular volume, and random distribution width)

4. The classification of anemia into hypoproliferative and hyperproliferative categories and the utility of the reticulocyte count/index

5. The potential usefulness of the white blood cell count and red blood cell count when attempting to determine the cause of anemia

6. The diagnostic utility of the various tests for iron deficiency (e.g. serum iron, total iron binding capacity, transferrin saturation, ferritin)

7. The genetic basis of some forms of anemia

8. Indications, contraindications, and complications of blood transfusion

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history, that differentiates among etiologies of disease, including:
    - Constitutional and systemic symptoms (e.g. fatigue, weight loss)
    - History of gastrointestinal bleeding or risk factors for it
    - Abdominal pain
    - Prior history of anemia or other blood diseases
    - Medications
    - Diet
    - Alcohol use
    - Menstrual history
    - Family history of anemia or other blood diseases

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of disease, including:
    - Pallor (e.g. palms, conjunctiva, nail beds)
    - Mouth (e.g. glossitis, cheilosis)
    - Hyperdynamic precordium, systolic flow murmur
    - Lymph nodes
    - Spleen
    - Obtain stool for occult blood testing
    - Nervous system

3. Differential diagnosis: Students should be able to generate a list of the most important and most common causes of anemia, recognizing specific history, physical exam, and laboratory findings that suggest a specific etiology.

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Complete blood count (CBC)
    - Reticulocyte count
    - Iron studies (serum iron, TIBC, ferritin, transferring, Tsat)
    - Serum B12 and folate
    - Haptoglobin.Lactic dehydrogenase. (LDH)
    - Hemoglobin electrophoresis
    - Blood smear (Manual differential)

    Students should be able to define the indications for
    - Bone marrow biopsy

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Evaluating for underlying disease processes, given that anemia is not a disease per se, but rather a common finding that requires further delineation in order to identify the underlying cause
    - Prescribing indicated replacement therapy, including iron, vitamin B12, and folic acid

Approved by Department of Medicine Undergraduate Medical Education Committee
September 4, 2009

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Atrial Fibrillation (AF)

A. KNOWLEDGE: Students should be able to define, describe and discuss

1. Definition of AF
2. Epidemiology
3. Pathophysiologic mechanism of AF
4. Myocardial and homodynamic consequences of AF
5. Thromboembolism in AF
6. Evaluation of patient with AF
7. Investigations of patient with AF
8. Management
    - rhythm control vs. rate control
    - pharmacological cardioversion
    - electrical cardioversion
    - anticoagulation
    - pulmonary vein ablation

B. SKILLS. Students should be able to demonstrate specific skills, including:

1. History and physical examination, to define
    - The presence and nature of symptoms associated with AF
    - The clinical type of AF (first episode, paroxysmal, persistent, or permanent)
    - The onset of the first symptomatic attack or date of discovery of AF
    - Identifying risks factors for stroke in AF
    - The frequency, duration, precipitating factors, and modes of termination of AF
    - The response to any pharmacological agents that have been administered
    - The presence of any underlying heart disease or other reversible conditions (e.g., hyperthyroidism or alcohol consumption)

2. Differential diagnosis:
    - Differentiating AF from other forms of SVT

3. Investigations. Students should be able to interpret specific diagnostic tests that are routinely ordered to evaluate patients with AF
    - 12 lead ECG
    - Chest x-ray
    - Echocardiogram
    - Blood work e.g. thyroid function tests

4. Management skills. Student should be able to develop an appropriate evaluation and treatment plan for patients with AF
    - Anticoagulation in AF
    - Rhythm control vs. rate control
    - Cardioversion
    - Pharmacological
    - Electrical
    - Pulmonary vein ablation

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Cancer

A. KNOWLEDGE

1. Primary prevention measures for common cancers and common risk factors.

2. Current screening recommendations for skin, colorectal, breast, cervical, and prostate cancer.

3. Principle clinical presentations, clinical courses, complications, and causes of death for the most common cancers in North America (e.g. skin, colorectal, lung, breast, cervical, and prostate).

4. Appreciate the difference in incidence and mortality of the most common cancers worldwide compared to those found in industrialized, Western countries.

5. Basic methods of initial evaluation, including the sensitivity and specificity of basic diagnostic studies and indication for their use, including:
    - Indications for skin biopsy in a patient with a suspicious skin lesion
    - Indications for colonoscopy in individuals a risk for colon cancer.
    - Indications for mammogram
    - Indications for breast biopsy in a patient with a breast nodule or abnormal

      screening mammogram
    - Indications for a lymph node biopsy in a patent with suspicious lymphadenopathy

- Initial workups for: isolated pleural effusion, pulmonary nodule, liver nodule, prostate nodule, elevated prostate-specific antigen, testicular mass, stool test positive for occult blood, abnormal Pap smear, hematuria and other findings suggestive of gastrointestinal and urogenital cancers

6. Genetic implications of selected cancers (e.g. hereditary nonpolyposis colon cancer, familial adenomatous polyposis, breast and ovarian cancer associated with BRCA1/BRCA2)

7. The role of different factors in the etiology of cancers eg. infectious agents human papilloma virus in cervical cancer), environmental factors (sun exposure in melanoma), and clinical factors (obesity in a number of cancers).

8. The similarities and differences between curative and palliative cancer care along with the different therapeutic modalities used to treat cancer including: chemotherapy, hormonal therapy, radiotherapy, immunotherapy, and targeted therapy. The basic principles of how each of these work and the expected results of treatment for the common cancers.

9. Appreciate what the individual psychological issues are for a patient and their family dealing with cancer.

10. Symptom management of both cancer related symptoms and treatment related symptoms.

11. The principles of palliative care and symptoms sometimes seen during end-of-life care and the basic principles of their management (e.g., pain, dyspnea, nausea and vomiting, anorexia, fatigue, depression, delirium, constipation).

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history, that differentiates among etiologies of disease, including:
    - Unintentional weight loss, fever, bone pain
    - Sun exposure history, abnormal skin lesions
    - Blood in the stool, alterations in bowel movements, abdominal pain, abdominal mass
    - Smoking, cough, hemoptysis, chest pain, dyspnea
    - Breast nodules and secondary signs of breast cancer

- Abnormal vaginal bleeding
- Abnormal urinary symptoms such as nocturia, frequency, and hematuria
- Lymphadenopathy

2. Physical Exam Skills: Students should be able to perform a full physical exam to establish the diagnosis and severity of disease, including:
    - Skin examination
    - Digital rectal examination
    - Breast examination
    - Lymph node examination
    - Male genital examination and prostate examination
    - Pelvic examination and Pap smear

3. Differential diagnosis: Students should be able to generate a prioritized differential diagnosis recognizing specific history and physical exam findings that suggest a specific etiology for:
    - Unintentional weight loss
    - Fever
    - Abnormal skin lesions
    - Occult blood positive stool
    - Colorectal mass.
    - Hematuria
    - Chronic cough, hemoptysis, pulmonary nodule, and pleural effusion
    - Breast mass
    - Abnormal Pap smear
    - Abdominal or pelvic mass
    - Prostate nodule and elevated prostate specific antigen
    - Lymphadenopathy

4. Laboratory and Diagnostic Tests interpretation: Students should be able to recommend when to order diagnostic and laboratory tests and be able to interpret them, both prior to and after initiating treatment

based on the differential diagnosis, including consideration of test cost and performance characteristics as well as patient preferences. Laboratory and diagnostic tests should include, when appropriate:

- CBC
- Electrolytes, BUN/Cr, Ca, hepatic function panel
- Stool occult blood testing
- PSA
- Urinalysis
- Radiological Imaging
  - Plain X-rays
  - Ultrasound
  - Computed Tomography (CT) Imaging
  - Magnetic Resonant Imaging (MRI)

5. Management skills: Students should able to develop an appropriate evaluation and treatment plan for patients that includes:

- Initial work-up of the symptom, sign, or abnormal laboratory value suspected to be due to cancer
- Provision of support and information for the patient and their families and know what supportive care services are available
- Coordination of care for workup
- Determining when to obtain consultation from appropriate specialists
- Appropriately assessing and treating pain when necessary with non-narcotic and narcotic analgesics
- Anticipating and treating narcotic side effects if necessary
- Adjusting the therapeutic plan when goals of care change (e.g., a shift toward palliative care)
- Alleviation of symptoms sometimes seen during end of life care (e.g. pain, dyspnea, nausea and vomiting, anorexia, fatigue, depression, delirium, constipation)
- Utilizing supportive care throughout the work up and management of cancer when appropriate

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Chronic Kidney Disease

A. KNOWLEDGE: Students should be able to define, describe and discuss:

1. The most common etiologies of chronic kidney disease
   - DM
   - Hypertension & Ischemic renal disease
   - Chronic Glomerulonephritis
   - Polycystic kidney disease
   - Chronic Interstitial disease
   - Obstructive uropathy

2. The staging scheme for CKD

3. The distinction between CKD and acute renal failure (acute kidney injury)

4. The significance for proteinuria in CKD

5. The use of ACE-Is and ARBs in the management of CKD

6. The complications of CKD including:
   - Disorders of mineral metabolism (hypocalcemia, hyperphosphatemia, secondary hyperparathyroidism)
   - Anemia
   - Metabolic acidosis
   - Malnutrition
   - ECF volume overload & hypertension

7. The value of hypertension control in limiting the progression of CKD

8. The basic principles of renal replacement therapy (e.g., hemodialysis and peritoneal dialysis and renal transplant) as well as the complications

9. The pathophysiology and clinical findings of uremia

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an history that distinguishes among the major reasons for CKD, including the predisposing conditions, nephrotoxic drugs or agents, and systemic disease.

2. Physical exam skills: Students should be able to perform a physical examination to establish the diagnosis and severity of disease, including:
    - The determination of a patient's volume status through estimation of the central venous pressure using the height of jugular venous distention and measurement of pulse and blood pressure in the lying/standing position
    - Palpation and percussion of the bladder to recognize bladder distention
    - Palpation of the prostate
    - Determination of the presence of pulmonary edema, peripheral edema, ascites, and signs of heart failure
    - Findings consistent with uremia
    - Examination for evidence of systemic disease, including but not limited to: skin, joints, and nails

3. Differential diagnosis: Students should be able to generate a differential diagnosis for a patient with CKD recognizing specific history, physical exam, and laboratory findings that suggest a specific etiology

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Serum electrolytes, Anion gap, Urea, Cr, calcium, phosphorus, albumin
    - ABG
    - CBC
    - Urinalysis (Dipstick and microscopic exam)
    - Calculating creatinine clearance using the Cockcroft-Gault equation
    - Serum parathyroid hormone level
    - ECG findings in hyperkalemia
    - Students should be able to define the indications for and interpret (with consultation) results of renal ultrasonography

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients, including:
    - Developing a management plan to effectively treat HTN and DM
    - Recommending treatment with phosphate binders, calcium replacement, and vitamin D replacement
    - Recommending treatment for anemia secondary to CKD
    - Recommending acute treatment for hyperkalemia
    - Determining when to obtain consultation from a nephrologist

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Congestive Heart Failure

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. Types of processes and most common disease entities that cause CHF
2. The basic role of genetics in certain forms of cardiomyopathy
3. Types of processes that cause systolic vs. diastolic dysfunction
4. Symptoms and signs of left-sided vs. right-sided heart failure.
5. Factors leading to symptomatic exacerbation of CHF, including ischemia, arrhythmias, hypoxemia, anemia, fever, hypertension, thyroid disorders, non-compliance with medications and dietary restrictions and use of nonsteroidal anti-inflammatory drugs and other drugs which can lead to fluid retention such as rosglitazone (Avandia™).
6. Importance of age, gender and ethnicity on the prevalence and prognosis of CHF
7. Physiological basis and scientific evidence supporting each type of treatment, intervention, or procedure commonly used in the management of patients who present with CHF
8. The general approach to the evaluation and treatment of atrial fibrillation

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history, including:
    - Differentiating between various etiologies of heart failure
    - Identifying clinical factors responsible for symptomatic exacerbation
    - Exercise intolerance (fatigue, dyspnea on exertion)
    - Fluid retention
        - dependant edema (peripheral and sacral)
        - dyspnea
    - Changes in sleep pattern (orthopnea, paroxysmal nocturnal dyspnea [PND], nocturia)
    - Assessing the functional capacity of patients with CHF (walking distance, New York Heart classification) and establish functional class
    - Cardiac risk factors

2. Physical exam skills: Students should be able to perform a focused physical exam to help establish the diagnosis of CHF and estimate its severity:
    - Measurement of vital signs including weight and respiratory rate/pattern
    - Accurate measurement of arterial blood pressure and recognition of the typical blood pressure findings that occur in patients with aortic stenosis, aortic insufficiency and pulsus paradoxus
    - Assessment of major arterial pulses for abnormalities, including bruits
    - Assessment of the neck veins for jugular venous distention
    - Assessment of the conjunctiva and optic fundus
    - Assessment of the extremities to ascertain for skin conditions, including color, temperature and the presence of edema, cyanosis or clubbing
    - Assessment of the lungs for crackles, wheezes and decreased breath sounds
    - Inspection and palpation of the anterior chest to identify right and left sided heaves, lifts and thrills
    - Auscultation of the heart to determine rhythm, intensity of heart sounds, splitting of S2 and the presence of rubs, gallops (S3, S4, summation) or extra heart sounds (e.g. clicks)
    - Auscultation of the heart to detect the presence of heart murmurs; when a murmur is present, students should be able to:
        - Identify timing (systolic vs. diastolic, holosystolic vs. ejection)
        - Describe pitch, location and pattern of radiation
        - Gauge significance (innocent vs. pathologic, sclerosis vs. stenosis)
    - Assessment of the abdomen to determine the presence of hepatomegaly, ascites, abnormal pulsations and bruits

3. Differential diagnosis: Students should be able to generate a differential diagnosis and recognize specific history, physical exam and/or laboratory findings that:
    - Help support or refute a clinical diagnosis of heart failure
    - Distinguish between various underlying etiologies of CHF, including disease processes that primarily affect:
        - Pericardium (constrictive pericarditis, pericardial tamponade)
        - Endocardium (valvular [congenital, acquired], endocarditis)
        - Myocardium (hypertrophic, restrictive, congestive)

4. Laboratory interpretation: Students should be able interpret specific diagnostic tests and procedures that are commonly ordered to evaluate patients who present with heart failure. Test interpretation should take into account: Laboratory and diagnostic tests should include, when appropriate:
    - 12-lead ECG
    - Chest radiograph
    - B-type natriuretic peptide

    Students should be able to define the indications for the following diagnostic tests and procedures:
    - Echocardiography
    - Treadmill and nuclear exercise testing
    - Radionuclide ventriculogram
    - Coronary angiography

