

Competencies and Objectives of the Doctor of Medicine (M.D.) Degree Program

- 1 **Altruism:** Medical students must be compassionate and empathetic in caring for patients, and must be trustworthy and truthful in their professional dealings. They must act with integrity, honesty, and respect for patients' privacy and dignity.

By the time of graduation, a medical student will:

- 1.1 **List and define the basic principles guiding ethical decision-making.**
- 1.2 **Apply ethical concepts to medical ethical dilemmas.**
 - 1.2.1 Demonstrate an understanding of models of ethical decision-making.
 - 1.2.2 Apply models of ethical decision making to common medical ethical dilemmas.
- 1.3 **Demonstrate respect for human dignity.**
 - 1.3.1 List behaviors indicative of respect for human dignity.
 - 1.3.2 Demonstrate an understanding of the importance of behaviors indicative of respect for human dignity.
 - 1.3.3 Behave in a manner indicative of respect for human dignity.
- 1.4 **Provide compassionate patient care.**
 - 1.4.1 List behaviors indicative of compassionate patient care.
 - 1.4.2 Demonstrate an understanding of the importance of behaviors indicative of compassionate patient care.
 - 1.4.3 Behave in a compassionate manner in caring for patients.
- 1.5 **Demonstrate honesty and integrity in educational and professional interactions.**
 - 1.5.1 Demonstrate an understanding of the importance of codes of conduct.
 - 1.5.2 Behave in a manner consistent with the institutional and professional codes of conduct.
- 1.6 **Demonstrate appropriate patient advocacy.**
 - 1.6.1 Demonstrate knowledge of the principles of patient advocacy.
 - 1.6.2 Demonstrate an understanding of the importance of patient advocacy.
 - 1.6.3 Appropriately apply principles of patient advocacy.
- 1.7 **Understand the factors that impact health.**
 - 1.7.1 Demonstrate an understanding of economic factors that impact health.
 - 1.7.2 Demonstrate an understanding of psychosocial factors that impact health.
 - 1.7.3 Demonstrate an understanding of cultural factors that impact health.
 - 1.7.4 Demonstrate an understanding of spiritual or religious factors that impact health.
 - 1.7.5 Demonstrate an understanding of environmental factors that impact health.
 - 1.7.6 Demonstrate an understanding of how lifestyle impacts health.
 - 1.7.7 Demonstrate an understanding of medical factors that impact access to health care.
 - 1.7.8 Demonstrate an understanding of factors that impact access to health care by medical underserved and marginalized persons.

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1.8 Appropriately address conflicts of interest inherent to the field of medicine.

- 1.8.1 Recognize conflicts of interest in the field of medicine.
- 1.8.2 Apply appropriate measures when faced with conflicts of interest in the field of medicine.

- 2 **Knowledge:** Medical students must understand the scientific basis of medicine and be able to apply that understanding to the safe and effective practice of medicine. They must utilize self-assessment and self-knowledge to optimize their learning.

By the time of graduation, a medical student will:

2.1 Demonstrate knowledge of normal structure and function of the human body.

- 2.1.1 Demonstrate knowledge of the normal structure, metabolism, and function of the molecules that compose the human body.
- 2.1.2 Demonstrate knowledge of normal cellular structure and function of the human body.
- 2.1.3 Demonstrate knowledge of normal structure and function of human organs.
- 2.1.4 Demonstrate knowledge of normal structure and function of human organ systems.
- 2.1.5 Demonstrate knowledge of the mechanisms that maintain homeostasis.

2.2 Demonstrate knowledge of the pathogenesis and pathophysiology of disease and disorders.

- 2.2.1 Demonstrate knowledge of the abnormal structure, metabolism, and function of the molecules that compose the human body.
- 2.2.2 Demonstrate knowledge of abnormal cellular structure and function of the human body.
- 2.2.3 Demonstrate knowledge of abnormal structure and function of human organs.
- 2.2.4 Demonstrate knowledge of abnormal structure and function of human organ systems.
- 2.2.5 Demonstrate knowledge of the mechanisms that disrupt homeostasis.

2.3 Demonstrate knowledge of the clinical manifestations of common conditions and disorders.

- 2.3.1 Given a common condition or disorder, list the symptoms a patient might experience.
- 2.3.2 Given a common condition or disorder, list the findings that might be identified on physical exam.
- 2.3.3 Given a common condition or disorder, list the findings that might be identified on laboratory analysis and diagnostic tests.
- 2.3.4 Given a common condition or disorder, list the findings that might be identified on imaging studies.

2.4 Demonstrate knowledge of the pharmacotherapeutic modalities for common conditions and disorders.

- 2.4.1 Explain basic pharmacologic principles.

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- 2.4.2 List the routine medications that might be used to manage a common condition or disorder.

2.5 Demonstrate knowledge of the basic principles of clinical and translational research.

- 2.5.1 List the important elements of the scientific method and basic study design.
2.5.2 Describe the role and importance of clinical and translational research in the care of patients.
2.5.3 Describe the basic principles and ethics of how clinical and translational research is conducted, evaluated, and applied to the care of patients.

2.6 Demonstrate knowledge of the epidemiology of common conditions and disorders.

- 2.6.1 List the epidemiologic factors that place a person or population at risk for a common condition or disorder.
2.6.2 List the epidemiologic factors that affect transmission or development of a common condition or disorder.
2.6.3 List the strategies used to control and prevent a common condition or disorder.

2.7 Demonstrate knowledge of systems of healthcare delivery.

- 2.7.1 Describe key features of various systems of healthcare delivery.
2.7.2 Describe the advantages and disadvantages of various systems of healthcare delivery.

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- 3 **Skill:** Medical students must acquire wide-ranging skills that will enable them to care for patients as a professional.

