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Postgraduate Institute of Medical Education & Research (PGIMER), Chandigarh

National Institute of Nursing Education (NINE)

CLINICAL NURSING PROCEDURES

3rd
Hybrid *Edition*
(Book+Digital)

Subjects Covered

- Nursing Foundations
- Adult Health Nursing/Medical Surgical Nursing
- Mental Health Nursing
- Midwifery/Obstetrics and Gynecological Nursing
- Pediatric Nursing
- Community Health Nursing

Special Features

- Thoroughly revised and updated edition
- **50+** Contributors and Reviewers
- **350+** Procedures of all specialities covered
- **50+** New Procedures covered
- **800+** fully-colored illustrations and Procedural steps photographs included
- **30+** Diagnostic and Therapeutic Procedures covered
- Medicolegal aspects and consent proformas covered extensively
- **100+** Procedures in Audio-Visual Form *(in App)*

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- Sunita Sharma
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Foreword
Jagat Ram

Editor-in-Chief
Sandhya Ghai

CBSPD
Dedicated to Education

Nursing Knowledge Tree

CBS Publishers & Distributors Pvt. Ltd.

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Preface to the 3rd Edition

Dear Readers

I extend my heartfelt gratitude to all of you for embracing **NINE's Clinical Nursing Procedures (2nd edition)**" and for giving it a special place on your bookshelves. We have worked really hard to create this compendium and your wonderful response to the book made all our day's and night's hard work worthwhile. In the past few years, we received constructive criticism for the betterment of the title and we accepted this criticism and incorporated all those changes suggested by our critics and now it gives me immense pleasure to present to you the highly improved and extremely useful **3rd edition** of **NINE's Clinical Nursing Procedures**.

NINE, PGIMER, Chandigarh, is an institution of national importance and we consider it as our moral responsibility to educate and train the nurses across the country with the right approach of performing various procedures because nurses are the backbone of our healthcare system. Thus, the foundation of this title was laid. We have retained the original flavor of the book as it is. All the procedures have been segregated in 6 nursing specialties and in this edition, we have added many new procedures; hence, covering up to 350 procedures. All procedures from basic to advanced have been covered. Since it's a fully colored book, we have included approximately 800+ relevant diagrams, flowcharts and real-time images to enhance the reading experience. The articulate way of writing strengthened by the use of simple language makes browsing through the book a delightful experience.

The book addresses what the nurse needs to know and do to perform best-practice procedures concerning infection control, specimen collection, physical assessment, drug administration, IV therapy, and hemodynamic monitoring, as well as procedures related to body systems. As a new feature, we have highlighted the documentation separately in all procedures to acquaint the nurses with what and how documentation needs to be done. New assessment proformas have been added wherever relevant. Every procedure contains photographs of article trays to help readers identify the equipment they need to perform the respective procedure. Rationales of all procedural steps are highlighted separately along with respective step in different color (blue) to acquaint them with the purpose of each step. Points to Remember and Special Considerations highlight the important points that one needs to take care of while performing the procedure. Thus, this go-to reference provides everything you need, to do your job confidently and efficiently, whether you are beginning your nursing career, learning a new skill, or brushing up on a familiar technique.

I am proud of the team members who have worked on this project laboriously, who are the masters of their respective subjects and have worked and led the other team members with perfection and continued enthusiasm to enhance the quality of this compendium. The dedication and efforts invested by the team in this project are commendable. I thank them for taking out time from their busy personal schedules and not compromising on the quality of the project. All the team members associated with the project have incorporated evidences from research and their own professional experiences while editing and writing the procedures.

The critical evaluation and the feedback regarding the contents, layout, etc. by the readers are welcome.

I gratefully acknowledge the contribution made by the students of NINE for the pictorial view of the manual.

I would like to thank **Mr Satish Kumar Jain** (Chairman) and **Mr Varun Jain** (Managing Director), M/s CBS Publishers and Distributors Pvt Ltd for providing me the platform in bringing out the book. I have no words to describe the role, efforts, inputs and initiatives undertaken by **Mr Bhupesh Arora**, Sr. Vice President – Publishing & Marketing (Health Sciences Division) for helping and motivating me.

I sincerely thank the entire CBS team for bringing out the book with utmost care and attractive presentation. I would like to thank Ms Nitasha Arora (Publishing Head and Content Strategist – PGMEE and Nursing), and Dr Anju Dhir (Product Manager cum Commissioning Editor – Medical) for their editorial support. I would also extend our thanks to Mr Shivendu Bhushan Pandey (Sr. Manager and Team Lead), Mr Ashutosh Pathak (Sr. Proofreader cum Team Coordinator) and all the production team members for devoting laborious hours in designing and typesetting the book.

Sandhya Ghai
Former Principal
NINE PGIMER

Special Features of the Book

VITAL SIGNS

Studded with up to **350** Procedures of all specialities and **50+** new Procedures have been added in this edition

1.1 MONITORING RESPIRATION

KEY TERMS

- Bradypnea
- Tachypnea

INTRODUCTION

It is the procedure in which we monitor the involuntary process of inspiration and expiration of a person.

PURPOSES

- To know about the characteristics of respiration
- To determine the respiration occurring per minute.

Steps of Procedures have been divided into Preprocedural, Intraprocedural and Postprocedural for the ease of learning and their implementation in the clinical settings

STEPS OF PROCEDURE

Preprocedural Steps

- Check the physician order for type of blood investigation
- Identify your patient

Intraprocedural Steps

- Wash hands and wear gloves
- Select the vein, examine the vein like the antecubital area (most preferred site), wrist dorsum of the hand, and top of foot Palpate the vein (if needed)

Postprocedural Steps

- Dispose of the needle by destroying in needle destroyer and syringe in red bin
- Clean the spills with 1% sodium hypochlorite solution

Intraprocedural Steps

- Place a sheet lengthwise on the mattress of the stretcher and tuck it under the mattress all around
- Place a folded sheet on the foot end for use as the cover. If the patient is likely to need an additional covering during transport, provide a sufficient number of blankets, made of cotton only *(the patient should be comfortable, warm and safe during transport)*
- Transfer the patient safely on the stretcher *(to prevent from falling)*
- Assist the operating room technician to position the patient on the stretcher
- Ensure that the patient is comfortable and fasten the safety strap *(to prevent from falling)*
- Instruct the patient to keep arms, hands and fingers over the chest during transport *(to avoid injury)*
- Attach IV solution bags securely and place at foot of the bed away from the patient's head *(this will minimize the danger of injury to the patient if the container falls)*.

Steps of Procedures with their respective rationales have been highlighted in different colors and style to acquaint them with the purpose of each and every step

Documentation has been provided with the procedures to help the nurses learn what needs to be documented and how

Documentation

When all the formalities are completed, it is the responsibility of a nurse to write a report in report book, which includes all details about patient (time of admission, general condition, and any other significant thing) and make entries in the census book.

Points to Remember

The following points are to be kept in mind:

- If a patient is suffering from ... to be first disinfected proper...
- Never throw away the thing...

Points to Remember and Special Considerations from Nursing Management point of view have been highlighted separately that one needs to take care of while performing the respective procedure

SPECIAL CONSIDERATIONS

- Instruct patient to walk, if ambulatory to help promote peristalsis.
- Do not palpate rectum, if patient has had rectal surgery.

ASSISTANCE/COLLECTION OF SPECIMENS FOR INVESTIGATIONS

Diagnostic and Therapeutic procedures have been covered extensively with the respective speciality subject

1.20 COLLECTION OF SPECIMEN

KEY TERMS

- Anticoagulant
- Color coded vials
- Culture
- Laboratory requisition form
- Venepuncture

1. Sterile chest tube insertion set
2. 70% ethyl alcohol to clean the area
3. 0.9% normal saline
4. Betadine solution. Povidone iodine to clean the area
5. Water seal drainage bag
6. Chest tubes of appropriate size
7. Micropore
8. 2% lidocaine/xylocaine to provide local anesthesia
9. Sterile blade and scalpel
10. Silk suture to secure the chest tube in place
11. Sterile gloves
12. Sterile syringe and needle
13. Additional packs
14. Biomedical waste management bags

Article Tray real-time photographs have been provided with the respective procedure to acquaint the young nurses with the equipment and instruments required in clinical settings

Medicolegal aspects and Ethics in Nursing Practices related to the respective procedure have been covered in an integrated manner so that it should not be ignored while performing the procedure

2.59 CONSENT TAKING

KEY TERMS

- Blanket consent
- Consent
- Patient's rights
- Proxy consent
- Refusal to treatment
- Valid consent

INTRODUCTION

Consent is a voluntary agreement or giving permission for something to happen. An adul...

Consent for Thrombolysis

I have been fully explained the risks and benefits of IV/IA thrombolysis rt-PA in vernacular.
I fully understand the nature of this treatment being given to me for my condition including risk of hemo... transformation.
I give my full consent for the use of rt-tPA on me/my patient

Signature of Patient/Patients Relative | Signature of Senior Resident/Cons...

Thrombolysis Dose Employed

1. Route : IV/IA/Bridging (I/V + I/A /I/V + Device + I/A)
2. Total Dose = (0.9 mg/kg) ..... mg/0.6 mg/kg — Time started .....
3. I/V Bolus (10%) over 1 minute..... mg.
4. Infusion @ l hr (Rate)..... mg/hr
5. I/A ..... mg over..... hours Groin Puncture time.....

Figure 2: Position of baby shows pinching of tube during orogastric feeding

Figure 3: Release of pinching of tube during orogastric feeding

800+ real-time photographs of performing procedures and illustrations have been included wherever relevant

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Part 5: Pediatric Nursing

Part 6: Community Health Nursing

Part 1

Nursing Foundations

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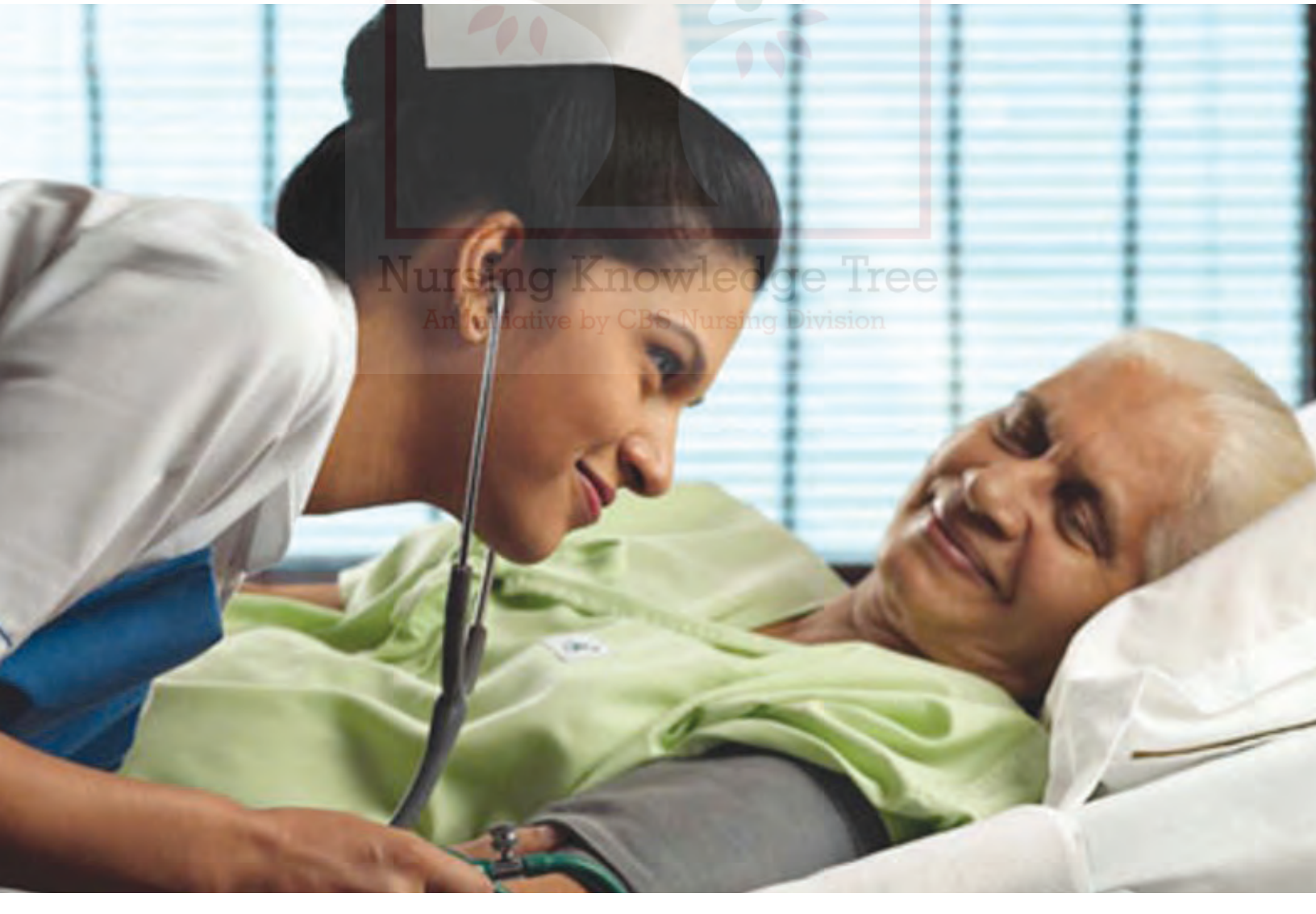


CONTENTS

ADMISSION OF THE PATIENT

KEY TERMS

- Interpersonal relationship
- Observation
- Hospitalization

INTRODUCTION

Admission to a hospital means allowing a patient to have a stay in the hospital for various health reasons like observation, investigations, and treatment. A patient might experience a lot of fear as given below:

Fear of:

- Treatment
- Pain and loss of body part
- Being experimented on
- Being neglected
- Being alone and away from family members
- Lack of knowledge and outcome of disease

PURPOSES

- For observation
- For investigations
- For treatment

Points to Remember

The following points are to be kept in mind:

- The admission to a hospital can be either on routine basis or emergency basis
- Due to sudden change and strangeness in the environment, patient can feel anxious
- The first personnel who meets the patients, should be polite and friendly and should have a courteous and sympathetic approach toward the patients
- Every person should be considered as unique in terms of both personality, needs, and extent of illness
- The patient should be allowed to use his own articles as far as the hospital policy allows
- Once admitted to the hospital, the following things are supposed to be remembered:
  - There is tendency among the nurses to identify the patients either by the bed number or by their disease they suffer from. It is a wrong practice. The nurses should always address them by their names
  - If there is a hospital routine to wear hospital gown or dress, some patients may not feel comfortable to wear that. If there is no real urgency, the comfort of wearing one's own dress and bed clothing may give a lot of satisfaction to the patients, hence, they should be allowed to wear dress according to their comfort
  - The nurse should understand the behavioral pattern of patients according to their age, sex, race, caste and socioeconomic conditions. Their needs should be met accordingly. They should be assisted to develop good health habits and to retain their mode of behavior as far as they do not cause any harm to their health
  - The needs of the patient should be met according to Maslow's law:
    - Proper explanations should be given to the patients about their illness, prognosis, and complications in the vernacular language
    - Proper care should be taken in psychological terms as patient may use ego defense mechanisms to cope with the anxiety related to his/her illness.

TYPES OF ADMISSIONS

- Emergency admission
- Routine admission/elective admission

Emergency Admission

In this, patients are admitted in acute condition requiring immediate treatment, e.g., poisoning, burns, cardiac and respiratory emergencies.

Routine Admission

In this type of admission, patients are admitted for investigation, diagnostic and medical or surgical treatment. Treatment is given according to patient's problem, e.g., patient with hypertension or diabetes mellitus.

