

Patient Assessment



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1

Routine History-Taking and Physical Examination

GENERAL OVERVIEW

Patient Interview Introduction

The primary job of the dental student starting clinical work is to learn to conduct a patient workup thoroughly and efficiently. The heart of every patient workup is a set pattern done in a sequential order of data collection and analysis.

Patient Workup Sequential Pattern

The sequential pattern of patient workup consists of the following:

1. History and physical examination.
2. Laboratory data collection and analysis.
3. Diagnostic and therapeutic plan formulation.

The first step, the patient interview, or the history, is probably the single most important task in the diagnostic patient workup because of its importance in diagnosis and in the development of a good doctor-patient relationship. The provider should demonstrate a professional manner that will put the patient at ease. During the interview, always listen carefully to the patient. Use interrogation sparingly, or use it later to aid a communicating patient, or to restrict the rare patient who has a tendency to ramble!

Patient Interview Practical Points

Keep your appearance neat and clean. This will help gain your patient's trust. Always introduce yourself when meeting a patient and refer to the patient as "Mr. John Doe" or "Miss Jane Doe." Do not use first names during the initial encounter. Exchange a few brief pleasantries because moving forward, this will help both you and the patient feel comfortable and at ease with one another.

4 Section I: Patient Assessment

Always have a friendly and sincere interest in your patient's problem(s). Always be courteous, respectful, and confidential and show a continued interest while you are with the patient.

Physical Examination Practical Points

Prior to the start of the physical examination let the patient know that you are going to take the pulse and blood pressure and examine the head and neck area. This heads-up will enable the patient to understand that you will be touching him or her. Your attentive and respectful ways will enhance a good doctor-patient relationship.

The physical examination is an art that is learned by constant repetition. There are many styles and methods for conducting the general examination, and every clinician will ultimately choose one examination sequence to go by. Most clinicians, however, prefer the head-to-foot order. When examining any area of the body, it is usually best to follow an orderly sequence of inspection, palpation, percussion, and auscultation. This sequential routine ensures thoroughness.

The physical examination should always be conducted and assessed in the context of the patient's dental and medical history. The range of "normal" varies from patient to patient.

The student needs to become familiar with the use of the stethoscope and the blood pressure cuff. Fumbling with your equipment or the technique during patient examination will cause you embarrassment. The student also needs to practice the head-and-neck exam techniques often on friends or family members to get a good sense of the normal.

History-Taking and Physical Examination: Broad Conclusions

After the history and physical examination is completed, you should, in most cases, be able to answer the following questions:

- The disease states that exist in the patient and whether the patient's problems are acute or chronic.
- The organ systems that may be involved.
- The differential diagnosis of the patient's problems.
- The laboratory tests that will be needed for the evaluation of the disease states.
- Confirmation or exclusion of a diagnosis and/or whether to follow the course of a disease state.

HISTORY-TAKING DETAILS

The purpose of medical history and physical examination is to collect information from the patient, to examine the patient, and to understand the patient's problems. Traditional history-taking has several parts, each with a specific purpose. In order to achieve maximum success, the medical history must be accurate, concise, and systematic.

The following is a standard outline in sequential order of the different components of history-taking. The introductory materials in the health history consist of collecting several types of information from the patient.

Data Collection

The following information is obtained in all patients to gain a basic understanding of the patient:

Date of the visit: _____ Record number: _____
Name: _____
(last) (first) (middle)
Home address: _____ Home phone: _____
Business address: _____ Business phone: _____ Cell phone: _____
Occupation: _____ Date of birth: _____
Sex: M/F/Transgender/Other
Marital status: S/M/D/W/Partnership
Height: _____
Weight: _____
Referred by: _____

Chief Complaint

The chief complaint states in the patient's own words the reason for the visit, for example, "I have a toothache" or "I need a root canal."

Present History

Present history lists, in clear, chronological order, the details of the problem or problems for which the patient is seeking care. You will determine by interrogation a timeline of the following:

1. When did the patient's problem(s) begin?
2. Where did the problem(s) begin?
3. What kinds of symptoms did the patient experience?
4. Has the patient had any treatment for the problem(s)?
5. Has the treatment had any positive or negative effect on the patient's condition?
6. Has the patient's lifestyle been affected by the problem(s)?

Past History

The past history gives you an insight about the health status of the patient until now. Check with the patient for the presence or absence of diseases by eliciting the **symptoms and signs** associated with the disease states. It is best to access the disease states with the patient in **alphabetical** order to ensure you address each disease state and do not miss anything. Use interrogation to check for the following disease states:

Anemia

Determine the presence or absence of the nutritional, congenital, and acquired or chronic disease-associated anemias.

6 Section I: Patient Assessment

Bleeding Disorders

Determine the presence or absence of the congenital and acquired types of bleeding disorders.

Cardiorespiratory Disorders

Determine whether the patient has a history of angina, myocardial infarction, transient ischemic attacks (TIAs), cerebrovascular attacks (CVAs/strokes), hypertension, rheumatic heart disease, asthma, tuberculosis, bronchitis, sinusitis, and chronic obstructive pulmonary disease (COPD).

Drugs/Medications

Determine the patient's current medications. Check for prescribed, herbal, and over-the-counter (OTC) medications. Determine whether the patient is currently on corticosteroids or has been on them, by mouth or by injection, for two weeks or longer within the past two years. Check if the patient has known allergies to any drugs, such as NSAIDs, aspirin, codeine, morphine, penicillin, sulpha antimicrobials, bisulfites, metabisulfites, or local anesthetics.

Endocrine Disorders

Check for diabetes, hyperthyroidism, hypothyroidism, parathyroid disorders, and pituitary and adrenal disorders (Addison's disease or Cushing's syndrome).