By the time of graduation, a medical student will:

3.1 Obtain an accurate and complete medical history.

- 3.1.1 List in appropriate order the essential components of a complete medical history.
- 3.1.2 Describe the content of each of the essential components of a complete medical history.
- 3.1.3 Demonstrate an understanding of the purpose/importance of each of the essential components of a complete medical history.
- 3.1.4 Demonstrate effective interview techniques to obtain an accurate comprehensive medical history.
- 3.1.5 Demonstrate effective interview techniques to obtain an accurate problem focused medical history.
- 3.1.6 Demonstrate effective interview techniques to obtain an accurate medical history in the following disciplines: family medicine, internal medicine, obstetrics & gynecology, pediatrics, psychiatry, surgery, neurology, and emergency medicine.
- 3.1.7 Demonstrate effective interview techniques to obtain an accurate medical history in the following clinical situations: history obtained from a person other than the patient, history obtained using an interpreter, history obtained under urgent circumstances.
- 3.1.8 Demonstrate the ability to obtain an accurate medical history from other health care providers and medical records.

3.2 Perform all components of a complete physical examination.¹

- 3.2.1 List and describe the essential components of a complete physical examination.
- 3.2.2 Demonstrate an understanding of the purpose of each essential component of a complete physical examination.
- 3.2.3 Demonstrate appropriate and effective techniques in performing a complete physical examination.
- 3.2.4 Demonstrate appropriate and effective techniques in performing a problem focused / hypothesis driven physical examination.
- 3.2.5 Demonstrate appropriate and effective techniques in performing a complete and problem focused / hypothesis driven physical examination in the following disciplines: family medicine, internal medicine, obstetrics & gynecology, pediatrics, psychiatry, surgery, neurology, and emergency medicine.

3.3 Prepare for and perform basic clinical procedures.²

- 3.3.1 Demonstrate an understanding of the indications, contraindications, and potential adverse outcomes for each of the listed procedures.
- 3.3.2 List in appropriate order the essential steps to perform each of the listed procedures.
- 3.3.3 Describe the essential steps to perform each of the listed procedures.

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- 3.3.4 Demonstrate appropriate and effective techniques in performing each of the listed procedures.
- 3.4 Perform basic interpretation of commonly used diagnostic tests.³**
- 3.5 Recognize the typical physical exam manifestations of common medical conditions and disorders.**
 - 3.5.1 Use appropriate physical exam techniques to identify a common condition or disorder.
- 3.6 Demonstrate the skills of clinical reasoning and clinical problem solving for common conditions and disorders.**
 - 3.6.1 Given a patient with a particular chief complaint and medical history, list the appropriate components of the physical exam that warrant evaluation.
 - 3.6.2 Given a patient with a particular chief complaint, medical history, and physical exam findings, list an appropriate differential diagnosis.
 - 3.6.3 Given a patient whose history and physical exam lead to a particular differential diagnosis, list the initial studies that should be ordered, including laboratory, radiological, and other studies or procedures.
 - 3.6.4 Demonstrate the ability to recognize conditions requiring immediate intervention from those that do not, and initiate care.
 - 3.6.5 Utilize the information gained by history, physical exam, laboratory tests, radiology tests, and other studies or procedures to determine an appropriate diagnosis.
- 3.7 Create appropriate management strategies for common conditions and disorders.**
 - 3.7.1 Demonstrate an understanding of the safe and effective use of particular medications in the management of a given common condition or disorder.
 - 3.7.2 List appropriate consultants utilized in the management of a given common condition or disorder.
 - 3.7.3 List the procedures or surgeries that might be used to manage a given common condition or disorder.
 - 3.7.4 Demonstrate the ability to use pertinent biomedical information in the management of a given common condition or disorder.
 - 3.7.5 Describe how patients with a given common condition or disorder are managed over time.
 - 3.7.6 List interdisciplinary health services and the role they might play in the management of a given common condition or disorder.
 - 3.7.7 Provide appropriate guidance for home management of a given common condition or disorder.
 - 3.7.8 Provide appropriate counseling on therapeutic lifestyle changes.
 - 3.7.9 List commonly used complementary and alternative medicine modalities.
- 3.8 Apply the principles of relieving total pain (physical, psychological, spiritual, social).**
 - 3.8.1 Demonstrate an understanding of the mechanisms of pain.
 - 3.8.2 Recognize the various manifestations of pain.

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- 3.8.3 Describe the principles of managing pain.
- 3.8.4 Given a particular patient situation, describe and explain appropriate pain management.

3.9 Demonstrate effective and appropriate communication of medical information, both in writing and verbally.

- 3.9.1 Demonstrate an understanding of the HIPAA rules on patient privacy.
- 3.9.2 List the elements of effective and appropriate communication of medical information to patients, patient family members, other physicians, interprofessional team members, and other non-health care related entities.
- 3.9.3 Demonstrate an understanding of the importance of each of the elements of effective and appropriate communication of medical information to patients, patient family members, other physicians, and interprofessional team members.
- 3.9.4 Given a specific clinical situation, demonstrate effective and appropriate communication of medical information to patients, patient family members, other physicians, interdisciplinary team members.

3.10 Demonstrate the ability and commitment to continuously improve medical knowledge and skills.

- 3.10.1 Demonstrate the ability to self-assess current knowledge and skills.
- 3.10.2 Demonstrate the ability to identify and access pertinent biomedical information resources that would address gaps in knowledge and skills.
- 3.10.3 Demonstrate the ability to evaluate the effectiveness of available biomedical information resources in addressing gaps in knowledge and skills.

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2022: Reviewed by Design & Integration (D&I) subcommittee, suggested revisions presented and approved by Curriculum Committee at 4/21/22 meeting.		
2020: Reviewed by Design & Integration (D&I) subcommittee, suggested revisions presented and approved by Curriculum Committee at 7/16/20 meeting.		
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Appendix 1:
Essential components of a complete physical examination (Objective 3.2)

Head-to-Toe Physical Examination

General rules for PE

- You should consider this the standard for the PE in all simulated patient (SP) encounters
- You may learn other maneuvers to test/examine some of these same areas and that is okay; however, the SPs will evaluate your technique based on the way we ask you to perform below.
- Inspection requires you to look without palpating for at least a couple of seconds
- Verbalize inspection as recommended; not doing so may result in points deducted from your score.
- This list is organized by organ system; however, this is not always the ideal order of a focused PE. You will always be instructed when there is an expectation of an organ system examination vs. a focused physical examination based on chief complaint.