ARTICLES

The various articles required at the time of reception of a client in unit vary according to different departments. The general equipment required are as follows:

- Hospital bed with adjustable height
- Bed side locker
- IV stand
- Top sheet/blanket
- Documentation chart
- Suction machine
- Oxygen cylinder
- Resuscitation trolley

STEPS OF PROCEDURE

Preprocedural Steps

Reception of the Patient

It is a totally different experience, most likely to be vivid and not easily erased, hence, it is important that the patient and those who are with him, should receive the most courteous attention and care in the outpatient department.

In emergency conditions, time should not be wasted to initiate the treatment.

Nursing Admission Activity

- Welcoming the client
  - Preparation of the client's room
- Orienting the client to ward/policies/procedure/equipment/of the respective unit/department
- Safeguarding valuables and clothing
- Helping the client in investigations/giving history and helping to adjust in the hospital environment.

Psychosocial Responses on Admission

- Anxiety and fear
- Decisional conflict
- Situational low self-esteem
- Powerlessness
- Social isolation
- Risk for ineffective therapeutic regimen compliance

Intraprocedural Steps

The clerk at the reception counter is responsible for admission, he/she performs the following procedure:

- Records the identification data (name, age, sex, religion, education, qualifications, occupation, family members, income, marital status, address and telephone number) of the patient
- In emergency situations, the identification data can be asked from the patient's family members or relatives
- In order to provide proper services and immediate care, it is important to know the diagnosis or suspected diagnosis and the name of physician to whom the patient is referred to
- The patient is then assigned an outpatient number/CR No. for future reference
- He is then given necessary directions to proceed further
- After completing formalities at reception counter, patient is sent to the particular ward and further formalities are carried out there.

Responsibilities of Physician

Once admitted **to the ward**, the patient is attended by the physician and the following steps are carried out:

- Detailed medical and social history is taken
- Vitals signs (blood pressure, pulse, temperature, respiration) are noted
- Physical examination is done
- Investigations are done.

Responsibilities of a Nurse at the Time of Admission

Assessment

Nurses should perform the following assessment:

- **Documentation:** Name, medical record number, age, date, time, probable medical diagnosis, chief complaint, the source of information and verify patients identity.
- **Past medical history:** Any past history of hospitalization and major illness or surgeries.
- **Assess pain:** Locations, severity and use of pain scales (Wong Baker scale in pediatric patients and the faces pain scale, numerical rating scale).
- **Allergies:** Any allergies related to medication, foods and environment; nature of the reaction and seriousness; intolerances to medications; apply allergy band and confirm all pre-populated allergies in the record book.
- **Medication:** Confirm accuracy of the list, names and dosages of medications by reconciling all medications promptly using the medication prescription.
- **Valuables:** Ask the patient or the patient's relative to take care of the valuables and explain the responsibility to keep them safe.
- **Rights:** Orient patient, caregivers and family to location, rights and responsibilities; goal of admission and discharge.
- **Activities:** Check daily activity limits and need for mobility aids.
- **Nutritional:** Assess for appetite, need for nutritional consultation, changes in body weight, body mass index (BMI) and weight on admission.
- **Falls:** Assess risk for falls related to altered level of consciousness, restlessness, hallucination, depression, suicidal ideation, or substance abuse.
- Any other information from other departments.
- Physical assessment and system-wise assessment should be done in detail.

Reception of the Patient by the Ward Sister

- The ward sister should introduce herself to the patient and should make effective steps to establish interpersonal relationship.
- Patient is received in the bed and further required things (blankets, lockers, etc.) are handed over to the patient.
- Proper orientation of the unit should be given to the patient.
- Explain the hospital policies, procedures and routines to the patient and his/her relatives.
- Inform about timings of doctor's round, meal servings, the visitors timings, prayer services, etc.
- Make arrangements for paying bills.
- Explain the use of stay passes, if any, given to the patient's relatives and should be renewed on time.
- Many hospitals have small booklets supplied to all patients on admission, which explain about all rules and regulations of the hospital.

Helping the Patient to Occupy the Bed

- A closed bed is converted into open bed on admission of the patient (Fig. 1)
- Vital signs are checked and recorded.

FIGURE 1: Open bed for patient

- Orders by doctor are checked and carried out immediately
- Ask the patient to wear clean clothes or hospital dress as per hospital rules and regulations
- Check patient for any pediculosis, injuries, rashes, swelling, oral complications and mental disorders
- Never leave a seriously ill patient alone in a private room
- Inform the doctor in-charge of the unit about the newly admitted patient in the hospital
- Care of valuables and clothes should be taken
- Take specimens and send for investigations.

Once patient has been admitted to hospital, it is the responsibility of the patient to take care of his/her belongings.

- Provide identification band for any specific allergies or precautions.

Points to Remember

The following points are to be kept in mind:

- If a patient is suffering from a communicable disease, the clothings are supposed to be first disinfected properly and then washed
- Never throw away the things, which belong to the patient
- Encourage the patient to send away the jewellery to home and not to keep any valuable with them in hospital. Make him understand that if he keeps anything with him, it is at his own risk
- In emergency, the patient's belongings are handed away to patient's relatives and a receipt or in writing is taken what all is handed away.

SPECIAL CONSIDERATION

Flow of Suspected COVID-19 Patients Visiting Emergency

Patient comes to emergency/**Helpdesk** enquires
if patient has cough/cold/fever and/or seeking testing
because of contact with positive case

↓

Security guard
Guides patient to the **COVID Helpdesk**

↓

Doctor at Helpdesk
Provides mask to person/s with symptoms **(fever + cough)**

Triage in Helpdesk area:

- Patient to be admitted to COVID unit—inform nodal officer
- Patient to be sent home (with handout for home quarantine), **OR**
- Send to ER

No physical examination or throat examination to be done

↓

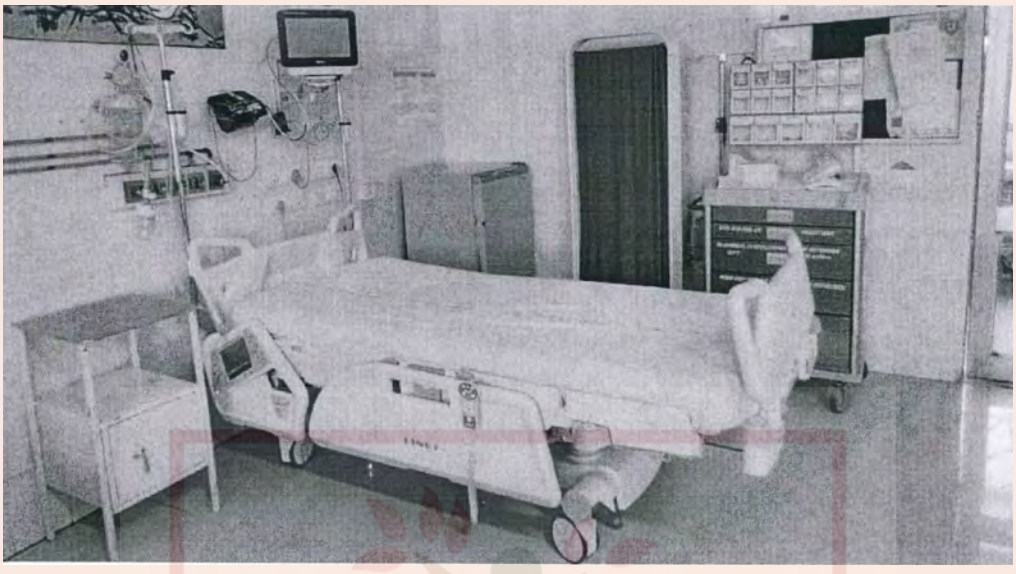
If decision for admission and testing—**HA accompanies family to the COVID Unit** and informs sister incharge of the COVID Unit
HA disinfects the designated lift taken by the suspected patient

↓

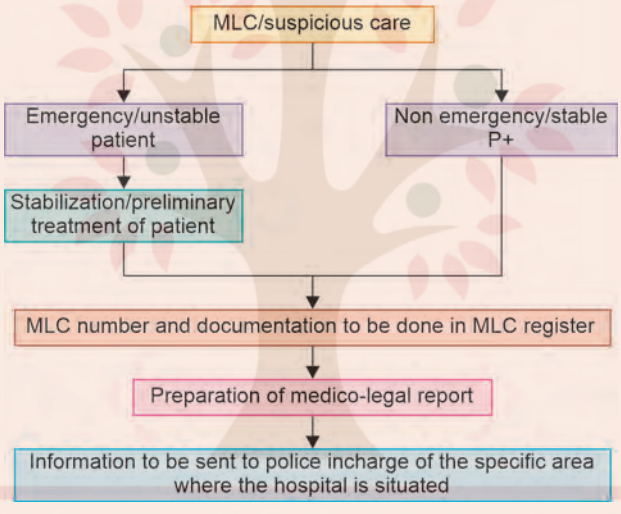
Sister in COVID unit activates:
JR on COVID duty nurse on COVID duty nodal officer
HA on COVID duty and Security on COVID duty

*HA, hospital attendant

Contd...



Administration work flow for medicolegal cases brought to emergency



Documentation

When all the formalities are completed, it is the responsibility of a nurse to write a report in report book, which includes all details about patient (time of admission, general condition, and any other significant thing) and make entries in the census book.

SUGGESTED READINGS

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Part 2

Adult Health Nursing/Medical Surgical Nursing

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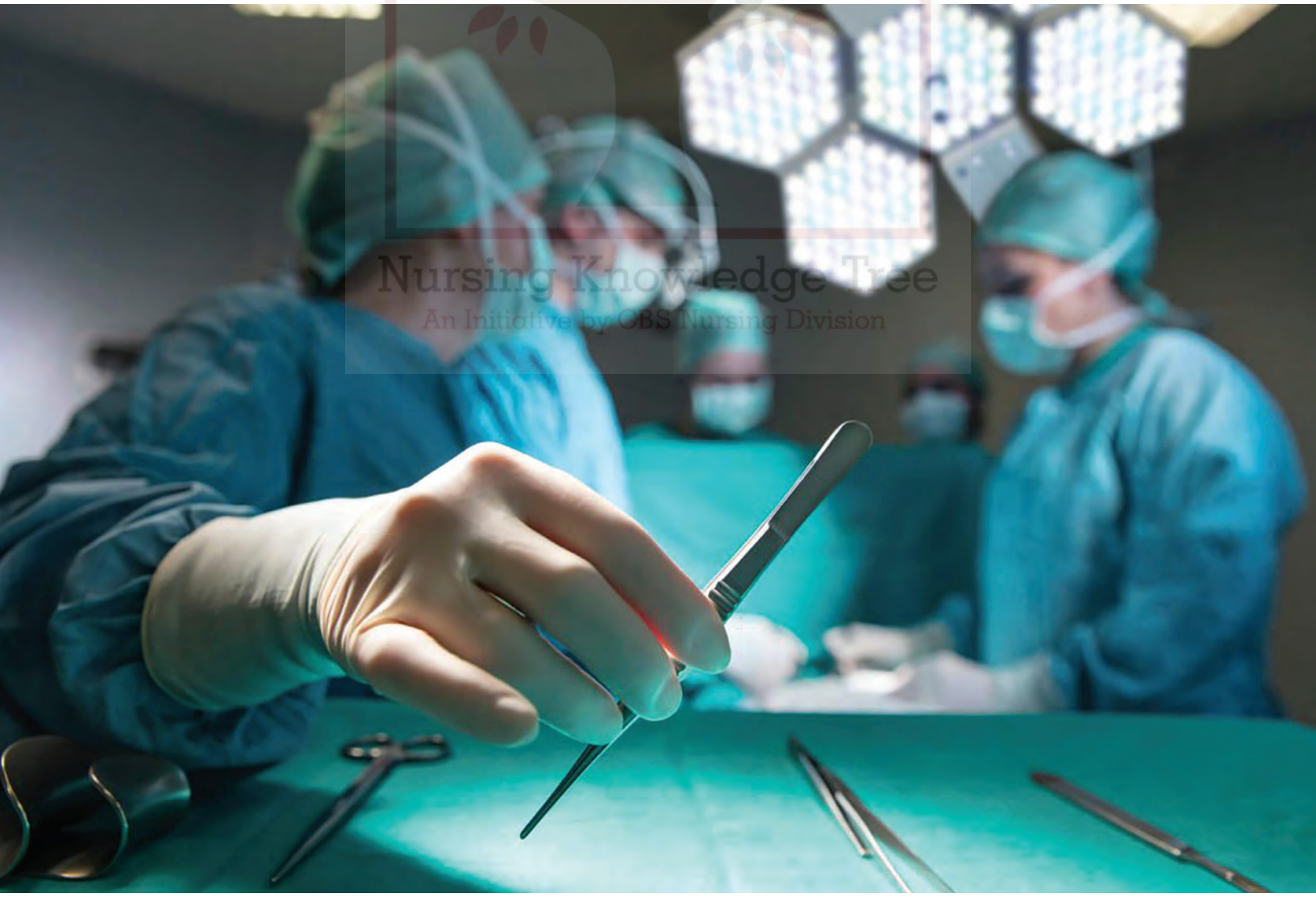

CONTENTS

ASSESSMENT OF THE PATIENT

2.1 HISTORY TAKING AND PHYSICAL ASSESSMENT

KEY TERMS

- Assessment
- Physical examination
- Health history

INTRODUCTION

Health history is the major subjective data source about a patient's health status. It provides insight into actual or potential health problems of a patient. Health history organizes physiological, cultural and psychosocial information related to patient.

DEFINITION

Health history is a holistic assessment of all the factors affecting a patient's health status including information about social, cultural, familial and economic aspects of the patient's life as well as any other components of the patient's lifestyle that affects health and well-being. The health history is designed to assess the effects of health care deviations on the patient and the family, to evaluate teaching needs, and to observe as the basis of an individualized plan for addressing wellness.

PURPOSES

- To gather appropriate information for each health history component
- To initiate a nurse-patient relationship
- To plan interventions accordingly
- To plan health education according to information gathered.

COMPONENTS OF NURSING HEALTH HISTORY

Biographic Data

It is the first information gathered to identify the patient and provides important sociocultural information. It includes the following:

- **Patient's name:** Record patient's full name including first, middle and last name. For a pediatric patient, verify and record child's surname as well as parent's name
- **Gender:** Record the patient as male, female or transgender
- **Age:** Record patient's stated age and compare it to the birth date
- **Marital status and number of support persons:** Note whether patient is married. If not, record the most descriptive category; never married, separated, divorced or widowed/widow. Do not assume about this. Ask if anybody lives with the patient and note any children or dependents
- **Address:** Record patient's current full address as sometimes the address reveals the socioeconomic information
- **Telephone number:** Record patient's home and office phone number, if applicable and even mobile number
- **Education:** Record the year of formal schooling which may affect the patient's health and knowledge. Do not confuse education with intelligence
- **Religion:** Be tactful when asking about religion. After learning the patient's religious preferences or restrictions, ask if patient adheres to any special health care or dietary practices which will help to plan interventions accordingly
- **Occupation:** Record current and previous occupations of the patient because they may effect stress and coping pattern. It can also help to correlate health with certain occupational risk factors
- **Per capita income:** Record total family income/Total number of family members.