Fits or Faints

Check for the presence of different kinds of seizures: grand mal epilepsy, petit mal epilepsy, temporal lobe or psychomotor epilepsy, or localized motor seizures.

Gastrointestinal Disorders

Check for oral ulcerations, esophagitis, gastritis, peptic ulcerations, Crohn's disease, celiac disease, ulcerative colitis, diverticulitis, polyps, and hemorrhoids.

Hospital Admissions

Determine the cause or causes for admission and also check if the patient had any history of accidents or injuries. Determine whether the patient was given any anesthesia, either local or general, during the hospital admission. Furthermore, determine whether there were any complications during the hospital admission due to the anesthesia or due to the medical/surgical condition for which the patient was admitted. Determine whether the patient was given a blood transfusion during hospitalization.

Immunological Diseases

Check for lupus, Sjögrens syndrome, rheumatoid arthritis, and polyarthritis nodosa.

Infectious Diseases

Check for infectious diseases of childhood: measles, mumps, chicken pox, streptococcus pharyngitis, rheumatic fever, or scarlet fever. Also check for infectious diseases of adulthood: sexually transmitted diseases (STDs), hepatitis, HIV infection, Methicillin-Resistant Staphylococcus Aureus (MRSA) infection, and infectious mononucleosis.

Jaundice or Liver Disease

If the patient is jaundiced or has had jaundice, determine the cause. Is it due to viral hepatitis, alcoholic hepatitis, or gallstones? Determine whether there is any history of gallbladder dysfunction. Check whether there is any indication of improper liver function.

Kidney Disorders

Determine whether there is any indication of kidney dysfunction, renal stones, urinary tract infections, renal disease, renal failure, or renal transplant.

Likelihood of Pregnancy

Determine the date of the patient's last menstrual period (LMP) and whether the patient is pregnant. Always let the patient know that prior to dental radiographs, you need to know if the patient is pregnant. You need to also know the pregnancy status, as there are certain anesthetics, analgesics, and antibiotics that are contraindicated during pregnancy.

Musculoskeletal Disorders

Check for osteoporosis and other causes of impaired bone metabolism, Paget's disease, osteoarthritis, rheumatoid arthritis, psoriatic arthritis, gout, muscular dystrophy, polymyositis, and myasthenia gravis.

Neurological Disorders

Check for cranial nerve disorders, headaches, facial pains, migraine, multiple sclerosis, motor neuron disease, transient ischemic attacks (TIAs), or cerebrovascular accidents (CVAs) associated neurological deficits, Parkinson's disease, and peripheral neuropathies.

Obstetric and Gynecological Disorders

Check for conditions or diseases that can lead to spontaneous abortions, miscarriages, bleeding, or anemia. Also check for any tumors needing chemotherapy or radiotherapy.

8 Section I: Patient Assessment

Psychiatric Disease

Check for personality disorders, neuroses, anxiety, phobias, hysteria, psychoses, schizophrenia, dementia, Alzheimer's disease, and posttraumatic stress disorder (PTSD).

Radiation Therapy

Check for any radiation to the head and neck region and the RADS or Gy of radiation received.

Skin Disorders

Lichen planus, phemphigus, herpes simplex, herpes zoster, eczema, unhealed skin lesions, and urticaria (itching of the skin) are conditions that should be checked for.

Tetanus

Determine the patient's immunization status for tetanus, hepatitis, influenza, and pneumonia.

Violence

Check for domestic violence, intimate partner violence (IPV), and elder or child abuse.

Wounds

Determine the patient's wound-healing capacity.

Personal History

In this part of the history, we try to get an insight into the patient's lifestyle, occupation, and habits. In the lifestyle component, an attempt is made to understand what constitutes a typical day for the patient. What does the patient do for recreation, relaxation, and so on? What is the patient's job like? Are there any job-related toxic exposures? Is there any history of alcohol, coffee, or tea intake? How much of these does the patient consume? Is there any history of diarrhea or vomiting?

Is there any history of smoking cigarettes or using "recreational" drugs such as marijuana, cocaine, or amphetamines? Has the patient ever used intravenous (IV) drugs or swapped needles? Has the patient been exposed to any infectious diseases or sexually transmitted diseases (STDs)? Does the patient use any herbal medications or over-the-counter medications?

Does the patient use diet pills, birth control pills, laxatives, analgesics (aspirin, acetaminophen, NSAIDS, and other pain medications), or cough/cold medications?

Family History

Once the patient's medical history has been completed, it is important to assess the health status of the immediate family members. Determine whether certain common

diseases run in the family or if a familial disease pattern exists. Determine the age and health of the patient's parents, siblings, and children. If any member is deceased, the cause of death and age at death should always be established.

Presence of diseases with a strong hereditary component or tendency for familial clustering should be determined. These diseases are coronary artery disease (CAD), heart disease, diabetes mellitus (DM), hypertension (Htn), stroke (CVA), asthma, allergies, arthritis, anemia, cancer, kidney disease, or psychiatric illness.

Review of Systems: Overview and Components

Review of systems (ROS) is a final methodical inquiry prior to physical examination. All organ systems not discussed during the interview are systematically reviewed here. It provides a thorough search for further, as yet unestablished, disease processes in the patient. If the patient has failed to mention certain symptoms, the process of ROS helps remind the patient. Also, if you have unknowingly omitted questioning the patient about certain aspects of his or her health, now is the time to include these aspects.

Review of Systems: Assessment Components

Constitutional

Determine whether there is any history of recent weight change, anorexia (loss of appetite), weakness, fatigue, fever, chills, insomnia, irritability, or night sweats.

Skin

Is there any history of allergic skin rashes, itching of the skin, unhealed lesions (probably due to diabetes, poor diet, steroids, HIV/AIDS, and so on)? Is the rash acute or chronic? Is the rash unilateral or bilateral? Does the patient have any history of bruising or bleeding?