VITAL SIGNS (Volume 5)

Blood pressure – 2 step method (5.4)

1. Estimate systolic blood pressure by palpation of radial artery while inflating cuff. Cuff **must** be positioned correctly and **arm must** be at heart level. Deflate cuff completely before next step
2. Measure blood pressure in one arm. Arm should be at heart level, cuff positioned correctly, stethoscope positioned correctly (bell or diaphragm). It is good practice, but you are not required to report blood pressure.

Orthostatic blood pressure (do not have to do the 2 step method if already done in sitting position)

Measure orthostatic blood pressure. Measure the blood pressure in supine, and standing positions. Verbalize that you would wait 3 minutes once patient is supine and standing (you do not have to actually wait three minutes for SP activities). There are variations on how to take orthostatic blood pressure as described in Bates. For the purpose of OSCE, students are expected to follow the method outlined in this checklist.

Heart rate

Measure heart rate with two finger pads (not thumb) in one radial artery for 30 seconds if regular. Do not have to report heart rate.

Respiratory rate

Measure respiratory rate for 15 seconds. Reveal to simulated patient that you measured respiratory rate after doing so in a hidden manner. You do not have to report respiratory rate.



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Temperature

Obtain oral temperature. Use a probe cover for the thermometer and dispose after use.

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HENT, NECK, CERVICAL LYMPH NODES (7, 8)

Head (7.3)

1. Inspect the hair and scalp. State to patient *“I am inspecting your hair and scalp.”*
2. Palpate the skull for tenderness or deformities.

Face (7.3)

Inspect the skin of the face and neck for color, moisture, temperature, texture, mobility, turgor, and lesions. State to patient *“I am inspecting the skin of your face and neck”*

Ears (7.7)

1. Inspect both auricles for size, symmetry, deformity, tenderness, or lesions. State to patient *“I am inspecting the outside of your ear.”*
2. Inspect the external ear canal of both ears with the otoscope for discharge, swelling, or redness. State to the patient, *“I am going to look in your ear now.”*
3. Inspect tympanic membranes. Inspect **both** TMs with the otoscope (use a disposable speculum); observe the color, contour, and cone of light.
4. ****Test auditory acuity** (gross hearing test on all patients). Test one ear at a time by using the whisper test or by rubbing your fingers together. (CN VIII).
5. ****Perform the Weber test (lateralization)** by placing a vibrating tuning fork firmly on top of the patient's head. *Ask them where they hear the sound: on one or both sides?* (CN VIII)
6. ****Perform the Rinne test (bone vs. air conduction on all patients)** by placing a vibrating tuning fork on the mastoid bone, behind the ear. When the patient can no longer hear the sound, quickly place the tuning fork close to the opening of the external ear canal and ask if they can now hear the sound. Perform this test on **both** ears. (CN VIII)

Nose (8.4)

1. Inspect the nose for symmetry and deformity. State to patient *“I am inspecting your nose.”*
2. Test the patency of each nostril. Occlude (or have the patient occlude) one nostril, ask the patient to inhale through the open nostril and then repeat on the other side.
3. Inspect nasal passages with the otoscope and an ear speculum (replace the speculum if used on the ears). Observe the nasal mucosa over the septum and turbinates for deformities, color and swelling.

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4. Palpate for sinus tenderness. Palpate **both** the frontal and maxillary sinuses **bilaterally** by firmly pressing over them.

Mouth and Pharynx (8.6) Always wear gloves when examining the mouth and tongue

1. Inspect the lips for color, moisture, masses, ulcers, scaling. State, "I am inspecting your lips."
2. Inspect the mouth and throat. State, "*I am inspecting your mouth and throat.*"
You must use a light source (penlight, otoscope) and examine the patient's entire mouth and throat, including having the patient lift their tongue and pulling the cheeks aside using your finger or a tongue blade.
 - Inspect the oral mucosa, hard palate, floor of mouth, and gums for color, ulcers, and nodules.
 - Inspect the teeth for color, deformity, or absence of teeth.
 - Inspect the anterior and posterior pillars, tonsils, and pharynx. Note color, symmetry, and lesions. May need to have the patient say "ah" or use a tongue depressor to hold tongue down.
3. **Observe the movement of the soft palate and uvula by having the patient say "ah" and watching the back of the mouth. You will need a light source to visualize and may need to use a tongue blade to hold the tongue down. **Do not assess gag reflex.** (CN IX, X)
4. Inspect the extended tongue, examining both sides for symmetry, color, and texture. Examine the dorsum, sides, and undersurface of the tongue.
5. Identify the parotid duct (Stenson's duct) and the submandibular gland duct (Wharton's ducts). State "*I am examining your salivary gland openings.*"
6. Gently palpate the tongue for induration or masses.
7. Palpate the floor of the mouth.

**Cranial Nerve exam- also on the CN list

Neck and Cervical Lymph Nodes (8.8)

1. Inspect the neck for symmetry, masses, and thyroid enlargement. State to patient "*I am inspecting your neck.*"
2. Palpate the lymph nodes of the neck noting size, shape, delimitation, mobility, consistency, and tenderness.
 - a. Occipital

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- b. Posterior auricular
 - c. Preauricular
 - d. Tonsillar
 - e. Submandibular
 - f. Submental
 - g. Cervical: Superficial cervical, Posterior cervical, Deep cervical chain
 - h. Supraclavicular
3. Palpate the thyroid gland from the front **or** from behind the patient. You **must** have the patient swallow (can use a sip of water) to aid your examination.

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EYE (7)

External eye (7.5)

1. ****Assess visual acuity of both eyes** with a hand held visual acuity card held 14 inches from the patient. Test each eye separately; have patient cover non-tested eye. Patient should leave glasses on for this test. (CNII)
2. ****Test peripheral visual fields of both eyes.** Ask the patient to cover one eye and test **at least four quadrants** using waving fingers (start the test with your fingers out of the patient's field of vision) or having the patient count fingers. Repeat with the other eye. Test each of the patient's eyes individually. (CNII)
3. **Inspect both eyes** for the following and state *"I am inspecting your external eye."*
 - Position and alignment of the eyes
 - General inspection of the eyebrows and eyelids
 - Conjunctiva and sclera for color, nodules, swelling (**must** pull inferior eyelids down)
4. **Inspect the cornea and lens of both eyes** for opacities. Using a light source, shine the light obliquely (from the side of the eye while you are in front of the patient) and look for opacities. Repeat on other side. State *"I am inspecting the cornea and the lens."*
5. **Inspect the pupils** for size, shape and symmetry. State *"I am inspecting your pupils."*
6. ****Assess pupillary reaction 3 ways: direct, consensual, accommodation.**

Direct— shine a light (penlight, oto/ophthalmoscope, etc.) at one eye and watch that pupil's response to light.