Health and Illness Patterns

- **Chief complaints:** It is a brief statement of the patient's primary problems in the patient's own words including duration of the complaint. Example: Cough for 3 weeks
  Ask the patient a direct question such as, "for what reason have you come to the hospital"
  Ask how long the problem has been present. If necessary, establish the time of onset, precisely by offering clues
  Let the patient speak freely without offering your opinion.
- **History of present illness:** It is a detailed chronological picture beginning with the time the patient was last well and ending with patient's current condition
  If there is more than one important problem, each is described in a separate, chronologically organized paragraph in the written history of present illness
  Collect the history by eliciting more information through the use of the pneumonic **OLD CARTS**
  - **O**nset: Setting, circumstances, rapidity or manners in which it began
  - **L**ocation: Exact place, where the symptom is felt, radiating factor
  - **D**uration: How long, if intermittent, the frequency and duration of each episode
  - **C**haracter/Course
  - **A**ggravating/Relieving factors
  - **R**adiation (pain)
  - **T**iming
  - **S**everity
- **Past medical history:** Childhood illnesses—mumps, measles and so on. Any chronic disease like diabetes mellitus (DM), hyperthermia, if on any treatment and compliances to treatment. Allergies, mental diseases, accidents, injuries and other disease, blood transfusions, use of over-the-counter products, herbal or dietary supplements
- **Family history:** Information about all family members (father, mother, grandparents, brother and sister) living or dead, cause of death (if dead), condition of their health (if living), family history of any illness, e.g., diabetes mellitus, cancer, heart disease, etc.
- **Personal history:** Record data about patient's personal hygiene practices, dietary pattern, sleep pattern, micturition and elimination pattern, any unhealthy practices like drug abuse, smoking, alcoholism, etc.
- **Family tree** (Fig. 1)

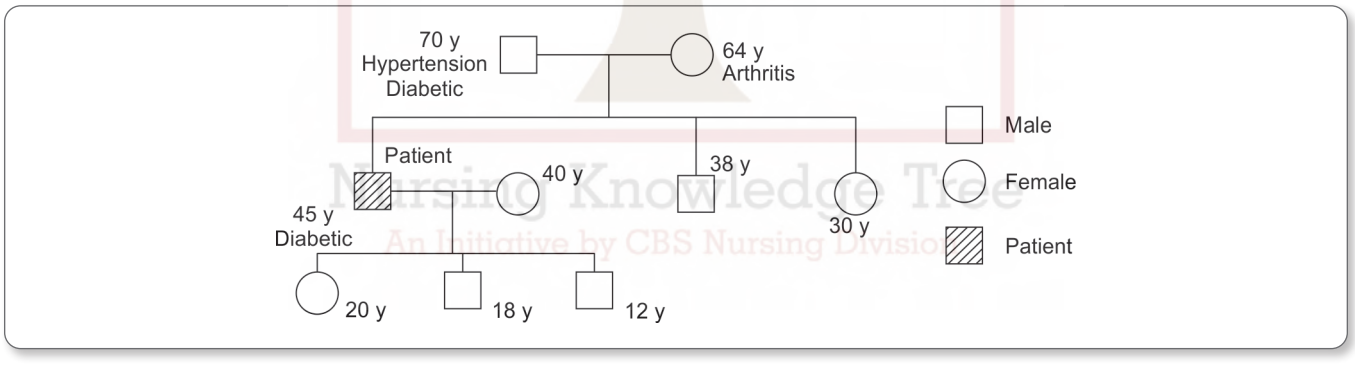

FIGURE 1: Example of a family tree

- **Lifestyle/high-risk behavior:** Smoking, alcoholism, substance abuse. If yes, how much and since when? Food habits, food fads, likes and dislikes, pattern of sleep, exercise pattern, hobbies, health care facility available
- **Obstetrical history (in case of female patient):** Menstrual history, history of pregnancy, labor and puerperium and their complications if any, history of children, alive or dead, etc.

PHYSICAL EXAMINATION AND ASSESSMENT

It is the systematic collection of objective information that is directly observed or is elicited through examination techniques. It involves the use of one's senses to obtain information about the structure and function of an area being observed or manipulated.

Purposes

- To understand the physical and mental well-being of the patient
- To detect diseases in its early stage
- To determine the cause and extent of disease
- To understand any changes in the condition of diseases, any improvement or deterioration
- To determine the nature of treatment or nursing care needed for the patient
- To safeguard the patient and his family by noting the early signs especially in case of a communicable disease
- To contribute to a medical research
- To find out whether the person is medically fit or not for a particular task.

Articles

- Tray containing the following articles:
  - Torch to visualize oral mucosa, to check accommodation of eyes
  - Wooden spatula to press tongue for oral examination
  - Vital signs tray to check vital signs
  - Measuring tape to take anthropometric measurements
  - Stethoscope for auscultation
  - Weighing machine to check body weight
  - Drape sheet to ensure patient's privacy
  - Gloves to examine genitalia
- Screen to maintain privacy.

Points to Remember

- Before proceeding with physical examination, introduce yourself and explain the procedure which you are going to do to establish rapport with the patient and relieve his/her anxiety.
- Make patient comfortable by providing privacy whenever required.
- Ask patient to void if he/she wants before doing physical examination.
- Record patient's height, weight and vital signs.

STEPS OF PROCEDURE

Preprocedural Steps

- Explain the procedure to the patient
- Ensure privacy of patient
- Ensure working condition of equipment
- Make patient comfortable.

Intraprocedural Steps

Systemwise assessment is as follows:

Neurological System

History

- Ask the patient for history of any episode of seizure, head injury, head surgery, any degenerative disorder (parkinsonism, Huntington's chorea, etc.), treatment taken for any neurological disorder. Ask patient for complaints of headache, nausea and vomiting, numbness, pins and needles, weakness, unsteadiness, stiffness and clumsiness
- Record patient's level of consciousness by calling him by his name and also record emotional state at the time of assessment
- Check patient's orientation to time, place and person, by asking questions like where are you right now, when did you come here and who is along with you. Otherwise one can get to know the status in conversation with the patient

- In case of unconscious patient, nurse should use Glasgow's Coma Scale (see neurological examination) for describing patient's level of consciousness.

Respiratory System

History

Ask the patient for history of any respiratory disease like asthma, chronic obstructive pulmonary disease (COPD), tuberculosis, any previous treatment taken for any of respiratory illness. If patient has the complaint of cough, then record the consistency, odor and color of sputum.

Inspection

- Inspect nose for hygiene, surgery scar, deviated nasal septum, placement of nasal Ryles tube/oxygen mask, if any
- Confirm that the trachea is near the midline, if tracheostomy tube is in place, record for tracheal hygiene, characteristics of sputum
- Inspect for any surgery scar, chest tube drainage on chest
- Observe the chest for asymmetry, deformity or increased anteroposterior (A-P) diameter ratio [In adults >6-year-old, between 1:14–1:2, Children <6 year (1:1)]
- Observe the rate, rhythm, depth, and pattern of breathing. Note whether the expiratory phase is prolonged. Listen for obvious abnormal sounds with breathing such as wheezes
- Observe for retractions and use of accessory muscles (for labored breathing).

Posterior Thorax and Lungs

Inspection (Posterior Thorax)

- Inspect the spine for mobility and any structured deformity
- Observe for the symmetry of the posterior chest and the posture and mobility of the thorax on respiration.

Palpation

- Identify any areas of tenderness or deformity by palpating the ribs and sternum
- Assess expansion and symmetry of the chest by placing your hands on the patient's back, thumbs together at the midline, and ask them to breathe deeply.

Percussion

Percuss by tapping fingers the region on the posterior and lateral lung fields. On normal lungs, resonant percussion sounds are heard that changes to dull note at the diaphragm.

Auscultation

Use the diaphragm of the stethoscope to auscultate breath sounds.

Posterior Chest

- Auscultate the posterior chest from top to bottom on both the sides. Do not auscultate on the scapula
- Note the quality of sound on both the sides and compare.

Anterior Chest

- Auscultate the chest from side to side and top to bottom
- Compare one side to the other for asymmetry
- Note the site and quality of the sounds you listen.

Interpretation

- Breath sounds are formed by turbulent air flow. They are classified by the size of the airways that transmit them to the chest wall. Generally the bigger the airway, the louder and higher pitched the sound
- Vesicular breath sounds are low pitched and normally heard over most lung fields
- Tracheal breath sounds are heard over the trachea
- Broncho-vesicular and bronchial sounds are heard in between
- Inspiration is normally longer than expiration (I > E)
- Breath sounds are decreased when there is collection of more air in the normal lung, e.g., in case of emphysema or pneumothorax or fluid in case there is pleural effusion

- Breath sounds shift from vesicular to bronchial when there is fluid in the lung itself like in case of pneumonia
- 'Adventitious' sounds are the extra and abnormal sounds that originate in the lungs and airways. Various adventitious sounds are:
  - **Crackles/Rales:** These are high pitched and irregular sounds. These are similar to the sound produced by rubbing the hair between the fingers
  - **Wheezing:** These are generally high pitched and 'musical' in quality
  - **Stridor or croup** is an inspiratory wheeze associated with upper airway obstruction
  - **Rhonchi:** Any extra sound that is not a crackle or a wheeze may be a rhonchi. These are low-pitched sounds and usually have a 'snoring' or 'gurgling' quality.

ENT Assessment

Examination of Ears

History

Ask the patient, if hearing loss is present or history of ear surgery, bleeding ear and since when, use of hearing aid.

Inspection

Inspect the auricles and move them around gently. Ask the patient if this is painful.

Palpation

- Palpate the mastoid process for tenderness or deformity
- Pull the ear upward and backward to straighten the canal. Examine external canal for discharge, impacted cerumen, inflammation, masses or foreign bodies with the help of otoscope and torch
- Also palpate preauricular and postauricular lymph nodes for enlargement and tenderness.

Abnormal findings

- Erythema: Suppurative otitis media. Purulent drainage
- Dull, nontransparent gray—serous otitis media with effusion.

Examination of Nose and Sinuses

History

- Ask the patient for presence of cold, anosmia and history of any nasal surgery, epistaxis.

Inspection

- Inspect the visible nasal structures (basal septum, discharge, nasal obstruction and airway patency, mucous membranes) for color and turbinates for color and swelling
- Normally, nasal septum is straight and not perforated, no discharge, patent airways, pink mucosa and turbinates
- Repeat for the other side.

Palpation: Facial tenderness:

- Ask the patient to tell you if following maneuvers cause excessive discomfort or pain
- Press upward under both eyebrows with your thumbs. (Frontal sinus)
- Press upward under both maxilla with your thumbs. (Maxillary sinus)
- Excessive discomfort on one side or significant pain suggests sinusitis.
- Frontal sinuses are below eyebrows
- Maxillary sinuses are below zygomatic arch.

Examination of Neck

- Inspect the neck for asymmetry, scars or other lesions. Inspect neck for internal jugular venous pulsation, normally jugular pulsations are rarely palpable, pulsation eliminated by light pressure on the vein just above the sternal end of the clavicle
- Palpate the neck to detect areas of tenderness, deformity or masses.

Examination of the Eye

History: Ask the patient:

- Any complaints in the eyes
  - Any eye surgery
  - Use of spectacles and the duration
  - Use of contact lenses.

Checking visual acuity: It can also be checked by making the patient to read newspaper headlines and body of news if Snellen chart not available. The patient can use their glasses or contact lens if available.

- Ask the patient to sit 20 feet in front of the Snellen eye chart
- Have the patient cover one eye at a time with an opaque card
- Ask the patient to read first the bigger letters and then progressively the smaller letters until he/she can go no further
- Record the smallest line the patient read successfully (20/20, 20/30, etc.)
- Repeat with the other eye.

Inspection of Eye

- Observe the patient's eye for ptosis, exophthalmos, lesions, deformities, or asymmetry
- Ask the patient to look up. Then gently pull down both lower eyelids to inspect the conjunctiva and sclera
- Open each eye of the patient with your thumb and index finger. Ask the patient to look to each side and downward to expose the entire bulbar surface
- Note down any discoloration, redness, discharge, lesions, any deformity of the eye.

Cardiovascular System

History

- Ask for the complaint of chest pain, shortness of breath, cyanosis, chest pain, fatigue and dyspnea, palpitations, and syncope
- Ask for lifestyle habits like smoking, alcoholism and family history of cardiac disease.

Inspection

- Inspect skin for pallor, eyes for Xanthelasma, neck for jugular vein distension, nails for clubbing and peripheral edema, chest for any deformity like pigeon chest or caved in chest
- Inspect for peripheral vessel for distension, cheilitis, etc.

Palpation

- Palpate pulses (radial, femoral, posterior tibial, dorsalis pedis) comparing symmetry from side to side. Absence of pulses on particular side indicates peripheral vascular disease of that side.
- **Capillary Refill**
  - Press down firmly on the patient's finger or toe nail so that it blanches
  - Release the pressure and observe how long it takes for the nail bed to get 'pink'
  - Capillary refill times greater than 2–3 seconds suggest peripheral vascular disease, arterial blockage, heart failure, or shock.

Auscultation

- Auscultate for apical heart beat and other abnormal heart sounds like murmurs and record apical heart rate.
- Measure blood pressure.

Gastrointestinal System

History

- Ask the patient for frequent gum bleeding, oral ulcers, diarrhea, constipation, hemorrhoids, any treatment modality taken before
- Ask for any specific diet or home made remedies.

Inspection

- Observe lips for color, moisture, pigment, masses, ulceration, fissures
- Ask the patient to open his mouth
- Using a wooden tongue blade and a good light source
- Inspect the inside of the patient's mouth including the buccal folds and under the tongue
- Note any ulcers, white patches (leukoplakia), or other lesions, and breath odor
- Assess the voice of the patient for hoarseness
- In case of any abnormally, use a gloved finger to palpate the anterior structures and floor of the mouth
- Inspect the posterior oropharynx by depressing the tongue and asking the patient to say 'Ah'. Note any asymmetry, tonsillar enlargement, redness, or discharge.

Abdominal Examination

- **General Considerations**
  - Record the mode of feeding, whether taking orally, RT feed, TPN or any other mode
  - The patient should have an empty bladder
  - The patient should be lying supine on the examination table and appropriately draped
  - The examination room must be quiet to perform adequate auscultation and percussion
  - In case of abdominal examination, follow the sequence of inspection → auscultation → palpation → percussion instead of usual sequence of inspection → palpation → percussion → auscultation
  - Watch the patient's face for signs of discomfort during the examination
  - Use the appropriate terminology to locate your findings: (a) Right upper quadrant (RUQ), (b) Right lower quadrant (RLQ), (c) Left upper quadrant (LUQ), (d) Left lower quadrant (LLQ), (e) Midline: Epigastric, (f) Periumbilical, (g) Suprapubic
  - Measure abdominal girth by putting measuring tape around the abdomen over umbilical area.

Inspection

- Look for scars, striae, hernias, vascular changes, lesions or rashes
- Look for movement associated with peristalsis or pulsations
- Note the abdominal contour. Is it flat, scaphoid or protuberant?

Auscultation

- Place the diaphragm of your stethoscope lightly on the abdomen
- Listen for bowel sounds. Are they normal, increased, decreased, or absent? Borborygmus = 'growling' Bowel sounds originate from the movement of air and fluid through the small intestine. Bowel sounds are high pitched, gurgling or scratching sounds that occur approximately every 5–15 seconds. They can be heard in all four quadrants
  - Hyperactive bowel sounds are loud, high-pitched, rushing and tinkling sounds (borborygmi)
  - Absent bowel sounds are defined as lack of sounds after 5 minutes of auscultation.

Percussion

- Percuss in all four quadrants (clockwise) using proper technique
- Proceed methodically from quadrant to quadrant noting tympany and dullness
- Categorize what you hear as tympanic or dull. Tympany is normally present over most of the abdomen in the supine position. Unusual dullness may be a clue to an underlying abdominal mass or full bladder.

Palpation

- Perform light palpation in an organized manner to detect any muscular resistance (guarding), tenderness or superficial organs or masses
- Perform deep palpation to determine location, size, shape, consistency, tenderness, pulsation and mobility of underlying organs or masses
- Move slowly and gently from one quadrant to next.