Head

Is there any history of headaches or loss of consciousness (LOC)? LOC may be due to cardiovascular, neurologic, or metabolic causes; or it may be due to anxiety.

Is there any history of seizures? Are the seizures generalized (with or without loss of consciousness) or focal? Are there any motor movements? Is there any history of head injury?

Eyes

Check for acuity of vision, history of glaucoma (can cause eye pain), redness, irritation, halos (seeing a white ring around a light source), or blurred vision. Is there any irritation of the eyes or excessive tearing? These symptoms could also be allergy-associated.

Ears

Check for recent changes in hearing, ear pain, discharge, vertigo (dizziness), or ringing in the ears (tinnitus).

Lymph Glands

Check for lymph glandular enlargement in the neck or elsewhere. Are the nodes tender or painless, or are they hot or cold to touch? When did the patient first notice any changes in the nodes? Are the nodes freely mobile, or are they anchored to the underlying tissues?

Respiratory System

Ask if there is any history of frequent sinus infection, postnasal drip, nosebleed, sore throat, or shortness of breath (SOB) on exertion, or at rest. SOB can be due to respiratory, cardiac, or metabolic diseases.

Check for wheezing (may be due to asthma, allergies, and so on) and hemoptysis or blood in the sputum (may be due to dental causes or due to lung causes such as bronchitis or tuberculosis). Check if the cough with expectoration is blood-tinged or is there frank blood in the sputum. Is there any history of bronchitis, asthma, pneumonia, or emphysema?

Cardiovascular System

Is there any history of chest pain or discomfort or palpitations? Have the palpitations been associated with syncope (loss of consciousness)? Is there any history of either hypertension or hypotension? Does the patient experience any paroxysmal nocturnal dyspnea (shortness of breath experienced in the middle of the night)? Is there any shortness of breath (SOB) with exercise or exertion?

Is there any history of orthopnea (SOB when lying flat in bed)? Does the patient use more than one pillow to sleep? Has this always been the case, or has the patient recently started using more pillows?

Is there any history of edema of the legs, face, and so on? Does the patient experience any history of leg pains or cramps? Are the cramps relieved by rest? If so, this is suggestive of intermittent claudication. If the cramping or leg pains are unremitting, it is more likely to be muscular in origin.

Is there any history of murmur(s), rheumatic fever, or varicose veins? Is there any history of hypercholesterolemia, gout, or excessive smoking that can lead to or worsen heart disease?

Gastrointestinal System

Check for a history of bleeding gums, oral ulcers, or sores. Is there any history of dysphagia (difficulty swallowing)? Can the patient point out and describe where the difficulty swallowing exists? Is there any history of heartburn, indigestion, bloating, belching, or flatulence? Is there any history of nausea? Is it related to food? Determine the following:

- **Vomiting:** Is there any associated weight loss? Are there psychosocial factors or medications causing it?
- **Hematemesis (vomiting blood):** Ask for associated ulcer history, food intolerance, abdominal pain, or discomfort.
- **Jaundice:** Is the jaundice due to a viral cause or gallstones?

Is there a history of diarrhea/constipation or any change in color of stools?

Genitourinary System

Is there a history of polyuria (excessive urination) due to diabetes, renal disease, or an unknown cause? Is it a recent change? Is there any history of nocturia (getting up at night to go to the bathroom)? Is this a recent change? Is there any history of dysuria (painful urination)? If dysuria is because of urinary tract infection (UTI), frequency and urgency will also be experienced. STDs will also be associated with similar symptoms. With a positive history of STD, always check to see if treatment for STD was completed. Check for renal stones, pain in the loins, and frequent UTIs.

Menstrual History

Determine the date of the last menstrual period. Never forget to paraphrase this question, as discussed previously. Check for any history of menorrhagia (heavy periods). Check whether the patient uses birth control or oral contraceptive pills and details of the type of contraception. Let the patient know that it is firmly established now that oral antibiotics can only decrease the potency of combined oral contraceptives pills (COCPs) or progesterone-only contraceptive pills when antibiotics cause **severe persistent** diarrhea or vomiting, thus essentially “washing out” the pills. It is only then that the patient will have to use extra barrier protection until the end of the next cycle to prevent pregnancy. It is well documented now that certain medications like Rifampin or antiseizure medications or azole antifungals that **induce** cytochrome P450 enzyme system **do affect** the potency of **just the COCPs** containing estrogen and progesterone, as these medications negatively affect the metabolism of just estrogen and not progesterone. So while on these enzyme-inducer medications in combination with COCPs, the patient will have to use barrier protection to prevent pregnancy. Antibiotics prescribed in the dental setting are not CYP450 enzyme inducers. Always enter a case note in the record stating that the patient has been so informed.

Musculoskeletal System

Check for a history of joint pains and what joints are affected. Is the pain acute or chronic, unilateral or bilateral, and is it in the morning or in the evening? Are there any systemic symptoms? Is there a history of rheumatoid arthritis, osteoarthritis, or gout?

Endocrine System

Check for symptoms associated with diabetes: polyuria (excessive urination), polydypsia (excessive thirst), polyphagia (excessive hunger), or weight change; thyroid: heat/cold intolerance, increased/decreased heart rate or goiter, and adrenals: weight change, easy bruising, hypertension, and so on.

Nervous System

Check for a history of stroke, cerebrovascular accident/stroke (CVA), or transient ischemic attack (TIA). Check for a history of muscle weakness, involuntary movements due to tremors, seizures, or anxiety. Check for history of sensory loss of any kind, anesthesia (no sensation), paresthesias (altered sensation commonly experienced as pins and needles), or hyperesthesias (increased sensations). Check if there is any change in memory, especially a recent change.