Consensual—shine light source at one eye while watching the other for pupil response.

Accommodation—have the patient look at your finger at arm's distance and then watch for pupillary response as you move your finger in toward the patient. State *"I am testing for accommodation."*

Must examine **both** eyes. (CN III)
7. ****Assess extraocular muscle function.** Ask the patient to follow your finger with their eyes as you move through the six cardinal fields of gaze. Make a wide "H" (15-16 inches to either side) in front of the patient's face (14-20 inches away), and watch the movement of the eyes. (CN III, IV, VI)
8. **Test convergence.** Have the patient follow the tip of your finger as you move it in toward the bridge of their nose. Watch how the patient's eyes come together. State *"I am testing for convergence."*

Internal Eye - Direct Ophthalmoscopy (7.5)

For items 9 and 10, it is preferable and improves visualization of the fundi to dim the room lights whenever possible.

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9. Inspect the red reflex of **both** eyes. Using the ophthalmoscope locate the red reflex in each eye. State to patient *"I am inspecting for the red reflex of your eye."*
10. **Inspect the optic disc and retina of **both** eyes.
Using the ophthalmoscope locate the optic disc and retina – including retinal arteries, retinal veins, and macula. State to patient *"Now I am going to focus more closely on the back of your eye."* You must use your correct eye to inspect the patient's eye (i.e. your right eye to inspect the patient's right eye while holding the ophthalmoscope in your right hand). (CN II)

**Cranial Nerve exam- also on the CN list

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THORAX AND LUNGS (9)

Posterior Thorax (9.4)

1. Inspect posterior chest for lesions or swelling. State, “*I am inspecting the back of your chest.*”
2. Palpate the posterior chest for masses or tenderness using moderately firm pressure.
3. Check chest expansion (respiratory excursion). Wrap hands around the lower portion of the ribs with thumbs pointing upward. Have the patient take a deep breath.
4. Test for tactile fremitus. Using the ball (bony part of the palm at the base of the fingers) of your hands or ulnar surface, have patient say “99”, comparing symmetric areas. Test upper, middle, and lower lung fields.
5. Percuss the posterior chest wall comparing sides symmetrically and bilaterally: start with the upper fields, then middle fields, then lower lung fields (top to bottom)
6. Auscultate the lungs with the diaphragm of the stethoscope, as the patient (1) breathes deeply (2) through an open mouth. Compare sides symmetrically and bilaterally in upper, middle, and lower lung fields. Must listen through the entire breath cycle each time.
7. Auscultate for egophony. Auscultate for E-to-A change by asking the patient to say “E” while auscultating the posterior lung fields with the diaphragm of the stethoscope. Compare sides symmetrically and bilaterally in upper, middle, and lower lung fields.

Anterior Thorax (9.5) Note: *the patient may be seated or supine*

1. Inspect the anterior chest. State “*I am inspecting the front of your chest.*”
2. Palpate the anterior chest in the upper fields only
3. Auscultate the anterior lung fields in the upper lobes; stethoscope should be placed between the collar bone and top of the breast. Compare sides bilaterally, as the patient (1) breathes deeply (2) through an open mouth. Must listen through the entire breath cycle each time.
4. Auscultate the right middle lobe by listening with the diaphragm of the stethoscope around the right breast anterior to the mid-axillary line, as the patient (1) breathes deeply (2) through an open mouth. Must listen through the entire breath cycle.

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CARDIOVASCULAR (10), PERIPHERAL VASCULAR (11)

Neck (10.4 & 10.5)

1. Inspect for JVP. Place the head of the exam table at 30° and patient supine (no pillow). Measure JVP by placing a ruler upright at the sternal angle and then another ruler or flat object parallel to the floor. Measure the distance in cm of pulsation above the sternal angle. You do not need to report this finding. If table is flat or >45 degree angle, it is incorrect.
2. Palpate the carotid pulse using the pads of your first and second fingers (Bates says thumb is okay, but the pads of your fingers is preferred). Assess only one artery at a time; **never** occlude both sides at the same time.
3. Auscultate the carotid arteries for bruits using diaphragm or bell. You **must** have patient hold his/her breath during this maneuver.

Heart (10.7 & 10.9)

1. Inspect for heaves or lifts. State to the patient *“I am inspecting your chest for heaves or lifts.”*
2. Palpate for thrills by pressing over the aortic, pulmonic, tricuspid, and mitral (apical) areas sequentially. Use the area of your hand below your fingers or the lower area of your palm.
3. Palpate the apical impulse or PMI. Locate the point of maximal impulse (usually 5th intercostal space, mid-clavicular line) using the palmar surface of your right hand, and then further identify the impulse using your finger pads. Place the patient in the left lateral decubitus position if necessary to locate the pulse.
4. Auscultate all four valve areas. Use the diaphragm to listen to the entire precordium to identify the first (S1) and second heart sounds (S2). Auscultate all 4 areas sequentially – right 2nd interspace (aortic), left 2nd interspace (pulmonic), left 3-5th interspace at the lower sternal border (tricuspid), and left 5th interspace (approx.) at the mid-clavicular line (apex/mitral).
5. Auscultate for extra heart sounds. Using the bell placed lightly to the chest, auscultate the mitral and tricuspid areas for extra heart sounds (S3, S4). It is fine to position the patient in the left lateral decubitus position for this maneuver. State to patient *“I am listening for extra heart sounds with the bell of my stethoscope.”*

Peripheral vasculature (11.4 & 11.6)

You **must expose** each area in order to receive credit:

1. Inspect from finger tips to shoulders. Inspect bilateral upper extremities for size, symmetry, any swelling. Note the venous pattern, the texture of the skin, and the nail beds. State to the patient *“I am inspecting your arms.”*
2. Capillary refill: Press on nail beds of a couple of fingers on **both** hands. Look for color to return in ~2 secs
3. Skin temperature. With the back of your hand note the temperature of the skin of bilateral upper extremities. State to the patient, *“I am checking the temperature of your skin.”*
4. Palpate the radial pulses. Palpate both arms using the pads of your first and second fingers.
5. Palpate the brachial pulses. Palpate both arms using the pads of your first and second fingers.
6. Palpate the femoral pulses. Palpate both legs in the groin crease using the pads of your first and second fingers. For SP examinations, approach the femoral pulse by pulling up the leg of the shorts. You will still

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be able to visualize the area. Please do not expose their pubic area by approaching from the top of the shorts.