Musculoskeletal System

History

- Record if patient has complaint of muscle/joint pain, stiffness, arthritis, gout, backache and any treatment previously sought.

Inspection

- Observe for any lack of symmetry, muscle wasting, any evidence of trauma/disease
- Observe skin over extremities for color, hair distribution, pallor, redness and swelling.

Palpation

- Note the temperature of the skin over extremities comparing one side to the other
- Palpate the skin over the tibia for **edema** by squeezing the skin between 30 seconds and 60 seconds. Run the pads of your fingers over the area pressed and note indentation. If indentation is noted, repeat the procedure, moving up the extremity and note the point at which no more swelling is present.
  - 1+ Mild, not noticeable
  - 2+ Moderate, subsides rapidly

- 3+ Deep, remains for short time, leg looks swollen
- 4+ Very deep, remains for long time, grossly swollen and misshapen

- Check for the presence of clubbing of the fingers.
  - Normal = 160°
  - Curved = 160° or less
  - Early clubbing = 180°
  - More than 180° = Clubbing
- Examine each major joint and muscle group in turn to test muscle strength. The scoring is done as follows:
  - 0/5: No contraction
  - 1/5: Muscle flicker, but no movement
  - 2/5: Movement possible, but not against gravity
  - 3/5: Movement possible against gravity, but not against resistance by the examiner
  - 4/5: Movement possible against some resistance by the examiner
  - 5/5: Normal strength
- Range of Motion
  - Ask the patient to move through an active range of motion (active exercises)
  - Ask the patient to move each joint through a full range of motion
  - Note the degree and type (pain, weakness, etc.) of any limitation
- Always compare the movement of one side with the other side of the body
- Proceed to passive range of motion, if the patient is not able to perform.

Passive range of motion

- Ask the patient to relax and allow you to support the extremity to be examined
- Gently move each joint through its full range of motion
- Note the degree and type (pain or mechanical) of any limitation
- If increased range of motion is detected, perform special tests for instability as appropriate
- Always compare with the other side.

- Scoliosis: Lateral curvature of spine with unequal leg length.
- Kyphosis: 'Hunchback'; overcurvature of the thoracic vertebrae.
- Knock knees: Knees together when standing.

Homan's Sign

- Flex the knee, gently press the calf anteriorly against the tibia or dorsiflex the foot toward the thigh.
- Normal = no pain. Abnormal pain: A deep vein thrombosis should be ruled out as it can be a positive sign of deep vein thrombosis (DVT). (more reliable tests can be D-dimer titration or Doppler ultrasound).

Immune System

History

- Record history of allergy to food (peanuts, fish, milk, eggs, wheat or chocolate), drug [(penicillin/nonsteroidal anti-inflammatory drugs (NSAIDs)] or insect stings (bees/ants).

Inspection

- Assess the patient for the presence of rashes, pruritus, lymph node swelling.

Palpation

- Methodically palpate various lymph node groups. Use pads of your index and middle fingers:
  - **Occipital:** At the base of the skull
  - **Tonsillar:** At the angle of the jaw
  - **Submandibular:** Under the jaw on the side
  - **Submental:** Under the jaw in the midline
  - **Superficial (anterior) cervical:** Over and in front of the sternomastoid muscle
  - **Supraclavicular:** At the angle of the sternomastoid and the clavicle
- The deep cervical chain of lymph nodes lies below the sternomastoid and cannot be palpated without getting underneath the muscle. Inform the patient that this procedure may cause some discomfort.
  - Hook your fingers under the anterior edge of the sternomastoid muscle

  - Ask the patient to bend his neck toward the side you are examining
  - Move the muscle backward and palpate for the deep nodes underneath
- Note the size and location of any palpable nodes. Document whether they were soft or hard, nontender or tender, and mobile or fixed.

Integumentary System Assessment

History

- Ask the patient for any skin-related complaints like vitiligo, ecchymosis, macule, papule, hair patterns (hirsutism, alopecia) any nail deformities along with duration
- Check temperature of skin.

Inspection

- Inspect skin color and uniformity of color as one proceeds through each body system (to rule out the presence of vitiligo, pallor, cyanosis, edema, ecchymosis, macule, papule, cyanosis, jaundice), moisture, hair pattern (hirsutism, alopecia), rashes, edema (types of edema)
- Record if any bedsore is present, if present then grade it
- Assess for broken skin integrity due to any surgical intervention
- Check site of cannula for inflammation.

Palpation

- Palpate to check temperature, turgor, lesions, edema, texture as pale, cool, moist skin can be indicative of heat stroke, shock or other cardiac complications.

Percussion and Auscultation

- Rarely used on skin.

Genitourinary System Assessment

History

- Ask the patient for pain (suprapubic or flank pain). History of urinary tract infections (UTIs), fever or chills, dysuria, hesitancy, straining, urinary incontinence, edema, hematuria, nocturia, history of kidney stones, sexually transmitted diseases, tobacco, alcohol, drugs and medicines.

Observation

- Record if patient is self-voiding or by Foley's catheter. Record previous day 24-hour urine output to rule out polyuria/oliguria or anuria
- Record color and consistency of urine.

Endocrine System

History

- Ask the patient for past medical history of hormone replacement therapy, surgery, chemotherapy, radiation
- Record family history of diabetes mellitus, diabetes insipidus, goiter, obesity, Addison's disease, infertility
- Record any changes in menstruation/menopause, integumentary changes (hair changes, skin changes, nails, bruising, wound healing). Neurologic changes (numbness/tingling lips or extremities, nervousness, hand tremors, mood changes, memory changes and sleep patterns).

Inspection

- Observe patient's face for shape, symmetry
- Observe patient's extremities for hand and feet size.

Palpation

- Palpate the neck for the thyroid gland from patient's backside.

Gynecological System

History

- Ask the patient for the presence of itching or discharge from vagina. If discharge is present, note the color and smell of discharge

- In case of older woman, ask for urinary incontinence on coughing and feeling of something coming out from vagina if uterine prolapsed is present
- Number and types of deliveries, history of vaginal infections, last menstrual period (LMP).

Breast Examination

Inspection (with the patient sitting, arms relaxed at sides)

- Inspect the areola and nipples for the position, pigmentation, inversion, discharge, crusting and masses. Extra or supernumerary nipples may occur normally more commonly in the anterior axillary region or just below the normal breasts
- Examine the breast tissue for size, shape, color, symmetry, surface, contour, skin characteristics and level of breasts. Note any retraction or dimpling of the skin
- Ask the patient to elevate her hands over her head and repeat the observation
- Have the patient press her hands to her hips and repeat the observation.
- Normally the nipples should be at the same level and protrude slightly.

Palpation: This is best done with the patient in a recumbent position. The patient with pendulus breasts should be given a pillow to place under the ipsilateral scapula of the breast being palpated so the tissue is distributed more evenly over the chest wall. The arm on the side of the breast being palpated should be raised above the patient's head.

- Palpate one breast at a time beginning with the asymptomatic breast if the patient complains of symptom. To palpate use the palmar aspect of the fingers in a rotational motion compressing the breast tissue against the chest wall. Do not forget to include the tail of the breast tissue which extends into the axillary region in the upper quadrant of the breast.
- Note the skin texture, moisture, temperature or masses. Gently squeeze the nipple and note any expressible discharge.
- Repeat the examination on the opposite breast and compare findings.

Inspection of Perineum

- Inspect the perineum for lesions, scars, old third degree perineal tears.
- Assess for bone swelling or change in normal anatomy.

Postprocedural Steps

- Make patient comfortable
- Replace all articles back in the utility room after cleaning and disinfection
- Give relevant health education according to history and physical assessment findings.

Documentation

Record findings on assessment proforma with date and time.

SUGGESTED READINGS

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Part 3 Mental Health Nursing

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CONTENTS

ADMISSION PROCEDURE OF A PSYCHIATRIC CLIENT

3.1 ADMISSION PROCEDURE

DEFINITION OF ADMISSION

- Admission is the act or **process** of accepting someone into a hospital, clinic or other treatment facility as an inpatient.
- Admission is defined as allowing a patient to stay in hospital for observation, investigation, treatment and care.
- Admission is the entry of a patient into a hospital/ward for therapeutic/diagnostic purposes.

GOALS AND OBJECTIVES

- To admit the psychiatric clients who have suicidal and homicidal tendencies.
- To control and treat violent episodes which are not controlled at home.
- To make proper diagnosis of psychiatric illness.
- To treat the client with various psychopharmacological drugs and therapies.

TYPES OF ADMISSION

Under the Mental Health and Welfare Law, there are various types of admissions to hospital: voluntary admission; admission for medical care and protection; emergency admission; involuntary admission and emergency involuntary admission.

Type	Details
Voluntary admission	The patient is admitted of his or her own volition after a doctor at the hospital has decided that inpatient treatment is necessary. However, discharge within 72 hours can be restricted at the discretion of a designated mental health doctor.
Admission for medical care and protection	The patient is admitted even without his consent if a designated doctor regards that admission is necessary and the patient's guardian give consent. The following persons are classified as guardians under the Mental Health and Welfare Law. 1. If the patient has a legal guardian: the legal guardian 2. If the patient is a minor: the parents 3. If the patient has a spouse: the spouse 4. In the absence of any of the above: A guardian appointed by the family court who is aged 20 years or more and is the patient's parent, child, sibling, grandparent, grandchild, or other relative (person with a duty to support the patient) 5. In the absence of all the above-mentioned points, the Mayor of the Municipality where the patient resides
Emergency admission	The patient is admitted for up to 72 hours even without his consent or that of his guardian or person with a duty to support him, if a designated mental health doctor regards emergency admission as a necessity.
Involuntary admission	The patient is admitted on the authority of the governor if two designated mental health doctors (ordered by the governor to examine the patient) determine that the patient's admission is necessary as a result of examination because of a risk of self-harm or hurting others.
Emergency involuntary admission	The patient is admitted for up to 72 hours on the authority of the governor as a result of examination by a single designated mental health doctor if a hospital cannot complete the official procedures for involuntary admission and speed is required.

ROLE OF A NURSE IN ADMISSION PROCEDURE

1. Obtains report of patient condition and receives patient into appropriate care area.
2. Identifies and prioritize appropriate patient care needs.
3. Obtains physician orders as needed
    a. Medication orders received from the physician as "meds per home routine" or any other nonspecific fashion will not be administered

b. Medication orders must meet standards prior to medication administration
c. The nurse ensures that the orders are accurately acknowledged, transcribed, and implemented.

4. Completes the nursing admission record which includes client's name, age and details of informant and verifies that all appropriate admission data are collected and documented.
5. Ensures that the current chief complaints have been obtained and documents the content of information in "Verbatim form".
6. Observes general appearance, attitude and general behavior at the time of receiving the patient.
7. Takes physical data which includes height, weight, BMI (Basal Metabolic Rate), dietary habits, etc.
8. Assures that identification bands or tags are placed with appropriate information included.
9. The health care team initiates a plan of care/clinical pathway.

ROLE OF A NURSE AFTER ADMISSION OF PATIENT

Soon after admission the person will be interviewed by a member of the nursing staff and by the ward doctor. The person will be asked about past history as well as full details of his current problems. This information is taken to ensure that the help and support offered while his stay in hospital is appropriate. The patient will also be asked if he has brought any medication with him.

a. A **keyworker** (sometimes called a primary nurse, named nurse or care coordinator) is introduced to each new patient within a few days of admission. The role of the keyworker includes coordinating nursing care and providing relevant information, for example, a person's rights under the Mental Health Act.
b. **Daily activity:** Activity in the ward will depend on the type of ward and the needs of the individual patients. Activity scheduling can be done by concerned psychiatrist or nurse on individual basis.
c. **Medication** will usually be given at set times, often around meal times and bed time by the nurse only. Medication will be kept under lock and key.
d. **Meals:** There should be proper menu planning for main meals and special diets by dietitian.
e. **Visiting:** Majority of wards arrangements for visiting are fairly flexible although some wards may have unrestricted visiting. Visiting for some individuals may be restricted if the treatment team feels that this is beneficial for the patient's recovery.
f. **Ward round:** Ward rounds usually take place weekly and offer an opportunity for professionals involved in the person's treatment to discuss his care and treatment plan. Patient should be fully involved in these discussions and important relatives and care takers should be invited.
g. **Smoking:** Smoking is only allowed in designated areas (within each ward) if patient is addicted to cigarettes. Order should be received from concerned psychiatrist.
h. **Care and treatment planning:** The latest guidance for professionals working with people detained in hospital under the Mental Health Act states that during a person's stay in hospital they should ensure that the person's full range of needs are assessed, and a multidisciplinary plan is drawn up to meet those needs. This plan should be drawn up together with the person and their carers, and it should be clear which professional is co-coordinating the implementation of the plan.

ADVANTAGES

- Provides safety and security to psychiatric patients
- Protects the rights of mentally ill clients
- Treats the mentally ill effectively with the help of health care team
- Prevents social stigma among patients and their caregivers.

DISCHARGE PROCEDURE OF A PSYCHIATRIC CLIENT

3.2 DISCHARGE PROCEDURE

DEFINITIONS

- It is defined as the procedure when a patient leaves a hospital after treatment.
- A hospital discharge is the procedure when patient no longer needs to receive inpatient care and can go home.
- Discharge planning is defined as a dynamic, flexible, comprehensive, and collaborative process that should be started at the time of admission and its aim is to identify the client's plans and needs to support him after discharge from psychiatric unit.

GOALS AND OBJECTIVES

1. Based on the individual needs of the patient, effective discharge planning supports the continuity of health care between the health-care setting and the community.
2. Ensure continuity of quality care between the hospital and the community.
3. Reduce length of stay in hospital.
4. Reduce unplanned readmission to hospital.
5. Improve the coordination of services following discharge from hospital.
6. Encourage independence in psychiatric clients after engaging in rehabilitation services.
7. Prepare the client and caregivers for follow-ups.

TYPES OF DISCHARGE PROCEDURE

A. Discharge of Voluntary Patients

- The medical officer-in-charge on a request made on the behalf of:
  - by any voluntary patient
  - by the guardian, if he is a minor
- Discharge the patient within 24 hours of the receipt of such request
- If medical officer-in-charge is satisfied that the discharge will not be in the interest of the patient, he shall:
  - within 72 hours of a request constitute a Board consisting of two medical officers and seek its opinion
  - if the Board is of the opinion that patient needs further treatment, medical officer should continue his treatment for a period not exceeding 90 days at a time.

1. **Discharge by medical officer:**
   - On the recommendation of two medical practitioners one of whom shall preferably be a psychiatrist
   - By order in writing, the medical officer shall direct the discharge of any person from the psychiatric hospital
   - Other than a voluntary patient
2. **Discharge on application:**
   - Any person detained in a psychiatric hospital under an order and in pursuance of an application
   - Shall be discharged on an application made in that behalf to the medical officer-in-charge, provided that no person shall be discharged if the medical officer-in-charge certifies in writing that the person is dangerous and unfit to be at large
3. **Discharge on request:**
   - Any person (not being a mentally ill prisoner) detained in pursuance of an order, who feels that he has recovered from his mental illness, may make an application to the Magistrate for his discharge from the psychiatric hospital
   - The application made shall be supported by a certificate either from the medical officer-in-charge or from a psychiatrist
   - The Magistrate may after making such inquiry as he may deem fit, pass an order for discharging the person or dismissing the application
4. **Discharge of person subsequently found on inquisition to be of sound mind:**
   - If any person detained in a psychiatric hospital in pursuance of a reception order is subsequently found on an inquisition to be of sound mind or capable of taking care of himself and managing his affairs. The medical officer-in-charge shall discharge such person from a hospital or nursing home

5. **Leave of absence:** An application for leave of absence may be made to the medical officer-in-charge:
   - by the husband or wife of the mentally ill
   - relative of the mentally ill person duly authorized
   - by the husband or wife or by the person on whose application the mentally ill person was admitted
6. **Every application shall be accompanied by a bond undertaking:**
   - To take proper care of the mentally ill person
   - To prevent the mentally ill person from causing injury to himself or to others
   - To bring back the mentally ill person to the psychiatric hospital on the expiry of leave
   - The medical officers-in-charge may grant leave of absence for such period as deemed necessary
   - The total number of days shall not exceed 60 days
7. **Removal:**
   - Any mentally ill person other than a voluntary patient subject to any general or special order of the state government be removed from any psychiatric hospital or psychiatric nursing home to any other psychiatric hospital or psychiatric nursing home, within the state, or to any other state with the consent of the government of that other state

B. Transfer

- Patients may be transferred from one room to another for several reasons:
  - Sometimes it is at the patient's request for a different type of room or a more compatible roommate.
  - Medical staff may request it – change in level of care, i.e., ICU to Med-Surg or vice versa.
- The nurse will collect the patient's chart and medicines.
- Document date/time of transfer; reason for transfer; patient's attitude toward the move.