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Recognize the importance of early detection and treatment of risk factors that may lead to the development of heart failure.
    - Identifying the indications, contraindications, mechanisms of action, adverse reactions, and significant interactions of the following treatments/interventions:
    - Non-pharmacological management: Sodium restriction, Physical activity and limitations
    - Pharmacological management (recommended for routine use)
        - Diuretics
        - ACE-I/ARB
        - Beta-blockers
        - Aldosterone antagonists (spironolactone, eplerenone).
        - Digoxin
        - Interventions considered for use in selected patients: Hydralazine and isosorbide dinitrate, Angoitensin receptor blockers, Calcium channel blockers, Anti-arrhythmic agents, Anticoagulants/anti thrombotic agents

    - Other modalities: Coronary revascularization, Cardiac re-synchronizing therapy (synchronized biventricular pacing), Implantable cardiac defibrillators
- Developing a timely and appropriate evaluation and treatment plan for patients with heart failure due to diastolic dysfunction, including:
    - Control of physiologic factors (blood pressure, heart rate)
    - Reduction in central blood volume by judicious use of diuretics
    - Alleviation of myocardial ischemia
    - Use of calcium channel blockers

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Coronary Artery Disease

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. The primary and secondary prevention of ischemic heart disease through the reduction of cardiovascular risk factors (e.g. controlling hypertension and dyslipidemia, aggressive diabetes management, avoiding tobacco, and aspirin prophylaxis).

2. The basic principles of the role of genetics in IHD

3. Pathogenesis, signs, and symptoms of the coronary syndromes:
    - Stable angina
    - Acute coronary syndromes:
        - Unstable angina
        - Non-ST-elevation myocardial infarction (NSTEMI)
        - ST-elevation myocardial infarction (STEMI)

4. Atypical presentations of cardiac ischemia/infarction

5. The typical clinical course of the acute coronary syndromes.

6. ECG findings and macromolecular markers (myoglobin, CK-MB, Troponin-I, Troponin-T) of acute ischemia/MI

7. The importance of monitoring for and immediate treatment of ventricular fibrillation in acute MI

8. Therapeutic options for acute MI and how they may differ for NSTEMI and STEMI, including:
    - Aspirin
    - Morphine
    - Nitroglycerine
    - Oxygen.
    - Heparin
    - Beta-blockers
    - ACE-I/ARB
    - HMG-CoA reductase inhibitors
    - Thrombolytic agents
    - Emergent cardiac catheterization with percutaneous coronary intervention (PCI)

9. Therapeutic options for stable angina :
    - Aspirin
    - Nitroglycerine
    - Beta-blockers
    - Calcium channel blockers
    - HMG-CoA reductase inhibitors
    - ACE-I/ARB
    - Revascularization strategies (CABG vs. PCI)

10. Pathogenesis, signs, and symptoms of the complications of acute MI, including arrhythmias, reduced ventricular function, cardiogenic shock, pericarditis, papillary muscle dysfunction/rupture, acute valvular dysfunction, cardiac free wall rupture and ventricular septal defect.

11. The general approach to the evaluation and treatment of ventricular tachycardia and fibrillation

12. The importance of post-MI risk stratification, including the burden of residual coronary disease and assessment of left ventricular function

13. Basic principles of cardiac rehabilitation

14. Indications for coronary artery bypass grafting (CABG)

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history that differentiates among etiologies of disease, including:
    - Cardiac risk factors
    - Location, duration, intensity, exacerbating/ameliorating factors, radiation of chest pain
    - Symptoms associated with chest pain (e.g. nausea, emesis, dyspnea, diaphoresis, palpitations, dizziness, syncope, heartburn belching, etc.)
    - Establishing functional class

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of disease including:
    - Recognition of dyspnea and anxiety
    - Accurate measurement of vital signs
    - Examination of the heart and vascular system
    - Examination of the lungs

3. Differential diagnosis: Students should be able to generate a prioritized differential diagnosis recognizing specific history and physical exam findings that suggest a specific etiology of chest pain:
    - Stable angina
    - Coronary vasospasm
    - Unstable angina
    - Acute MI
    - Pericarditis/myocarditis
    - Aortic dissection
    - Pulmonary embolism
    - Other noncardiac causes of chest pain

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - ECG
    - Chest radiograph.
    - Macromolecular markers (myoglobin, CK-MB, Troponin-I, Troponin-T)

Students should be able to define the indications for:

- Echocardiogram
- Cardiac stress testing
- Coronary angiography

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Medical management of stable angina and acute coronary syndromes (unstable angina, NSTEMI and STEMI)
    - CCU monitoring
    - Indications for and complications of thrombolytic therapy, cardiac catheterization with percutaneous coronary intervention, and CABG.
    - Proper pre-discharge risk stratification
    - Secondary risk factor modification

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Delerium/Dementia

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. The difference between delirium and dementia including:
    - Duration of symptoms: acute versus chronic
    - Presence of altered level of consciousness and impaired concentration
    - Fluctuation

For Delirium:

1. The diagnostic criteria for delirium including:
    - Acute onset and fluctuating course
    - Inattention
    - Disorganized thinking
    - Altered level of consciousness

2. The most common and most serious causes of delirium, including:
    - Prescription medications, over-the-counter drugs and supplements, alcohol and drug/alcohol withdrawal,
    - Infectious causes (e.g., urinary tract infection, pneumonia, cellulitis, encephalitis, meningitis).
    - Congestive heart failure, myocardial infarction
    - Metabolic causes (e.g. hyper/hyponatremia, hyper/hypoglycemia, hypercalcemia, hypoxia/hypercapnea, dehydration, uremic encephalopathy,hepatic encephalopathy, and Wernicke's encephalopathy).
    - Cerebrovascular accident, intracranial hemorrhage, subdural hematoma
    - Seizures/ post-ictal state
    - Hypertensive encephalopathy
    - Miscellaneous causes (e.g. fecal impaction, postoperative state, sleep deprivation, urinary retention)

3. The risk factors for developing delirium, including:
    - Dementia
    - Advanced age
    - Substance abuse
    - Comorbid physical problems such as sleep deprivation, immobility, dehydration, pain, and sensory impairment
    - ICU admission
    - Surgery

4. The diagnostic work-up of delirium.

5. Indications, contraindications, and complications of lumbar puncture.

6. Principles of management of the common causes of delirium.

7. Nonpharmacologic measures to reduce agitation and aggression, including:
    - Avoiding the use of physical restraints whenever possible.
    - Using reorientation techniques.
    - Assuring the patient has devices to correct sensory deficits.
    - Promoting normal sleep and day/night awareness.
    - Preventing dehydration and electrolyte disturbances.
    - Avoiding medications which may worsen delirium whenever possible (e.g. anticholinergics, benzodiazepines)

8. The risks of using physical restraints.

9. The risk and benefits of using antipsychotics for delirium associated with agitation, aggression and frightening delusions.

For Dementia:

1. The diagnostic criteria for dementia:
    - Impairment of memory and one other area of cognition
    - Functional impairment
    - Progressive decline

2. The most common causes of dementia including:
    - Alzheimer disease
    - Vascular dementia
    - Lewy-Body dementia

- Depression
- Anticholinergic and sedating medications
- Brain tumor, chronic subdural hematoma

3. Dementia mimics including:

4. The diagnostic work-up of dementia

5. Pharmacological treatment including:

    - Benefits and adverse effects of cholinesterase inhibitors
    - Risks of antipsychotics in Lewy Body dementia

6. Nonpharmacological management including:
    - Education of the family about diagnosis and prognosis
    - Alzheimer Society and other support groups
    - Identification of potential safety risks such as driving, stove use, medication noncompliance
    - Home Care Nova Scotia, Adult Day programs and other resources
    - Appointment of Power of Attorney
    - Information for family and/or referral to social work for future care planning

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present a medical history that differentiates among etiologies of altered mental status including eliciting appropriate information from patients, their families and other appropriate collateral historians regarding the onset, progression, associated symptoms, and impairment in activities of daily living (IADLs and ADLs).