History-Taking Conclusion

It is important at this point to collect the relevant data or all positive findings about the patient and then construct a logical framework of the case. You are now able to decide which organ or body area is affected and where to focus on during physical examination.

PHYSICAL EXAMINATION: DETAILED DISCUSSION

Structure and Overview

The history serves to focus on and provides emphasis to the physical examination in the sequence of patient workup. The patient is examined from head to toe, thus ensuring thoroughness and screening for abnormalities. Any specific physical findings suggested because of the history findings are sought.

PHYSICAL EXAMINATION: ASSESSMENT COMPONENTS

The following are components of the physical examination in sequential order.

General Appearance

Note the patient's mental status, ability to interact, speech pattern, neatness, and so on.

Vital Signs: Pulse, Respiration Rate, Blood Pressure, Height, and Weight

Pulse

Note the rate, rhythm, volume, and regularity of the pulse. Count the pulse rate/minute. If the pulse rhythm is irregular, determine whether the irregular rhythm is regular or irregular. An irregularity, more than 5 beats/min, is pathological and should prompt a consult with the patient's MD (normal pulse: 65–85 beats/min).

Respiration Rate

Note the breathing pattern and the respiratory rate (RR)/min **while taking** the pulse, so the patient is unaware and anxiety does not alter the breathing (normal RR: 12–16 breaths/min).

Blood Pressure Overview

Take the blood pressure (BP) in both arms during the patient's first visit. Always obtain two blood pressure readings, taken five minutes apart, during the patient's first visit. If the blood pressure is high, confirm the elevated reading in other arm and then take two more readings at the next visit. An average of three to four readings will determine the mean blood pressure for the patient.

Always ensure that the patient has rested sufficiently in the chair prior to monitoring the BP. Certain physiological states can erroneously raise the blood pressure. Stress, caffeine, heavy meal consumption, improper positioning of the arm, or improper cuff size

can alter the BP readings. Normal BP reading: <120/80mmHg in a non-diabetic adult and <140/80mmHg in an adult diabetic

Blood Pressure Recordings and Additional Facts

For a seated patient, place the patient's arm on the armchair and place the arms to the sides for a patient lying down. Fasten the cuff snugly over the arm such that the lower border of the cuff is about $\frac{1}{4} - \frac{1}{2}$ inch above the elbow crease and the rubber tubes are over the brachial artery. The cuff should be at the cardiac level.

Place your fingers on the radial pulse, and as you gradually raise the pressure to 200mmHg, make a mental note of the reading where you lose the pulse. Continue to keep your fingers on the pulse and lower the pressure from 200mmHg to 0mmHg, making a mental note of the pressure where the pulse returns. The pressure where the radial pulse disappears and then reappears is the **same**; this is the patient's **rough systolic pressure**. Next place your stethoscope on the brachial artery and raise the pressure to 30–40mm above the rough systolic pressure. Now gradually lower the pressure and listen for the "tapping" of the Korotkoff sounds. The pressure where the Korotkoff sounds begin is the **true systolic pressure**, and the pressure where the tapping sounds disappear is the **true diastolic pressure**. Always raise the pressure to 200mmHg initially to overcome the **auscultatory gap** that may be present in an occasional hypertensive patient. As shown in Figure 1.1, the "tapping" sounds begin at the true **elevated** systolic pressure, disappear **temporarily**, reappear, and then disappear **finally** at the true diastolic pressure. If you **do not** raise the pressure to 200mmHg, the reappearance of the tapping sounds can erroneously be thought of as the **start** of the tapping sounds.

Current National Institute for Health and Clinical Excellence (NICE) guideline for hypertension states that BP readings showing a difference of 15mmHg or more between both arms is often associated with underlying peripheral vascular or cardiovascular or cerebrovascular disease, as well as increased cardiovascular and all-cause mortality. Therefore, it is advised to routinely check the BP in both arms during patient assessment.

Ambulatory BP monitoring is indicated to evaluate "white coat hypertension." Patient self-check at home is useful for evaluating "white coat hypertension." There should be a 10–20% BP decrease during sleep, and absence of this drop may indicate increased cardiovascular disease (CVD) risk.

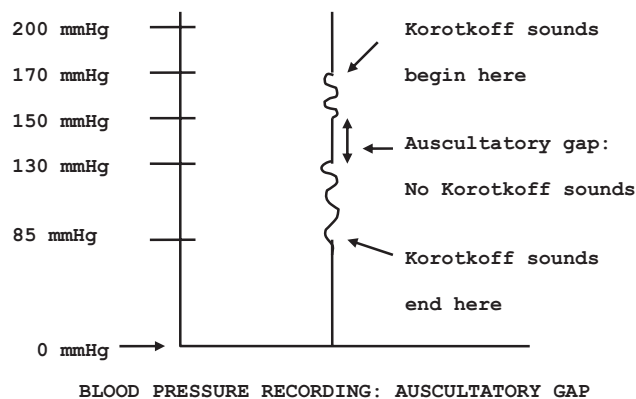


Figure 1.1. Blood pressure recording auscultatory gap.

14 Section I: Patient Assessment

Hypertension in the elderly: A threshold of <140/90mmHg is considered adequate in patients between 65–79 years of age and a systolic blood pressure (SBP) threshold of 140–145mmHg is reasonable for patients 80 years and older.

Height and Weight

The height and weight of the patient is needed for the calculation of the Body Mass Index (BMI) to determine if a person is underweight, normal weight, overweight, or obese, in addition to the appropriate medication dosage for routine care or during a medical emergency and the radiation dose for dental radiographs.

Examination of the Skin

Note the skin color, temperature, and turgor, and look for skin lesions such as petechiae and bruises.