7. Palpate the popliteal pulses. Palpate both legs behind knee in tibial side of knee crease using the pads of your first and second fingers.
8. Palpate the dorsalis pedis pulses. Palpate on middle of top of both feet using the pads of your first and second fingers.
9. Palpate the posterior tibial pulses. Palpate behind lower edge of interior side of both ankles (medial malleolus) using the pads of your first and second fingers.
10. Inspect for edema in the feet and lower legs. State to patient *“I am looking for swelling in your feet and legs.”*
11. Palpate for pitting edema on both legs using firm pressure over the dorsum of the feet **and/or** anterior lower legs (ankle/shin area). You must hold pressure with the pad of your finger for **at least 5 seconds**.

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BREASTS AND AXILLAE (12)

(Advanced Clinical Skill)

1. Inspect the breasts and nipples. Pt should be sitting and disrobed to the waist. Look for skin changes, symmetry, contours, and retraction with patients'
 - a. arms at sides
 - b. arms over head
 - c. hands pressed against hips
 - d. leaning forward

2. Palpate the breasts and nipples. With patient supine, use the pads of your 2nd, 3rd and 4th fingers to palpate a rectangular area from the clavicle to the inframammary fold (bra line) and the midsternal line to the posterior axillary line. Palpate in small concentric circles using light then medium then deep pressure noting any nodules. Also thoroughly examine the axilla. Spend approximately three minutes per breast.

*(Note: there is some variation on technique and it may vary between preceptors. The vertical strip pattern is preferred)
 - a. Palpate lateral breast area. Have pt shift weight to opposite hip and place hand overhead with shoulder flat on exam table. Palpate from axilla to inframammary fold then move medially and palpate in a vertical strip up to clavicle. Continue in vertical strips until you reach the nipple.
 - b. Palpate medial breast area. Have pt place hand at neck and lower elbow until perpendicular and even with shoulder. Continue palpating in vertical strips until you reach the midsternal line
 - c. Palpate the nipple, noting any discharge

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ABDOMEN (13), PERIPHERAL LYMPH NODES

Abdomen (13.4-13.6)

1. Inspect the abdomen for contour, symmetry, lesions. State *"I am inspecting your abdomen."* You **must** have full view of the abdomen – drape/shorts should be placed almost to symphysis pubis. The anterior superior iliac spine should be exposed.
2. Auscultate for bowel sounds, **before** palpation/percussion.
3. Auscultate for an aortic bruit at the midline above the umbilicus.
4. Percuss lightly in all four quadrants to assess the distribution of tympani and dullness
5. Lightly palpate all four quadrants, noting any muscular resistance or tenderness. If the patient complains of pain, start in the quadrant farthest away from the area of pain.
6. Deeply palpate all four quadrants, noting any tenderness, masses, or pulsations. If the patient complains of pain, start in the quadrant farthest away from the area of pain.

Note: The SP must be able to tell the difference between light and deep palpation, but please keep in mind that the SP may have multiple examinations during a session so please keep your deep palpation to a minimum.

7. Assess liver span. Assess the vertical liver span by percussing the upper and lower borders of the liver in the midclavicular line. **Indicate to the patient both the upper and lower liver edges.**
8. Palpate the liver. Check for the lower edge of the liver with deep palpation. **Do not perform the "hooking technique" on SPs.**
9. Palpate the spleen. Check for the lower edge of the spleen with deep palpation. The patient can be placed either supine **or** lying on his/her right side.
10. Test for rebound tenderness. Over a tender area, press down with your fingers firmly and slowly, and then withdraw them quickly. Ask the patient, *"Which hurts more, when I press down or let go?"*
11. Palpate the aortic pulse. Palpate the abdomen at the midline above the umbilicus. (13.7)

Kidneys (13.7)

1. Percuss (gently) the costovertebral angle (CVA) on both flanks with your fist to examine for tenderness. You do not need to palpate the kidneys.

Peripheral Lymph Nodes

Examine **both** sides of the body. You should wear gloves to examine the axillae and groin.

All areas must be exposed during the examination.

1. Inspect the axillae: Inspect the area of palpation, you must expose the axillae (12.6)

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2. Palpate axillary nodes with the patient's arm down and relaxed. Note the areas of central, anterior, posterior and lateral nodes (12.6)
3. Palpate epitrochlear nodes: Palpate each upper extremity for epitrochlear nodes. (16.7)
4. Palpate inguinal nodes: Palpate each groin for the superficial **horizontal** inguinal nodes over the inguinal canal. You must visualize the area of palpation. For SP examinations, approach the inguinal area by pulling up the leg of the shorts. You will still be able to visualize the area. Please do not expose their pubic area by approaching from the top of the shorts.

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MALE GENITALIA, HERNIAS, AND PROSTATE (14)

(Advanced Clinical Skill)

Wear gloves for all portions of this examination.