2. Physical exam skills: Students should be able to perform an examination to establish the diagnosis and severity of disease, including:
    - Mental status examination including cognitive assessment using tools such as the Mini-Mental Status Examination (MMSE), clock drawing and serial subtractions
    - Complete physical and neurologic examination

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical exam findings that suggest a specific etiology for altered mental status.

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - CBC with differential
    - Electrolytes, Urea, Cr, glucose, calcium, liver enzymes and liver function tests
    - ABG
    - Toxicology screen (stipulate)
    - VDRL, HIV serology
    - Vitamin B12
    - Thyroid function tests
    - Urinalysis and urine culture
    - Blood cultures
    - CK, troponin
    - CXR
    - EKG
    - Cerebrospinal fluid analysis (color, opening pressure, chemistries, cell counts, staining, cultures, cytology, cryptococcal antigen, VDRL)
    - Students should be able to define the indications for:
        - Cranial CT
        - Cranial MRI
        - Electroencephalogram (EEG)

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Recognizing that altered mental status in an older inpatient is a medical emergency and requires that the patient be evaluated immediately
    - Writing appropriate fluid and replacement orders for patients with common electrolyte and metabolic disturbances
    - Writing appropriate antibiotic orders for the treatment of common infectious etiologies
    - Ordering appropriate nonpharmacologic and pharmacologic interventions for patients with acute altered mental status with accompanying agitation and aggression
    - Understanding that the diagnosis of dementia will often change the investigation and planned treatment for other illnesses, and the importance of discussing this with the family

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Diabetes

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. Diagnostic criteria for impaired fasting glucose and impaired glucose tolerance
2. Diagnostic criteria for type I and type II diabetes mellitus, based on a history, physical examination, and laboratory testing
3. Pathophysiology, risk factors, and epidemiology of type I and type II diabetes mellitus
4. The basic principles of the role of genetics in diabetes mellitus
5. Presenting symptoms and signs of type I and type II diabetes mellitus
6. Presenting symptoms and signs of diabetic ketoacidosis (DKA) and nonketotic hyperglycemic (NKH)
7. Pathophysiology for the abnormal laboratory values in DKA and NKH including plasma sodium, potassium, and bicarbonate
8. Precipitants of DKA and NKH
9. Major causes of morbidity and mortality in diabetes mellitus (coronary artery disease, peripheral vascular disease, hypoglycemia, DKA, NKH coma, retinopathy, neuropathy—peripheral and autonomic, nephropathy, foot disorders, infections)
10. Laboratory tests needed to screen, diagnose, and follow diabetic patients including: glucose, electrolytes, urea, creatinine, fasting lipid profile, HgA1c, urine microalbumin/creatinine ratio, urine dipstick for protein
11. Non-pharmacologic and pharmacologic (drugs (oral agents and insulins) and side effects) treatment of diabetes mellitus to maintain acceptable levels of glycemic control, prevent target organ disease, and other associated complications

12. The specific components of the Canadian Diabetes Association (CDA) dietary recommendations for type I and type II diabetes mellitus
13. Basic management of diabetic ketoacidosis and nonketotic hyperglycemic states, including the similarities and differences in fluid and electrolyte replacement
14. Basic management of blood glucoses in the hospitalized patient
15. The Somogyi effect and the Dawn phenomenon and the implications of each in diabetes pharmacologic management
16. The fundamental aspects of the Canadian Diabetes Association (CDA) clinical practice recommendations and how they encourage high quality diabetes care
17. Awareness of target levels and basic management of hypertension and hyperlipidemia in the diabetic patient

B. SKILLS: Students should be able to demonstrate specific skills including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history, that differentiates among etiologies of disease, including:
    - Weight changes
    - Hypo- or hyperglycemic symptoms
    - Medication history (adherence, side effects, other medications)
    - Home glucose monitoring results
    - Target organ disease complications (cardiovascular, foot, gastrointestinal, infectious, neurological, sexual, skin, urinary, or vision symptoms)
    - Diet history (total caloric intake, intake of sugar-containing foods, intake of saturated fat and cholesterol, physical activity level, timing of meals)
    - Screen for depression

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of disease, including:
    - Skin examination for diabetic dermopathy, furuncles/carbuncles, candidiasis, necrobiosis lipoidica diabeticorum, dermatophytosis, and acanthosis nigricans
    - Fundoscopic exam
    - Arterial pulses
    - Peripheral nerves (e.g. monofilament testing)
    - Examination of the feet for corns, calluses, and ulcerations
    - In patients with DKA or NKH evaluate for mental status alterations, Kussmaul's respirations, fruity breath, and signs of volume depletion

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical exam findings that suggest a specific etiology for:
    - Hyperglycemia
    - Hypoglycemia
    - Anion gap acidosis
    - Ketosis
    - Hyperosmolality

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Fasting serum GLC
    - Electrolytes, Urea, Cr
    - Serum and urine ketones
    - Serum and urine osmolality
    - HbA1c
    - Fasting lipid profile
    - UA
    - Urine microalbumin/creatinine ratio
    - 24-hour urine for protein and creatinine clearance

5. Management skills: Students should able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Writing appropriate fluid and insulin orders and outline critical steps for the treatment of DKA and DKH
    - Counseling patients regarding basic features of CDA diabetic diet recommendations
    - Instructing patients in home blood glucose monitoring
    - Counseling patients on behavior changes (smoking cessation, medication adherence, poor glycemic control, obesity, hypertension, dyslipidemia, and infection) to avoid the complications of diabetes
    - Counseling patients regarding basic foot care
    - Determining when to institute diet therapy, oral hypoglycemic agents, and insulin therapy
    - Calculating an appropriate insulin dose for a diabetic patient
    - Using community resources (CDA, hospital and community-based education programs) to aid the patient in understanding and managing his or her illness
    - Determining when to obtain consultation from an endocrinologist, nephrologist, ophthalmologist, podiatrist, and dietician
    - Determining when to obtain consultation from a social worker
    - Determining when to obtain consultation from a psychologist

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Objectives for Common Clinical Problems

Dying Patient

A. Knowledge

1. Pain
   - Understand the pathophysiology of pain and ways in which pain can present in clinical practice
   - Understand the pharmacology of and dosing strategies for medications used to treat pain including effective prescribing, titration, breakthrough dosing and prevention of side effects
     - Opiates
     - Non-opiates
   - Understand adjuvant modalities and medications for pain

2. Suffering
   - Recognize the symptoms that often experience by patients near the end of life, including fatigue, anorexia and cachexia, constipation, dyspnea, nausea and vomiting, delirium, anxiety and depression
   - Understand how these present and how they can be mitigated

3. Bioethics/Legal Aspect

   Distinguish between physician-assisted suicide and euthanasia and palliative/terminal sedation, and withholding and withdrawing therapy

B. Skills

1. Pain, Suffering and Treatment Plans
    - Assess pain and symptoms effectively via a pain history, appropriate physical exam and relevant investigations
    - Develop an evidence-based approach to mitigate the suffering (see knowledge for specifics) experienced by patient near the end of life
    - Assist in monitoring the efficacy of treatment plans
    - Communicate information about the illness effectively—including bad news
    - Participate effectively in patient and family meetings
    - Assist in the education of patients and family about end-of-life care issues and pain and symptom management
    - Assist in determining, recording and implementing goals of care through effective communication with patients, families and other caregivers
    - Propose advance care plans, including developing and discussing advance directives with patients and families
    - Describe models of end-of-life care

