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Rajiv Gandhi University of Health Sciences, Karnataka

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PART - II ADVANCED NURSING

FACULTY OF NURSING
STANDARD OPERATING PROCEDURES



FACULTY OF NURSING
STANDARD OPERATING PROCEDURES
FOR
ADVANCED NURSING

PART - II



Rajiv Gandhi University of Health Sciences
Bengaluru - 560041, Karnataka, India



VAJUBHAI VALA
Governor of Karnataka

No. GS 48 MSG 2020

14th December, 2020

MESSAGE

I am delighted to pen down few lines to congratulate the efforts of RGUHS toward quality nursing education to cater to the health care needs of today's society. There is a greater need to prepare skillful nurses with uniform standards of education, training and practice.

I am happy to learn that the Prestigious University RGUHS has taken efforts towards reaching this goal by bringing out the Standard Operating Procedure manual, which will serve as a ready reference for all institutions under its umbrella.

I wish to appreciate the hardwork, meticulous planning, excellent and intelligent execution towards bringing out such an excellent document which will serve as a road map to quality education and training. I wish to place on record my appreciation to the faculty of RGUHS for supporting this venture and wish that this university shall turn out to be a role model to many other universities in the country.

Once again I wish the SOP implementation to be a grand success.

(VAJUBHAI VALA)

B.S. YEDIYURAPPA

CHIEF MINISTER

No: CM/MS/365/2020



VIDHANA SOUDHA
BENGALURU - 560 001

Date : 17/12/2020

MESSAGE

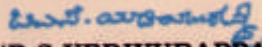
It is a pleasure to know that the **Rajiv Gandhi University of Health Sciences** has developed a Manual on Standard Operating Procedures for Basic and Advanced Nursing Practice.

It is heartening to note that the Rajiv Gandhi University of Health Sciences is always at the forefront of innovation and educational reforms and has undertaken the mammoth task of developing this comprehensive procedure manual that is consistent with WHO guidelines.

I hope that this manual will facilitate uniform standards of teaching nursing skills and will also serve as a guide for nursing students who would soon be embarking on their nursing careers. Nurses play a vital role in the health care system, and I envisage that a document such as this would ultimately ensure enhanced quality in patient care and thus, contribute to the health of the nation at large.

I compliment the Vice Chancellor, other functionaries of the University and the experts in the nursing field for their efforts and extend my best wishes for the release of this manual.

I wish this SOP implementation to be a grand success.


(B.S.YEDIYURAPPA)

Dr.S.Sacchidanand
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ಡಾ|| ಕೆ. ಸುಧಾಕರ್
Dr. K. SUDHAKAR



ಅರೋಗ್ಯ ಮತ್ತು ಕುಟುಂಬ ಕಲ್ಯಾಣ ಹಾಗೂ
ವೈದ್ಯಕೀಯ ಶಿಕ್ಷಣ ಸಚಿವರು
ಮತ್ತು ಚಿಕ್ಕಬಳ್ಳಾಪುರ ಜಿಲ್ಲಾ ಉಸ್ತುವಾರಿ ಸಚಿವರು
ಕರ್ನಾಟಕ ಸರ್ಕಾರ
Minister for Health & Family Welfare,
Medical Education
and Chikkaballapur District In-Charge
Government of Karnataka

MESSAGE

Nurses play a vital role in the health care industry. There is a great need for them to upgrade their skill based knowledge to provide safe care to their patients.

Rajiv Gandhi University of Health Sciences is well known for its innovative educational strategies to provide quality health care professionals. It has taken the initiative to bring out this Standard Operating Procedures for Basic and Advanced Nursing Practices to improve nursing skills and to provide quality care for the patients.

This manual will help to lower the risk of procedural errors and safeguard the rights of the patients, and also enhance the credibility of the health care agencies. It helps to produce competent nurses to practice in the clinical area at all levels of health care, who will provide need based care to the satisfaction of the patients.

I congratulate and appreciate the efforts taken by Rajiv Gandhi University of Health Sciences which is always striving to bring about innovative educational strategies to impart quality health education and training and contribution for the health of the nation.


(Dr.K.Sudhakar)

Dr.S.Sacchidanand,
Vice Chancellor,
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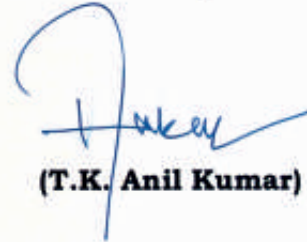
MESSAGE

It gives me immense pleasure to know that the Nursing Professionals in whom we had reposed our trust for preparing a manual of Standard Operative Procedures have prepared an exceptionally commendable document.

The manual will serve as the standard bench mark of professional skills in both basic and advanced nursing procedures. As we all are aware, nursing professionals form the backbone of health care as they provide first and immediate care to the patients. Enabling the untiring professionals will ensure quality healthcare and patient safety.

I am sure that this manual will fulfil the long pending necessity of quality bench marks and quality care.

I hope the Nursing Profession will make complete use of this manual.


(T.K. Anil Kumar)



भारतीय उपचर्या परिषद्

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स्वास्थ्य एवं परिवार कल्याण मंत्रालय के तहत सांविधिक निकाय
Statutory Body under the Ministry of Health & Family Welfare

MESSAGE

I am happy to note that Rajiv Gandhi University of Health Sciences is publishing standard operative procedure manual. The said publication by the University during the International Year of Nurse and Midwife 2020 is significant. I would like to congratulate University and the Faculty for bringing out the book which will be useful to the students and to the faculty to improve the quality of nursing education.

Changes in the Epidemiological profile of population and illness served by nurses, technological advancements, knowledge proliferation and rapid changes in the health systems around the globe necessitate that the nursing education system respond to change in a timely and effective manner to enable graduates to function as a safe and competent nursing professionals in meeting the health needs of the patients.

The unique expertise of nursing is to identify the issues to be addressed during each encounter and explore them with the patient through their therapeutic relationship. This is the added value, the nurse brings to the procedure and what distinguishes nursing practice and medical practice. This is the true person-centred care and if practiced well, then nursing becomes in itself therapy that includes management of illness, education for wellness and support for physical, mental and emotional resilience.

I wish Faculty and students utilize the said manual as a guide in their day to day teaching and learning environment.

Thank You,

(Dr.T. Dileep Kumar)
PRESIDENT
Indian Nursing Council



उपचर्या शिक्षा के एकसमान मानक प्राप्त करने के लिए प्रयासरत
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ರಾಜೀವ್ ಗಾಂಧಿ ಆರೋಗ್ಯ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕರ್ನಾಟಕ
Rajiv Gandhi University of Health Sciences, Karnataka

Dr. S. Sacchidanand MD, DVD, DHA, FRCP (Glasgow)
Vice-Chancellor

29.12.2020

MESSAGE

It is a huge sense of contentment that I feel on the occasion of releasing this compilation of Standard Operating Procedures (SOPs) for nursing practices. This is a culmination of a long journey characterised by committed teamwork driven by the passion to instil safety and quality into a range of critical nursing procedures. It is all the more satisfying that this project is an in-house effort by the teachers of our University affiliated colleges.

The need for standardisation is a relic of the industrial revolution that required a consistency of performance. This got a shot in the arm in post the world wars, which required the military to have a zero-risk performance on and off the battlefield. These ideas spread to other professional fields also with healthcare and education adapting the compulsions of standardisation to stay relevant in the increasingly competitive and adversarial environment.

In healthcare industry, quality management was accepted as essential to nursing practices for the improvement of healthcare delivery and patient satisfaction. The best way to ensure standardisation was therefore to understand flow of process and creating a systematic representation. This ensued into the development of SOPs, which describes each critical and sequential step one has to perform in a task in order to assure its expected result.

As the need to improve health care delivery and sustain a better living for the people has become the new normal, the role of nurses has transformed into multi-dimensional competencies. Not only are they required to perform their typical duties in hospitals such as caring for patients and managing essential tasks, they are also playing a role in promoting health care awareness among different segments of the society.

To meet such a need and to ensure that the practices are compliant for our local needs and compulsions, a compilation of SOPs for nursing procedures and practices was felt necessary to provide a comprehensive set of rigid criteria that outline the nursing care for each and every professional function in nursing care. It is in this background that we have the satisfaction of having not only compiled the SOPs, but also that we have made it relevant for our local needs.

I am sure that the nursing profession across the country will find this useful for their practice decisions, and also that the nursing students would find this compilation a standard guide to plan their learning and the teachers would find it useful for teaching and assessment.

I congratulate the entire team that undertook such an onerous task and has come up with such a wonderful practice guide.




Dr. S. Sacchidanand
Vice Chancellor

PREFACE

Nursing is a core part in health service delivery system in which health promotion, disease prevention; curative and rehabilitative health strategies are applied. The clinical skills for the nurses are of paramount importance not only to provide comprehensive care but also enhance clinical competence. Over the years, evidence-based practice came into use more frequently and the scope of practice of nurses broadened, and so too did the invasive and non invasive procedures done on the patients. The ability to think critically and provide evidence-based care is the pivotal role of the skilled nurse. Students and Nurse Practitioner need to know the "facts" of the procedures done on the patients and not necessarily the whole world of knowledge surrounding that one fact or procedure. Student or Nurse- Practitioner need to identify and address common problems that would allow timely, evidence-based interventions to reduce long-term sequelae.

The principle of going from simple to complex concepts in nursing education is well established, and yet many textbooks provide voluminous rather theoretical knowledge to the students with "nice to know" concepts rather than "need to know" ones. Several textbooks on the theoretical aspects of the patient care procedures are available. However to get the most of the practical knowledge on the procedures, one might have to refer many textbooks.

This "Standard Operating Procedures - Manual" is intended to act as a reference for nurses working at public health facilities, hospitals, Institutions and home care settings. It can be used as a guide to refer to know how of the Basic and Advanced procedures outlined in this manual.

Lineaments of this Manual:

Development of this manual made the distribution of the Basic and Advanced procedures on a wider, yet on a systematic platform. With our students, Nurse Practitioners, faculty readers in mind, we have developed this manual as simple as possible, which we hope, will cater to the needs of all the health care professionals.

This manual is culminate product of efforts by 30 nursing experts, who were well known in their specialties and are from various organisations (Central Government, state Government and Private Institutions affiliated to the Rajiv Gandhi University of Health Sciences) and due care has been given to align the contents of this manual with that of the curriculum of the Nursing courses.

In this manual, each procedure is explained in an orderly way i.e Meaning, Purposes/ Indications, Article required, Pre procedural steps, Procedure and Post Procedures, which will help the readers to improve the understanding of the procedures and it also provides a ready reference to the students and nurse practitioners while doing or observing a procedure. However we encourage our readers to follow the steps of the procedures as indicated in the manual.

This "Standard Operating Procedures - Manual" has explained 115 Basic Procedures and 71 advanced patient care procedures. This has been a possible task for the Standard Operating Procedures - Manual - Committee members by referring more than 100 available text books, manuals, articles etc.

When we first started writing this manual, we aimed to include everything that fascinated us about bringing out a procedural manual on nursing courses, however what more

fascinated us is to include the procedures in alignment with the curriculum of the Nursing courses. There have been some exciting recent developments in the field of nursing like emergency medicine etc, but to sustain the interest of students, Nurse practitioners, health care professionals, we have simply outlined the commonly performed and advanced procedures in a ready reference semblance.

With the approval of the Rajiv Gandhi University of Health Sciences, Bangalore, this "Standard Operating Procedures - Manual" can be used or incorporated in the Log book of the nursing students, or can be utilised to conduct an exit examination for the Nursing students and as well can form the base for certification course. However the key focus is to understand the practical knowledge of the patient care procedures.

The committee acknowledges and is thankful to Dr.V.Manjula, IAS who initiated development of this manual, through Hon'ble Vice Chancellor, RGUHS and also acknowledges the efforts of all people who were involved in bringing about this manual.

We hope to improve this manual with more feedback and hope this will be helpful to students and faculty.



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ADMINISTRATION OF BLOOD AND BLOOD PRODUCTS

1.0 Meaning:

- 1.1 Blood transfusion consists of administration of compatible donor's whole blood or any of its components to correct/ treat any clinical conditions.

2.0 Purposes/Indications:

- 2.1 To restore circulating blood volume.
- 2.2 To correct platelet and coagulation factor deficiencies.
- 2.3 To correct anemia.
- 2.4 Blood transfusion

3.0 Contraindications:

- 3.1 Hypersensitivity
- 3.2 Incompatibility of blood group and Rh Factor
- 3.3 Allergic reaction during the procedure.

4.0 Articles:

- 4.1 Blood transfusion set
- 4.2 Normal saline
- 4.3 Blood/blood components- sterile in appropriate container
- 4.4 Cannula No: 18/19(adult)
- 4.5 Alcohol or iodine swab
- 4.6 Sterile gauze
- 4.7 Tourniquet
- 4.8 Adhesive tape
- 4.9 Scissors
- 4.10 Roller bandage and splint
- 4.11 Infusion stand
- 4.12 Disposal bag/ kidney tray
- 4.13 Disposable gloves
- 4.14 Pressure bag
- 4.15 Specimen container

5.0 Pre Procedure:

- 5.1 Check physician's order, clients condition, history of transfusion/ infusion reaction, reason for present transfusion etc.
- 5.2 Identify client, verify & validate the blood group.
- 5.3 Check the availability of blood with blood bank
- 5.4 Explain the procedure to the client, need for transfusion, blood products to be given, approximate length of time, desired outcome, etc.
- 5.5 Emphasize the need for the client to report unusual symptoms immediately.
- 5.6 Obtain informed consent from the client.