Examination of the Head

Note the quality of the hair. Is it coarse and dry or thin and sparse? Note the facial symmetry and look for facial edema, butterfly rash, and so on.

Examination of the Ears***Otitis Externa***

Otitis externa is external ear infection or inflammation. Do the ear **tug test** by gently pulling on the earlobe. The test is positive if the patient experiences pain during the pinna tug, which indicates infection in that ear.

Otitis Media

Otitis media is middle ear infection or inflammation and is associated with mastoid tenderness. Gently press the mastoid tip with your thumb. The test is positive if the patient experiences pain on slight pressure, indicating otitis media in that ear.

Examination of the Eyes***Xanthelesma***

Look for xanthelesma, which is a swelling near the medial end of the eyes. It can be benign or it can be suggestive of hypercholesterolemia. Look for pallor, redness, and yellowing of the sclera by pulling down on the lower eyelid.

Exophthalmus

Exophthalmus or protrusion of the eyeballs can be familial or due to Grave's disease. The lid lag test is **positive** with Grave's disease and **negative** with familial cases of eyeball protrusion.

The Lid Lag Test

Sit in front of the patient and hold the patient's head with your left hand. Then have the patient follow your moving right index finger as it moves from above the face to below the face. The upper eyelid does **not** roll over the eyeball with a positive lid lag test, thus showing the white sclera.

Enophthalmus

Enophthalmus, or sinking in of the eyeballs, can be due to acute starvation, anorexia nervosa, or loss of body mass due to an underlying carcinoma.

Extraocular Movements

Sit in front of the patient and holding the patient's head with your left hand, test for the extraocular movements. Have the patient follow your right index finger and test the patient's ability to look up, down, sideways (both right and left), and diagonally. The superior oblique muscle is innervated by cranial nerve (CN) IV, the lateral rectus muscle is supplied by CN VI, and the remaining muscles are innervated by CN III, as shown in Figure 1.2.

The Light Reflex

To test for the light reflex, maintain the extraocular movements test position and have the patient look straight ahead. Bring a flashlight from the right side and shine it onto the right eye. Bridge the patient's nose with your hand to keep the light from spreading to the other eye. Observe the pupillary constriction in the right eye and also look for a simultaneous constriction in the left eye. The pupillary constriction in the right eye is the **direct** light reflex, and the pupillary constriction in the left eye is the **indirect** or the **consensual** light reflex. Next, follow the same steps using the light from the left side. The afferent nerve for the light reflex is CN II and the efferent nerve is CN III.

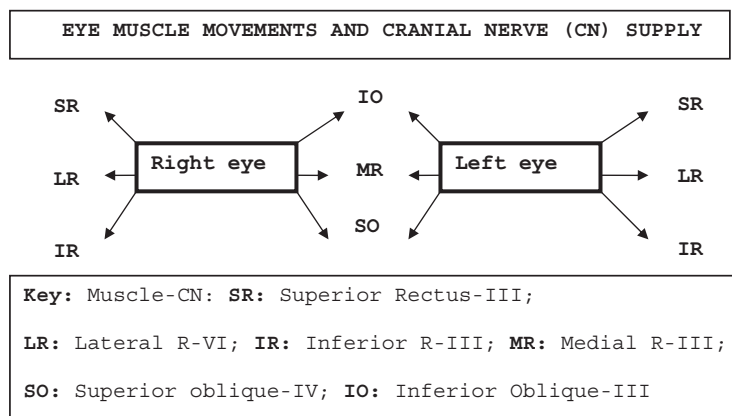


Figure 1.2. Extraocular muscle movements and associated cranial nerve innervations.

Visual Fields

Maintain the same position as with the light reflex and have the patient look straight ahead. The patient should not move the head, eyes, or gaze during the test. With your arms outstretched, gradually bring your wriggling fingers inward and have the patient inform you at what point in the visual field he or she is able to see your fingers. Test the fields at points above, below, diagonally, and to the sides of the head in a cross and “x” pattern.

Examination of the Nose and Sinuses

Check for sinus tenderness by tapping lightly over the ethmoid, maxillary, and frontal sinuses. Transient flexion of the neck toward the chest can bring out the pain associated with sinusitis.

Examination of the Mouth and Throat

Examine the teeth, gums, mucous membranes, tongue, oropharynx, and roof of the mouth. Gingival hypertrophy, when seen, can be due to puberty, pregnancy, leukemia, and drugs: phenytoin (Dilantin), an antiseizure drug; nifedipine (Procardia), a calcium channel blocker/high blood pressure medication; or cyclosporine (Sandimmune), an antirejection drug for organ transplant.

Examination of the Neck: Lymph Glands, Thyroid, and Trachea

Lymph Glands

Inspect the head and neck region for any lumps or bumps due to lymph node enlargement. Next, proceed with palpation of the lymph nodes. Stand behind or to the side of the patient and feel/palpate the lymph nodes in the neck with the pulp of your fingers. You may do this one side at a time, or both sides at the same time.

Tonsillar nodes are the only nodes that should be palpated **one side at a time**. Simultaneous palpation of both sides can massage the carotid sinus causing bradycardia (slowing of the heart rate). This could cause a problem, particularly in an elderly patient.

Normally, you are unable to feel any nodes. If you do feel some nodes, they should be soft, pea-sized, nontender, and freely mobile. These could be leftover nodes from a past infection. Tender nodes indicate a current infection and this should trigger an assessment of disease-associated symptoms and signs.

Nontender, nonmobile, small, or enlarged nodes with irregular margins are highly suspicious for benign or cancerous tumors.

The preauricular, postauricular, and occipital nodes drain only the superficial tissues. The submental, submandibular, and tonsillar nodes drain superficial and deep tissues.