2. Psychosocial and spiritual needs
    - Assess psychosocial and spiritual issues in end-of-life care, including grief
    - Develop and propose a care plan in collaboration with other disciplines
    - Self-assess one's own attitudes and beliefs in caring for the dying
    - Demonstrate cultural, religious and Aboriginal sensitivity in addressing end-of-life care

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Fever

A. KNOWLEDGE: Students should be able to:

1. define fever and fever of unknown origin
2. summarize the pathophysiology of temperature regulation and its relationship to host defense mechanisms
3. identify the infectious (e.g. bacterial, viral, fungal, parasitic) and noninfectious (e.g. malignancy, connective tissue disorders) causes of fever and their relative contributions in different patient populations (e.g. children vs adults, the immune compromised host, the returned traveller)
4. outline the diagnostic workup for the patient with fever and fever of unknown origin, and
5. explain the rationale behind specific radiologic investigations such as indium scan, gallium scan, CT scan, and PET scan in the investigation of fever of unknown origin

B. SKILLS: Students should be able to demonstrate specific skills including:

1. History-taking skills: Students should be able to obtain, document, and present a medical history that contributes to the accurate diagnosis of fever and the etiology of fever and fever of unknown origin, including:
    - History of presenting illness: The presence and pattern of fever and associated symptoms such as chills, sweats, anorexia, weight loss, as well as a review of all systems, such as the respiratory and genitourinary tracts, to identify a specific site of infection
    - Past medical history that might point to a risk for infection:
        - Surgical procedures or device implantation
        - Blood or blood product transfusion
        - Tuberculosis infection (active or latent)
        - Immunosuppressive conditions
        - Drug therapy including duration and dosing
        - Drug allergies
    - Family history that might point to exposure risks or familial and genetic conditions that are associated with fever:
        - Inflammatory diseases (e.g.: joint, bowel)
        - Tuberculosis
        - Familial fever
        - Malignancy
    - Social and personal factors that might represent a risk for infection:
        - Exposures to persons with potential infections
        - Sexual activities (numbers and gender of sexual partners)
        - Occupational or environmental exposures including travel, work, and hobbies
        - Exposure to animals including pets
        - Recreational drug use including injecting drugs

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis, etiology, and severity of a febrile illness, including:
    - Accurately determining vital signs (BP, P, RR, and temperature)
    - An exam directed by the history
    - A detailed examination covering all systems including lymph nodes, thyroid gland, chest, heart, liver, spleen, joints, and integument

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical exam findings that suggest a specific etiology of fever and fever of unknown origin, including:
    - Infective endocarditis
    - Acute community acquired infection (e.g. urinary tract infection, pneumonia, cellulitis)
    - Tuberculosis
    - Abscess
    - Granulomatous hepatitis
    - Rheumatoid arthritis

- SLE
- Lymphoma
- Leukemia
- Drug fever
- Thromboembolic disease
- Factitious fever

4. Laboratory investigation: Students should know to order and how to interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - CBC with differential
    - Inflammatory markers (e.g. ESR, CRP)
    - Transaminases, CK, and alkaline phosphatase
    - TSH
    - Urinalysis
    - Blood cultures
    - Urine cultures
    - Chest radiograph
    - Abscess and tissue cultures

    Students should be able to identify when additional investigations should be considered:
    - Indium-labelled WBC scan
    - Gallium scan
    - CT scan
    - PET scan
    - Bone marrow and/or liver biopsy
    - Tuberculin skin test
    - Infectious diseases consultation

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients with fever and fever of unknown origin that includes:

    - Identifying when antimicrobials should be initiated pending results of investigations
    - Selecting an appropriate empiric antimicrobial regimen for suspected infection related fever
    - Adjusting or discontinuing antimicrobial treatment according to the results from laboratory testing
    - Monitoring therapy for response and adverse effects

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Fluid, Electrolyte and Acid-Base Disorders

A. KNOWLEDGE: Students should be able to define, describe and discuss:

1. The pathophysiology of:
   - Hypo- and hypervolemia
   - Hypo- and hypernatremia
   - Hypo- and hyperkalemia
   - Hypo- and hypercalcemia
   - Simple and mixed acid-base disorders
   - Respiratory acidosis and alkalosis
   - Metabolic acidosis and alkalosis
2. Presenting symptoms and signs of the above disorders
3. The importance of total body water and its distribution
4. The differential diagnosis of hypo- and hypernatremia in the setting of volume depletion, euvolemia, and hypervolemia
5. How to distinguish hyponatremia from pseudohyponatremia
6. How to identify spurious hyperkalemia or acidosis-related hyperkalemia
7. Risks of too rapid or delayed therapy for hyponatremia
8. The most common causes of respiratory acidosis, respiratory alkalosis, metabolic acidosis and metabolic alkalosis
9. How to calculate the anion gap and explain its relevance to determining the cause of a metabolic acidosis
10. Changes in total body water distribution that occur with aging
11. Tests to use in the evaluation of fluid, electrolyte, and acid-base disorders
12. Indications for obtaining an ABG
13. The types of fluid preparations to use in the treatment of fluid and electrolyte disorders

B. SKILLS: Students should demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history that differentiates among etiologies of disease, including:
    - Eliciting appropriate information from patients with volume overload, symptoms of heart failure, dietary sodium intake, changes in medications, noncompliance and intravenous fluid regimens
    - Eliciting appropriate information from patients with volume depletion, including recent weight loss, thirst, gastrointestinal losses, urinary losses, oral intake, insensible losses, and intravenous fluid regimens.
    - Eliciting appropriate information from patients with electrolyte problems, including use of diuretics and other medications, gastrointestinal losses, and history of relevant medical conditions (e.g., heart failure, liver disease, renal disease, pulmonary disease, central nervous system disease, and malignancy).

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of disease, including:
    - Measurement of orthostatic vital signs
    - Identification of signs of hyper and hypovolemia
    - Identification of signs of sodium disorders including lethargy, weakness, encephalopathy, delirium, seizures
    - Identification of signs of potassium disorders including weakness, fatigue, constipation, ileus, cramping, tetany, hypo- or hyperreflexia.
    - Identification of signs of calcium disorders including cramping, tetany, Chvostek's and Trousseau's sign, seizures, anorexia, constipation, polyuria, hypo- or hyperreflexia, delerium

3. Differential diagnosis: Students should be able to generate a prioritized differential diagnosis recognizing specific history, physical exam, and laboratory findings that distinguish between:
    - Hypo- and hypervolemia
    - Hypo- and hypernatremia
    - Hypo- and hyperkalemia
    - Hypo- and hypercalcemia
    - Respiratory acidosis and alkalosis
    - Metabolic acidosis and alkalosis

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Serum electrolytes, Anion Gap, Urea, Cr
    - ABG
    - Serum and urine osmolality, urinary sodium
    - ECG findings in hyper- and hypokalemia

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Write appropriate fluid orders for the treatment of hypo- and hypervolemia, hypo- and hypernatremia, hypo- and hyperkalemia, hypo- and hypercalcemia
    - Write appropriate orders for replacing sodium, potassium, calcium
    - Write appropriate orders for correcting hyperkalemia, hypercalcemia
    - Calculate the water deficit that needs to be corrected to treat hypernatremia
    - Identify indications for administration of bicarbonate