- 5.7 Obtain blood from blood bank in accordance with agency policy. If transfusion cannot begin immediately, return product to blood bank. Blood which is out of refrigerator for more than 30 minutes, above 10 degree centigrade cannot be re-issued. Never store blood in unauthorized area- like ward refrigerator. Blood must be stored in refrigerated unit at carefully controlled temperature. (40 C)
- 5.8 Encourage client to empty bowel and bladder and assist to a comfortable position. Collect urine specimen.
- 5.9 Ensure privacy.
- 5.10 Wash and dry hands.
- 5.11 Check vital signs and record.

6.0 Procedure:

- 6.1 Don disposable gloves.
- 6.2 Insert IV cannula, if not already present in a large peripheral vein and initiate infusion of normal saline solution using blood transfusion set.
- 6.3 Inspect the blood product (by 2 nurses) for:
 - 6.3.1 Identification number.
 - 6.3.2 Blood group and type.
 - 6.3.3 Expiry date.
 - 6.3.4 Compatibility.
 - 6.3.5 Clients name.
 - 6.3.6 Abnormal color, clots, excess air etc.
- 6.4 Warm blood, if needed, using special blood warmer or partially dip in tepid water.
- 6.5 If blood product is found to be correct, stop the saline solution by closing roller clamp. Remove insertion spike from saline container and insert spike into blood container.
- 6.6 Start infusion of blood product slowly, at the rate of 25 to 50 ml per hour for the first 15 minutes. Stay with client for first 15 minutes. Check vital signs every 15 minutes for the first 30 minutes, or as per agency policy.
- 6.7 Increase infusion rate if no adverse reactions are noticed. The flow rate should be within safe limits.
- 6.8 Assess the condition of client every 30 minutes and if any adverse effect is observed stop transfusion and start saline. Send urine sample, blood sample and remaining blood product in container with transfusion set, back to the blood bank.
- 6.9 Complete transfusion and administer saline(as per physician's order), if no adverse reaction is observed.

7.0 Post Procedure

- 7.1 Dispose blood product container and set in appropriate receptacle.
- 7.2 Wash hands.
- 7.3 Record the following:
 - 7.3.1 Product and volume transfused.
 - 7.3.2 Identification number and blood group.
 - 7.3.3 Time of administration started and completed.
 - 7.3.4 Name and signature of nursing staff carrying out procedure.
 - 7.3.5 Client's condition.
 - 7.3.6 If agency policy requires remove label from blood bag and paste it on client's record.
 - 7.3.7 Assist client to comfortable position.

CARE OF CENTRAL VENOUS CATHETER

1.0 Meaning:

- 1.1 A Central Venous catheter is a vascular infusion device which is a long flexible tube or catheter placed into the large vein of neck, chest or groin that is used to provide long term venous access

2.0 Indications / Purposes :

- 2.1 To maintain cleanliness of the insertion site.
- 2.2 To prevent infection.
- 2.3 To check the patency of the catheter.

3.0 Contraindications

- 3.1 No significant contraindications

4.0 Articles :

A clean trolley containing:

- 4.1 Dressing bin
- 4.2 Cheatle forceps
- 4.3 Cleaning solutions
- 4.4 Dressing tray
- 4.5 Disposable syringes & needles
- 4.6 Sterile gloves
- 4.7 Inj. Heparin 5000 IU
- 4.8 Normal Saline 100ml
- 4.9 Tegaderm
- 4.10 Mackintosh & Towel
- 4.11 Kidney Tray / Waste disposal containers

5.0 Pre -procedure

- 5.1 Identify the client.
- 5.2 Assess the general condition of the client.
- 5.3 Provide privacy.
- 5.4 Provide a well-lighted area.

6.0 Procedure:

- 6.1 Wash hands.
- 6.2 Explain the procedure.
- 6.3 Position the client.
- 6.4 Place a mackintosh & towel under the catheter site.
- 6.5 Wear gloves.

- 6.6 Assess the insertion site and surrounding skin.
- 6.7 Clean the central line insertion site using a single stroke.
- 6.8 Clean the surrounding of the insertion site in circular strokes.
- 6.9 Clean the catheter and 3 way.
- 6.10 Remove the mackintosh & towel.
- 6.11 Remove gloves.
- 6.12 Apply tegaderm.
- 6.13 Wear gloves.
- 6.14 Add 1000 IU of inj. Heparin (1 ml) in 100ml NS.
- 6.15 Load the heparin for flushing.
- 6.16 Open the three way after cleaning it with spirit.
- 6.17 Care should be taken to prevent entry of air into the system while flushing.
- 6.18 Recap the three way.
- 6.19 Remove gloves.

The strength of heparin is as follows:

For adults: Take 10ccsyringe, load 6ml and flush 5ml.

For children: Take 5cc syringe, load 3ml and flush 2ml.

For neonates: Take 2cc syringe, load 2ml and flush 1 ml.

7.0 Post-procedure:

- 7.1 Make the client comfortable.
- 7.2 Label the dressing and IV set with date.
- 7.3 Clean, dry and replace the equipment in its proper place.
- 7.4 Wash hands
- 7.5 Record the date and time when procedure was done, observation made and client's condition during and after the procedure.

8.0 Points to note

- 8.1 Utilize gauze pieces and cleaning solution for central line dressing.
- 8.2 In case the central line is not sutured to the skin, place a sterile slit gauze piece at the insertion site and apply tegaderm.
- 8.3 Central line dressing, IV set and 3 way should be changed every 3rd day.
- 8.4 In case the dressing gets soaked, it should be changed immediately.
- 8.5 If the client is on blood transfusion through the central line and if medication is to be administered through the same line, flush the line with Normal Saline before and after administration of medication.

MECHANICAL VENTILATION

1.0 Meaning:

- 1.1 Mechanical Ventilation is the use of mechanical device to assist the respiratory muscles in the work of breathing and to improve gas exchange.

2.0 Indications/Purposes:

- 2.1 Failure to maintain airway tone
- Swelling of upper airway as in anaphylaxis/infection
 - Oropharyngeal bleeding or hematoma
- 2.2 Decreased consciousness & loss of airway reflexes that leads to regurgitation of vomit, secretions or blood.
- 2.3 Failure to ventilate
- Prolonged respiratory effort that results in fatigue or failure as in status asthmatics or COPD
 - RR>35/min, PaO₂ < 60 mm Hg with oxygen & PaCO₂ > 50 mmg Hg
- 2.4 Failure to oxygenate
- 2.5 Diffuse pulmonary edema, ARDS, pneumonia, PE, CO toxicity

3.0 Contraindication

- 3.1 Total upper airway obstruction which requires surgical airway.
- 3.2 Serious maxilla - facial trauma

4.0 Articles:

A clean trolley containing:

- 4.1 Disposable Gloves
- 4.2 Masks
- 4.3 Laryngoscope handle with blades & batteries
- 4.4 Endotracheal tubes of different sizes
- 4.5 Oropharyngeal airway
- 4.6 Stillet/bags
- 4.7 Xylocaine jelly
- 4.8 Disposable syringes & needles
- 4.9 Adhesive tape & scissors
- 4.10 Ambu bag and mask
- 4.11 Boogie
- 4.12 Stethoscope
- 4.13 Dressing tray
- 4.14 Suction catheter
- 4.15 Distilled water

- 4.16 Torch
- 4.17 Kidney tray/waste disposal containers
- 4.18 Drugs, Intravenous Fluid & Injection trolley
- 4.19 Artificial (lung) breathing bag
- 4.20 Suction apparatus/wall suction
- 4.21 Ventilator & circuits
- 4.22 Oxygen cylinder/wall point, flow meter & connecting tubes
- 4.23 Pulseoxymeter/cardiac monitor

5.0 Pre - procedure:

- 5.1 Assess the general condition of the client
- 5.2 Monitor vital signs & Monitor the SPO₂ with a pulse oxymeter
- 5.3 Obtain baseline ABG values
- 5.4 Auscultate the breath sounds and assess the respiratory rate & pattern
- 5.5 Explain the need for mechanical ventilation & the charges.
- 5.6 Obtain an informed consent from the attendant.
- 5.7 Provide privacy
- 5.8 Provide a well-lighted & ventilated area
- 5.9 Maintain a sterile field
- 5.10 Connect the plug to the switchboard
- 5.11 Connect the oxygen tube to the central oxygen point and air tube to compressed air port.
- 5.12 Switch on the ventilator
- 5.13 Set the tidal volume (4 - 6 ml /kg for adults)
- 5.14 Set the respiratory rate (12 - 15 breaths /mt for adults)
- 5.15 Set the I/E ratio (inspiration: expiration).
- 5.16 Set the FiO₂ (40 - 100% depending on the client's saturation).
- 5.17 Select & set the mode.

6.0 Procedure:

- 6.1 Explain procedure to patient and the reason for intubation
- 6.2 Assess for patent IV access
- 6.3 Gather equipment and assemble
- 6.4 Draw up any drugs that may be required during intubation\
- 6.5 Wash hands, and wear personal protective equipment
- 6.6 Set up suction apparatus and connect yankeur suction catheter to tubing
- 6.7 Assist in positioning the patient's head by flexing the neck forward and extending the head. Allows visualization of vocal cords by aligning the three axes of the mouth, pharynx and trachea.
- 6.8 Check the mouth for dentures, and remove if present. Suction mouth as needed.
- 6.9 Pre oxygenate using laerdal bag attached to 100% oxygen for 3 to 5 minutes
- 6.10 Pre medicate patient as indicated.
- 6.11 Apply cricoid pressure as requested. Cricoid pressure may assist in visualization of vocal cords and decrease the risk of gastric distension and subsequent pulmonary aspiration. Cricoid pressure is not removed until tube is correctly placed.
- 6.12 Once tube is correctly placed inflate cuff using 3-5 ml of air (Check with cuff pressure manometer 20 - 24mmHg)

- 6.13 Confirm placement
 - a) Auscultate over epigastrium
Allows for identification of esophageal intubation.
 - b) Auscultate lung bases and apices for bilateral breath sounds
 - c) Observe for symmetric chest wall movement. Asymmetrically chest movement can indicate placement of ETT in right main bronchus.
 - d) Attach end tidal CO₂ level
 - e) Evaluate oxygen saturation (SpO₂) by non-invasive pulse oximetry.
- 6.14 Connect endotracheal tube to oxygen source /ventilator
- 6.15 Secure endotracheal tube in place.
- 6.16 Reconfirm placement of tube. Verifies that the tube was not inadvertently repositioned during the securing of tube. Place the appropriate oropharyngeal airway
- 6.17 Note and document position of tube at teeth or lips
- 6.18 Connect endotracheal tube to ventilator.
- 6.19 Check ventilator setting and ensure alarms set.
- 6.20 Confirm correct tube position by chest x-ray
- 6.21 Clean the Articles and keep in place

7.0 Post Procedure:

- 7.1 Date and time of intubation
- 7.2 Indications and assessment findings of the patient
- 7.3 Size of tube and position
- 7.4 Length of tube inserted
- 7.5 Amount of air/pressure in cuff
- 7.6 Drugs administered and signed for
- 7.7 Client's condition after the procedure

AIRWAY MAINTENANCE:

8.0 General Instructions:

- 8.1 Auscultate breath sounds every 4th hourly for bilateral air entry and breath sounds.
- 8.2 Take vital signs
- 8.3 Check oxygen saturation
- 8.4 Listen to breath sounds, and note changes from previous findings
- 8.5 Assess the patient's pain and anxiety, facial expressions, skin colour and temperature, respiratory efforts and ECG tracing.
- 8.6 Keep all the things required for both tracheostomy and oropharyngeal suctioning near to the patients bed side.
- 8.7 Check the working condition of the suction apparatus and maintain the suction pressure between 80-150 mmHg.
- 8.8 Use appropriate suction catheters for suctioning preferably 14 f(green catheters).
- 8.9 Keep the ambu bag with reservoir and mask always available at the bed side of each and every patient in a good working condition. Check the ambubags and mask in every shift.