C. LAMA

LAMA (Left against medical advice) due to any personal reason of the patient.

D. Abscond

Patient went out of the hospital without doctor's or other staff's knowledge. Or patient may abscond or leave the hospital without any prior information.

STEPS OF PLANNED DISCHARGE

1. Written order by doctor
2. Discharge card
3. Informing other departments
4. Check payment of the bills
5. Hospital glossaries should be taken back
6. Returning of the personal belongings
7. Documentation

NURSE'S RESPONSIBILITY DURING DISCHARGE PROCEDURE

During Discharge

1. See doctor's written order
2. Explanations
3. Hand over personal belongings
4. Check and receive any hospital property
5. Confirm bill payment
6. Inform other departments regarding discharge

After Discharge

1. Documentation
2. Care of patient's room and articles

NURSE'S RESPONSIBILITY IN MEDICOLEGAL DISCHARGE PROCEDURE

1. Check for medicolegal history
2. Notify medical officer-in-charge
3. Abscond cases immediately contact medical officer-in-charge

4. Maintain all documents in a proper manner
5. Take in written handing over and taking of articles
6. Never discharge patient without written order by physician

PATIENT AND FAMILY TEACHING

- Patient and family teaching is of vital importance in discharge planning.
- It is planned before patient is going to be discharged.
- Nurse plays a responsible role in patient's teaching.

Topics Included for Predischarge Teaching

- Medications and drugs
- Diet
- Taking medications
- Exercise programs
- Physical therapy
- Any home health care
- When to follow-up with the doctor

SPECIAL CONSIDERATIONS

There are many things that have to be done before patient can really leave a hospital, safely:

- The doctor has to write discharge orders in patient's chart.
- He has to review all medications and list that patient should take home.
- The doctor gives the order to the nurse with prescriptions he wrote.
- The nurse must call patient's family doctor or the primary doctor on call and makes an appointment for follow-up visit.
- Any equipment or supplies that a patient may require for home care, needs to be arranged with an outside agency.
- Financial arrangements are reviewed and finalized.
- Transportation is confirmed.
- Discharge instructions are prepared and printed.
- Patient and caregivers are updated on any delays encountered with the above arrangements.
- The nurse reviews all discharge instructions with the patient.
- The nurse asks you for your feedback on the discharge plan and discusses any concerns or questions a patient may have.
- Patient's understanding of the instructions will be confirmed.
- Only after all of the above steps are completed, will it be time to head to the car, and even then, it is hospital's policy that they help a patient all the way to and into patient's vehicle.

Part 4

Midwifery/ Obstetrics and Gynecological Nursing

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CONTENTS

ANTENATAL CARE

4.1 ANTENATAL EXAMINATION

KEY TERMS

- Abdominal palpation
- General assessment
- Obstetrical examination

INTRODUCTION

Antenatal examination is a part of prenatal care, which involves screening of a pregnant woman for determining normal fetal growth and also to detect any health problems during pregnancy to ensure a healthy baby to be born to a healthy mother.

DEFINITION

It is the systemic examination of the pregnant woman externally to assess the position of pregnant uterus and condition of fetus.

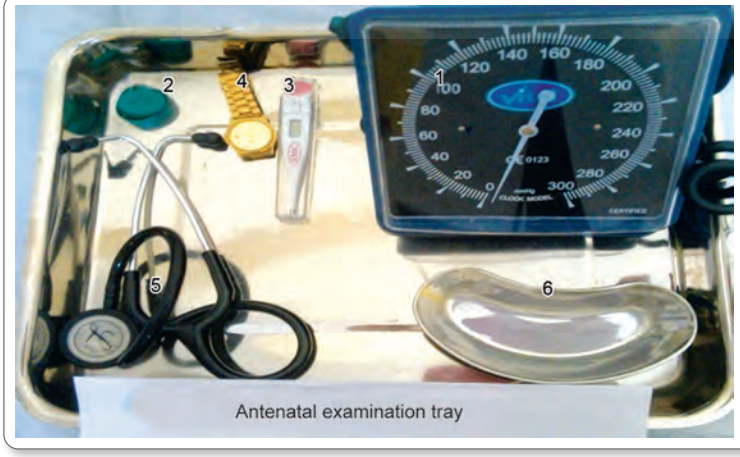
PURPOSES

- To promote and maintain physical health.
- To detect the high-risk conditions of mother and fetus.
- To prevent or to detect and treat any complication at the earliest.
- To ensure continued medical surveillance and prophylaxis.
- To teach the woman regarding importance of antenatal visits, diet, exercise and rest
- To prepare the mother for labor and educate about family planning.
- To clarify all her doubts associated with child-bearing and child-rearing to reduce fears and anxiety.

ARTICLES

The articles used in the procedure are shown in Figure 1.

- Examination table/bed *(for the comfort of the woman)*.
- Fetoscope/stethoscope *(to hear the fetal heart sound)*.
- Thermometer *(to take temperature)*.
- Measuring tape *(to measure abdominal girth)*.
- Sphygmomanometer *(to measure blood pressure)*.
- Weighing machine *(to measure weight of mother)*.
- Watch to count *pulse, respiration and fetal heart rate.*
- Soap to *wash hands.*
- History sheets/casebook *(to write the history, assessment including general and obstetrical assessment)*.



1. BP Apparatus/ Sphygmomanometer
2. Measuring tape
3. Thermometer
4. Wrist watch
5. Stethoscope/Fetoscope
6. Kidney tray

Other Articles

- Table/bed
- Weighing machine
- Soap to wash hand
- History sheets/casebook to write the history

FIGURE 1: Tray containing articles for antenatal examination

STEPS OF PROCEDURE

Preprocedural Steps

- Approach the woman pleasantly *(to establish rapport)*.
- Maintain privacy *(to relieve anxiety)*.
- Make her comfortable while taking history *(to gain her cooperation)*.
- Ask her to empty her bladder before conducting abdominal palpation *(to avoid discomfort before obstetrical examination)*.
- Keep all the articles ready in examination room *(to save the time)*.
- Explain the procedure to the mother *(to reduce anxiety)*.
- Blood examination for CBC and hemoglobin and urine examination (for albumin and glucose) are done.
- Take weight, height and blood pressure of the woman *(to detect any abnormality)*.
- Collect complete history prior to examination *(to know the woman completely)*.

A complete history includes the following:

- Identification data of mother including—name, address, age, religion, occupation, etc.
- History of previous pregnancy.
- History of present pregnancy.
- Medical history.
- Family history.

Intraprocedural Steps

- Estimate the gestational age and expected date of delivery by Naegele's rule when assuming a gestational age of 280 days (40 weeks) by adding 1 year, subtracting 3 months, and adding 7 days or by another method adding 9 months and 7 days to the first day of the last menstrual period, to diagnose intrauterine growth restriction of fetus.
- ***General assessment:*** Collect the data including appearance, gait, height and weight, blood pressure, pulse, respiration and temperature.
- ***Head to foot assessment*** *includes* observation of the following:
  - **Head:** Cleanliness, infection, pediculosis, etc.
  - **Eyes:** Sclera and conjunctiva for pallor, signs of infection and jaundice.
  - **Ears:** Hearing abnormality, discharge, wax accumulation.
  - **Nose:** Discharge, deviated nasal septum (DNS), epistaxis
  - **Mouth:** Cracked lips, cheilosis, dental caries, gum swelling or bleeding, coated tongue
  - **Neck:** Symmetry, shape, lymph glands
  - **Breast examination:** Symmetry, shape, primary and secondary areola, tubercles, inverted or flat nipples and colostrum.
  - **Upper extremities:** Check for any bony deformity.
  - **Lower extremities:** Homan's sign, edema, bony deformity and varicose veins.
  - **Bowel and bladder:** Constipation and incontinence.
  - **Genital area:** Bleeding, discharge, infection, hemorrhoids and hygiene.
- Before obstetrical examination ask woman to empty her bladder *(to avoid discomfort)*.
- Inspect the abdomen *(for the shape, contour, scars, linea nigra, striae gravidarum and albicans)*.
- ***Abdominal palpation:*** Make the woman lie in comfortable position *(to promote relaxation)*.
  - Maintain privacy *(by giving her sheet to cover)*.
  - Warm your hands, if cold *(to promote comfort to woman and to avoid risk for causing contraction of uterine and abdominal muscle)*.
  - Expose her abdomen from xiphisternum to symphysis pubis and keep her knees flexed. Measure the abdominal girth by encircling the woman's body with measuring tape at the level of the umbilicus (Fig. 2).

FIGURE 2: Measurement of the abdominal girth by measuring tape at the level of the umbilicus

- Estimate the height of the fundus with fingers and tape measure from symphysis pubis to the actual height of the uterus *(to correlate the height with dates)*. This will determine the progress of fetal growth.
  - Measure height of fundus in centimeters. Locate the upper border of the fundus, measure the distance between the upper border of the symphysis pubis up to the fundus by a tape measure in centimeters (Fig. 3).
  - Determine fundal height *(using ulnar border of the palm)*. Measure the height *(by keeping fingers in between umbilicus and fundal area)*, each finger measuring approximately 1.0 cm (Table 1).

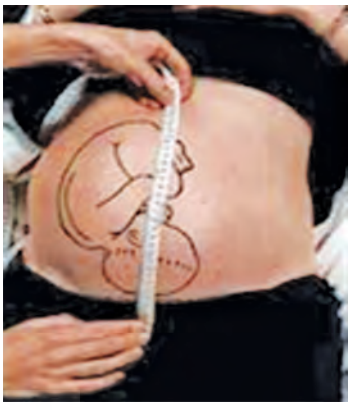
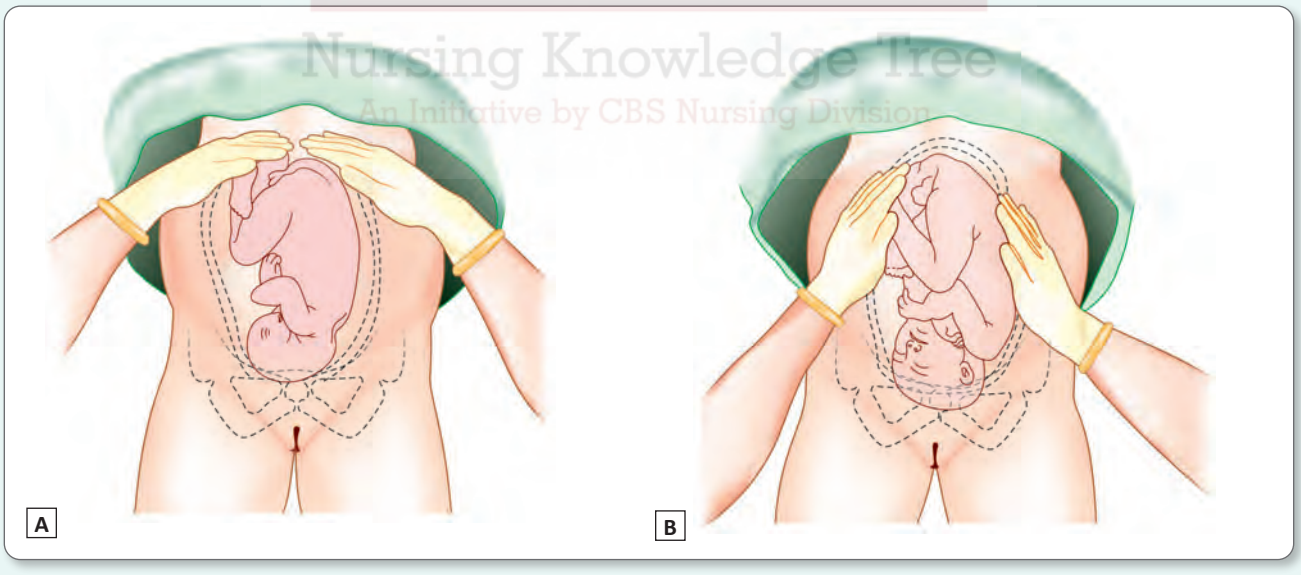


FIGURE 3: Measurement of height from the upper border of the symphysis pubis up to the fundus by a tape. Measure in centimeters

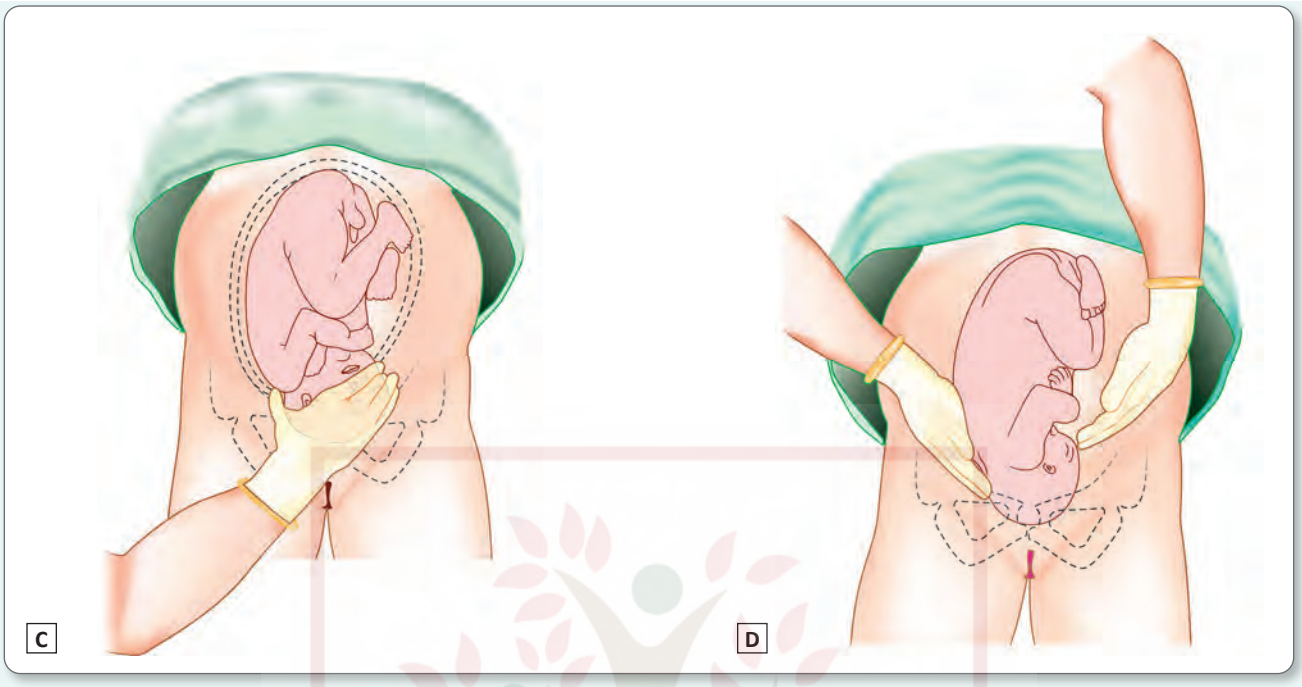
TABLE 1: Position of uterus as per week of pregnancy

12 weeks	As pelvic organ
16 weeks	Midway between symphysis pubis and umbilicus.
20 weeks	1–2 finger below umbilicus.
24 weeks	Level of umbilicus.
32 weeks	Halfway between umbilicus and xiphoid process.
36 weeks	At level of xiphoid process.
40 weeks	2–3 fingers breadth below the xiphoid process if lightening occur

- ***Perform the first maneuver (Fundal palpation)*** (Fig. 4A) by facing the woman and *(placing both hands on the fundus)*. Palpate for size, shape, consistency and mobility of the fetal part in the fundus. Round, hard, movable part, ballotable between the fingers of both hands is indicative of head. Irregular, bulkier, less firm and not well defined *(is indicative of breech*. Neither of the above is *indicative of transverse lie)*.
- ***Feel the fetal limbs and the curve of the back by lateral palpation (second maneuver)*** (Fig. 4B)
- ***Perform the third maneuver (Pawlik grip)*** (Fig. 4C). Grasp the portion of the lower abdomen immediately above the symphysis pubis between the thumb and middle finger of one of your hands, ballot the fetal part from one side to the other side *(to be sure of the presentation)*. The head will be felt round, globular and hard whereas breech will be soft and irregular. Place your hands on both sides of the uterus about midway between the symphysis pubis and the fundus. Apply pressure with one hand against the side of the uterus pushing the fetus to the other side and stabilizing it there.
- ***Conduct the pelvic palpation (fourth maneuver)*** (Fig. 4D) *(to locate the presentation by facing the legs of the woman and feeling the fetal part in the lower pole of the uterus)*. The hands converge around the presenting part when head is not engaged. The hands will diverge away from the presenting part and there will be no mobility if the presenting part is engaged.