Approved by Department of Medicine Undergraduate Medical Education Committee
September 4, 2009

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Gastroesophageal Reflux Disease (GERD)

A. Knowledge: Students should be able to define, describe, and discuss:

1. The pathophysiology of GERD including the contributing factors and protective factors:
    - Saliva production
    - Effect of esophageal motility and clearance
    - Effect of lower esophageal sphincter tone and pressure

2. The pathophysiology of acid production and how the common medications effect acid production

3. The symptoms GERD can present with including:
    - Heartburn
    - Chest pain
    - Globus
    - Dysphagia/ motility or mechanical

4. The complications that can occur from GERD:
    - Asthma
    - Laryngitis
    - Peptic stricture
    - Barretts esophagus
    - Esophageal cancer

B. SKILLS: Students should demonstrate specific skills, including:

1. Obtaining an appropriate history in a patient with GERD and be able to elicit the worrisome features/complications including:
    - Stricture
    - Cancer
    - Bleeding

2. Generate a differential diagnosis for the symptoms of GERD

3. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - CBC
    - Tests for Helicobacter pylori

    Students should be able to define the indications for:
    - Esophagogastroduodenoscopy
    - pH probe
    - Barium studies of the gastrointestinal tract

4. Students should understand how to manage a patient with GERD including:
    - Lifestyle modification
        - Caffeine
        - Alcohol
        - Diet
        - Weight loss
        - Elevating head of bed
        - Smoking
    - Medical management
        - Proton pump inhibitors
        - H2 blockers
        - Antacids
    - Surgical management
        - Identify who is a candidate for surgical correction of GERD

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Gastrointestinal Bleeding

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. The common causes for and symptoms of upper and lower gastrointestinal blood loss, including:
    - Esophagitis/esophageal erosions
    - Mallory Weiss tear
    - Peptic and duodenal ulcer disease
    - Esophageal/gastric varices
    - Erosive gastritis
    - Arteriovenous malformations
    - Gastrointestinal tumors, benign and malignant
    - Diverticulosis
    - Ischemic colitis
    - Hemorrhoids
    - Anal fissures

2. The distinguishing features of upper versus lower GI bleeding

3. The indications for inpatient versus outpatient evaluation and treatment

4. The principles of stabilization and treatment of acute massive GI blood loss.

5. The role of contributing factors in GI bleeding such as H. pylori infection; NSAIDs, alcohol, cigarette use, coagulopathies; and chronic liver disease.

B. SKILLS: Students should demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate history that differentiates among etiologies of disease, including:
    - Features that distinguish upper from lower GI bleeding
    - Quantification of degree of blood loss
    - Chronology and duration of bleeding
    - Associated symptoms
    - Relevant past medical history
    - Medication history, including use of tobacco and alcohol

2. Physical exam skills: Students should be able to perform a physical examination to establish the diagnosis and severity of disease, including:
    - Postural blood pressure and pulse
    - Abdominal palpation for organomegaly, masses, and tenderness
    - Search for stigmata of chronic liver disease
    - Rectal examination

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical examination findings that suggest a specific etiology for GI bleeding

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Stool and emesis fluid tests for occult blood
    - CBC
    - PT/PTT
    - Hepatic function panel
    - Tests for Helicobacter pylori

    Students should be able to define the indications for:
    - Esophagogastroduodenoscopy
    - Colonoscopy
    - Barium studies of the gastrointestinal tract

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Establishing adequate venous access
    - Administering crystalloid fluid resuscitation
    - Ordering blood and blood product transfusion
    - Determining when to obtain consultation from a gastroenterologist or a general surgeon
    - Outlining long-term management when appropriate (e.g. Helicobacter pylori eradication, antacid, H-2 blocker or proton pump inhibitor therapy, smoking /alcohol cessation, NSAID restriction, and dietary modification)

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Hypertension

A. KNOWLEDGE: Students should be able to define, describe and discuss:

1. The etiologies and relative prevalence of primary and secondary hypertension.

2. The definition of hypertensive urgency and emergency, citing examples of both

3. The difference between essential (primary) and secondary hypertension

4. Symptoms and signs of the following disorders associated with secondary hypertension:
    - Renovascular hypertension
    - Parenchymal renal disease
    - Cushing's disease or syndrome
    - Hyperaldosteronism
    - Hyperthyroidism
    - Hypercalcemia
    - Medication, alcohol, and illicit drug use
    - Coarctation of the aorta
    - Sleep apnea

5. The manifestations of target-organ disease due to hypertension

6. The JNC-V Classification of blood pressure disorders

7. Basic approaches to the pharmacological management of acute and chronic hypertension, including the physiologic basis and scientific evidence supporting these approaches, and causes for lack of responsiveness to therapy

8. Prevention strategies for reducing hypertension (including lifestyle factors, such as dietary intake of sodium, weight, and exercise level), and explain the physiologic basis and/or scientific evidence supporting each strategy

9. Steps in management of patients with a hypertensive emergency

10. Factors that contribute to non-adherence with antihypertensive medications.

B. SKILLS: Students should demonstrate specific skills including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history that differentiates among etiologies of disease, including:
    - Duration and levels of elevated blood pressure
    - History of symptoms of cardiovascular, cerebrovascular, peripheral vascular or renal disease; diabetes
    - History of symptoms suggesting secondary hypertension
    - History of weight gain, leisure-time physical activities, and smoking or other tobacco use
    - Family history of high blood pressure, premature CHD, stroke, CVD, diabetes mellitus and dyslipidemia
    - Psychosocial and environmental factors that may elevate blood pressure (family situation, employment status, working conditions, education level)
    - Dietary assessment, including sodium intake and intake of saturated fat and cholesterol
    - Results and side effects of previous antihypertensive therapy
    - Use of commonly prescribed, over-the -counter, and illicit medications that may raise blood pressure or interfere with the effectiveness of antihypertensive medications
    - Alcohol intake

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of disease, including:
    - Blood pressure measurements to detect and confirm the presence of high blood pressure
    - Examination of the fundus for arteriolar narrowing, arteriovenous nicking, hemorrhages, exudates, or papilledema
    - Neck for carotid bruits, elevated JVP or an enlarged thyroid gland
    - Heart for increased rate, increased size, precordial heave, murmurs, arrhythmias, and third (S3) and fourth (S4) sounds
    - Abdomen for bruits, enlarged kidneys, masses, and abnormal aortic pulsation
    - Extremities for diminished, delayed, or absent peripheral arterial pulsations, bruits, and edema
    - Peripheral pulses specifically femoral arterial pulses

- Body habitus, looking for changes associated with secondary hypertension
- Peripheral and central nervous system for ischemic changes

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history, physical exam, and laboratory findings that suggest a specific etiology of hypertension

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Urinalysis
    - CBC
    - Blood Electrolytes, Urea, Cr
    - Fasting lipid profile
    - ECG

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Treating acute and chronic hypertension
    - Treating primary (essential) hypertension versus secondary hypertension
    - Prescribing preventative strategies to diminish hypertension, including:
        - Weight reduction
        - Moderation of alcohol intake
        - Regular physical activity
        - Reduction of sodium intake
        - Increase in potassium intake
        - Smoking cessation

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Obstructive Lung Disease – Asthma and COPD

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. The mechanisms of airflow obstruction and the physiological consequences.