- 8.10 Documentation of patient-ventilator synchrony during assisted or supported breaths
- 8.11 Patients level of consciousness
- 8.12 Chest movements to be monitored
- 8.13 Assess if there are any signs of breathing difficulty like gasping, use of accessory muscles, difficulty in lying flat.
- 8.14 Provide head end elevation up to 30-45 degree up, if not contraindicated.
- 8.15 Monitor cuff pressure every 6th hourly, always >20 mmHg, (between 20-30 mmHg)
- 8.16 Change the HME and catheter mount if it malfunctions or visibly soils

CARE OF PATIENTS ON VENTILATOR

2.0 In a Patient with ET Tube:

STEPS TO BE FOLLOWED	RATIONALE
2.1 Ensure that the tapes are secure and not too tight 2.2 Use double knots instead of bow. 2.3 Secure the endotracheal tube and the airway using dynaplaster and tapes.	To avoid dislodgement of tube if one tape becomes disconnected, the tracheostomy tube is still secured by the other tape. Reduce the risk of pressure areas around patient's neck.
2.4 Check the size and teeth level of the tube during each and every shift	To prevent the dislodgement of tube
2.5 Suction the patient every 2 hourly and whenever required.	Prevents tube blockage and reduces bleeding
2.6 Have a spare endotracheal tube of the same size near to the bed side	For use in case of tube dislodgement and accidental extubation
2.7 Change the position of the endotracheal tube every day	Reduces the injury to the mucosa
2.8 Change the position of the ventilator according to the side where the tube is placed.	Reduces the injury to the mucosa
2.9 Sit patient up to 45° after recovering consciousness	Allows them to use the full capacity of the lungs
2.10 Check the cuff pressure once in each shift	To ensure the cuff is not over inflated which may cause damage to the trachea

3.0 In a Patient with Tracheostomy:

<p>3.1 Ensure tapes are secure and not too tight. Two lengths of tape must be used when securing the tube. Use double knots without bows or any padding.</p> <p>Tapes that are well secured should allow two fingers to pass freely around the inside of the tapes</p>	<p>To avoid dislodgement of tube</p> <p>If one tape becomes disconnected, the tracheostomy tube is still secured by the other tape.</p> <p>Reduce the risk of pressure areas around patient's neck.</p>
<p>3.2 Have spare tracheostomy tubes (one the same size and one a size smaller) and tracheal dilators next to patient's bed.</p> <p>3.3 Check hat airway remains patent. Blockage may be due to an increase of secretions or the tube slipping out of the trachea.</p>	<p>For use in the event of the tracheostomy tube being dislodged after an ET tube has been reinserted.</p>
<p>3.4 When suctioning ensure to support the tube while withdrawing suction catheter.</p>	<p>Maintain patent airway Reduces the risk of tube dislodgement</p>
<p>3.5 Sit patient up to 45° after recovering consciousness</p>	<p>Allows them to use the full capacity of the lungs.</p>
<p>3.6 Tracheal suction only as required.</p>	<p>Minimize the risk of bleeding.</p>
<p>3.7 Inner tube is removed and cleaned at least three times per day (more frequently as required). Insert temporary inner cannula during cleaning of the permanent inner cannula. Inner cannulas are cleaned under running water and then replaced immediately. They are not to be soaked.</p>	<p>Ensure airway is patent.</p>
<p>3.8 For cuffed tracheostomy tubes measure cuff pressure once in each shift.</p>	<p>To ensure the cuff is not over inflated which may cause damage to the trachea.</p>
<p>3.9 The tracheostomy site should be assessed at least each shift and redressed as appropriate.</p>	<p>To check for signs of infection. If the site is inflamed take a swab and send to microbiology for culture.</p>
<p>Never use cotton wool. Always use gauze for tracheostomy dressings.</p> <p>3.10 Change the position of the ventilator and the catheter mount everyday.</p>	<p>Cotton wool fibres can cause irritation to the airways and cotton wool balls are small and can be lost in the stoma.</p> <p>Reduces the injury to the tracheal mucosa.</p>

MECHANICAL VENTILATION

4.0 Airway

- 4.1 Respiratory - tube placement
 - 4.1.1 Cuff status
 - 4.1.2 Airway patency
 - 4.1.3 Auscultate breath sounds
 - 4.1.4 Suctioning

- 4.2 Breathing
 - 4.2.1 Respiratory rate, volume, pressure
 - 4.2.2 ABG analysis - pulseoximetry
 - 4.2.3 Capnography

- 4.3 CardioVascular - Heart Rate & rhythm, BP (MAP)
 - 4.3.1 Peripheral perfusion

- 4.4. Neurological - GCS, ability to communicate
 - 4.4.1 Sedation score - degree of neuro muscular blockade

- 4.5 Gastrointestinal -Presence of bowel sounds - abdominal distention
 - 4.5.1 Amount and characteristic of gastric aspirate

- 4.6 Metabolic - temperature
 - 4.6.1 Blood glucose level

- 4.7 Renal - urine output
 - 4.7.1 Blood urea, creatinine

- 4.8 Skin integrity - pressure ulcer risk

MONITORING VENTILATOR SYSTEM: VENTILATOR SETTINGS:

SETTING	FUNCTION	USUAL PARAMETERS
Respiratory Rate (RR)	Number of breaths delivered by the ventilator per minute	Usually 4 - 20 breaths per minute
Tidal volume (VT)	Volume of gas delivered during each ventilator breath	Usually 4 - 15 cc/kg
Maximum amount of pressure the ventilator can use to deliver breath	Amount of oxygen delivered by ventilator to patient	21% to 100%; usually set to keep PaO ₂ > 60mm Hg or SaO ₂ > 90%
Inspiratory: Expiratory (I:E) Ratio	Length of inspiration compared to length of expiration	Usually 1:2 or 1:1.5 unless inverse ratio ventilation is required.
Pressure Limit	Maximum amount of pressure the ventilator can use to deliver breath	10-20 cm H ₂ O above peak inspiratory pressure; maximum is 35 cm H ₂ O

VENTILATOR MODES:

MODE	FUNCTION	CLINICAL USE
Control Ventilation (CV)	Delivers preset volume or pressure regardless of patient's own inspiratory efforts	Usually used for patients who are apneic.
Assist -Control Ventilation(A/C)	Delivers breath in response to patient effort and if patient fails to do so within preset amount of time	Usually used for spontaneously breathing patients with weakened respiratory muscles.
Synchronous Intermittent Mandatory Ventilation (SIMV)	Ventilator breaths are synchronized with patient's respiratory effort	Usually used to wean patients from mechanical ventilation. Opening collapsed alveoli.
Constant Positive Airway Pressure (CPAP)	Similar to PEEP but used only with spontaneously breathing patients.	Maintains constant positive pressure in airway so resistance is decreased.

Sl. No.	Indication	Observation to be made	Management
1	High pressure alarm	<ul style="list-style-type: none"> • Observation of the tube • Blockage in the circuit • Biting of the tube • Kinking of the tube 	<ul style="list-style-type: none"> • Suction to clear the tube • Empty the water, which is collected in the circuit • Instruct the client not to bite the tube • Remove the kinks of the tube • If needed, extubate and re-intubate
2	High Rate	<ul style="list-style-type: none"> • Client's alertness • Ability to breathe the ventilator against ventilate setting • Obstruction of the tube • Blockage in the circuit • Kinking of the tube 	<ul style="list-style-type: none"> • If unfit for weaning process, sedate, if fit, start weaning • If blocked, suction or re-intubate
3	Low oxygen Pressure	<ul style="list-style-type: none"> • Oxygen tubing & it's connections 	<ul style="list-style-type: none"> • Check the oxygen knob • Check the oxygen connection to the central oxygen point • If it is central oxygen leakage inform the maintenance department.
4	Low air pressure	<ul style="list-style-type: none"> • Ventilator compressor 	<ul style="list-style-type: none"> • If ventilator compressor is out of order, connect the spare air compressor. • Inform the bio-medical dept. • If spare air compressor is not available, change the entire ventilator
5	Low exhaled Volume	<ul style="list-style-type: none"> • Leakage in the exhalation circuits • Water drops in the diaphragm or one way check valve or in the water collector • Deflation of endotracheal or tracheostomy tube 	<ul style="list-style-type: none"> • Check exhalation path circuits • Gently wipe the diaphragm and sensor of one way check valve • Inflate endotracheal tube
6	Low pressure	<ul style="list-style-type: none"> • Disconnection in any of the circuits 	<ul style="list-style-type: none"> • Check all the tubings of the ventilator • If endotracheal tube is leaking extubate and re-intubate
7	Apnea	<ul style="list-style-type: none"> • Displacement of endotracheal tube • Disconnection of ventilator from endotracheal tube • Disconnection of circuits • Ability of the client to breath • Restrict sedation if on weaning process 	<ul style="list-style-type: none"> • If displacement of endotracheal tube, re-intubate or re-adjust the tube • Reconnect the endotracheal tube, if disconnected, • Check all the circuits • If the client is not able to breath check the mode, if the client is able to breath and is sleeping, wake the client. • Change the mode as per doctor's orders.

8	Over temperature	<ul style="list-style-type: none"> • Connection of temperature probe • Humidifier 	<ul style="list-style-type: none"> • Check & secure the temperature probe properly. • Fill the humidifier with distilled water till the mark • Check the functioning of the humidifier • Switch off the humidifier if it is over heated until the temperature comes to 28^oC.
9	Ventilator in-operative	<ul style="list-style-type: none"> • Functioning of the ventilator - circuit & parameters • Respiratory distress 	<ul style="list-style-type: none"> • Disconnect & connect to ambu bag • Give breaths • Connect to another ventilator • Inform the bio-medical dept.

Weaning protocol & Extubation

1.0 Ventilator:

- 1.1 Assess the general condition of the client
- 1.2 Monitor the GCS and ensure patient is awake and able to follow instructions.
- 1.3 Monitor vital signs
- 1.4 Obtain ABG
- 1.5 Auscultate for the breath sounds
- 1.6 Ensure that the respiratory rate and pattern is within normal limits
- 1.7 Explain the procedure
- 1.8 Start the weaning process as per the doctor's orders
- 1.9 If the client is able to tolerate the weaning mode, repeat ABG analysis
- 1.10 Ensure the respiratory rate and ABG values are within normal limits
- 1.11 Assist in disconnecting the ventilator and connect the client to the T-piece with oxygen supply.
- 1.12 Communicate with the client.

2.0 Extubation Criteria:

- 2.1 Return of adequate conscious state to maintain adequate protective reflexes & secretion clearance.
- 2.2 Adequate pulmonary reserve
- 2.3 RR L35/mt, FiO₂ <40%
- 2.4 SpO₂ >95%
- 2.5 PEEP <5 cm of H₂O
- 2.6 PS <10 cm of H₂O

3.0 Client with Endotracheal tube:

- 3.1 Assess the general condition of the client
- 3.2 Monitor the SaO₂.
- 3.3 Monitor the vital signs
- 3.4 Repeat ABG analysis after 30 minutes of disconnecting the ventilator

- 3.5 Ensure the respiratory rate and ABG values are within normal limits
- 3.6 Provide semi-Fowler's position to the client
- 3.7 Perform airway suctioning using sterile technique and remove the adhesive tape and deflate the tube
- 3.8 Perform airway suctioning gently
- 3.9 Remove the ET tube by continuous suctioning of secretions through the ET tube
- 3.10 Repeat oral and throat suctioning
- 3.11 Place face mask with oxygen connection of prescribed amount
- 3.12 Provide oral hygiene and face wash.

4.0 Administer oxygen/nebulization

- 4.1 Ensure the client is in semi-Fowler's position
- 4.2 Assess the general condition of the client
- 4.3 Monitor the SaO₂.
- 4.4 Monitor the vital signs
- 4.5 Observe the signs of respiratory distress
- 4.6 Repeat ABG after 30 minutes to 1 hour of removing the ET tube
- 4.7 Ensure the respiratory rate and ABG values are within normal limits
- 4.8 Gradually decrease the amount of oxygen administered as prescribed
- 4.9 Disconnect the oxygen as per doctor's orders and remove the mask
- 4.10 Continue to monitor the SaO₂.

5.0 Post Procedure

- 5.1 Remove gloves and mask

Points to note

- Remove dentures & /or loose teeth before intubation
- In case intubation is not possible through the oropharyngeal route, prepare the client for tracheostomy
- Ensure continuous & adequate oxygenation of the client throughout the procedure.
- Change the tubings of the ventilator every 72 hours
- Begin the weaning of the client from the ventilator during morning hours
- Keep the ventilator as 'stand by' for the client, after extubation until the client is stable
- Do not leave the client unattended
- Ensure periodic servicing of the ventilators

TRACHEOSTOMY CARE

1.0 Meaning:

- 1.1 Tracheostomy is performed to provide long term airway support to patients. Tracheostomy care involves removal of soiled tube , changing a tracheostomy inner tube, cleaning tracheostomy site and changing the dressing around the site.

2.0 Indication / Purposes:

- 2.1 To maintain a patent airway
- 2.2 To prevent pooling of secretions
- 2.3 To facilitate client's comfort
- 2.4 To increase the respiratory efficiency
- 2.5 To decrease the risk of infection
- 2.6 Client is unable to clear the secretions by coughing
- 2.7 Mucus bubbling sound
- 2.8 Breathing difficulty
- 2.9 Low oxygen saturation
- 2.10 Cyanosis
- 2.11 Increased inspiratory pressure, if the client is on ventilator
- 2.12 Stridor or changes in breathing sounds

3.0 Contraindications:

- 3.1 No significant contraindications.

4.0 Articles:

For Suctioning:

A clean trolley containing:

- 4.1 Suction catheter according to the age of the client (12 - 16 F for adult)
- 4.2 Irrigation saline
- 4.3 Ambubag
- 4.4 Gloves
- 4.5 Mask
- 4.6 Dressing tray
- 4.7 Disposable syringe
- 4.8 Connectors
- 4.9 Kidney tray/waste disposal containers

For tracheostomy dressing:

A clean tray containing:

- 4.10 Dressing tray
- 4.11 Normal saline and H₂O₂ (1 : 1)
- 4.12 Antiseptic /Antibacterial solution
- 4.13 Sterile Gloves

- 4.14 Tape or tracheostomy Ties
- 4.15 Scissors
- 4.16 Kidney tray

5.0 Pre-procedure :

- 5.1 Provide privacy
- 5.2 Switch off the fan
- 5.3 Provide a well-lighted and ventilated area
- 5.4 Identify the client
- 5.5 Check the client's response
- 5.6 Assess the need for suction

6.0 Procedure:

Suctioning:

- 6.1 Explain the procedure
- 6.2 Position the client flat on the bed and move the client to the edge of the bed
- 6.3 Adjust the upper garments of the client if it is interfering with the procedure
- 6.4 Wear a mask
- 6.5 Put on the suction source
- 6.6 Wash hands
- 6.7 Reassure the client, if he/she is conscious
- 6.8 Open the end of the suction catheter pack
- 6.9 Fill the sterile container with normal saline
- 6.10 Check that the suction pressure is not too high or too low
- 6.11 Wear sterile gloves
- 6.12 Keep the dominant hand as sterile and a sterile gauze piece to clean the catheter
- 6.13 Ambu the client with non-dominant hand or by the help of an assistant
- 6.14 Pick up the sterile catheter with your dominant hand and connect it to the suction apparatus tube, which is in the non-dominant hand.
- 6.15 Flush or suck saline through the sterile catheter and check the suction pressure.
- 6.16 Insert the sterile suction catheter 6-8 inches or as far as the tube will go without resistance without applying suction.
- 6.17 Apply suction and rotate the tube while withdrawing (total time should not exceed 10 seconds).
- 6.18 Flush the catheter with saline and clean the suction tube with sterile gauze piece from less contaminated area to the tip of the catheter
- 6.19 Oxygenate the client
- 6.20 Repeat the procedure according to the need (steps 15 - 19)
- 6.21 Suction oropharyngeal cavity and provide mouth care
- 6.22 Turn off the suction with non-dominant hand or by the help of the assistant

Tracheostomy dressing:

- 6.23 Remove the inner cannula after releasing the lock
- 6.24 Wash it under running water to remove the mucus adhering to it
- 6.25 Soak it in normal saline or H₂O₂
- 6.26 Remove the used dressing from the site and discard
- 6.27 Assess the site

- 6.28 Wash hands, wear sterile gloves
- 6.29 Clean the site with normal saline and with antiseptic solution (wipe from stoma outward).
- 6.30 Cut the sterile dry gauze piece gauze, half way and insert it on either side of the tube. Change it every 4th hourly.
- 6.31 Clean the inside of the inner cannula and remove the secretion (use a small brush or introduce a gauze piece from the top and remove it from the other end)
- 6.32 Rinse the inner cannula with normal saline
- 6.33 Dry the inner cannula
- 6.34 If the inner tube is of metal, boil/sterilize it.
- 6.35 Reinsert the inner cannula
- 6.36 Lock it into place
- 6.37 Change the tracheostomy ties if soiled
- 6.38 Thread the new tie through the flange tie holes and around the client's neck.
- 6.39 Tie it at the side of client's neck. The tie should be loose enough to slip one finger in between it and the skin and it should be secure enough to ensure the tracheal tube is in place (do not dislodge the tube)
- 6.40 Assess the client's status
- 6.41 Remove gloves
- 6.42 Place a wet gauze piece over the stoma if the patient is on atmospheric air to prevent drying of the tracheal mucosa.