Bimanual palpation of the floor of the mouth should always be done if the submental and submandibular nodes are enlarged. Using gloved hands, support the floor of the mouth firmly with your left palm under the chin. Place the fingers of your right hand inside the mouth and feel with pressure against the outside hand, the floor and sides of the mouth, noting any enlargements or swellings. Note the shape, size, mobility, and tenderness status of the swelling, when present.

Cervical Nodes

The cervical nodes that collect drainage from the previously mentioned nodes are anterior cervical, posterior cervical, and deep cervical. Firmly gripping the sternocleidomastoid (SCM) muscle, palpate the neck along the anterior border for the anterior cervical nodes, and then palpate along the posterior border for the posterior cervical nodes. The deep cervicals lie **under** the muscle and cannot be palpated.

Nape of the Neck Nodes

The nodes in this area include the trapezius and supraclavicular nodes.

Trapezius Nodes

Stand in front of or behind the patient and palpate on both sides at the nape of the neck, just below the occipital nodes.

Supraclavicular Nodes

Stand in front of the patient and have the patient flex the neck toward the chest. As the patient takes a **deep breath**, use the pulp of your fingers to feel the area behind both the clavicles, adjacent to the suprasternal notch. Deep breathing brings to the surface any enlarged nodes, when present. These nodes are enlarged with liquid tumors or solid tumors affecting the lungs, breast, or upper abdomen. Section XVIII, "Oncology," outlines the head and neck lymphatic drainage disease states.

See Table 51.1 in Chapter 51 to learn more about specific tissues drained by each of the head and neck lymph nodes. The table also outlines direct or indirect drainage into the deep cervical chains.

Thyroid Gland

Use the following techniques:

Inspection: Stand in front of the patient and ask the patient to hyperextend the neck and swallow. Note the free mobility of the thyroid gland in the neck.

Palpation: Palpate the thyroid gland by standing behind the patient. Place your palm on the patient's neck and check whether the gland feels warmer than the surrounding skin. Check whether the surface is smooth. Palpate each lobe separately to note the size and margins of the gland. Move the left gland toward the right, to feel the right margin of the gland. The margin, if felt, should be soft and smooth. Repeat the process on the left side by moving the right gland toward the left.

Auscultation: Occasionally, an arterial bruit may be heard over a highly vascular enlarged gland.

Trachea

The trachea is normally located in the **midline**. Deviation to the right or left may suggest tumor, pneumothorax, or lung collapse.

Examination of the Hands

Check the skin temperature, appearance, and color of the hands, nails, joints, palms, and palmar creases, and look for any deformity. Compare the patient's palm color with the color of your own palms. White palmar creases indicate a hemoglobin level that is less than 50% of normal. Palmar erythema is frequently seen in alcoholics. If the knuckle joints and the proximal interphalangeal joints are swollen and affected bilaterally, it is indicative of **rheumatoid arthritis**. If the distal interphalangeal joints are affected unilaterally, it is suggestive of **osteoarthritis**. Look for and note any changes in the nails.

Examination of the Nails

Clubbing or **convexity** of the nails can be associated with chronic cardiopulmonary diseases. **Spooning** or **koilonychia** can be seen with iron deficiency anemia. **Splinter hemorrhage** in the nails can be associated with subacute bacterial endocarditis (SBE).

Examination of the Back

Inspection

Look for any spinal deformity.

Palpation

The spine should be palpated along the entire length of the spinal column to elicit any areas of tenderness.

Movements

Ask the patient to bend forward, backward, and sideways to check for mobility of the spine. Patients with limitation in movements should be assisted in and out of the dental chair. Rheumatoid arthritis affects the mobility of the cervical spine and the temporomandibular joint (TMJ). Osteoarthritis affects the lumbosacral joint mobility.

Examination of the Lower Extremities

Inspection

Inspect for any skeletal or muscular deformity, varicose veins, joint deformity, and loss of hair on the toes, shin, and feet. Loss of hair occurs due to poor circulation.

Palpation

Palpate the joints for any tenderness or swelling. Also, with the back of your hands, check for the relative warmth of the feet and toes, and indirectly assess perfusion.

Examination of the Lungs or Pulmonary Examination

Inspection

Note the shape and symmetry of the chest. Barrel chest is seen with obstructive lung disease and with emphysema (hyperinflated lungs). Note the rate, rhythm, and regularity of respiration, if not yet assessed. Normal respiration rate for adults is 12–16 breaths/min. Resting shallow tachypnea (rapid shallow breathing) is seen with restrictive lung disease. Hyperpnea (rapid deep breathing) is commonly seen with anxiety, exertion, or metabolic acidosis. The rapid deep breathing as seen in metabolic acidosis is called **Kussmaul's respiration**.

Palpation

Strap or brace the chest with your hands and note the equality of chest excursions on both sides simultaneously, with deep breaths. Test from the apex to the base of the lungs.

Palpation of the Apex of the Lungs

To palpate the apex of the lungs, place your palms on the patient's shoulders and press down firmly as the patient inhales deeply. Check whether the apex of both lungs rises up equally. In the adult patient, a collapsed apex is usually due to tuberculosis (TB).

Percussion

Compare percussion notes at the same intercostal levels over both lung fields. The normal percussion note is resonant. Dullness on percussion is caused by consolidation of the lungs, as in pneumonia, or due to fluid collection, as in pleural effusion. A hyperresonant note occurs with pneumothorax.

Auscultation

Auscultate the right and left lung fields at the same intercostal level for comparison of auscultatory findings. Note the quality of the breath sounds and determine whether any adventitious sounds like rales, ronchi, or wheezes are present. The vesicular breathing pattern as seen in Figure 1.3 is heard over normal lung parenchyma. In this pattern, the inspiration limb is longer than the expiration limb.