FIGURES 4A AND B: Abdominal palpation. (A) Fundal palpation (first maneuver); (B) Lateral palpation (second maneuver)



FIGURES 4C AND D: Abdominal palpation. (C) Pawlik grip (fourth maneuver); (D) Pelvic palpation (third maneuver)

- Place fetoscope or stethoscope after 20 weeks of pregnancy over the convex portion of the fetus closest to anterior uterine wall *(to hear the fetal heart sound)*.

Postprocedural Steps

- Cover the abdomen and make her sit comfortably.
- Replace articles and wash hands.
- Send the woman home after clarifying all her doubts and reset the article.
- **Complete the record:** Hemoglobin and urine for albumin and sugar. Weight, height and blood pressure of the woman. Findings of abdominal palpation and fetal heart rate.

SPECIAL CONSIDERATIONS

- Wash hands before and after the procedure.
- Fetal heart rate should not be confused with uterine soufflé and rate of the mother's pulse.
- Report if there is sudden increase/decrease/static weight, fetal heart sound rate <120 and >160 beats/min.
- Never make any moral judgment regarding the unwed woman and take her history in privacy.
- Educate woman regarding importance of antenatal visits, diet, exercise, rest and prepare the mother for labor specially after 32 weeks in terms of monitoring daily fetal movement, signs of labor, orientation of labor room, preparation of articles for mother and baby.
- Advise care of nipples for preparation for lactation.

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4.2 ANTENATAL EXERCISES

KEY TERMS

- Abdominal exercise
- Pelvic floor exercise
- Deep breathing

INTRODUCTION

Exercise during pregnancy is of utmost importance for the health of both the mother and the baby. Antenatal exercises are exercises done during pregnancy. It not only relieves pregnancy-related ailments but it also helps to cope during antenatal, intranatal and postnatal period. Antenatal exercises help to develop a good posture and relieve minor discomfort such as backache, constipation and insomnia.

DEFINITION

These are systematic exercises to help the pregnant woman adapt to the physical changes in her body during pregnancy and to tone up the muscles that will be stretched or stressed during pregnancy.

PURPOSES

- To tone the pelvic floor muscles.
- To reduce lower back stress from the added weight of pregnancy and strengthen upper back.
- To reduce problems related to sluggish circulation such as leg cramps, varicose veins and edema.
- To increase endurance and muscle control for labor and birth.
- Strengthen pelvic floor muscles.
- Strengthen the diaphragm and improve oxygenation of the blood.
- To speed up return of muscle strength after delivery.

ARTICLES

- Mat/Dari *(to do laying exercises comfortably)*.
- Chair *(to sit in a comfortable position)*.

STEPS OF PROCEDURE

Preprocedural Steps

- Educate the woman to start exercises slowly and rhythmically.
- Empty bladder before exercises.
- Wear comfortable loose clothes and assume comfortable position.
- Educate the woman to take adequate fluid intake before and after exercise.

Intraprocedural Steps

Deep Breathing Exercises

Exercise 1: Deep breathing (Fig. 1)

Purposes: Deep breathing exercises strengthen the diaphragm and *improve oxygenation of the blood.*

This exercise is also very relaxing and is an *effective pain reducing technique*.

Instruct the mother to do the following procedures:

- Sit in comfortable position.
- Breathe in deeply through nose.
- Sigh out through mouth.
- Repeat 5 times.
- Do this exercise 6 times a day.

FIGURE 1: Practice deep breathing

Exercise 2: Alternate nostril breathing (Figs 2)

Purposes: Following are the purposes of alternate nostril breathing:

- It relaxes the mind and body and reduces anxiety.
- Aids oxygen supply to mother and fetus.
- Prevents hyperventilation.

Instruct the mother to do the following procedures:

- To start with empty lung completely.
- Close one nostril and take a deep breath through the other nostril.
- Try to fill lungs with as much air as possible. Hold for a few seconds.
- Breathe out through the same nostril.
- Now, repeat the process with the other nostril closed.
- At one time, 3–4 breaths are to be taken.

FIGURE 2: Alternate nostril breathing (*Anulom-Vilom pranayam*)

Exercise 3: Abdominal breathing (Fig. 3)

Purposes: The following are the purposes of abdominal breathing:

- This exercise *(strengthens the deep transverse abdominal muscles)*, which are main support of spine.
- Prevents backache in future.

Instruct the mother to do the following procedures:

- Sit comfortably or kneel on all fours.
- Breathe in and out normally.
- Pull in the lower part of abdomen below the umbilicus while continuing to breathe normally.
- Hold the muscles in the drawn-in position for 10 seconds.
- Repeat up to 10 times.

FIGURE 3: Abdominal breathing

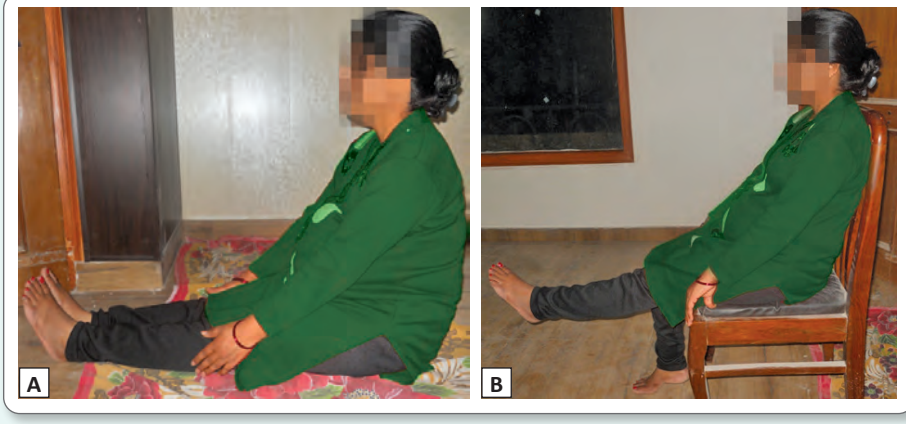
Foot and Leg exercises (Figs 4A and B)

Purposes: Following are the purposes of foot and leg exercise:

- Helps to improve venous circulation.
- It helps to prevent swollen ankles and reduce the incidence of varicose veins.

Instruct the mother to do the following procedures:

- Sit with legs hanging down or lie down.
- Keep both knees and ankles relaxed.
- Now, bend and stretch your ankles for 30–45 seconds at least 12 times.
- After this make imaginary circles with your feet. Circle both feet at the ankles at least 20 times in each direction.
- Brace both knees for a count of four and then relax. Repeat 12 times.
- Bend and straighten knees.
- Perform this exercise before getting up from resting, last thing at night and several times during day.



FIGURES 4A AND B: Foot and leg exercise

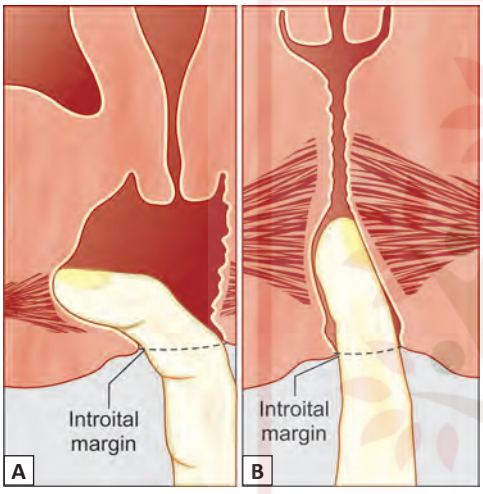
Kegel's Exercise (Pelvic floor Exercise) (Figs 5 and 6)

Purposes: Following are the purposes of Kegel's exercise:

- This exercise will prepare the pelvic floor muscles *(for the stretching during delivery)*.
- This *(helps to prevent problems)* like prolapsed of uterus and vagina and urinary stress incontinence in postnatal period.

Instruct the mother to do the following procedures:

- Sit, stand or half lie with legs slightly apart.
- Close and draw up around the anal passage as though preventing a bowel action.
- Then, draw up around the vagina and urethra as, if to stop the flow of urine in mid stream.
- Hold for 10 seconds, breathe normally and then relax.
- Repeat up to 10 times.
- One should aim to do 8–10 sets of 10 contractions each per day for maximum benefit.



FIGURES 5A AND B: (A) Before Kegel's exercise; (B) During Kegel's exercise

Kegel's exercises:
Contract your pelvic floor muscles for 3 seconds then relax the muscles for 3 seconds. Do this 10–15 times several times a day. Although shown here while lying down, these exercises can also be done during a variety of daily activities, such as sitting in a meeting, while stopped in your car at a traffic light or when talking on the phone.

FIGURE 6: Kegel's exercise

Pelvic Tilting (Fig. 7)

Purposes

- This exercise will prepare the pelvic floor muscles *(for stretching during delivery)*.
- This exercise will prevent back pain *(by strengthening abdominal and back muscles)*.
- This helps *(to prevent problems like prolapse)* of uterus and vagina and urinary stress incontinence in postnatal period.

FIGURE 7: Pelvic tilting exercise

Instruct the mother to do the following procedures:

- Assume half-lying position, well supported with pillows, knees bent and feet flat.
- Place one hand under the back and other on top of the abdomen.
- Tighten the abdominal muscles and buttocks and press the small of the back down on the underneath hand.
- Breathe normally, hold for 10 seconds and relax.
- Gently repeat up to 10 times.

Knee rolling exercise (Fig. 8)

Purposes: Following are the purposes of knee rolling exercise:

- Helps *(prevent backache)* and *(minimizes leg cramps)*.

Instruct the mother to do the following procedures:

- Lie on the back with knees bent and feet flat.
- Keep the shoulders down flat, lower both the knees slowly to the left, return them to center and then over to the right.
- Repeat in a rhythmical manner and gradually increase the range of movement.

FIGURE 8: Knee rolling exercise

Hip up drawing exercise (Fig. 9)

Purposes: Following are the purposes of hip up drawing:

Dorsiflexion of foot *(stretches the calf muscles and relieves cramps)*.

Instruct the mother to do the following procedures:

- Lie on the back with the left knee bent and the right knee straight.
- Slides the heel of the straight leg down as far as possible.
- Then keeping the leg straight, shorten again by pulling up from the waist.
- Repeat with the right knee bent and left one straight.

FIGURE 9: Hip up drawing

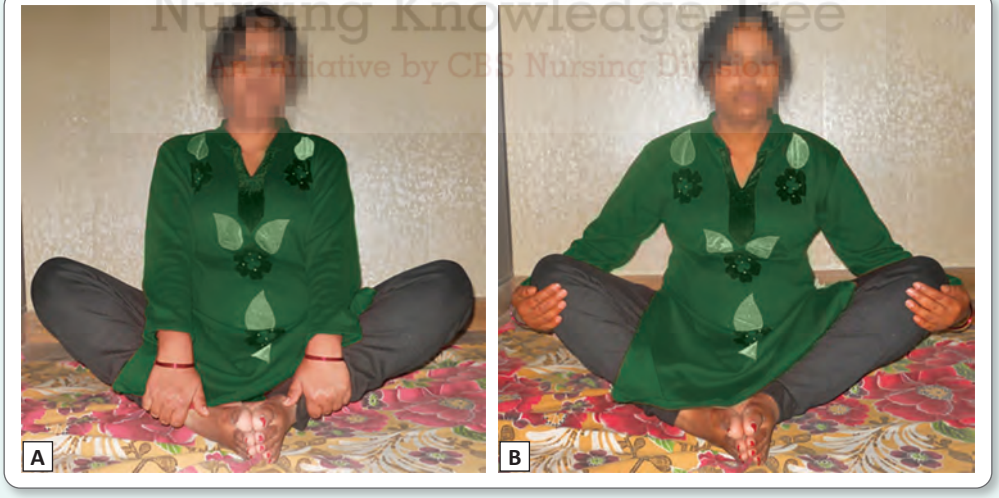
Tailor Press Exercise (Figs 10A and B)

Purposes: Following are the purposes of Tailor press exercise:

- *Strengthen perineal muscle*.
- *Increase perineal circulation*.
- Make more pelvic joints pliable.
- Helps to relieve lower back pain, and strengthen the hip, thigh and pelvic muscles.

Instruct the mother to do the following procedures:

- Sit with knees bent and place the soles of feet together.
- Pull feet closer to body.



FIGURES 10A AND B: Tailor press

- Place hands underneath knees.
- Inhale and press knees down against hands.
- While doing this, push hands against knees.
- Hold this pressure for a count of five.

Postprocedural Steps

Record the time and details of exercise. Advice the mother to notify health personnel, if she has dizziness, blurry vision, nausea, heart palpitations, vaginal bleeding, back, abdominal or pelvic pain, unusual lack of fetal movement during or after exercise.

Educate the mother about the benefits of exercise during pregnancy like improving sleep, reducing swelling or backaches caused by pregnancy, making labor and delivery easier, providing endorphins that can make her feel happier and more energetic, and helping to get her shape back faster after delivery. Activities that put the mother at a high risk of injury should be avoided during pregnancy.

SPECIAL CONSIDERATIONS

- Educate the woman to start exercises slowly and rhythmically.
- Begin exercise for a few minutes and gradually increase the time. Exercise should be done in moderation and moderate exercise should be done 30 or more minutes daily.
- Avoid doing exercises immediately after meals.
- Exercises must be done regularly.
- Avoid doing exercises during a hot or humid weather.
- Stop doing exercises that cause fatigue.
- Avoid exercises in case of pregnancy-induced hypertension, preterm rupture of membranes, preterm labor during a prior or current pregnancy, incompetent cervix/cerclage, persistent or intermittent bleeding in the second or third trimester.