7.0 Post Procedure:

- 7.0 Make the client comfortable
- 7.1 Reassure the client
- 7.2 Auscultate the lungs
- 7.3 Observe the client for any adverse reaction
- 7.4 Check the client's oxygen saturation if necessary
- 7.5 Clean, dry and replace the equipment in its proper place
- 7.6 Wash hands.
- 7.7 Record the date and time when procedure was done, observation made and client's condition during and after the procedure.

8.0 Points to note:

- 8.1 Use alternative modes of communication like calling bell, alphabets, pictures and closed ended questions.
- 8.2 Displacement of tracheal tube may be an emergency situation and will need prompt intervention.

INSERTION OF CHEST TUBE AND MAINTAINING A WATER SEAL DRAINAGE

1.0 Meaning:

- 1.1 Chest tubes are inserted to allow draining of the pleural space of air, blood or fluid, allowing expansion of lungs and restoration of negative pressure in thoracic cavity.

2.0 Indications/Purposes:

- 2.1 To remove air and fluid from the pleural space or thoracic cavity and the mediastinal space
- 2.2 To bring about re-expansion of the lung and restore normal cardio respiratory function after surgery and trauma
- 2.3 To re-establish normal negative pressure in the pleural space
- 2.4 To prevent shifting of the mediastinum as in case of pneumonectomy

3.0 Contraindications:

- 3.1 Water seal drainage with suction is contraindicated in client after pneumonectomy

4.0 Articles:

A clean trolley containing:

- 4.1 Client's chart and X-rays
- 4.2 Hole towel - 1
- 4.3 Dressing bin
- 4.4 Cheatle forceps
- 4.5 Cleaning solution (betadine and spirit)
- 4.6 Thoracic catheter - No.28 and 32 size for adult
- 4.7 Aspiration set - 1
- 4.8 2 way cork - 1 pair
- 4.9 3 way cork - 1
- 4.10 ICD sterile tubing - 1 pack
- 4.11 Sterile ICD bottles - 3
- 4.12 Catheter introducer
- 4.13 Surgical blade No.11 - 1
- 4.14 Centrisilk No.1 - 1 or Mersilk No.3 & 2 - 1
- 4.15 Sterile gloves
- 4.16 Mackintosh and drawsheet
- 4.17 Kidney tray / waste disposal containers
- 4.18 Dynaplast
- 4.19 Pair of sterile scissors (Blunt)
- 4.20 Inj. Xylocaine 2%
- 4.21 Disposable syringes and needle

- 4.22 Clamps - 2
- 4.23 Distilled water

5.0 Pre-procedure:

- 5.1 Provide privacy
- 5.2 Provide a well lighted and ventilated area
- 5.3 Maintain a sterile field
- 5.4 Identify the client and check doctor's orders
- 5.5 Assess the general condition of the client
- 5.6 Shave and clean the site of puncture
- 5.7 Administer an analgesic as prescribed

6.0 Procedure:

- 6.1 Explain the procedure
- 6.2 Assist the client to Fowler's position
- 6.3 Drape the client appropriately
- 6.4 Assist the doctor during the procedure
- 6.5 Instruct the client to take a deep breath and hold it as the tube is inserted
- 6.6 After insertion of the chest tube, connect the free end of it to the sterile tubing, which has the other end connected to the long glass tube of the 1st bottle of water seal drainage system.
- 6.7 Ensure that the stopper (2 way cork) is absolutely air tight
- 6.8 Communicate with the client in between the procedure
- 6.9 Assess for the proper functioning of the water seal drainage system by:
 - 6.9.1 Observing the oscillating movement of the fluid up (on inspiration) and down (on expiration) in the water sealed glass tube.
 - 6.9.2 Observe for intermittent bubbling in the water seal bottle
 - 6.9.3 Observe the collection of drainage in the water seal.
- 6.10 Assist in securing the chest tubes with sutures
- 6.11 Assist in applying a tight dynaplaster dressing over the tube insertion site.

Procedure for changing of water seal drainage bottle:

- 6.12 Wash hands
- 6.13 Explain the procedure
- 6.14 Milk the tube with a milker
- 6.15 Clamp the chest tube using 2 artery forceps in opposite direction with a gauze piece in between.
- 6.16 Detach the chest tubing from the first bottle and connect to the long glass tube of the freshly prepared drainage bottle having 400ml of sterile water.
- 6.17 Release the clamps.
- 6.18 Connect the short connecting tube from the second bottle to the short glass tube of the first bottle.
- 6.19 Place the drainage bottle in the wooden frame.
- 6.20 Measure the fluid in the used bottle and minus 400 ml.
- 6.21 Document the amount of drainage in the intake output chart and temperature chart. Note the colour and content of the drainage.
- 6.22 Ensure that the system is functioning well and the cork is tight.

7.0 Post procedure:

- 7.1 Make the client comfortable
- 7.2 Provide Fowler's position unless contraindicated, to facilitate effective chest drainage
- 7.3 Observe for any adverse reactions.
- 7.4 Assess the client's response to the procedure. Educate the client about the care of tube during ambulation
- 7.5 Encourage football bladder/balloon exercises and thoracic exercises (deep breathing and coughing and arm and shoulder exercises).
- 7.6 Clean, dry and replace equipment in its proper place
- 7.7 Wash hands
- 7.8 Record the date and time when procedure was done, observation made and client's condition during and after the procedure.

Inter costal drainage systems:

One bottle water-seal system: (Figure A)

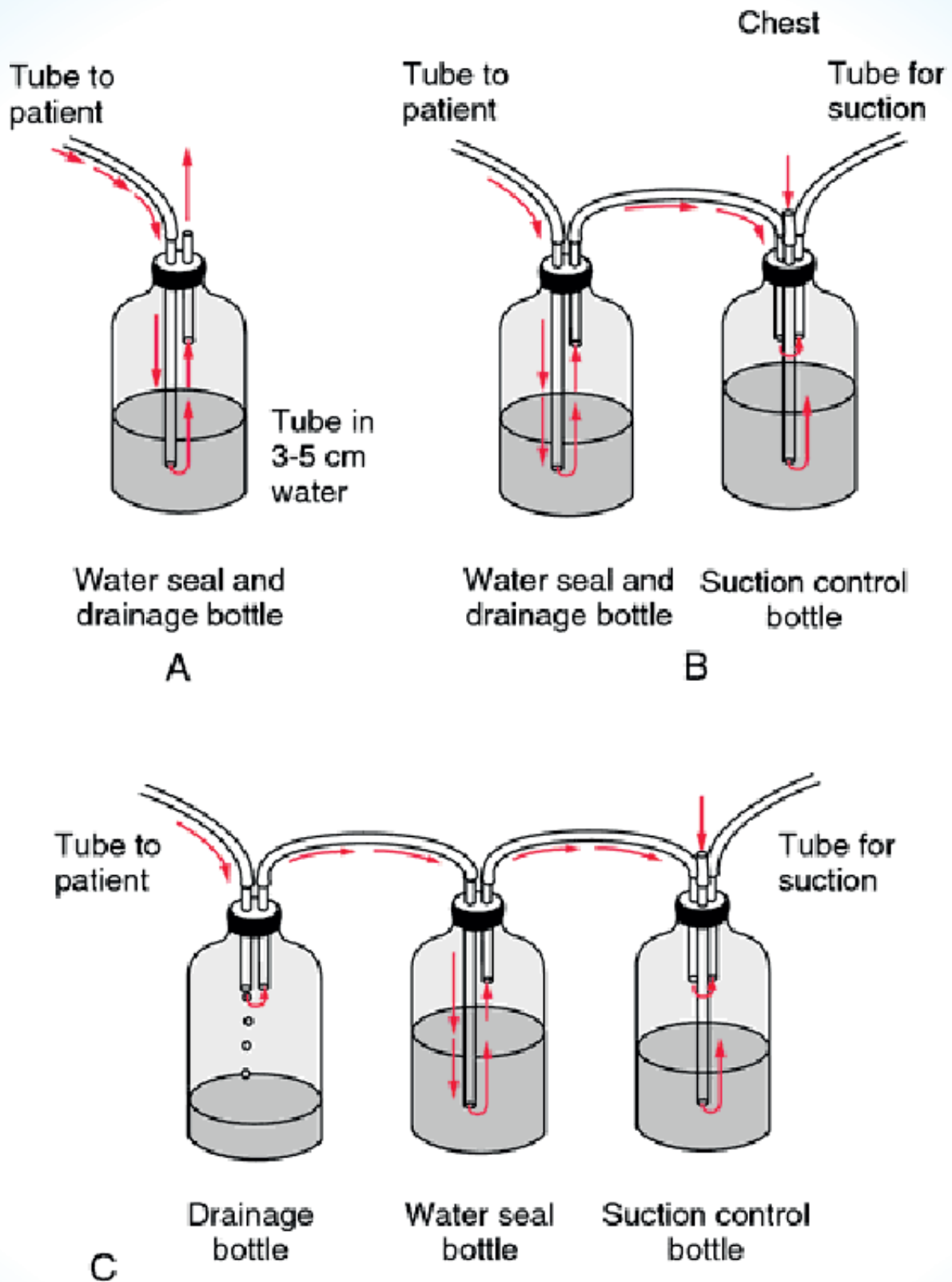
A single bottle with a 2 way cork is used. The cork has one long and one short glass tube. 400 ml of sterile water is filled in the bottle. The tube from the client is connected to the long glass tube which has its other tip immersed 3 - 5 cm in water. The short glass tube acts as the air vent.

Two bottle water-seal system: (Figure B)

With this system, the first bottle (closer to the patient) collects the drainage and acts as the water seal and second bottle is the suction control bottle. The first bottle, which is near to the patient side acts as the water seal and drainage bottle and filled with 400ml of sterile water. It has two glass tubes, one long tube connected to the patient chest drain to drain the secretions and the short tube is connected to the short tube of the second bottle. Second bottle acts as suction control bottle and filled with 400ml sterile water. It has three glass tubes, one short tube connected to the first bottle short tube, one lone glass tube acts as an air vent and the third short tube is connected to the suction port.

Three bottle water seal drainage system: (Figure C)

The first bottle has two short glass tubes. The second bottle has one long glass tube and one short glass tube. The third bottle has one long glass tube and two short glass tubes. The first bottle is empty and one short tube is connected to the tube from the client. The other short glass tube is connected to the long glass tube of the second bottle which has its tip immersed 3-4cm in 400ml of water. The short glass tube of the second bottle is connected to the short glass tube of the third bottle. The long glass tube of the third bottle has its tip immersed 3-4cm in 900ml of water. The second short glass tube acts as the air vent or can be connected to the suction device.



*Intercoastal drainage system

ASSISTING FOR BRONCHOSCOPY

1.0 Meaning:

- 1.1 Bronchoscopy is an endoscopic technique of visualizing the inside of airways for diagnostic and therapeutic purposes.