Penis and Srotum (14.4)

1. Inspect the penis

- a. Inspect the base of the penis and pubic area
- b. Inspect the skin of the entire penis
- c. If present, inspect the prepuce (foreskin) and retract it
- d. Inspect the glans and note the location of urethral meatus
- e. Compress the glans to open the urethral meatus, noting discharge
- f. Replace foreskin if it was retracted
- g. Palpate the shaft of the penis noting tenderness or induration

2. Inspect and palpate the scrotum

- a. Inspect the skin of the scrotum, lifting to see the posterior surface. Note any lumps, swelling or veins
- b. Palpate each testis, noting any pain, swelling or nodules. Transilluminate any swelling that is found
- c. Palpate each epididymis on the superior posterior surface of each testicle
- d. Palpate each spermatic cord from the epididymis to the superficial inguinal ring

Hernias (14.5)

3. Inspect and palpate for hernias

- a. Inspect the inguinal and femoral areas carefully for bulges. Ask patient to bear down and observe the same area for new bulges
- b. Place forefinger on patient's loose scrotal skin and invaginate skin to palpate with finger up the spermatic cord to inguinal ligament and the opening of the external inguinal ring. Ask patient to bear down or cough and note any herniation
- c. Palpate anterior thigh in region of femoral canal. Ask patient to bear down or cough and note any swelling or tenderness

Prostate (14.8)

4. Inspect and palpate the anus, rectum and prostate

This exam may be performed with the patient standing and leaning forward (hips flexed) or in the side-lying position with patient's hips and knees flexed.

- a. Spread the buttocks apart and inspect the sacrococcygeal and perianal area skin. Palpate any abnormal appearing areas.
- b. Ask the patient to bear down and insert gloved, lubricated forefinger gently into the anal canal toward umbilicus
 - i. Note sphincter tone of anus
 - ii. Rotate finger around posterior portion of anus and note any irregularities or nodules

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- iii. Rotate finger back toward the umbilicus to palpate the posterior surface of the prostate gland
 1. Identify lateral lobes and median sulcus between them
 2. Note size, shape and consistency of prostate
 3. Identify nodules or tenderness

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FEMALE GENITALIA (15)

(Advanced Clinical Skill)

Wear gloves for all parts of this examination.

External (15.4)

1. Inspect and palpate mons pubis noting pubic hair distribution.
2. Inspect and palpate the labia majora.
3. Separate the labia majora and inspect:
 - a. the labia minora
 - b. the clitoris
 - c. the urethral meatus
 - d. the vaginal opening (introitus)

Internal (15.6)

1. Insert the speculum into the vagina to bring the cervix into view.
 - a. inspect the cervix noting position and any nodules, masses or ulcerations
 - b. inspect the cervical os for discharge
2. While slowly withdrawing the speculum, inspect the vaginal wall.

Bimanual

From a standing position, insert lubricated index and middle finger of gloved hand into vagina. Pressure and direction should be posteriorly. Thumb should be abducted and ring and little fingers flexed into palm. Other hand should be on abdomen halfway between umbilicus and symphysis pubis.

1. Palpate urethra and vagina
2. Palpate the cervix
3. Palpate the uterus between both hands
4. Palpate each ovary (sometimes not palpable)

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MUSCULOSKELETAL SYSTEM (16)

Make sure to first inspect for a few seconds before you start palpating the area, these must be two distinct steps.

Upper Extremities

1. Examine **both shoulders** (16.5)
 - Inspection; State *“I am inspecting your shoulders.”*
 - Palpation of acromioclavicular joint, coracoid process, scapula, greater tubercle, biceps tendon, and subacromial bursa/ supraspinatous insertion
 - Active range of motion (AROM)—the patient moves their own limb including forward flexion, extension abduction and adduction, internal rotation, and external rotation
2. Examine **both elbows** (16.7)
 - Inspection of extensor surface of ulna and olecranon process; State *“I am inspecting your elbows.”*
 - Palpation of olecranon process and epicondyles
 - AROM including flexion, extension, pronation, supination
3. Examine **both wrists** (16.9)
 - Inspection of palmar and dorsal surfaces; State *“I am inspecting your wrists.”*
 - Palpation of distal radius and ulna on lateral and medial surfaces, groove of joint on dorsal surface and the carpal bones, you must palpate both sides and front and back of wrists
 - AROM including flexion, extension, radial and ulnar deviation
4. Examine **both hands** and **all fingers**
 - Inspection of the dorsal and palmar surfaces of the hands and fingers; State to patient *“I am inspecting your hands and fingers.”*
 - General palpation of anatomic snuffbox and metacarpals; and joint palpation of MCP joints, and medial and lateral aspects of each PIP joint and DIP joint
 - AROM of the fingers including flexion, extension, abduction, adduction
 - AROM of the thumb including flexion, extension, abduction, adduction, opposition

Spine

1. Examine the **spine** (16.11)
 - Inspection of posture and spinal curvature from behind, State to patient *“I am inspecting your spine.”* Only correct if you expose the entire spine and stand behind the patient for this.
 - Palpation of spinous processes of each vertebra, the paravertebral muscles, and sacroiliac joints
 - AROM of the neck including flexion, extension, rotation, lateral bending,
 - AROM of the lower spine including flexion, extension, rotation, lateral bending (hold patient’s hips stable, if necessary, so that the patient moves at the waist only),

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Lower Extremities

1. Examine **both hips** (16.13)
 - Observation of gait (may include with examination of the spine),
 - Palpation of trochanteric bursa, bilaterally (patient lying on their **side**), area exposed
 - PROM (Passive ROM – you move the patients' limb) with patient supine including flexion, extension, abduction, adduction, external rotation, internal rotation

2. Examine **both knees** (16.15)
 - Inspection of contour and swelling, state to patient *"I am inspecting your knees."*
 - Palpation with knee in flexion of the patellar tendon, femoral condyles, medial and lateral collateral ligaments, and joint lines,
 - AROM including flexion and extension

4. Examine **both ankles** (16.17)
 - Inspection for deformities and swelling state to patient *"I am inspecting your ankles"*,
 - Palpation of anterior ankle, Achilles tendon
 - AROM including dorsiflexion and plantarflexion

5. Examine **both feet**:
 - Inspection for deformities and swelling state to patient *"I am inspecting your feet"*
 - Palpation of metatarsophalangeal joints, heel, plantar fascia
 - AROM including inversion and eversion of foot, and flexion of toes

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NERVOUS SYSTEM (17, 18)