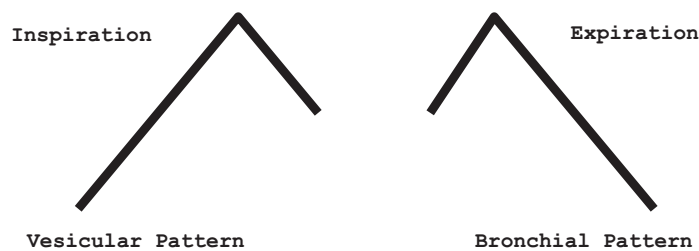


Figure 1.3. Breathing patterns.

Bronchial Breath Sounds

The expiratory sound is higher pitched and louder than that heard with the vesicular breath sounds. Also, the expiratory component is equal to or greater than the inspiratory component (Figure 1.3). Bronchial breath sounds, when heard over the lung parenchyma, are abnormal and indicate underlying disease. Bronchial sounds heard over the bifurcation of the trachea, however, are normal in occurrence.

Adventitious Breath Sounds

Adventitious breath sounds heard on auscultation are:

- **Wheezes**, as with asthma, are whistling sounds caused by constriction of the bronchioles.
- **Rales and ronchi** are crackling sounds indicating presence of fluid in the lungs that can be due to bronchitis or congestive heart failure (CHF). Rales are coarse crackles and ronchi are soft crackles.

Examination of the Cardiovascular System

Inspection

Lay the patient at a 30–40° angle and note the jugular venous pulsation (JVP) in the neck. Normally, the JVP will be seen at or below the clavicle. If the JVP is seen in the neck, it is suggestive of decreased forward flow/cardiac output or increased backward flow. The apex beat, which is usually located in the fifth intercostal space medial to the midclavicular line, is also noted during inspection of the heart. Confirm the apex beat location with your palm during palpation.

Palpation

Locate the carotid pulse with the tips of your fingers along the anterior border of the sternomastoid muscle in the middle of the neck, one carotid at a time. Once located, gently press down and establish the pulse rate per minute. Never use your thumb to feel for pulsations because the thumb has its own pulsation. This can interfere with perceiving the patient's pulsation. Never palpate the carotid at the angle of the mandible because this will compress the carotid sinus and cause the pulse to slow down. This can become problematic in the elderly patient and may result in the patient experiencing dizziness or fainting. Note the pulse rate per minute for each carotid artery. Disparity of pulse rates between the two carotids will require you to auscultate for carotid bruits, as discussed further under "Auscultation."

Palpate the radial pulse at the wrist with the tips of your fingers, but never your thumb. Support the patient's hand in your hand, and with the fingers of your other hand feel the radial pulse, which is located on the side of the thumb. Let the pulse stabilize for a few seconds and then count the rate per minute. Determine the rhythm of the pulse. If there is a rhythm irregularity, assess whether it is regular (regularly irregular rhythm, as in cardiac conduction defects) or irregular (irregularly irregular rhythm as associated with atrial flutter or atrial fibrillation). Palpate over the cardiac area with your palm to feel for the presence of any other pulses or thrills. A thrill is a purring sensation, felt on

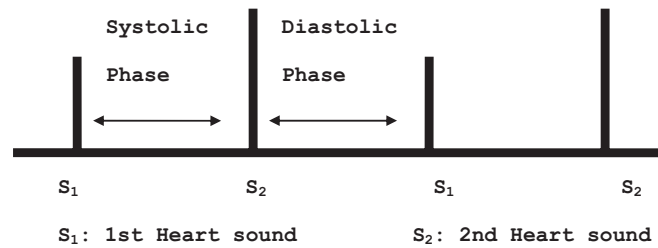


Figure 1.4. Heart sounds: Systolic and diastolic phases.

palpation. Thrills are caused by a loud heart murmur. Murmurs are sounds produced by turbulent blood flow, or they can occur due to vibrating heart valves.

Percussion

Percussion of the heart is done to outline the right and left border of the heart.

Auscultation

There are two associated auscultation techniques:

1. **Carotid Artery Auscultation:** When there is disparity in rates between the two carotids, auscultate over the arteries as the patient **holds** the breath. Turbulence of blood flow in the partially obstructed carotid artery causes a swooshing sound or **bruit** over the carotid artery with the **lesser** pulsation. Holding the breath is important as a bruit, and breath sounds are similar sounding.
2. **Heart Sounds Auscultation:** As shown in Figure 1.4, the first heart sound or S₁ is caused by the **closure** of the **mitral** and the **tricuspid** valves, and the second heart sound or S₂ is caused by the **closure** of the **aortic** and the **pulmonic** valves. The phase between S₁ and S₂ is the **systolic** or **ventricle** contraction phase, and the phase between S₂ and S₁ is the **diastolic** or the **atrial** contraction phase. Auscultation must be done in the four cardiac areas, shown in Figure 1.5. The **aortic** area is located in the **second right** intercostal space, next to the sternum. The **pulmonic** area is located in the **second left** intercostal space, next to the sternum. The **tricuspid** area is located in the third and fourth intercostal spaces; along the left border of the sternum and the **mitral** area is located in the fifth intercostal space, medial to the midclavicular line. The **apex beat** is located in the mitral area.

Systolic murmurs, as shown in Figure 1.6, can be due to aortic stenosis (AS), pulmonary stenosis (PS), tricuspid incompetence (TI), or mitral incompetence/regurgitation (MI). Diastolic murmurs, as shown in Figure 1.7, can be caused by mitral stenosis (MS), tricuspid stenosis (TS), aortic incompetence (AI), or pulmonary incompetence (PI).