2.0 Indications/Purposes:

- 2.1 Lung growth, lung cancer, lymph node, atelectasis, or other changes seen on an x-ray or other imaging test
- 2.2 Suspected interstitial lung disease
- 2.3 Coughing up blood (haemoptysis)
- 2.4 Possible foreign object in the airway
- 2.5 Cough that has lasted more than 3 months without any other explanation
- 2.6 Infections in the lungs and bronchi that cannot be diagnosed any other way or need a certain type of diagnosis
- 2.7 Inhaled toxic gas or chemicals
- 2.8 To diagnose a lung rejection after a lung transplant
- 2.9 Wash out an airway (therapeutic lavage)

3.0 Contraindications

- 3.1 Acute Myocardial Infarction:
- 3.2 CO₂ Retention:
- 3.3 Low PO₂:
- 3.4 Coagulation Defect
- 3.5 Tracheal Stenosis:

4.0 Articles:

- A clean trolley containing:
- 4.1 Client's chart & X-rays/CT Scan
 - 4.2 Mucus extractor-1
 - 4.3 Nasal prongs-1
 - 4.4 Sputum culture bottle-2
 - 4.5 Syringe 10cc -2, 5cc-2, 20cc-2, 2 each
 - 4.6 Inj. Midazolam /Propranolol as prescribed by doctor
 - 4.7 Biopsy bottle with formalin-2
 - 4.8 Fibrotic bronchoscope
 - 4.9 Biopsy forceps
 - 4.10 Lignocaine 2%
 - 4.11 Xylocaine jelly
 - 4.12 Gowns & mask, mackintosh, towel
 - 4.13 Kidney tray /Waste disposal containers
 - 4.14 Suction apparatus
 - 4.15 Pulseoxymeter
 - 4.16 Cardiac Monitor
 - 4.17 Emergency trolley with resuscitation equipment

5.0 Pre -procedure

- 5.1 Shift the client with full uniform to the bronchoscopy room with the required equipment.
- 5.2 Provide privacy.
- 5.3 Provide a well lighted& ventilated area.
- 5.4 Send the patient with full uniform
- 5.5 Identify the client and check doctor's orders.
- 5.6 Collect & send the client's blood for PT/INR,APTT, Platelet count & ascertain that the results are within the normal limits.
- 5.7 Fix an appointment for the procedure.
- 5.8 Monitor vital signs and oxygen saturation level.
- 5.9 Confirm that a patent IV cannula is in situ.
- 5.10 Ensure that an informed consent has been taken by the doctor.
- 5.11 Instruct the client to fast 6-8 hours before the procedure.
- 5.12 Remove the dentures if present.

6.0 Procedure

- 6.1 Explain the procedure.
- 6.2 Administer local anesthetic drug (lignocaine2%) as per the procedure such as spray to throat if done through mouth, and instill to the nostrils if done through nose.
- 6.3 Assist the client to supine position with a cloth under back of neck to extend the head and neck.
- 6.4 Drape the client appropriately.
- 6.5 Explain to the client that he/she will feel to cough or feel a choking sensation during the procedure.
- 6.6 Explain him/her to take slow, deep breaths and swallow any liquid that may come to the throat.
- 6.7 Wear gloves.
- 6.8 If client cannot tolerate the procedure, sedate as prescribed.
- 6.9 Ensure airway patency.
- 6.10 Assist the doctor during the procedure.
- 6.11 Instruct the client to spit out the saliva or suck out the secretions if client is under sedation.
- 6.12 Remove gloves.

7.0 Post Procedure:

- 7.1 As soon as the procedure is over, inform the respective ward staff/ attendant.
- 7.2 Shift the client to the recovery area.
- 7.3 Send the specimen to the lab with appropriate client identification.
- 7.4 Monitor vital signs.
- 7.5 Assess the response to the procedure.
- 7.6 Instruct to inform if any adverse reaction such as breathlessness or hemoptysis.
- 7.7 Explain the after effects of the procedure like hoarseness of voice, soreness of throat and nose, cough and mild fever.
- 7.8 Instruct the client not to take anything orally for around 1-2 hours until gag reflex returns.

- 7.9 Instruct the client not to consume alcohol or drive a vehicle for the next 24 hours.
- 7.10 Advice regarding follow up.
- 7.11 Care of the scope:
- Wear gloves.
 - Wipe off all mucous secretions from the scope.
 - Dip the scope in soap water solution, wash and suck all channels.
 - Immerse the scope in cidex solution for a minimum of 15 minutes.
 - In case of HbsAg positive or HIV positive cases, immerse in the cidex solution for a minimum of one hour.
 - Remove the scope from cidex solution.
 - Wash the scope under running water.
 - Wipe with spirit swab.
 - Dry it and keep on the side table for next use.
- 7.12 Clean, dry and replace the equipment in its proper place.
- 7.13 Remove gloves.
- 7.14 Wash hands.
- 7.15 Record the date and time when procedure was done, observation made and client's condition during and after the procedure.

ASSISTING FOR PLEURAL BIOPSY

1.0 Meaning:

- 1.1 It is a procedure to remove a sample of tissue lining the lungs and inside of the chest wall to check for diagnostic purpose.

2.0 Indications/Purposes:

- 2.1 To obtain sample of pleura for histopathological study (6 bits of pleura are obtained)

3.0 Contraindications:

- 3.1 Pleural fluid more than 400ml
- 3.2 Underlying mass
- 3.3 Uncooperative clients

4.0 Articles:

- A clean trolley containing
- 4.1 Client's chart & X-rays
 - 4.2 Dressing bin
 - 4.3 Cheatle forceps
 - 4.4 Cleaning solution
 - 4.5 Dressing tray
 - 4.6 Gloves
 - 4.7 Disposable syringes & needles
 - 4.8 Inj. Xylocaine 2%
 - 4.9 Biopsy needle (14/18 gauze needle)
 - 4.10 Sterile specimen containers
 - 4.11 Sterile towel pack
 - 4.12 Dynaplast & scissors
 - 4.13 Kidney tray / waste disposal container

5.0 Pre-procedure:

- 5.1 Shift the client to the treatment room
- 5.2 Provide privacy
- 5.3 Provide a well lighted area
- 5.4 Identify the client and check doctor's orders
- 5.5 Instruct the client to get admitted and remain in the hospital at least for 24 hours after biopsy procedure
- 5.6 Monitor the vital signs
- 5.7 Obtain an informed consent
- 5.8 Educate the client in regulating his / her breathing as a preparation for biopsy
- 5.9 Administer pre-medication as prescribed

6.0 Procedure:

- 6.1 Explain the procedure
- 6.2 Depending on the site of puncture position the client
- 6.3 Drape the client appropriately
- 6.4 Instruct the client to take a deep breath and hold it from the time of insertion till removal of biopsy needle
- 6.5 Communicate with the client in between the procedure
- 6.6 Immediately after biopsy, apply a pressure dressing to the site
- 6.7 Position the client on the unaffected side

7.0 Post Procedure:

- 7.1 Shift the client to his / her bed from a stretcher.
- 7.2 Monitor vital signs for the first 2 hours x Q 15 mts, for the next 2 hours x Q1/2 hour and for 12 hours x Q 1hour, record and report the findings.
- 7.3 Ensure the client remains in position with affected side up for 1 hour
- 7.4 Check the puncture site regularly for oozing, edema
- 7.5 Send the specimen to the lab with appropriate client's identification
- 7.6 Ascertain that the client does deep breathing exercises
- 7.7 Clean dry and replace the equipment in it's proper place
- 7.8 Wash hands
- 7.9 Check X-ray to be taken as ordered
- 7.9 Record the date and time when procedure was done observation made and clients condition during and after the procedure
- 7.10 Document the characteristics (example colour& consistency)
- 7.11 Document the details of samples sent for investigation

ASSISTING FOR CORONARY ANGIOGRAM

1.0 Meaning:

- 1.1 Coronary angiogram is a cardiac catheterization procedure done to detect patency of the coronary vessels as well as to detect the pressures in the heart chambers.

2.0 Indications/Purposes:

- 2.1 Typical Angina
- 2.2 Myocardial infarction
- 2.3 Typical anginal pain
- 2.4 HTN with ECG changes
- 2.5 Positive TMT (Tread Mill Test)
- 2.6 Suspected coronary anomalies
- 2.7 Cardiogenic shock

3.0 Contraindications:

- 3.1 Fever
- 3.2 Severe anemia (Hb < 8gm/dl)
- 3.3 Active bleeding or deranged bleeding parameters
- 3.4 Uncontrolled systemic hypertension
- 3.5 Digitalis toxicity
- 3.6 Recent history of stroke
- 3.7 Pregnancy

4.0 Articles:

A. Clean trolley containing:

- 4.1 Linen: Big sheet - 1, Hole towel - 1, Big towel - 2, Gown - 3, Small towel - 3
- 4.2 Dressing bin
- 4.3 Cheatle forceps
- 4.4 Crash cart
- 4.5 Disposable Gloves
- 4.6 Syringe 20cc, 10cc, 5cc
- 4.7 Luerlock 10cc - 1
- 4.8 IV set - 2
- 4.9 Disposable needle 22 G(1.5) - 1
- 4.10 Surgical blade no.11 -1
- 4.11 Inj.Xylocaine 2%
- 4.12 Contrast medium
- 4.13 Betadine solution (5%) for painting

Asterile tray containing:

- 4.14 Big bowl - 2
- 4.15 Small bowl - 1

- 4.16 Gallipot - 1
- 4.17 Kidney tray
- 4.18 Sponge holding forceps - 1
- 4.19 Curved artery forceps - 1

Hardwares on a trolley:

- 4.20 Puncture needle - 1
- 4.21 Sheath with stiller - 1 (size of the sheath as per doctor's need)
- 4.22 Small guide wire with straightener - 1
- 4.23 J - tipped long guide wire - 1
- 4.24 Manifold - 1
- 4.25 LCA catheter - 1 (left coronary artery) size of the catheter as per
- 4.26 RCA catheter - 1 (right coronary artery) doctors need
- 4.27 Pig tail - 1
- 4.28 Pressure ling - 1
- 4.29 Contrast syringe - 1
- 4.30 Contrast line - 1

5.0 Pre-Procedure:

- 5.1 Shift the client to the cardiac catheterization lab with the required equipment
- 5.2 All machinery to be used during the procedure should be put on and its working condition ascertained.
- 5.3 The defibrillator is to be kept on with jelly on the paddles
- 5.4 Emergency light to be charged
- 5.5 O2 and suction equipment to be kept in proper working condition
- 5.6 Only required number of lights to be kept on during the procedure

In the ward:

- 5.7 Identify the client and check doctor's orders
- 5.8 Assess the general condition of the client
- 5.9 Collect and send the client's blood for Hb, TC, DC, PC, PT/INR, Creatinine, Electrolytes, HIV HbsAg (rapid screening), blood grouping and typing and RBS/FBS. Ascertain the results are within normal limits.
- 5.10 Explain the procedure to the client
- 5.11 Obtain an informed consent
- 5.12 Instruct the client to have a light breakfast 4 hours prior to the procedure
- 5.13 Administer medications except hypoglycemic and anticoagulant agents as per doctor's order
- 5.14 Shave and clean from umbilicus to mid-thigh
- 5.15 Instruct the client to have a thorough bath, remove undergarments and wear a clean hospital dress.
- 5.16 Instruct the client to remove all ornaments and any other metal items like safety pins
- 5.17 Measure the height and weight of the client and enter it in the Angiogram consent form.
- 5.18 Start a peripheral IV line on the left forearm. Intravenous fluid should be started if procedure is delayed.
- 5.19 Ensure the client has voided prior to the procedure
- 5.20 Assess the vital signs

- 5.21 Explain the necessity of an attendant with the client before, while shifting to catheterization lab and after the procedure.
- 5.22 Make sure the patient has paid the advance for the procedure /insurance is approved or not.

In Cath Lab:

- 5.23 Welcome the client and give a brief orientation
- 5.24 Identify the client and check doctor's orders
- 5.25 Reassure the client by the following information:
- 5.26 Angiogram is a test not an operation
- 5.27 Client will be awake. The local anesthetic injection will be equal to an ant bite
- 5.28 During the procedure client can see his heart on the monitor
- 5.29 Client may feel a slight discomfort in the chest when the catheters are introduced to the heart
- 5.30 Client will be asked to cough loudly once or twice during the procedure to wash out the dye from the arteries. When the client coughs the intra thoracic pressure increases and allows the dye to clear from the arteries.
- 5.31 Assess the NPO status and medications administered.
- 5.32 Check the blood reports
- 5.33 Explain to the client that during IV angiography, he/she may feel few extra beats in the heart, flushing of face and an urge to pass urine, but it will be just a feeling. Instruct to take deep breaths and the symptoms will subside.

6.0 Procedure:

- 6.1 Assist the client onto the table
- 6.2 Connect the cardiac monitor to the client and monitor the client.
- 6.3 If the heart rate is below 50 beats/min, administer Inj. Atropine ½ cc IV in dilution (standing order)
- 6.4 Position the client and drape the client appropriately
- 6.5 Put on the lead apron and x-ray badges
- 6.6 Scrub hands for 2 - 3 minutes
- 6.7 Wear the gown and gloves
- 6.8 Clean both femoral areas with betadine - distal (left) first and proximal (right) next.
- 6.9 Drape the client with sterile linen
- 6.10 Flush the hard wares with heparinized saline solution
- 6.11 Keep the hard wares ready for use
- 6.12 Assist the doctor during procedure
- 6.13 Communicate with the client in between the procedure
- 6.14 Monitor the cardiac function of the client throughout the procedure.

7.0 Post Procedure:

- 7.1 On completion of the procedure a sterile gauze piece is placed on the site and pressure is applied for 20 minutes.
- 7.2 Continue monitoring the cardiac functions.
- 7.3 Inform the respective ward staff/attendant
- 7.4 Separate the blood stained linen. Rinse the blood stains under running water and send it to laundry for washing.
- 7.5 Wash all the hardware equipment with soap and water.

- 7.6 Flush the catheter with normal saline and disinfect it in cidex for 3 hours. If the catheter is blocked with blood clots flush it with H₂ O₂ or clenzyme to reduce the bio burden and put it for continuous flushing for at least 1 hour.
- 7.7 Wash it with distilled water
- 7.8 Dry and pack
- 7.9 Send it for gas sterilization
- 7.10 Clean, dry and replace equipment in its proper place
- 7.11 Wash hands
- 7.12 Record the date and time when procedure was done, observation made and client's condition during and after the procedure.
- 7.13 Shift the client to the ward/CCU
- 7.14 Make the client comfortable

- 7.15 Instruct the client:
 - To rest in bed for 6 hours
 - To lie in supine position for one hour and then can be in semi Fowler's position if required.
 - Not to move the limb through which the catheter was passed for 6 hours.
 - To inform if feeling of wetness at the dressing site is experienced or any adverse reactions.
 - To use the urinal /bedpan
 - To take lot of fluids if not contraindicated.