Mental Status

You must have these questions memorized

1. Orientation to person: Ask for the patient's full name.
2. Orientation to place: Do you know where you are right now? Ask for the name of hospital, floor, city, state, or county.
3. Orientation to time: Ask patient for the date, month, year, day of week, or season.
4. Recall: Ask patient to name three unrelated objects and immediately repeat them. (Give the patient 3 simple unrelated nouns to recall: for example- apple, table, penny). Tell the patient you will ask him/her to tell you these 3 words again in a few minutes.
5. Remote memory: Ask patient for 1-2 historical events relevant to his/her past (i.e., jobs held, birth date, name of schools attended).
6. Recent memory: Ask patient to tell you events about the day (i.e., the weather, today's appointment time).
7. Attention: Ask patient to subtract serial 7s. Stop after 5 answers. Alternatively, ask patient to spell WORLD backwards.
8. Information and Vocabulary: Ask about patient's work, hobbies, favorite music/TV programs, current events. Ask specific facts (i.e., name of president, vice president, name 5 large cities in the US)
9. Calculating ability: Ask patient to solve simple arithmetic problems.
10. Abstract thinking: Ask patient to explain a proverb or similarities.
11. Constructional ability: Ask patient to draw a clock complete with numbers and hands and set to a specific time. Example - "Please draw a clock showing the time 2:30."
12. Ask patient to repeat the names of the three objects above in #4.

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Cranial Nerves (17.4)

1. CN I (Olfactory)

Test smell in each nostril individually with different scents. With patient's eyes closed and occluding the non-tested nostril.

2. CN II (Optic) (see also 7.5)

- a. Assess visual acuity of **both** eyes with a hand-held visual acuity card held 14 inches from the patient. Test each eye separately; have patient cover non-tested eye. Patient should leave glasses on for this test.
- b. Test peripheral visual fields of both eyes. Ask the patient to cover one eye and test **at least four quadrants** using waving fingers (start the test with your fingers out of the patient's field of vision) or having the patient count fingers. Repeat with the other eye. Test each of the patient's eyes individually.
- c. Inspect the optic disc and retina.
Using the ophthalmoscope locate the optic disc and retina – including retinal arteries, retinal veins, and macula. State to patient *“Now I am going to focus more closely on the back of your eye.”* You must use your correct eye to inspect the patient's eye (i.e. your right eye to inspect the patient's right eye while holding the ophthalmoscope in your right hand). Inspect **both** eyes.

3. CN III (Optic and Oculomotor) – Pupillary response (see also 7.5)

- a. Direct—shine a light (penlight, oto/ophthalmoscope, etc.) at one eye and watch that pupils' response to light.
- b. Consensual—shine light source at one eye while watching the other for pupil response.
- c. Accommodation—have the patient look at your finger at arm's distance and then watch for pupillary response as you move your finger in toward the patient. State *“I am testing for accommodation.”*
- d. Must examine **both** eyes.

4. CN III, IV, VI (Oculomotor, Trochlear, Abducens). (see also 7.5) Extraocular muscle function (EOM).

Ask the patient to follow your finger with their eyes as you move through the six cardinal fields of gaze. Make a wide “H” (15-16 inches to either side) in front of the patient's face (14-20 inches away), and watch the movement of the eyes. Note nystagmus.

5. CN V (Trigeminal)

- a. Test jaw clenching by palpating at jaw for muscle contraction and moving the jaw side to side.
- b. Test sensation on face. With the patient's eyes closed, use light touch with finger, tissue or other soft object on forehead, cheeks, and chin **one side at a time**. Ask the patient to tell you a) when the touch is felt, AND b) compare both sides (*“Does this feel the same as this?”*)
- c. **Do not** assess corneal reflex on SPs, be aware of when to test this.

6. CN VII (Facial)

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Test face muscles: (1) wrinkling forehead, (2) strength of eyelid closure (student must try to open the patient's *closed eyes*), and (3) smiling and/or puffing cheeks (must do ALL 3)

7. CN VIII (Acoustic) (see also 7.7)
 - a. Test auditory acuity (gross hearing test). Test one ear at a time by using the whisper test or by rubbing your fingers together.
 - b. Perform the Weber test (lateralization) by placing a vibrating tuning fork firmly on top of the patient's head. *Ask them where they hear the sound: on one or both sides?*
 - c. Perform the Rinne test (bone vs. air conduction) by placing a vibrating tuning fork on the mastoid bone, behind the ear. When the patient can no longer hear the sound, quickly place the tuning fork close to the opening of the external ear canal and ask if they can now hear the sound. Perform this test on **both** ears.

8. CN IX, X (Glossopharyngeal, Vagus)
 - a. Observe movement of the soft palate and uvula by having the patient say "ah" and watching the back of the mouth. You may need to use a tongue blade and/or light source to visualize. (see also 8.6)
 - b. **Do not** assess gag reflex on SPs.
 - c. Listen to patient's voice. State, *"I am listening to/have listened to your voice."*

9. CN XI (Spinal Accessory)
 - a. Test strength of trapezius with shrugging shoulders against firm pressure
 - b. Test strength of sternocleidomastoid by turning head each direction against firm pressure

10. CN XII (Hypoglossal) –
 - a. Test by having patient stick tongue straight out.

Motor System (17.5)

1. Observe body position with movement and rest. Verbalize observation. Note involuntary movements.

2. Inspect muscle bulk and tone of **both** arms and hands. State, *"I am inspecting the muscle bulk of your arms and hands."* Check tone by moving the extremity back and forth at the elbow and wrist joints, note position.

3. Test muscle strength of **both** upper extremities, making sure to isolate the muscle(s) to be tested. Test all of the following:
 - biceps flexion (C5, C6)
 - triceps extension (C6, C7, C8)
 - wrist flexion (C6, C7, C8, radial nerve)
 - wrist extension (C6, C7, C8, radial nerve)

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- finger grip (C7, C8, T1)
 - finger abduction (C8, T1)
 - thumb to little finger opposition (C8, T1, median nerve)
3. Inspect muscle bulk and tone of **both** legs and feet. State, “*I am inspecting the muscle bulk of your legs and feet.*” Check tone by moving the extremity back and forth at the knee and ankle joints.
4. Test muscle strength of **both** lower extremities, making sure to isolate the muscle(s) to be tested. Test all of the following:
- hip flexion (L2, L3, L4—iliopsoas)
 - hip extension (S1—gluteus maximus)
 - hip abduction (L4, L5, S1—gluteus medius and minimus)
 - hip adduction (L2, L3, L4—adductors)
 - knee extension (L2, L3, L4—quadriceps)
 - knee flexion (L4, L5, S1, S2—hamstrings)
 - ankle dorsiflexion (mainly L4, L5)
 - ankle plantarflexion (S1)

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Sensory System (18)

You **MUST** have the patient close their eyes for all of the following, 1-6. All areas must be exposed. These are required for credit. You should demonstrate each test for the patient and explain what you are looking for before proceeding with the examination.