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Part 5 Pediatric Nursing

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CONTENTS

5.3 MEASUREMENT OF WEIGHT

KEY TERMS

- Child
- Weight
- Neonate

INTRODUCTION

Weight is the quantitative expression of body that indicates the state of growth and health**.** Weight is measured in pounds or kilograms.

PURPOSES

- Recording of weight at birth helps in identifying the level of care required for the neonate
- Daily weight recording is essential to monitor the adequacy of nutrition as well as fluid balance
  - Term neonates lose about 10% of birthweight and regain birthweight at 7–10 days of age
  - Preterm neonates can lose up to 15% of birthweight and regain birthweight by 14 days of age
  - Average weight gain in initial 3 months is 25–30 g/day and 20 g/day for next 3 months
  - Birthweight doubles in 6 months and triples by the end of 1 year.
- To evaluate child's response to treatment
- To aid in accurate diagnosis of the child.

INDICATIONS

- All newborns at birth
- All low birthweight newborns at 2 weeks (to check regaining of weight), 4 weeks (to ascertain a weight gain of 80–100 g/kg per week) and then every month
- Sick newborn and very low birthweight (VLBW) (<1500 g) babies, daily to monitor fluid therapy for at least 1 week.

Points to Remember

- If the baby loses or gains 3% or more of body weight in a day, it should be brought to the notice of a physician
- Record weight prior to feeding and after voiding
- Weight on admission, to provide a baseline information to subsequent daily weight recording
- For monitoring of weight, one should use the same weighing scale
- Ask the mother to dress the baby promptly after weighing *(to prevent hypothermia)*
- *Wash hands properly (to prevent infection)*
- It is recommended to weigh children using a scale with the following features:
  - Solidly built and durable
  - Electronic *(digital reading)*
  - Measures to a precision of 0.1 kg (100 g).
- Wherever possible, take tared weighing.
  "Tared weighing" means that the scale can be reset to zero ("tared") with the person just weighed still on it. Thus, a mother can stand on the scale, be weighed, and the scale can be tared.
- While remaining on the scale, if she is given her child to hold, the child's weight alone appears on the scale.
  Tared weighing has two clear advantages:
  - There is no need to subtract weight to determine the child's weight alone *(reducing the risk of error)*
  - The child is likely to remain calm when held in the mother's arms for weighing.

ARTICLES

- Weighing scale with accuracy of +5 g (Fig. 1)
- Clean and preferably sterile towel (autoclaved newspaper can be used)
- Paper/pencil.

FIGURE 1: Weighing scale for neonate

STEPS OF PROCEDURE

Preprocedural Steps

- Set up measurement station with appropriate equipment as per the age of child.
- Put the weighing scale on a flat and stable surface.
- Put a clean sterile newspaper/towel on the scale pan for newborn/infant. Zero the scale, if the machine has the facility or record the weight of the towel
- Detach as many tubes/equipment as possible
- Verify accuracy of the weighing scales
- Prepare the child for measurement
  - Call by name
  - Ask the child to remove extra layers of clothing, shoes, glasses, jewelry
  - Empty pockets
- Maintain privacy
- Explain the purpose and procedure to child or neonate's caregivers
- Assist the child to void or empty the bladder.

Intraprocedural Steps

Weight Recording of Neonates/Infants

- Wash hands properly *(to prevent infection)*
- Keep the naked baby on the sterile towel/newspaper and record the weight *(subtract the weight of the towel if scale has not been zeroed with the towel on the scale)*
- Keep baby in middle of the scale pan; hold the remaining tubes and lines in hand
- Use separate sterile towel/newspaper for each baby
- If using preweighed splint, reduce the weight from baby's weight
- For quality assurance, check accuracy of weighing scale with standard known weights every 2 weeks
- Wrap the baby immediately after the procedure of weight recording *(to prevent hypothermia).*

Weight Recording for Child

- Ask the mother to stand in the middle of the scale, feet slightly apart *(on the footprints, if marked)*, and remain still. The mother's clothing must not cover the display or solar panel

- Remind her to stay on the scale even after her weight appears, until the baby has been weighed in her arms
- With the mother still on the scale and her weight displayed, tared the scale by covering the solar panel for a second. The scale is tared when it displays a figure of a mother and baby and the number 0.0.
- Gently hand over the naked baby to the mother and ask her to remain still
- The baby's weight will appear on the display
- Record this weight in the child's growth record. Be careful to read the numbers in the correct order *(as though you were viewing while standing on the scale rather than upside-down)*
- Ask the mother to put on clothes to the baby
- If a child can understand and can stand on the weighing scale, ask the child to step on the scale backward *(for confidentiality)* (Fig. 2)
- Ensure that the body weight is evenly distributed between both feet
- Arms hang freely by sides of the body, palms toward thighs
- Head is up and facing straight ahead
- Weight is recorded to nearest 0.2 pounds.

FIGURE 2: Measuring weight of the child

Normal Ranges

- Weight (kg) at 3–13 months = $\frac{\text{age (months)} + 9}{2}$
- Weight (kg) at 1–6 years = [age (years) × 2] + 8
- Weight (kg) at 6–12 years = $\frac{[\text{age (years)} \times 7] - 5}{2}$
- Weight above 12 years = Height (cm) – 100 × 0.9

Postprocedural Steps

- Ask the child to step down and to wear shoes and clothes
- Wash hands
- Clean the articles and replace at appropriate places.

Documentation

- Document weight recording in the child's treatment sheet accurately with name, age, gender, time and date.

SPECIAL CONSIDERATIONS

- For quality assurance, check accuracy of weighing scale with standard known weights every 2 weeks
- For monitoring of weight, one should use the same weighing scale
- Ask the mother to dress the baby promptly after weighing *(to prevent hypothermia)*
- If baby loses or gains 3% or more of body weight in a day, it should be brought to the notice of the physician.

SUGGESTED READINGS

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5.4 MEASUREMENT OF HEIGHT

KEY TERMS

- Growth and development
- Height
- Length
- Quantitative measurement

INTRODUCTION

A slow rate of growth could suggest a pathological disorder requiring diagnosis and possible treatment in children. Height is a quantitative measurement of child from head to foot in feet, inches or centimeters. The average length of Indian newborn is 50 cm. Rate of increase in length is 0.9 cm per week in first 3 months and 2 cm per month in next 3 months and 1.2–1.5 cm per month thereafter. Length increases to 75 cm by first birthday.

PURPOSES

- Growth can be measured by checking weight and length/height periodically and plotting them on a growth chart.
- To describe accurate methods for measuring length/height and weight as part of nutritional assessment and determination of nutritional risk.

Points to Remember

- Put the infantometer with a headboard for infants and toddler on a flat and stable surface
- Prior to using the stadiometer, it must be calibrated against a rod of standard length or by baseline readout and checked for cleanliness *(to ensure accuracy of medical device)*
- The equipment should be kept on a stable/uncarpeted platform in working condition
- Every time clean the infantometer scale and spread a clean newspaper/paper on it before keeping the neonate for measuring height.

ARTICLES

- Clean newspaper to spread on the infantometer
- Infantometer with a headboard for neonate, infants and toddler
- Portable/wall-mounted Harpenden Stadiometer with movable head piece
- Inch tape/measuring rod
- Paper and pencil
- WHO Growth chart
- Hand rub

STEPS OF PROCEDURE

Preprocedural Steps

- Set up measurement station with appropriate equipment as per the age of child
- Put the infantometer with a headboard for infants and toddler on a flat, and stable surface
- Put portable/wall-mounted Harpenden Stadiometer with a movable head piece, or measuring rod, typically mounted on a balanced beam scale on a flat and antiskid stable surface for children to obtain accurate length
- Put a clean newspaper/towel on the infantometer scale for newborn/infant
- Prepare the child for measurement
  - Call by name
  - Ask the child to remove extra layers of clothing, shoes, hair ornaments
- Maintain privacy
- Explain the purpose and procedure to child or caregivers of neonates
- The child may require play and distraction techniques to be utilized whilst obtaining the measurement *(to minimize discomfort and distress)*

- Assist the child to void or empty the bladder
- It is often easier if two people are involved in the measurement of a child, one of whom may be a parent or care giver *(to help maintain a correct position, e.g., ensure contact of heels to the floor)*
- Measurer must ensure they are eyeball-to-eyeball with the child to be measured *(to ensure accuracy of measurement).*

Intraprocedural Steps

- Wash hands to prevent infection
- A child should be measured in supine position (lying face upward) until 2 years of age or those who are less than 85 cm *(to obtain accurate reading)*
- Place the measuring board horizontally on a stable and flat surface
- Remove the shoes and any head covering. Loosen the hairs
- Place the child in supine lying down position by facing up in the middle of the board
- Allow the parents to hold the sides of the child's head and position the head until it is touching the head board
- Allow the examiner to place his/her hands on the child and firmly hold the child's knees together while pressing down. The soles of the feet should be flat on the foot piece, toes pointing up at right angles (Fig. 1).
- The measurer should immediately remove the child's feet from contact with the footboard with one hand while holding the footboard securely in place with the other
- Read and record measurement

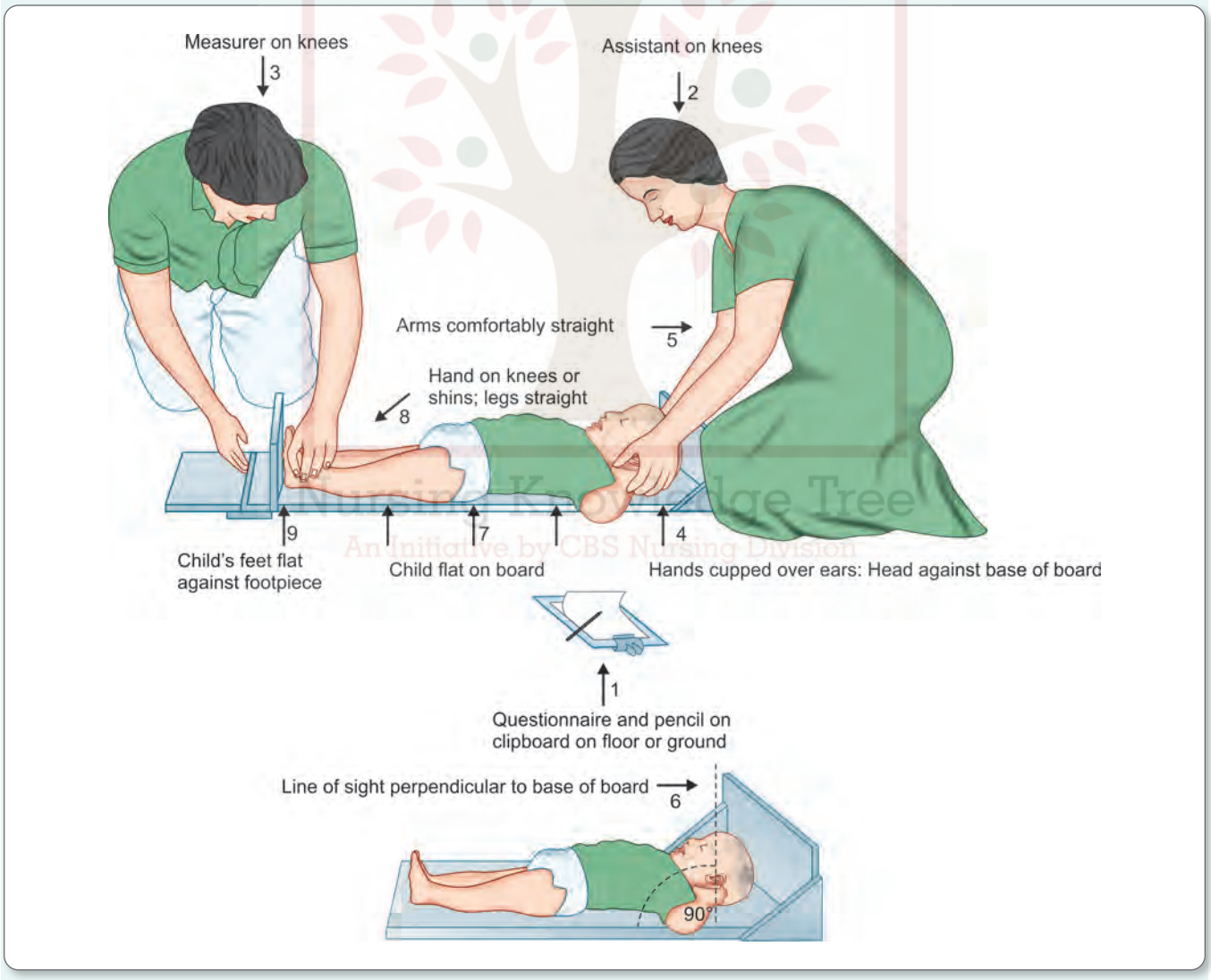


FIGURE 1: Measurement of height of infant with infantometer

Measuring Height of an Older Child

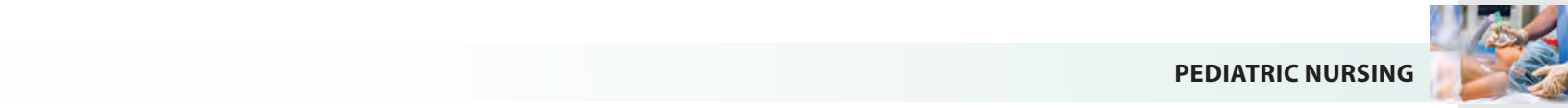
- Ask the child to stand with his/her back to the height rule. The back of the head, back, buttocks, calves and heels should be touching the upright, feet together (Figs 2A and B)

FIGURES 2A AND B: Stadiometer with headpiece for measuring the height of child

- Ensure that the body weight is evenly distributed on both feet
- Arms hang freely by side of the body, palms facing the thighs
- Legs are placed together, bringing knees or ankles together
- Ask the child to stand erect, head is up and facing straight ahead
- Ensure feet and heels do not raise up from the ground
- Take the measurement while the child stands with head, shoulders, buttocks, and heels touching the flat surface. Depending on the overall body shape of the child, all points may not touch the wall
- Verify body position from front and left
- Position head in Frankfort horizontal plane
- Ask child to breathe in normally and exert upward pressure on their mastoid process
- Ask the child to breathe out normally and exert pressure on their mastoid process *(to relax the muscles down the spine and to allow the spine to be straight)*
- DO NOT round up the measurement *(it will lead to future measurement errors)*
- The child must not be left on his own at any point *(to maintain the child's safety)*
- Once the child has fully exhaled, record the measurement to the last complete millimeter, read instrument at eye level.
- Bring headpiece of the stadiometer down onto the uppermost point on the head so that the hair *(if present)* is pressed flat.
- Make sure the measurer's eyes are at the same level as the headpiece (Fig. 3).
- Ask child to breathe out.
- Height is recorded to the resolution of the height rule *(nearest 1/8th inch)*.
- The length of a full term infant at birth is 50 cm.
  - Height (cm) at 2–12 years = age (years) × 6 + 77
  - Height (inch) at 2–12 years = age (years) × 2.5 + 30.

Postprocedural Steps

- Ask the child to step down and to wear shoes and clothes
- Wash hands
- Clean the articles and replace at appropriate place.