- 7.16 Monitor the cardiac function and vital signs
- 7.17 Observe the site of puncture frequently
- 7.18 Assess the colour temperature and peripheral pulse of the affected limb.
- 7.19 Keep the line till instructed
- 7.20 Inform the doctors if any problem/doubt (Eg; chest pain /discomfort)
- 7.21 Patient ambulated after 6 - 8 hours
- 7.22 Remove dressing next morning.

ASSISTING FOR PERICARDIOCENTESIS

1.0 Meaning:

- 1.1 Pericardiocentesis is also called pericardial tap in which a needle and catheter is inserted to remove fluid from the pericardium

2.0 Indications/Purposes:

- 2.1 To remove fluid from the pericardial sac caused by pericarditis, effusion from malignant neoplasm or lymphoma, trauma, accidental-blunt or penetrating wounds, iatrogenic-cardiac surgery, cardio pulmonary resuscitation, perforation of heart by catheter or trans venous pacemaker, infection.
- 2.2 To obtain fluid for diagnosis
- 2.3 To instill certain therapeutic drugs.

3.0 Contraindications:

- 3.1 Client on thrombolytic agents (Inj. Streptokinase, Inj. Heparin)
- 3.2 Deranged bleeding parameters.

4.0 Articles:

A clean trolley containing;

- 4.1 Sterile venous section set
- 4.2 Disposable syringe (10ml)-1
- 4.3 Disposable needle-18 G -1
- 4.4 20 ml syringe with luerlock / dispovan
- 4.5 6F or 7F sheath, pig tail catheter -1
- 4.6 3 way adaptor with IV set
- 4.7 Sterile specimen container (minimum 3), and EDTATube-1, serum plain-1
- 4.8 Sterile whole towel.
- 4.9 Dressing bin, cheatle forceps, and cleaning solution
- 4.10 Sterile Gloves,
- 4.11 IV tubing with drainage bottle
- 4.12 Mackintosh and draw sheet
- 4.13 Kidney tray / waste disposal container
- 4.14 Mask
- 4.15 Inj. Xylocaine 2 %
- 4.16 Tincture Benzoin
- 4.17 Measuring Jar
- 4.18 Emergency trolley with resuscitation equipment

5.0 Pre-procedure:

- 5.1 Provide privacy
- 5.2 Provide well lighted area
- 5.3 Maintain a sterile field

- 5.4 Identify the client and check doctor's orders.
- 5.5 Assess the general condition of the client
- 5.6 Collect and send the client's blood for PT/INR/APTT/PC, HIV, HbsAg and ascertain the results are within normal limits.
- 5.7 Ensure that an echocardiography is done and the report is available.
- 5.8 Obtain written informed consent.
- 5.9 Shave and clean the site of puncture.
- 5.10 Monitor the client's vital signs.
- 5.11 Administer a premedication if prescribed.
- 5.12 Connect the cardiac monitor to the client.
- 5.13 Keep the patient NPO
- 5.14 Patient should be shifted with patent IV line.

6.0 Procedure:

- 6.1 Wash hands
- 6.2 Explain the procedure
- 6.3 Place a mackintosh and draw sheet under the thoracic region(chest)
- 6.4 Provide supine position to the client. (if breathless, position in 30 - 40 degree head end elevation)
- 6.5 Drape the client appropriately
- 6.6 Assist the doctor during the procedure
- 6.7 Communicate with the client in between the procedure
- 6.8 Assist in applying a dressing over the puncture site after the procedure
- 6.9 Remove the mackintosh and draw sheet.

7.0 Post-procedure :

- 7.1 Assess the response to the procedure
- 7.2 Make the patient comfortable
- 7.3 Monitor the patient's cardiac function
- 7.4 Assess for complications like damage to cardiac muscles, bleeding, cardiac tamponed, Arrhythmias, post procedure infection.
- 7.5 Observe the puncture site for any leakage. Ensure that the puncture site dressing is sealed
- 7.6 Send the specimen to the lab with appropriate client identification
- 7.7 Clean, dry and replace the equipment in its appropriate place.
- 7.8 Daily dressing is not necessary
- 7.9 Wash Hands
- 7.10 Record the date and time when procedure was done, observation made, and client's condition during and after the procedure, and name of the doctor who did the procedure

ADMISSION AND MANAGEMENT OF PATIENT IN BURNS UNIT

1.0 Meaning :

- 1.1 Admitting a burns patient directly to the unit to resolve the immediate problems resulting from burn injury.

2.0 Indications/Purposes:

- 2.1 To correct fluid and electrolyte imbalances.
- 2.2 To initiate life saving measures without delay.
- 2.3 To prevent infection.
- 2.4 To manage pain.

3.0 Articles

- 3.1 Intravenous infusion Tray
- 3.2 Tray for Urinary Catheterization.
- 3.3 Vital signs Tray
- 3.4 ECG Machine
- 3.5 Nasogastric insertion Tray

4.0 Pre Procedure

- 4.1 Unit preparation for maintaining aseptic precautions and isolation technique
- 4.2 Obtaining blood for initial investigations.
- 4.3 Assemble all the articles in the patient receiving unit
- 4.4 Receive the patient in the unit specially prepared for the purpose.

5.0 Procedure

- 5.1 Cover the patient with a sterile sheet
- 5.2 Assess airway, breathing and circulation.
- 5.3 Establish airway and ensure adequate breathing by providing 100% oxygen if indicated as in suspected inhalation injury.
- 5.4 Check vital signs.
- 5.5 Assess for associated trauma.
- 5.6 Remove saturated clothing
- 5.7 Cool the tar burn.
- 5.8 Copiously irrigate a chemical burn
- 5.9 Remove any jewelry present on patient.
- 5.10 Collect history about the incident such as the cause of burns that is chemical, thermal, electrical or radiation.
- 5.11 Collect data about the time of occurrence of burns, level of consciousness at the scene, whether injury occurred in an enclosed or open space, presence of associated trauma, etc.

- 5.12 Assess the patient for depth, size and location of the burns.
- 5.13 Assess the duration of exposure in case of electrical, chemical or radiation burns.
- 5.14 Assess percentage of burns by "Rule of 9"

Head and neck - 9%
Anterior thorax - 18%
Posterior thorax - 18%
Right arm - 9%
Left arm - 9%
Perineum - 1%
Right leg - 18%
Left leg - 18%

- 5.15 Assess general health of the patient with debilitating illness such as cardiac, pulmonary, endocrine and renal disease.
- 5.16 In chemical burns, assess for :
 - 5.16.1 Knowledge of offending agent
 - 5.16.2 Concentration
 - 5.16.3 Duration of exposure.
- 5.17 Initiate IV infusion through peripheral line. Assist for cut down if indicated. Fluid calculation depends upon patient's weight, extent of injury, presence of inhalation injury, any delay In initiation of resuscitation and deep tissue damage.
- 5.18 Catheterize the patient. Measure the amount of urine and record hourly.
- 5.19 Initiate nasogastric feeding (Withhold feed if paralytic ileus is present).
- 5.20 Maintain strict isolation and follow aseptic technique in caring for patient.
- 5.21 Check vital signs frequently.
- 5.22 Assess for baseline laboratory studies such as:
 - 5.22.1 Blood glucose
 - 5.22.2 BUN
 - 5.22.3 Serum Creatinine
 - 5.22.4 Serum electrolytes
 - 5.22.5 Hematocrit level
 - 5.22.6 Chest X-ray
 - 5.22.7 ABG (inhalation injury)
- 5.23 Monitor ECG continuously especially in high voltage electrical injury and major burns.
- 5.24 Administer narcotic agents through IV line as prescribed by physician.
- 5.25 Administer tetanus toxoid for patients who have not been immunized. If immunized, Tetanus booster dose should be given according to physician's order.

6.0 Post procedure

- 6.1 Record the time of admission and document, procedures done in nurses records.
- 6.2 Inform police in medicolegal case.
- 6.3 Use caution when patient is biohazard with hepatitis B and HIV infection.

- 6.4 Inform family by giving periodical information about patient's condition and progress.
- 6.5 Assess patient for known allergies.

IMAGES OF THE DEGREES OF BURN



BURN INJURIES

3rd Degree Burn

A full-thickness burn, extends through all layers of the skin and damages tissue and nerve endings just beneath the skin

Texture: Stiff and white or brown, no blanching under pressure, leathery and dry

Sensation: Painless (nerve endings are damaged or destroyed)

Approximate Time to Heal: Several months, requires specialized burn treatment, full function may not be restored in some cases

4th Degree Burn

A severe burn extending beyond the skin and into underlying fat, muscle, or bone

Texture: Black, charred, dry, crisp

Sensation: Painless (nerve endings are destroyed)

Approximate Time to Heal: Excision or amputation is typically needed. Function in the affected area is lost or severely limited. Death can result in severe cases.

2nd Degree Burn

Also known as partial-thickness burn, damaging some on the underlying skin/flesh layers

Texture: Redness with clear blisters, skin blanches (turns white) under pressure, damaged area feels moist

Sensation: Extremely painful, injury site remains very sensitive to touch, slight hot and cold

Approximate Time to Heal: 2-3 weeks

1st Degree Burn

A burn affecting only the superficial (outermost) layers of skin,

Texture: Redness, some irritation, no blistering

Sensation: Moderate "stinging" pain

Approximate Time to Heal: 5 to 10 days



FLUID RESUSCITATION IN ACUTE BURNS

1.0 Meaning :

- 1.1 Initiating and maintaining fluid resuscitation as per burns protocol.

2.0 Indications/Purposes:

- 2.1 To prevent hypovolemic shock.
- 2.2 To prevent further complications.

3.0 Articles :

- 3.1 Sterile dressing pack-1
- 3.2 Antiseptic solution
- 3.3 Injection Xylocaine
- 3.4 Disposable needle 20
- 3.5 I.V cannula's of different sizes
- 3.6 Cut down set
- 3.7 IV fluids as required
- 3.8 Blood administration set (for 2nd day's colloids transfusion)
- 3.9 Three-way connector with extension
- 3.10 Scalpel blade No.11

4.0 Pre procedure

- 4.1 If patient does not tolerate feeds, keep nil orally with 4 hourly aspiration and dependent drainage.
- 4.2 Initiate fluid therapy within an hour following a severe burn.
- 4.3 Consider three types of fluids in calculating the needs of the patient:
 - 4.3.1 Colloids-including plasma and plasma expanders such as dextran.
 - 4.3.2. Electrolytes such as physiologic solution of sodium chloride, Ringer's solution.
 - 4.3.3. Non-electrolyte fluids such as distilled water with 5% dextrose.
- 4.4 The amount of fluid replacement required during first 48 hours is determined by assessment of factors such as
 - 4.4.1 Urinary output
 - 4.4.2 Serum electrolyte levels
 - 4.4.3 Blood gas findings
 - 4.4.4 Central venous pressure
 - 4.4.5 Body weight
 - 4.4.6 Hematocrit level
 - 4.4.7 Level of consciousness
 - 4.4.8 Vital signs

4.5 Observe urine for colour and volume. An urine outflow of 30-50 ml per hour for adults and 15 ml/hr for infants is considered adequate. If the urinary output falls below these figures notify physician immediately.

5.0 Procedure

- 5.1 Explain procedure to patient.
- 5.2 Initiate IV access or assist for cut-down and connect IV fluids as per fluid resuscitation formula.
- 5.3 Assist in collecting blood samples while starting cut down.
- 5.4 Enquire date and time of burns accident.
- 5.5 Check the weight of the patient.(if possible).
- 5.6 Monitor urinary output.
- 5.7 Check vital signs frequency.
- 5.8 Monitor ECG continuously.

Formula for fluid replacement in burns patient

Sl. No.	Fluid resus citation	Crysta lloids	Colloid containing solution	Dextrose in water	Crysta lloids	Colloid containing solution	Dextrose In water
1.	Evans	Normal saline 1 ml/kg/% BSA ½ given in first 8 hrs remaining ½ in next 16 hours	1 ml/kg/%BSA	2000 ml	½ of first 24 hours requirement	½ of first 24 hours requirement	2000 ml
2.	Brooke	Lactated Ringer's Solution 1.5ml/kg/% BSA ½ given in first 8 hrs remaining ½ in next 16 hours	0.5 ml/kg % BSA	2000 ml	Half to three fourth of first 24 hours requirement	Half to three fourth of first 24 hours requirement	2000 ml
3.	Modified Brooke	Lactated Ringer's 2 ml/kg/% BSA ½ given during first 8 hrs remaining ½ given in next 16 hours	None	None	None	0.3-0.5 ml/Kg/% BSA	Titrate to maintain urine Output

4.	Parkland/ Baxter	Lactated Ringer's 4 ml/kg/% BSA ½ given first 8 hrs 1/4th given in each next 8 hours	None	None	None	0.3-0.5 ml/ Kg/% BSA	Titrate to maintain urine Output
5.	Hypertonic Saline solution	Fluid containing 250 mEq of sodium / L to maintain hourly urine output of 70 ml in adults ½ given in first 8 hrs. remaining ½ in next 16 hours	None	None	Same solution to maintain hourly urine output of 30 ml in adults	None	None

6.0 Post procedure

- 6.1 If a burned patient is delayed for 2 hours in reaching emergency department. Those 2 hours must be considered in calculation of needed fluid.
- 6.2 With the exception of Evans and Brooke formulas, for the first 24 hours colloid containing solutions are not given because of the changes in capillary integrity that allows leakage of protein rich fluid into the interstitial space resulting in formation of additional edema fluid.
- 6.3 It is important to remember that all resuscitation formulas are only guides and that fluid resuscitation volumes should be adjusted according to the patient's physiologic response.
- 6.4 Modified Brook and Parkland formula for fluid resuscitation are widely used clinically.
- 6.5 Document all the types and amount of fluid replacement done.
- 6.6 Record the Intake Output chart as and when required

ASSISTING IN CARE OF PATIENTS RECEIVING CHEMOTHERAPY

1.0 Meaning

- 1.1 The term chemotherapy which is sometimes shortened to chemo, refers to the use of medications to treat cancer.