2. The definition, differential diagnosis, causes and pathophysiology of obstructive lung disease.

3. Distinguish the epidemiology, risk factors, symptoms, signs, radiographic findings, pulmonary function and blood gas abnormalities as well as the typical clinical course of the main types of obstructive lung disease (asthma, chronic bronchitis and emphysema)

4. Allergic and non-allergic factors that may precipitate bronchospasm and exacerbate asthma, including:
    - Allergens (pollen, animal dander, cockroaches, dust mites, mold)
    - Allergic rhinitis/post-nasal drip; acute/chronic infectious sinusitis
    - Respiratory infections
    - Pulmonary edema/gastroesophageal reflux
    - Exercise/cold air
    - Anxiety/stress
    - Poor air quality (e.g. ozone, pollutants, tobacco smoke)
    - Drugs
    - Occupational exposures
    - Medical noncompliance

5. Common causes of acute exacerbations of COPD (AECOPD), including:
    - Respiratory infections
    - Pulmonary edema
    - Poor air quality (e.g. ozone, pollutants, tobacco smoke)
    - Occupational exposures
    - Medical noncompliance

6. The genetics and role of alpha-1 antitrypsin deficiency in some patients with emphysema

7. The affect of chronic obstructive bronchitis and emphysema on the pulmonary circulation and pulmonary vascular resistance including the effects of hypoxia and the mechanism of development of cor pulmonale.

8. Non pharmacologic therapies for asthma and COPD.

9. Therapies for asthma and COPD, including pharmacology/ side effects:
    - Beta-agonist bronchodilators (short and long acting)
    - Anticholinergic bronchodilators
    - Leukotriene inhibitors
    - Inhaled and systemic corticosteroids
    - Antimicrobial agents
    - Supplemental oxygen
    - Theophylline

10. The indications for and the efficacy of influenza and pneumococcal vaccines

B. SKILLS: Students should be able to demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history, that differentiates among etiologies of disease including:
    - Existence, duration, exacerbating and relieving factors and severity of dyspnea, orthopnea, paroxysmal nocturnal dyspnea, cough, sputum production, hemoptysis, wheezing, chest pain, fever, chills, sweats.
    - Medication use and adverse reactions
    - Past history of respiratory problems and allergies
    - Family history of respiratory problems
    - Smoking history and passive exposure to tobacco smoke
    - Occupational and environmental history

2. Physical exam skills: Students should be able to perform a physical exam of the respiratory system to establish the diagnosis and severity of disease including vital signs (including pulse oximetry), inspection, palpation, percussion and auscultation. They should also be able to identify abnormalities including signs of respiratory distress, hyperinflated lungs and chest, abnormal breath sounds, crackles and wheezes, signs of pulmonary consolidation, pleural effusion, and pneumothorax.

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical exam findings that suggest a diagnosis of chronic bronchitis, emphysema, asthma, or other conditions with similar findings

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Pulmonary function tests
    - Arterial blood gases including the determination of the A-a difference
    - Chest radiograph

5. Management skills: Students should able to develop an appropriate evaluation and treatment plan for patients that includes:
    - The use of bronchodilators and inhaled corticosteroids
    - The key components of the care of patients admitted with acute exacerbations of asthma and COPD
    - Using systemic corticosteroids appropriately
    - Judicious use of antimicrobial agents
    - The principles of oxygen therapy
    - Smoking cessation strategies
    - Be familiar with the Canadian recommendations for the management of asthma and COPD

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Pneumonia

A. KNOWLEDGE: Students should be able to define, describe, and discuss:

1. The epidemiology, pathophysiology, symptoms, signs, and typical clinical course of community-acquired, nosocomial, and aspiration pneumonia and pneumonia in the immunocompromised host

2. The conceptualization of “typical” and “atypical” pneumonia and its limitations

3. Common pneumonia pathogens (viral, bacterial, mycobacterial, and fungal) in immunocompetent and immunocompromised hosts)

4. Identify patients who are at risk for impaired immunity

5. Indications for hospitalization and ICU admission of patient with pneumonia

6. The radiographic findings of the various types of pneumonia

7. The antimicrobial treatments (e.g. antiviral, antibacterial, antimycobacterial, and antifungal) for community-acquired, nosocomial, and aspiration pneumonia, and pneumonia in the immunocompromised host

8. The implications of antimicrobial resistance

9. The pathogenesis, symptoms, and signs of the complications of acute bacterial pneumonia including: bacteremia, sepsis, parapneumonic effusion, empyema, meningitis, and metastatic microabscesses

10. The indications for and complications of chest tube placement

11. The indications for and efficacy of influenza and pneumococcal vaccinations

12. The indications and procedures for respiratory isolation

B. SKILLS: Students should be able to demonstrate specific skills including:

1. History-taking skills: Students should be able to obtain, document, and present an age-appropriate medical history that differentiates among etiologies of disease, including:
    - The presence and quantification of fever, chills, sweats, cough, sputum, hemoptysis, dyspnea, and chest pain
    - Historical features consistent with potential immunocompromise
    - Potential tuberculosis exposure
    - Identify patients at risk for aspiration

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of disease, including:
    - Accurately determining respiratory rate and level of respiratory distress
    - Identifying bronchial breath sounds, crackles and wheezes
    - Identifying signs of pulmonary consolidation
    - Identifying signs of pleural effusion
    - Identifying signs of the complications of pneumonia

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical exam findings that suggest a specific etiology of pneumonia and other possible diagnoses, including:

    - Common cold
    - Acute bronchitis
    - Influenza
    - Acute exacerbation of COPD
    - Asthma exacerbation
    - CHF
    - Pulmonary embolism

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - CBC
    - Blood cultures
    - ABG
    - Pleural fluid chemistry, cell counts and culture
    - Chest radiograph

    Students should be able to define the indications:
    - Chest CT

5. Management skills: Students should able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Selecting an appropriate empiric antibiotic regimen for community-acquired, nosocomial, immunocompromised-host, and aspiration pneumonia
    - Adjusting antimicrobial treatment according to the sputum staining and culture results
    - Recognizing the complications of pneumonia

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Respiratory Failure

A. KNOWLEDGE: Students should know the following:

1. Understand how respiration is regulated and the mechanisms of respiratory failure including the anatomical locations of disease that can result in respiratory failure e.g. airway disease, lung parenchymal disease, chest wall disease, neuromuscular disease, and central nervous system causes of respiratory failure

2. Define the process of oxygen transport from the lungs to the tissues, understanding such concepts as: oxygen content, oxygen delivery and oxygen uptake

3. The etiology, pathogenesis, evaluation, and management of hypoxemia and hypercapnia

4. Differentiate acute and chronic respiratory failure in clinical and laboratory terms

5. Understand the changes in the respiratory system that occur normally during sleep

6. Understand the epidemiology and mechanisms of obstructive sleep apnea and the associated significant morbidity (i.e. hypersomnolence, cor pulmonale, respiratory failure, etc.)

7. Understand the role of noninvasive and invasive ventilation in the management of respiratory failure and particularly the role of noninvasive ventilation for the management of respiratory failure in exacerbations of COPD

B. SKILLS: Students should be able to demonstrate the following skills:

1. History-taking and physical examination skills: Students should be able to obtain a comprehensive respiratory and general history and complete physical examination in order to determine the most likely etiology, differential diagnosis and severity of the disorder causing respiratory failure

2. Laboratory investigations: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - blood work and arterial blood gases (including calculation of the A-a difference and determination of acute or chronic respiratory acidosis)
    - chest radiograph
    - spirometry

3. Management Skills: Students should develop an appropriate evaluation and treatment plan guided by the most likely etiology (etiologies) of the respiratory failure and understand when to apply non invasive or invasive ventilation for the treatment of respiratory failure.