1. Test sensation to pain, bilaterally. With patient's eyes closed, touch symmetric areas on both sides of the body **one side at a time** (list below) with a sharp object. Use the broken end of a cotton swab for sharp (please do not use safety pins with standardized patients). Ask the patient to tell you a) if they feel a sharp sensation AND b) compare both sides ("*Does this feel the same as this?*")
 - Shoulders (C4)
 - Inner and outer aspects of forearms (C6 and T1)
 - Thumbs and little fingers (C6 and C8)
 - Fronts of thighs (L2)
 - Medial and lateral aspects of calves (L4 and L5)
 - Little toes (S1)
2. Test sensation to temperature, bilaterally. With patient's eyes closed, use a tuning fork (cool sensation- we do not have test tubes or a "hot") to compare symmetric areas one side at a time (list below). Ask the patient to tell you when they feel a cool touch.
 - Upper arms
 - Lower arms
 - Fronts of thighs
 - Lateral calves
3. Test sensation to light touch, bilaterally. With patient's eyes closed, touch symmetric areas on both sides of the body **one side at a time** (list below). Use a cotton ball or your finger. Ask the patient to tell you a) when the touch is felt AND b) compare both sides ("*Does this feel the same as this?*")
 - Shoulders (C4)
 - Inner and outer aspects of forearms (C6 and T1)
 - Thumbs and little fingers (C6 and C8)
 - Fronts of thighs (L2)
 - Medial and lateral aspects of calves (L4 and L5)
 - Little toes (S1)
4. Test vibratory sensation, bilaterally, using the 128 Hz tuning fork. With the patient's eyes closed, tap the tuning fork and place it firmly on the joint. Ask the patient to describe what they feel, then to tell you

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when the feeling stops. Lightly touch the tuning fork with your hand to stop the vibration. Ask the patient what they feel (refer to Bates page 754).

Test over:

- the DIP joint of one finger on each hand
- the interphalangeal joint of both big toes

5. Test position sense, **bilaterally** (by holding the *sides of the joint, not top and bottom*).

With the patient's eyes closed, test the following;

- **Both** big toes—holding the interphalangeal joint
- One finger on **each** hand—holding the DIP

6. Test discriminative sensation in **one hand** by;

- *Stereognosis* – with the patient's eyes closed, place an object in the patient's hand and ask them to identify the object
- *Number identification (graphesthesia)* – with the patient's eyes closed, draw a number on the patient's palm and ask them to identify the number

Deep Tendon Reflexes (DTR) (18.5)

1. Test reflexes, bilaterally (list below). Do not strike the patient's tendon more than 3 times to elicit the response. If you elicit the response with the first attempt, move on with the exam.
 - Biceps (C5/6)
 - Triceps (C7)
 - Brachioradialis (C5/6)
 - Knee/Patellar (L3/4)
 - Ankle (S1)
2. Test for clonus, bilaterally. Push foot up (dorsiflex ankle) sharply once and hold to see if foot pushes back down; if it does, note the number of times it does so.
3. Test plantar response (Babinski), bilaterally. With the end of a tongue depressor stroke the lateral aspect of the sole from the heel to the ball of the foot, curving medially across the ball. Use only gentle pressure with the SPs, do not use a sharp tool (many handles of reflex hammers are too sharp) and always warn your patients before doing this test.

Coordination (17.6)

1. Test rapid alternating movements, bilaterally. Have patient alternate striking palm and back of hands on thighs as quickly as they can.
2. Perform point-to-point testing, bilaterally ("finger to nose"). Ask the patient to touch your index finger and then his/her nose. Move your finger about so that the patient has to alter directions and extend the arm fully to reach it. Perform this maneuver several times.

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3. Perform heel to shin bilaterally. Have the patient slide their leg from their knee to their foot as straight as possible three times in a row.
4. Observe walking – look for symmetry and posture
 - Normal walking
 - Tandem walking (heel-to-toe on a straight line)
 - Toe walking
 - Heel walking
 - Hop in place
 - Shallow knee bend
5. Romberg*: Have patient stand for at least 20 seconds with arms at their sides, feet together, and eyes closed (be prepared to stop the test; have them open eyes, if they start to lose balance and be ready to catch/stabilize).
6. Pronator drift: Have patient sit or stand with their arms out straight, **palms up**, and eyes closed. Have them hold this position for at least 20 seconds to observe any movement or pronator drift

*You may sometimes see Romberg and pronator drift tested at the same time, however these are two separate tests. Romberg tests position sense, but is done here because the patient is already standing in order to test gait. Pronator drift tests for a lesion in the corticospinal tract.

Appendix 2:
Basic Clinical Procedures (Objective 3.3)

1. Establish and maintain a sterile field
2. Perform venipuncture
3. Insert and remove an intravenous catheter
4. Insert and remove a nasogastric tube
5. Insert and remove a foley catheter
6. Suture simple incisions and lacerations
7. Administer subcutaneous and intramuscular injections
8. Perform basic cardiac life support (BLS)
9. Perform a 12-lead EKG
10. Demonstrate fundamental ultrasound image acquisition including machine set up, transducer and exam mode selection, image optimization, and appropriate transducer manipulation.

Appendix 3:
Commonly used diagnostic tests (Objective 3.4)

1. Abdominal x-ray series
2. Arterial blood gas analysis
3. Body fluid analysis (cerebrospinal fluid, ascites, pleural effusion)
4. Cardiac enzymes
5. Chest x-ray
6. Complete blood count
7. Comprehensive metabolic profile
8. Culture & sensitivities
9. Electrocardiogram
10. Peak flow
11. Pregnancy test
12. Urinalysis
13. Coagulation Studies