2.0 Indications/Purposes:

- 2.1 To lower the total number of cancer cells in your body.
- 2.2 To reduce the likelihood of cancer spreading.
- 2.3 To shrink tumor size.
- 2.4 To reduce current symptoms.

3.0 Articles

- 3.1 Chemotherapy drug
- 3.2 Needles
- 3.3 IV Set
- 3.4 Alcohol wipe
- 3.5 Syringe
- 3.6 Disposable surgical gloves.
- 3.7 Protective eye goggles.
- 3.8 Long sleeves gown .
- 3.9 Elastic or knit cuffs.

4.0 Pre- Procedure preparation

- 4.1 Explain the importance of the procedure to the patient
- 4.2 Obtain written informed consent
- 4.3 A lab tests are done before chemotherapy is started.
- 4.4 All chemotherapeutic drug should be prepared in laminar wood
- 4.5 Personal protective equipment should be used.
- 4.6 Wash hands before and after drug handling.
- 4.7 Limit access to drug preparation area.
- 4.8 Keep labeled drug spill kit near preparation area.
- 4.9 Apply gloves before drug handling.

5.0 Procedure

- 5.1 Check name of drug, Dosage, Route of administration, Date and time.
- 5.2 Open drug vials/ ampoules away from body.
- 5.3 Place absorbent pad on work surface.
- 5.4 Wrap alcohol wipe around neck of ampoule before opening.

- 5.5 Cover tip of needle with sterilize gauge when expelling air from syringe.
- 5.6 Label all chemotherapeutic drugs.
- 5.7 Observe the 5 Rights.
- 5.8 Explain about prevention of extravasation.

6.0 Post Procedure care

- 6.1 Dispose of all equipment used in chemotherapy preparation and administration in designated containers.
- 6.2 Dispose all chemotherapy wastes as hazardous materials.
- 6.3 Check the vitals and record.
- 6.4 Monitor client for symptoms of anaphylactic reaction Urticaria, pruritus, shortness of breath.
- 6.5 Asses for electrolyte imbalances,
- 6.6 Teach client and family to report about any complication after C T administration
- 6.7 Advice client to take plenty of fluids 2500-3000ml/day
- 6.8 Assess for signs of bone marrow depression and change in blood counts.
- 6.9 Assess for signs of bleeding and infection.
- 6.10 Monitor for signs of renal insufficiency of urine output.

NURSES RESPONSIBILITY DURING RADIATION THERAPY

1.0 Meaning :

- 1.1 Radiation therapy uses high-energy radiation to shrink tumors and kill cancer cells. X-rays, gamma rays and charged particles are types of radiation used for cancer treatment.

2.0 Types

- 2.1 EXTERNAL BEAM RADIATION THERAPY/ TELE THERAPY- the radiation may be delivered by a machine outside the body
- 2.2 INTERNAL RADIATION THERAPY/ BRACHY THERAPY- The radioactive material placed in the body near cancer cells

3.0 External Radiation :

- 3.1 Explain the procedure of treatment.
- 3.2 The radiation oncologist will mark with the colored semi-permanent ink
- 3.3 The radiation source is exterior to the tumour such as the use of linear accelerator.
- 3.4 Remove all opaque objects such as pins, buttons and hairpins
- 3.5 Have patient perfectly still; maintain position with the use of foam, plastic devices.
- 3.6 Tell the patient there will be no sensation or pain accompanying radiation therapy.
- 3.7 Advise the patient that he will be alone in the room for the protection of the technician.
- 3.8 Series of treatments are to be given, include the patient in the planning phase.
- 3.9 Explain about a side effects of R T treatment.

4.0 Nursing Responsibilities

- 4.1 Explains the procedure
- 4.2 The equipment, the duration and the possible need of immobilizing the patient.
- 4.3 Minimize side effects
- 4.4 Provide a non-stressful environment
- 4.5 Dental care-If you wear dentures, they may no longer fit well because of swollen gums.
- 4.6 Patients might feel depressed, afraid, angry, frustrated, alone or helpless.
- 4.7 Side effects can include eating and digestion problems. it is important to keep your protein and calorie intake high
- 4.8 Advise patient to drink plenty of fluids to prevent dehydration
- 4.9 Monitor nutritional status
- 4.10 Advise client to wear loose clothing.

5.0 Client and Family Teaching

- 5.1 Wash the skin that is marked as the radiation site only with plain water, no soap; do not apply deodorant, lotions.

- 5.2 Take care not to wash off the treatment marks.
- 5.3 Do not rub, scratch, or scrub treated skin areas.
- 5.4 Apply neither heat nor cold to the treatment site.
- 5.5 Inspect the skin for damage or serious changes
- 5.6 Protect skin from sun exposure during treatment.
- 5.7 Be sure to get plenty of rest and eat a balanced diet.
- 5.8 Explain about complication after treatment.

6.0 Internal Radiation

- 6.1 The radiation source, called an implant, is placed into the affected tissue or body.
- 6.2 An implant may be temporary or permanent.
- 6.3 Internal radiation is introduced into the tumour through the catheter.
- 6.4 The radioactive substance may transmit rays outside the body or be excreted in body fluids.

7.0 Nurses Responsibility

- 7.1 An explanation to the patient of the procedure and the precautions
- 7.2 Place the patient in isolation in a single room.
- 7.3 Provide a telephone and radio or television and reading materials
- 7.4 In close contact with patient always wear a lead apron or gown.
- 7.5 Wear a monitoring badge which records the amount of radiation received.
- 7.6 Visit patient once in a while
- 7.7 Nurse should wash hands thoroughly after any contact with patient and other equipment
- 7.8 Limit visits to 10 to 30 minutes, and have visitors sit at least 6 feet from the client.
- 7.9 Monitor for side effects such as burning sensations, excessive perspiration, chills and fever, nausea and vomiting, or diarrhoea. Assess for fistulas or necrosis of tissues.

8.0 Client And Family Teaching

- 8.1 While a temporary implant is in place, stay in bed and rest to avoid dislodgment.
- 8.2 For outpatient treatments, avoid close contact with others until treatment stops.
- 8.3 Dispose of excretory materials in special containers or in a toilet not used by others.
- 8.4 Carry out daily activities as able; get extra rest if feeling fatigued.
- 8.5 Eat a balanced diet; frequent, small meals often are better tolerated.
- 8.6 Contact the nurse or physician for any concerns or questions after discharge.

9.0 Staffs Safety

- 9.1 Put on shoe covers and protective gloves before entering patients room.
- 9.2 Work quickly but effectively and courteously. Minimize time in room
- 9.3 Leave all trash, linens, and food trays in the room separately.
- 9.4 After leaving the room, wash your hands.
- 9.5 Staff should maintain principles of protection TDS (TIME, DISTANCE, SPACE)

ASSISTING IN COLOSTOMY IRRIGATION

1.0 Meaning:

- 1.1 Colostomy irrigation is a way to regulate bowel movements by emptying the colon at a scheduled time.

2.0 Indications/Purposes:

- 2.1 To empty and cleanse the colon and rectum.
- 2.2 To stimulate peristalsis and help develop regular bowel movement.
- 2.3 To relieve flatulence.
- 2.4 To promote regulated evacuation.
- 2.5 To regulate bowel movement.
- 2.6 To help to avoid constipation.

3.0 Articles

- 3.1 Enema Can and tubing.
- 3.2 Three emesis basins
- 3.3 Bath blanket
- 3.4 Warm water in a basin
- 3.5 Bath towel
- 3.6 Bedpan or pail for collecting the return flow
- 3.7 Irrigating solution
- 3.8 Newspaper
- 3.9 Soap, extra rubber sheet, small colon tube, plastic apron, colostomy dressing tray, wash cloth.

4.0 Pre-Procedure preparation

- 4.1 Explain the procedure to patient and relative
- 4.2 Obtain written informed consent
- 4.3 Bring equipments to the bedside
- 4.4 Provide privacy.
- 4.5 Assist the patient to turn on his left side or appropriate side.
- 4.6 Place the emesis basin and newspaper at the foot of the bed.

5.0 Procedure

- 5.1 Expose the abdomen, drape the patient with a bath blanket if necessary.
- 5.2 Remove soiled dressings and place them on the emesis basin and newspaper at the foot of the bed.
- 5.3 Place the basin for return flow immediately under the colostomy opening. The patient can hold this in place if he is able.
- 5.4 Open the clamp on the tubing and allow a small amount of solution to flow into the basin.

- 5.5 Lubricate the tip of the colon tube.
- 5.6 Insert the colon tube 6-8 inches into the colostomy opening.
- 5.7 Hold the enema can approximately 12 inches above the bed and allow the solution to flow in slowly.
- 5.8 When the basin is almost full, quickly remove it and place the second basin in position.
- 5.9 Empty the first basin immediately.

6.0 Post Procedure care

- 6.1 After the irrigation is finished, wash the area with soap and water and apply a clean dressing to the area.
- 6.2 Return the equipment to the utility room, clean and return to the proper place.
- 6.3 Check the vitals and document it.
- 6.4 Document the following:
 - 6.4.1 The time of irrigation administered.
 - 6.4.2 Kind and amount of solution used for the irrigation.
 - 6.4.3 Dressing applied and condition of the area.
 - 6.4.4 Results obtained; amount, color, and consistency of the returns.
 - 6.4.5 Patient's reaction to procedure.

BLADDER IRRIGATION

1.0 Meaning

- 1.1 Bladder irrigation can be defined as a process of flushing out or washing out the urinary bladder with specified solution

2.0 Indications/Purposes:

- 2.1 To flush clots and debris out of bladder
- 2.2 To instill medication to bladder lining
- 2.3 To restore patency of the catheter.

3.0 Indication

- 3.1 Post TURP (Trans urethral resection of Prostate)
- 3.2 Post ESWL (Extracorporeal shockwave Lithotripsy)

4.0 Articles

- 4.1 Disposable gloves
- 4.2 Disposable ,water resistant,sterile towel/mackintosh
- 4.3 Three way retention catheter in-situ
- 4.4 Sterile drainage tubing and bag in place
- 4.5 Sterile antiseptic swab
- 4.6 Sterile receptacle
- 4.7 Sterile irrigating solution (Normal saline or Distilled water or Solution as prescribed by physician)
- 4.8 Infusion tubing
- 4.9 IV pole
- 4.10 Kidney tray

5.0 Pre procedure

- 5.1 Determine the client's current urinary drainage system.
- 5.2 Review the client record for recent intake and output and difficulties the client has been experiencing with the system.
- 5.3 Review the result of previous irrigations.
- 5.4 Assess the client for any discomfort , bladder spasm,or distended bladder.

6.0 Procedure

- 6.1 Explain the procedure
- 6.2 Wash hands and observe appropriate infection control measures.
- 6.3 Provide for client privacy.

- 6.4 Apply clean gloves.
- 6.5 Empty, measure, and record the amount and appearance of urine present in the drainage bag.
- 6.6 Discard urine and gloves.
- 6.7 Emptying the drainage bag allows more accurate measurement of urinary output after the irrigation.
- 6.8 Prepare the equipment
- 6.9 Wash hands
- 6.10 Connect the irrigation infusion tubing to the irrigating solution and flush the tube with solution ,keep the tip sterile. Flushing the tubing removes air and prevents it from being instilled in to the bladder.
- 6.11 Apply clean gloves and cleanse the part with antiseptic swabs.
- 6.12 Connect the irrigation tubing to the input port of the three way catheter.
- 6.13 Connect the bag and tubing to the urinary drainage port if not already in place.
- 6.14 Remove your gloves and wash your hands.
- 6.15 Irrigate the bladder.

7.0 Post procedure

- 7.1 Assess the drainage for amount, color, and clarity. The amount of drainage should equal the amount of irrigant entering plus expected urine output.
- 7.2 Assess the client and the urinary output, assess the client's comfort
- 7.3 Empty the drainage bag and measure the contents. Subtract the amount of irrigant instilled from the total volume of drainage to obtain the volume of urine out put.
- 7.4 Document the procedure and results in the clients records. Use forms or checklists supplemented by narrative notes when appropriate.
- 7.5 Note any abnormal constituents such as blood clots, pus or mucous shreds.

ASSISTING IN BOWEL WASH

1.0 Meaning

- 1.1 Bowel washouts are performed to decompress the lower intestine and deflate the abdomen by removing gas and stool using small amounts of Sodium Chloride 0.9% (normal saline).

2.0 Indications/Purposes:

- 2.1 Performed in babies and children to relieve low intestinal obstruction, e.g. suspected Hirschsprung disease (HD), meconium plug disease, meconium ileus or intestinal dysmotility.
- 2.2 Used as a mode of temporary management in proven cases of Hirschsprungs Disease until definitive surgery is performed (for 4-12 weeks depending on each case).
- 2.3 Used in the management of patients admitted with enterocolitis.
- 2.4 Used preoperatively in patients undergoing closure of stoma procedures.
- 2.5 May be used in the management of constipation in children.

3.0 Articles

- 3.1 Nelaton catheter.
- 3.2 60mL catheter tip syringe.
- 3.3 Sodium Chloride 0.9% sachets.
- 3.4 Lubricant.
- 3.5 Gloves.
- 3.6 Incontinence sheet.

4.0 Pre- Procedure preparation

- 4.1 Explain the procedure to patient and relative.
- 4.2 Obtain written informed consent.
- 4.3 The frequency of washouts is determined according to the effectiveness of decompression of the bowel.
- 4.4 Position neonate, usually on his/her back with legs in the frog position.
- 4.5 Position older child on their left side.
- 4.6 Swaddling of arms, comfort and play therapy techniques can be used.
- 4.7 Select appropriate sized catheter for use.