Approved by Department of Medicine Undergraduate Medical Education Committee
September 4, 2009

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Thromboembolic Disease

A. KNOWLEDGE: Students should be able to define, describe and discuss:

1. Risk factors for developing DVT, including:
    - Prior history of DVT/PE
    - Immobility/hospitalization
    - Increasing age
    - Obesity
    - Trauma
    - Smoking
    - Surgery
    - Cancer
    - Acute MI
    - Stroke and neurologic trauma
    - Coagulopathy
    - Pregnancy
    - Oral estrogens

2. Genetic considerations predisposing to venous thrombosis

3. The symptoms and signs of DVT and PE

4. The differential diagnosis of DVT including the many causes of unilateral leg pain and swelling:
    - Venous stasis and the postphlebitic syndrome
    - Lymphedema
    - Cellulitis
    - Superficial thrombophlebitis
    - Ruptured popliteal cyst
    - Musculoskeletal injury
    - Arterial occlusive disorders

5. The differential diagnosis of PE including the many causes of chest pain and dyspnea:
    - MI/unstable angina
    - Congestive heart failure
    - Pericarditis
    - Pneumonia/bronchitis/COPD exacerbation
    - Asthma
    - Pulmonary hypertension
    - Pneumothorax
    - Musculoskeletal pain

6. Treatment modalities for DVT/PE, including:
    - Unfractionated heparin
    - Low-molecular-weight heparin
    - Warfarin
    - Thrombolytics

7. The risks, benefits, and indications for inferior vena cava filters.

8. The long-term sequelae of DVT and PE.

9. Methods of DVT/PE prophylaxis, their indications and efficacy, including:
    - Ambulation
    - Compression stockings
    - Unfractionated heparin
    - Low-molecular-weight heparin
    - Warfarin

B. SKILLS: Students should demonstrate specific skills, including:

1. History-taking skills: Students should be able to obtain, document and present an age-appropriate medical history that suggests the diagnosis of DVT or PE, including:
    - The presence or absence of known risk factors
    - Presence or absence of leg pain, swelling, warmth, discoloration
    - The presence or absence of dyspnea, chest pain, palpitations, cough, hemoptysis.

2. Physical exam skills: Students should be able to perform a physical examination to establish the diagnosis and severity of disease, including:
    - Assessment of vital signs (i.e. hypotension, tachycardia, tachypnea, fever) and general appearance (i.e. degree of respiratory distress, anxiety)
    - Accurate identification of leg swelling, erythema, warmth, and tenderness
    - Inspection for signs of lower extremity trauma, arthritis, or joint effusion
    - Identification of pleural friction rubs, wheezes, crackles, signs of pneumothorax

3. Differential diagnosis: Students should be able to generate a differential diagnosis for a patient suspected of having DVT/PE, recognizing specific history, physical examination and laboratory findings which suggest DVT/PE, including the disease states noted above

4. Laboratory interpretation: Order and interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - Pulse oximetry
    - 12-lead ECG
    - Chest radiograpy
    - ABG
    - D-dimer

    Students should be able to define the indications for:
    - Duplex venous ultrasonography
    - Ventilation perfusion (V/Q) scan.
    - CT angiography (Spiral CT)
    - Pulmonary angiography
    - Echocardiography

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Outlining the acute and long-term treatment of DVT and thromboembolism, including appropriate use and monitoring of heparin and warfarin.
    - Understanding the indications for placement of inferior vena cava filter, indications and complications of thrombolytic therapy, as well as indications for performing a hypercoaguability work-up

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OBJECTIVES FOR COMMON CLINICAL PROBLEMS

Urinary Tract Infection

A. KNOWLEDGE: Students should be able to:

1. Summarize the epidemiology, pathogenesis, and pathophysiology of urinary tract infections, noting the differences between men and women

2. Name the most common microorganisms that cause uncomplicated and complicated urinary tract infections in the community setting

3. Outline the pathogenesis of urosepsis

4. Describe the usual clinical presentation of urinary tract infection and urosepsis

5. Identify the empiric antimicrobial therapy for complicated and uncomplicated UTI (including urosepsis) and outline the pharmacokinetics of the most commonly used agents to treat UTI

B. SKILLS: Students should be able to demonstrate specific skills including:

1. History-taking Skills: Students should be able to obtain, document, and present a medical history that contributes to the accurate diagnosis of urinary tract infection and urosepsis, including:
    - History of presenting illness:
        - the presence and pattern of dysuria
        - frequency
        - nocturia
        - urgency
        - suprapubic pain
        - flank pain
        - perineal pain
        - testicular pain
        - hesitancy
        - decreased urinary output

    - fever
    - rigors
    - confusion (in the elderly)
    - hypotension
    - shock

- Past medical history that might point to a risk for UTI and urosepsis:
    - Prior UTI
    - Structural kidney disease, including renal calculi
    - Indwelling urinary catheter
    - Prostatic hypertrophy
    - Pregnancy
    - Diabetes mellitus
    - Recent (within the last 3 months) antimicrobial use
- Family history that might point to familial and genetic conditions that may be associated with UTI:
    - Structural kidney disease, including renal calculi
- Social and personal factors that might represent a risk for UTI:
    - Sexual activities (relation of symptoms to intercourse)

2. Physical exam skills: Students should be able to perform a physical exam to establish the diagnosis and severity of UTI and urosepsis, including:
    - Accurate determination of vital signs (BP, P, RR, T),
    - Determination of altered cognition,
    - Palpation for flank and suprapubic tenderness,
    - Percussion for bladder distension,
    - Identifying the presence of indwelling devices (e.g.: urethral catheters, nephrostomy tubes, ureteral stents)
    - Genital examination where appropriate to excluded the diagnosis of vaginitis, cervicitis, prostatitis, epididymitis, and urethritis

3. Differential diagnosis: Students should be able to generate a differential diagnosis recognizing specific history and physical exam findings that suggest the presence of a UTI rather than other processes, including:
    - Renal calculi
    - Sexually transmitted diseases (e.g.: Gonococcal or non-gonoccal urethritis, HSV)
    - Vaginitis
    - Epididymitis
    - Asymptomatic bacteriuria
    - Interstitial cystitis

4. Laboratory investigation: Students should know when to order and how to interpret diagnostic and laboratory tests based on the differential diagnosis. These may include:
    - CBC with differential
    - Urinalysis
    - Urine culture
    - Blood cultures
    - Renal ultrasound
    - CT scan of the abdomen

5. Management skills: Students should be able to develop an appropriate evaluation and treatment plan for patients that includes:
    - Recognizing that most patients with asymptomatic bacteriuria do not warrant antimicrobial therapy
    - Knowing which patients with asymptomatic bacteriura warrant antimicrobial therapy
    - Selecting an appropriate empiric antimicrobial regimen for uncomplicated and complicated UTI, taking into consideration recent antimicrobial use and possibility of renal dysfunction that may impact on choice of agent
    - Adjusting the antimicrobial treatment according to the results from urine and/or blood cultures
    - Monitoring therapy for response and adverse effects (e.g. watching for nephrotoxicity and ototoxicity if an aminoglycoside is prescribed)
    - Investigating for complicated UTI (e.g.: in association with obstruction or renal calculi, renal absess) in the patient who does not respond appropriately to antimicrobial therapy
    - Recognizing when an Infectious Diseases consultation is indicated
    - Recognizing when a Urology consultation is indicated
    - Knowing where to access and how to apply the current appropriate UTI management guidelines

Approved by Department of Medicine Undergraduate Medical Education Committee
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