Examination of the Musculoskeletal System

Warm, tender elbow joints with subcutaneous nodules are commonly seen with rheumatoid arthritis. Wrists swollen bilaterally are suggestive of rheumatoid arthritis. Palpable

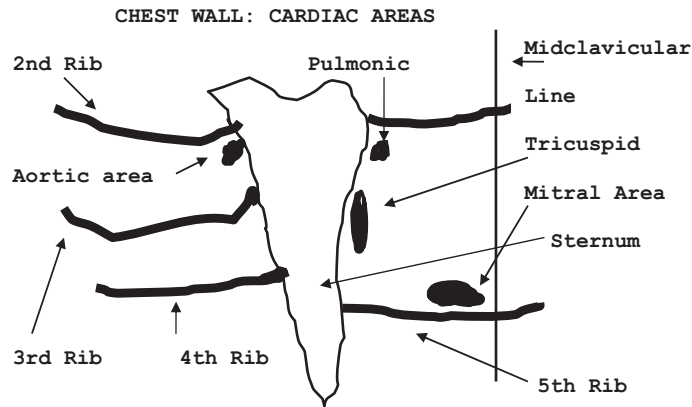


Figure 1.5. Cardiac areas surface anatomy.

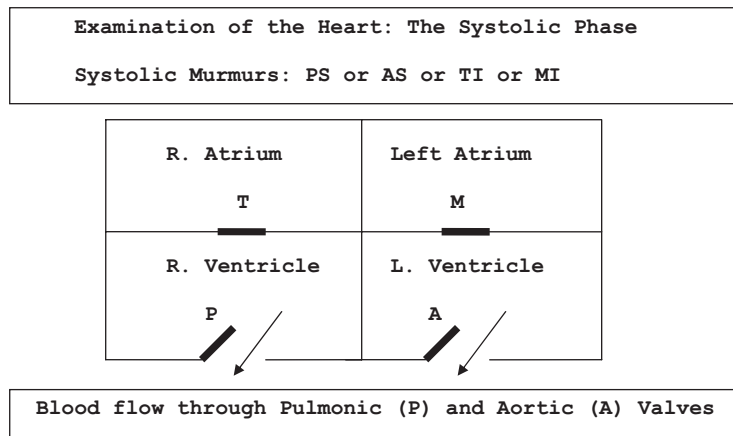


Figure 1.6. Systolic murmurs.

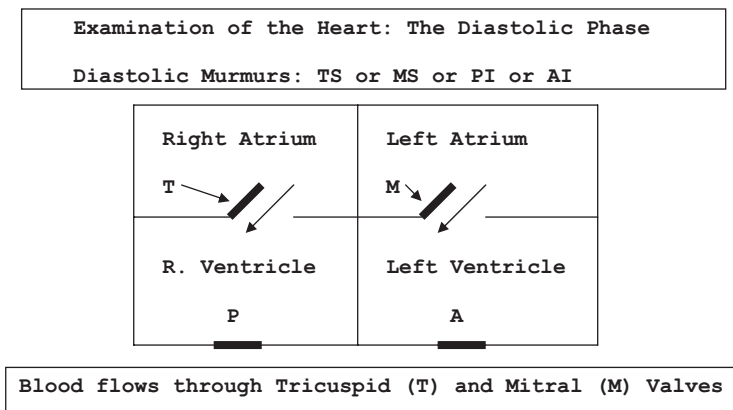


Figure 1.7. Diastolic murmurs.

enlargement of bones in hands, also called **nodules**, is suggestive of osteoarthritis. If the large toe is affected, think of gout. However, an enlarged toe is no longer considered “the classic” gout presentation site, as other areas can and do get affected instead of or before the big toe.

Examination of the Cranial Nerves

Review Table 1.1.

Table 1.1. Cranial Nerve (CN) Examination

CN #:	CN Name:	CN Action:
CN I	Olfactory	Causes the sense of smell
CN II	Optic	Afferent nerve for vision
CN III	Oculomotor	Causes all extraocular muscle movements (except those caused by lateral rectus and superior oblique muscles) and pupillary constriction
CN IV	Trochlear	Innervates the superior oblique muscle to move the eye down and in
CN V	Trigeminal	Sensory fibers to the face via the ophthalmic, maxillary, and mandibular divisions. Motor fibers to the muscles of mastication, the Temporal and Masseter muscles. CN V Sensory Exam: Have the patient shut the eyes. Touch the skin in the ophthalmic, maxillary, and mandibular areas with a cotton tip. Sense of touch is intact with optimal sensory function. CN V Motor Exam: Put your hands on either side of the patient’s face and feel the equality of the Masseter muscle tone as the patient clenches. Next, place your hands on either side of the forehead to test the Temporalis muscles’ tone.
CN VI	Abducens	Innervates the lateral Rectus muscle and moves the eye laterally.
CN VII	Facial	Motor nerve to most facial muscles and anterior tongue taste. Ask the patient to blow, whistle, and frown.
CN VIII	Acoustic	Responsible for hearing and balance
CN IX	Glosso-pharyngeal	Sensory and motor to pharynx and posterior tongue, plus responsible for taste
CN X	Vagus	Motor to the palate, larynx, pharynx; sensory to pharynx and larynx. Test IX and X CNs together. Ask the patient to say a deep “aah.” Use flashlight to see if the palate rises equally on both sides.
CN XI	Spinal Accessory	Motor nerve to Sternocleidomastoid and Trapezius muscles. To test the Trapezius muscle, stand behind the patient and press down on both shoulders with your hands. Ask patient to shrug against pressure and note equality of tension on both sides. Sternocleidomastoid test: Place your palm on patient’s right cheek and feel the tension in left Sternomastoid as the patient tries to turn his face to the right against resistance. Next, test the right sternomastoid muscle.
CN XII	Hypoglossal	Motor to tongue. Ask patient to protrude the tongue. It should be in the midline and have no tremors. CN damage causes the tongue to deviate toward the affected side.