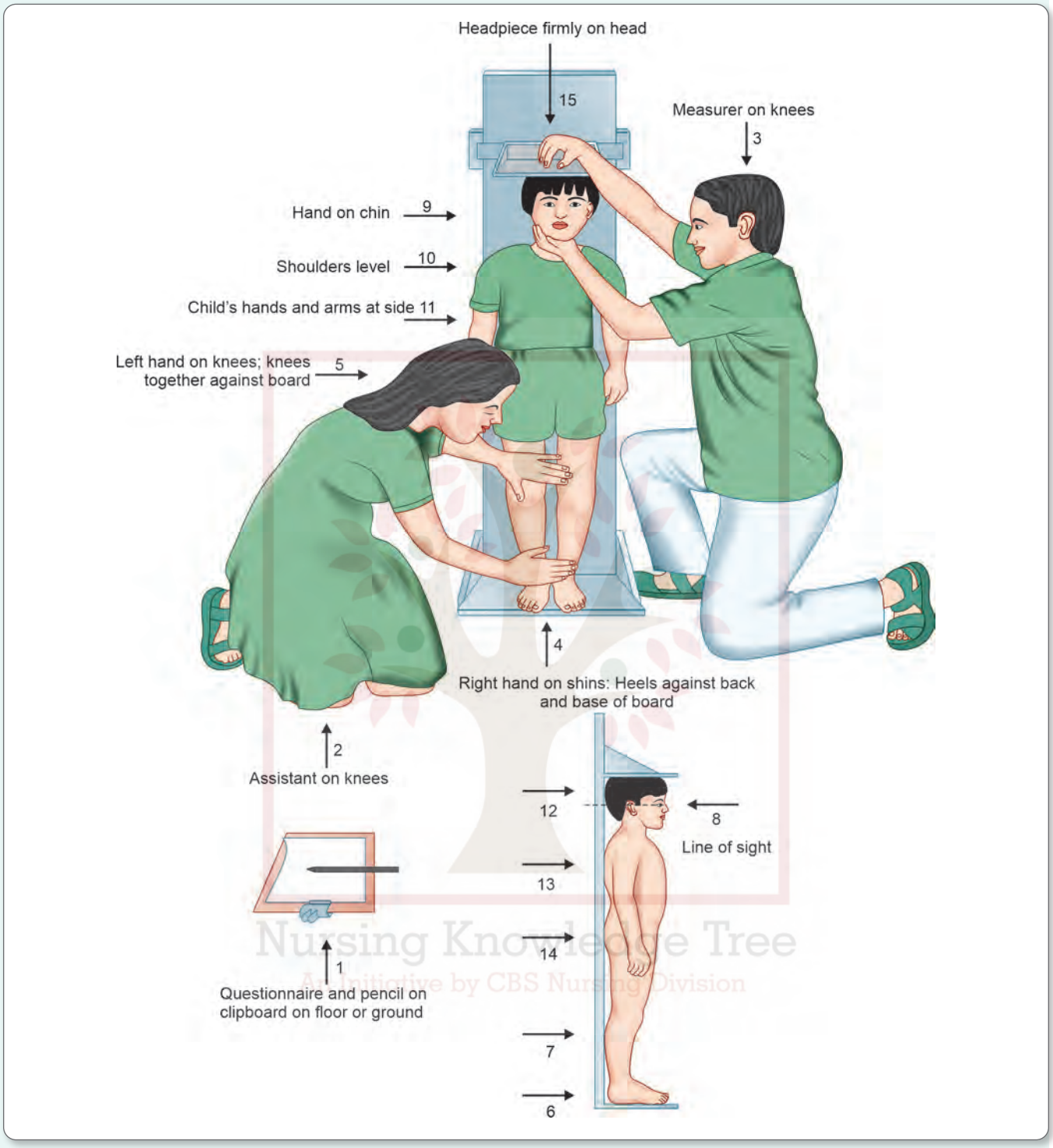


FIGURE 3: Measurement of length/height of a child with stadiometer

Documentation

- Document height of the child accurately in centimeter or feet and inches on treatment chart, OPD card or on child's WHO growth chart. Mention name, age, gender of the child on treatment chart or OPD card or WHO growth chart.

Points to Remember

- A child should be measured in supine position (lying face upward) until 2 years of age
- A child who is unable to stand, or who finds standing difficult due to illness or physical disabilities should also be measured in supine position
- All the measuring equipment must be checked prior to every use and after each session with the calibration rod annually by the Biomedical Engineering Department
- Wear appropriate protective clothing to tackle any identified risk
- Place the measuring board on a firm and flat surface.

SUGGESTED READINGS

1. Johnson CP, Blasco PA. Infant Growth and Development. Pediatrics in Review. 1997;18(7):224-42.
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Part 6 Community Health Nursing

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CONTENTS

DIAGNOSTIC TESTS

6.31 HEMOGLOBIN ESTIMATION

KEY TERMS

- Sahli's method
- Hemoglobin
- Telequest method

INTRODUCTION

Iron is necessary for many functions in the body including formation of hemoglobin, brain development and function, regulation of body temperature, muscle activity, etc. The main function is 'oxygen transport' and cell respiration. The adult human body contains between 3 g and 4 g of iron, of which 60–70% is present in the blood as circulating iron and rest 1–1.5 g as storage iron.

Major route of iron loss are hemorrhage, may be physiological, pathological or basal loss due to excretion. Use of intrauterine device (IUD) is another reason for iron loss. Cut-off points for the diagnosis of anemia are given in Table 1.

TABLE 1: Cut-off points for the diagnosis of anemia (WHO)

Variable	g/dL (venous blood)	Mean corpuscular hemoglobin concentration (MCHC) (%)
Adult male	13	34
Adult female, non-pregnant	12	34
Adult female, pregnant	11	34
Children, 6 months–6 years	11	34
Children, 6–14 years	12	34

At all ages the normal mean corpuscular hemoglobin(Hb) concentration (MCHC) should be 34, values below indicate that red cells are hypochromic, i.e., iron-deficiency anemia. Hb level of 10–11 g/dilution has been defined as early anemia; a level below 10 g/dilution is marked as anemia.

- Mild anemia—9.5 to <13 g/dilution
- Moderate anemia—8.0–9.5 g/dilution
- Severe anemia—<8.0 g/dilution

Reasons of increased Hb:

- High altitude due to low oxygen tension
- Obstructive lung disease
- Congestive heart disease due to hypoxia
- Smoker
- Polycythemia.

Reasons of decreased Hb:

- Parasitic infection
- Drugs
- Lead poisoning
- Iron deficiency.
- Copper deficiency because copper is necessary for the formation of protein, which converts ferric to ferrous.
- Kidney disease, formation of erythropoietin is reduced in kidney.

DEFINITION

Hemoglobin estimation is the estimation of hemoglobin content of blood. In the community setting usually two methods may be used to estimate Hb in blood. Telequest method and Sahli's method.

PURPOSES

- To detect anemia
- To provide supplements
- To prevent complications.

HEMOGLOBIN ESTIMATION BY TELEQUEST METHOD

Articles

The articles used in the procedure are given in Figure 1.

1. Newspaper for spreading *(to keep all the articles)*
2. Hand washing articles *(to prevent contamination)*
3. Spirit swabs in container *(to clean finger tip)*
4. Dry cotton swabs in container *(to wipe first drop of blood and to press the puncture site)*
5. Disposable lancet *(to prick the finger tip)*
6. Puncture-proof container with lid *(for used lancet)*
7. Telequest sheet *(to determine Hb level)*
8. Small blotting paper 4-folded *(to receive blood for estimation)*
9. Paper bag *(for soiled swabs)*

FIGURE 1: Articles for hemoglobin estimation procedure

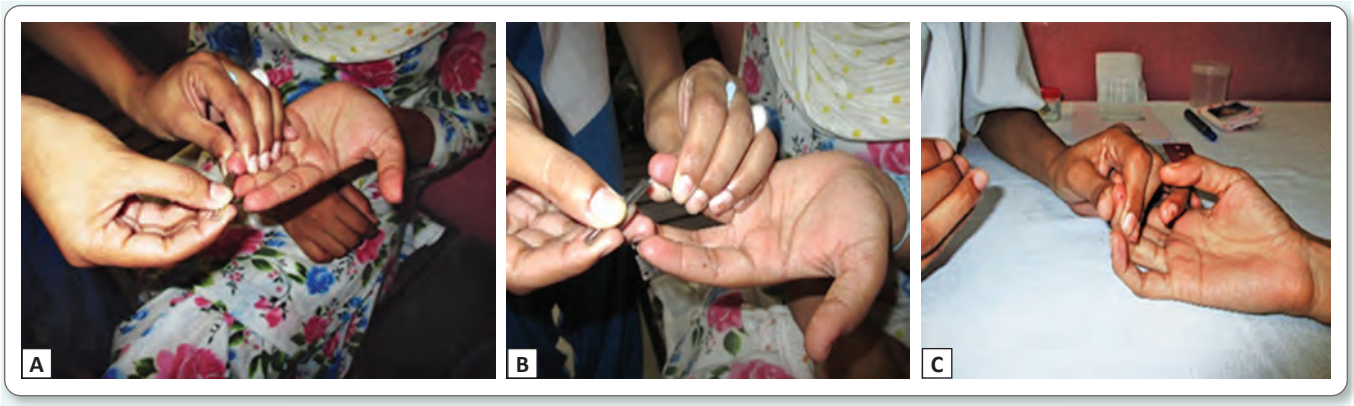
STEPS OF PROCEDURE

Preprocedural Steps

- Look for the signs of anemia, i.e., complains of giddiness, lethargic and anorexia.
- Perform clinical examination—check—conjunctiva for paleness, tongue for paleness, check capillary refill time normally it is <2 seconds (press the nail of the client with your thumb and index finger, then release the pressure, note the time in how many seconds nail resumes original color) *(it will help to assess if client is anemic or not)*

Intraprocedural Steps

- Explain procedure to the patient *(to relieve anxiety)*.
- Arrange all the articles on the newspaper near the patient *(to save time and energy)*.
- Wash your hands and also instruct patient to wash his/her hands *(to prevent cross-infection)*.
- Instruct the patient to sit comfortable *(to gain cooperation)*.
- Take one spirit swab in between first and second finger, dry swabs in between second and third finger and little finger of your nondominating hand *(to facilitate safe performance)*.
- Ask for the nondominating hand of the patient. Clean the tip of the ring/middle finger with spirit swab in a single stroke and discard in the paper bag *(to prevent infection)*.
- Open the lancet, hold with thumb and first finger of your dominating hand, press little *(to increase the vascularity)*.
- Let the spirit evaporate (to prevent dilution of blood), prick the tip of the finger with lancet and discard it in puncture proof-container *(for safety)* (Figs 2A to C).
- Wipe the first drop with dry swab and discard it in the paper bag *(to prevent infection)*.
- Take next drop of blood on the inner corner of the folded bloating paper.
- Apply dry swab on the prick, and advise patient to press it *(to prevent bleeding)*.
- Open the folded bloating paper and let it dry for 30 seconds.
- Check the pricked site and discard the swab in the paper bag.
- Match the drop of blood taken on bloating paper with the telequest sheet in good light, and estimate the Hb.



FIGURES 2A TO C: Pricking the finger

- During matching, if color falls in between two reading then take the lower value as a result.
- Inform the result to the client.
- Lancet in puncture-proof container and blood stained swabs should be brought to dispensary, *(for proper biomedical waste management)*
- Wash hands, *(to prevent cross infection)*
- Teach the patient regarding:
  - Cheap rich available iron sources
  - Prevent worm infestation by:
    - Hand hygiene
    - Wash raw fruits and vegetables thoroughly before consumption
    - Maintain personal and environmental hygiene
    - Avoid walking bare-foot in the open field
    - For prevention of anemia, all adolescent girls should take Blue Iron tablets, i.e., weekly iron and folic acid (WIFA tablet). These tablets are given free in schools and anganwadis
    - Antenatal and postnatal mothers should continue with tablets of iron and folic acid as prescribed by their doctors
  - If you are prescribed tablet iron then one should:
    - Not take tablet empty stomach
    - Not take tablet along with tablet calcium
    - Preferably take tablet with lemon water
    - No tea/coffee or milk till 2 hours of tablet intake
    - Compliance to medication and follow-up
    - Clear the doubts of the patient.

Postprocedural Steps

- Clean all articles and replace in the bag. In the clinic discard used cotton swabs in black bucket, lancet in blue bucket and wash hands.

Documentation

Document hemoglobin level in g/dilution.

HEMOGLOBIN ESTIMATION BY SAHLI'S METHOD

Articles are shown in Figure 3.

- Newspaper for spreading *(to keep all the articles)*.
- Hand washing articles *(to prevent contamination)*.
- Spirit swabs in container *(to clean finger tip)*.
- Dry cotton swabs in container *(to wipe first drop of blood and to press the puncture site)*.

FIGURE 3: Sahli's hemoglobinometer

- Disposable lancet *(to prick the finger tip)*.
- Puncture proof container with lid *(for used lancet)*.
- Apparatus—Sahli's tube which has red and yellow (two) tubes on two sides. Red scale is % scale and yellow scale is g% or g/dilution.
  - Hemometer with two standards
  - Sahli's pipette
  - Stirrer
  - Graduated glass tube
  - N/10 HCl (hydrochloric acid)
  - Distilled water in a container.

STEPS OF PROCEDURE

Preprocedural Steps

- Look for the signs of anemia, i.e., complains of giddiness, lethargic, anorexia.
- Perform clinical examination—check—conjunctiva for paleness, tongue for paleness, check capillary refill time normally it is <2 seconds (press the nail of the client with your thumb and index finger, then release the pressure, note the time in how many seconds nail resumes original color).

Intraprocedural Steps

- Explain procedure to the patient *(to relieve anxiety)*.
- Arrange all the articles on the newspaper near the patient *(to save time and energy)*.
- Wash your hands and also instruct patient to wash his/her hands *(to prevent cross-infection)*.
- Instruct the patient to sit comfortable *(to gain cooperation)*.
  - In Sahli's tube take N/10 HCl (1/10 of the original HCl) up to 10th level of scale
  - Take one spirit swab in between first and second finger, dry swabs in between second and third finger and little finger of your nondominating hand *(to facilitate safe performance)*.
  - Ask for the nondominating hand of the patient. Clean the tip of the ring/middle finger with spirit swab in a single stroke and discard in the paper bag *(to prevent infection)*.
  - Open the lancet, hold with thumb and first finger of your dominating hand, press little *(to increase the vascularity)*.
  - Let the spirit evaporate to prevent dilution of blood, prick the tip of the finger with lancet and discard it in puncture proof container *(for safety)*.
  - Wipe the first drop with dry swab and discard it in the paper bag *(to prevent infection)*.
  - From the next drop take 0.02 mL (20 microliters) of blood in Sahli's pipette by sucking at the rubber tubing end till the blood reached at the mark on the pipette.
  - Apply dry swab on the prick site, and advise patient to press it to prevent bleeding.
  - Add blood from pipette into tube containing HCl, lysis of blood cells will be caused by HCl and hemoglobin is released. Hb after combining with HCl form acid hematin which is of tan color.
  - Put tube in hemometer and continuously add drops of distilled water.

- Shake with stirrer until color matches then take the reading. The reading on the glass tube is the Hb level of patient.
- Check the pricked site and discard the swab in the paper bag. Lancet in puncture proof container and blood stained swabs should be brought to dispensary, *(for proper biomedical waste management)*
- Wash hands *(to prevent cross infection)*

- Teach the patient regarding:
  - Cheap but rich available sources of iron; prevention of worm infestation by:
    - Hand hygiene
    - Washing raw fruits and vegetables thoroughly before consumption
    - Maintaining personal and environmental hygiene
    - To avoid walking bare-foot in the open field
  - If you are prescribed iron tablet then one should:
    - Not take tablet empty stomach
    - Not take tablet along with tablet calcium
    - Preferably take tablet with lemon water
    - No tea/coffee till 2 hours of tablet intake
    - Compliance to medication and follow-up
- Clear the doubts of the patient.

Postprocedural Steps

- Clean all articles and replace in the bag. In the clinic, discard used cotton swabs in black bucket, lancet in blue bucket and wash hands.
- Document hemoglobin level in g/dL.

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