5.0 Procedure

- 5.1 Warm 0.9% Sodium Chloride sachets (in a jug of warm tap water) and prime catheter with solution.
- 5.2 Lubricate tip of catheter and gently insert into the rectum.
- 5.3 Length to be determined, Instil 0.9% Sodium Chloride solution in 10 - 20ml liquids (by pushing in with syringe plunger) over 1-2 minutes (there should be no resistance when injecting the normal saline).

- 5.4 Remove syringe and let fluid run into nappy/kidney dish. Procedure may be repeated twice if return is not clear.
- 5.5 If there is 0.9% Sodium Chloride retention or return is not clear contact surgeon.
- 5.6 Remove catheter from the rectum and leave the patient clean and dry.

6.0 Post Procedure care

- 6.1 Note and record results of rectal washout accurately on fluid balance chart and in progress notes.
- 6.2 Sucrose may be administered prior to and throughout the procedure as required.
- 6.3 Check the vitals and record.
- 6.4 Do not use excessive force if resistance is felt. Contact medical staff if unsure
- 6.5 Do not pull back on syringe to aspirate, allow the saline to run out naturally. Sometimes manipulating the catheter in and out a few centimeters gently and massaging the abdomen may encourage fluid returns to be expelled. Do not exceed maximum of 20ml/kg or total of 250ml.
- 6.6 Allow the patient to rest for few hours.
- 6.7 Clean the articles with cold water then with warm water, dry and send to autoclave.
- 6.8 Record the procedure, observations made, Washout result, vitals and any complications.

ASSISTING IN PET / MRI (POSITRON EMISSION TOMOGRAPHY / MAGNETIC RESONANCE IMAGING)

1.0 Meaning :

- 1.1 PET is a nuclear medicine functional imaging technique that is used to produce detailed three dimensional images of inside of the body by injecting radioactive tracer into the vein and observing how it is absorbed or processed in the body.

2.0 Indications/Purposes:

- 2.1 Clinical oncology : Imaging of tumors & confirming the diagnosis staging and restaging, Response assessment to treatment : To check therapeutic effectiveness of treatment e.g. chemotherapy.
- 2.2 Non oncologic applications : neurology (epilepsy, movement disorders, dementia, psychiatric application etc.) and Cardiology.
- 2.3 Research tool to map normal human brain and heart function & support drug development.
- 2.4 Miscellaneous applications : Fever of Unknown origin, etc.

3.0 Articles

- 3.1 BP apparatus
- 3.2 IV canula (20 gauge)
- 3.3 Glucometer
- 3.4 Weighing machine
- 3.5 Height scale
- 3.6 Normal saline

4.0 Pre Procedure

- 4.1 Prepare the unit for procedure & Screen all the patients who are referred to PET
- 4.2 Explain the procedure to the patient relatives regarding PET.
- 4.3 Take consent both for injection of radio pharmaceutical and IV contrast.
- 4.4 Receive the patient with case file/with appointment slip.
- 4.5 Fasting for 4-6 hrs, water is allowed.
- 4.6 Check for LMP for all female patients, if any doubt spot urine pregnancy test must be done. Inform the doctor.
- 4.7 Blood investigations especially Serum Creatinine.
- 4.8 Random Blood Sugar
- 4.9 Record the Weight
- 4.10 Assess for Diabetic status, hypertension, any renal problems.
- 4.11 Record Vital Signs
- 4.12 Provide hospital cotton dress
- 4.13 Remove all metallic objects.
- 4.14 Ensure if the patient had the drugs prescribed by the doctor, prior to the procedure.
- 4.15 Check with the doctor regarding drugs to be with hold

5.0 Procedure

- 5.1 Administer the drugs with sips of water, if patient needs to have any.
- 5.2 Fix IV line and ensure the line is patent.
- 5.3 Check Random Blood sugar if $>200\text{mg/dl}$ or $< 60\text{mg/dl}$ to inform the concerned doctor.
- 5.4 Assist technologist during injection of radio pharmaceuticals.
- 5.5 Assist patient to be comfortable after injection.
- 5.6 Give specific instructions regarding frequent voiding and hydration after injection of radio pharmaceuticals.
- 5.7 Monitor patient through CCTV.
- 5.8 Follow strict ALARA while working with patients injected with radio pharmaceuticals.
- 5.9 Assist Technologists for positioning the patients for scan and injection of contrast.
- 5.10 Assist Anesthetist during sedation for patients.
- 5.11 Make sure that pregnant women and children are kept away from radiation area.

6.0 Post Procedure Care

- 6.1 Make the patient comfortable
- 6.2 Reassure the patient and make him/her comfortable
- 6.3 Make sure the patient has his breakfast and prescribed medications after the procedure.
- 6.4 Educate the patient and the relatives regarding post procedure care and follow up.
- 6.5 Any specific instructions to contact the faculty in charge.

CHEST PHYSIOTHERAPY

1.0 Meaning:

- 1.1 Chest physiotherapy (CPT) is a therapeutic intervention applied to help natural airway clearance mechanisms (cough and ciliary cleansing mechanisms) reduce or prevent blockage of airways by thick, tenacious mucus.

2.0 Indications/Purposes:

- 2.1 Assist in coughing
- 2.2 Reeducate breathing muscles
- 2.3 Improve ventilation of the lungs

3.0 Contra Indications:

- 3.1 Increased ICP
- 3.2 Unstable head or neck injury
- 3.3 Active haemorrhage or haemoptysis
- 3.4 Recent spinal injury
- 3.5 Rib fracture
- 3.6 Flail chest
- 3.7 Uncontrolled hypertension
- 3.8 Anti coagulation
- 3.9 Thoracic surgeries

4.0 Articles:

- 3.1 Tilt bed and/or pillows
- 3.2 Towels or thick pad
- 3.3 Sputum cup/tissue
- 3.4 Stethoscope
- 3.5 Manual, pneumatic, or vibratory percussor

5.0 Pre-Procedure

- 5.1 Identify physical indications for CPT.
- 5.2 Identify possible contraindications for CPT.
- 5.3 Determine child's age, developmental level, ability to understand procedure, and ability to cooperate.
- 5.4 Assess diversional activities child might enjoy during CPT.
- 5.5 Determine parent's understanding of and ability to perform CPT at home.
- 5.6 Assess ability of older child to do self-physiotherapy.

6.0 Procedure

- 6.1 Have child cough or suction trachea before beginning treatment.
- 6.2 Therapist and parents should wash hands before treatment.
- 6.3 Administer bronchodilators as ordered before CPT.
- 6.4 Select areas of lungs to be percussed. Treatments may be split up into sections and performed at various times throughout the day.
- 6.5 Place child in appropriate drainage position. Assist child in assuming proper positioning, placing pillows for comfort, support and to maintain position.
- 6.6 Perform percussion using cupped hands. Clap rhythmically over specific area to be drained. Mold hands side by side.
- 6.7 Contour of chest: Alternate hands while clapping. Clapping should be vigorous, not painful. Speed and rhythm vary with experience and individual techniques. Percuss 1 minute over lung segment to be drained.
- 6.8 Vibrate 2 to 3 times.
 - 6.8.1 Place hand over hand on area to be drained as child takes in a slow, deep breath.
 - 6.8.2 Have child exhale through pursed lips, contract abdominal muscles, and relax chest wall muscles.
 - 6.8.3 While child is exhaling, gently push down and perform isometric contractions of forearm with flat part of hand. Hold elbows slightly bent.
 - 6.8.4 Release pressure after child exhales.
 - 6.8.5 Repeat vibrations 2 to 3 times.
 - 6.8.6 Child should cough by taking deep breath and doing a series of small coughs. Vibrate chest as child coughs.
- 6.9 Percuss for another minute over same segment. Percussion should be done at a comfortable, effective, moderately fast rate.
- 6.10 Repeat vibration 2 to 3 times over the same segment during exhalation.
- 6.11 Allow child to sit up to cough between each segment being drained.
- 6.12 Have child expectorate into a clear container or tissues.
- 6.13 Have the child rest between positions if necessary.
- 6.14 Change the positions and repeat steps until all congested area have been drained. Treatment should take approximately 30 minutes if child is co-operative.
- 6.15 If long therapy is to be continued in the home, teach parents and child positions for postural drainage, percussion and vibration.
- 6.16 If necessary, initiate referral to assess regimen through home health or outpatient follow-up care.

7.0 Post-Procedure

- observe and record
- 7.1 Pre-treatment and post-treatment
 - 7.2 Assessment of chest; frequency and duration of treatment and segments drained;
 - 7.3 Effectiveness of cough; color, amount and consistency of sputum;
 - 7.4 Need for suctioning;
 - 7.5 Child co-operation and tolerance of treatment;
 - 7.6 Any unexpected results of therapy.

ENDOTRACHEAL INTUBATION

1.0 Meaning:

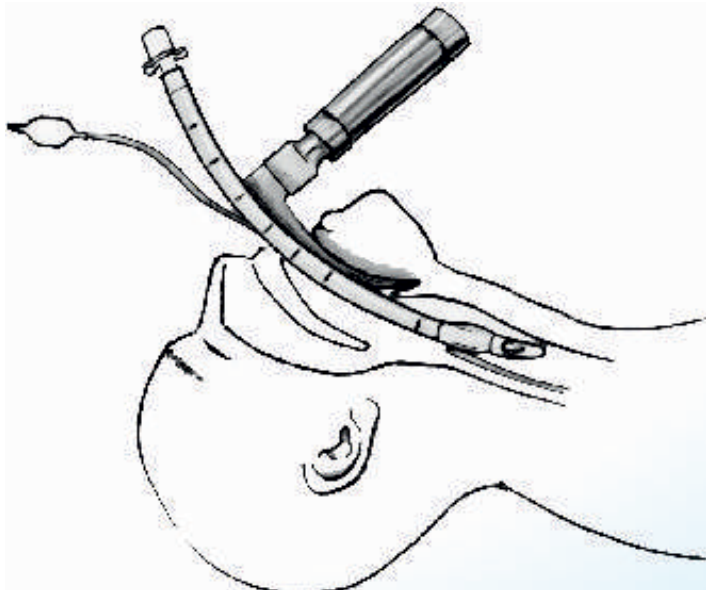
Endotracheal Intubation is placement of special tube in trachea. Endotracheal intubation is employed to relieve upper airway obstruction, maintain a patent airway or treat impending or actual respiratory failure from any cause. The special care needs of a child who is intubated include, Frequent assessment of respiratory status. Evaluation of the effects of mechanical ventilation.

2.0 Indications/Purposes:

- 2.1 To secure airway
- 2.2 To supply oxygen
- 2.3 For general anesthesia
- 2.4 For cardiopulmonary resuscitation
- 2.5 For ventilatory therapy in ICU

3.0 Articles:

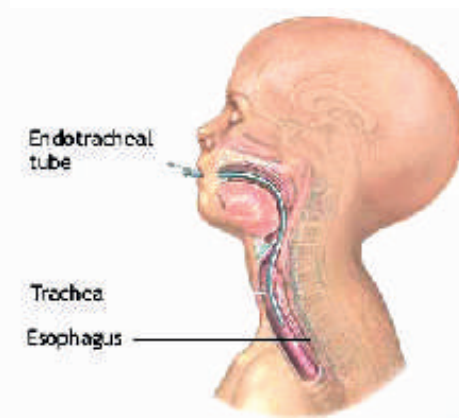
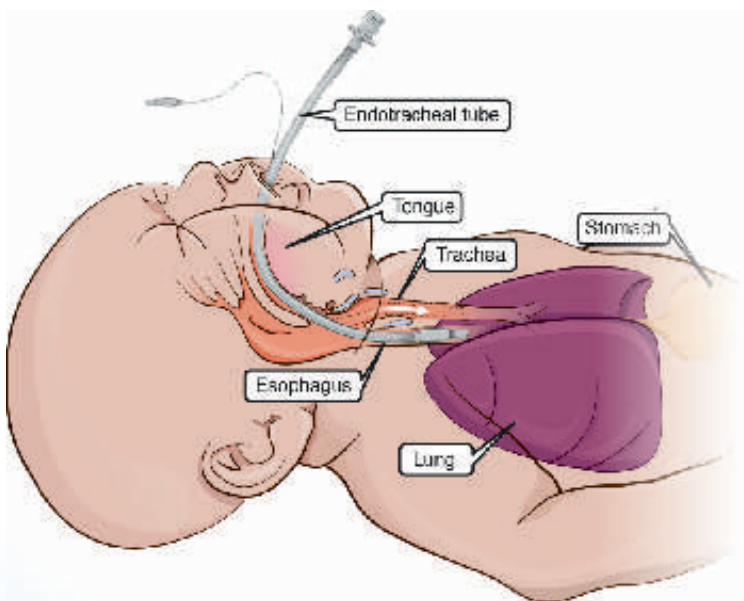
- 3.1 Endotracheal tubes
- 3.2 Laryngoscope blades
- 3.3 Oral airway
- 3.4 Suction devices: catheters and tonsil tip
- 3.5 Intravascular catheters, spinal needle, or bone marrow needle.
- 3.6 Oro gastric tube
- 3.7 Tape measure
- 3.8 2 X 2 inch gauze pads
- 3.9 Laryngoscope handles and blades
- 3.10 Scissors
- 3.11 Gloves
- 3.12 Syringes
- 3.13 Needles
- 3.14 Medications - benzoin
- 3.15 Tapes - plastic or adhesive



- 3.16 Stethoscope
- 3.17 Mouth Care Articals
 - 3.17.1 2-3 sponge tipped applicators or tooth brush
 - 3.17.2 Solution of ½ mouth wash and ½ hydrogen peroxide.
 - 3.17.3 Container of water
 - 3.17.4 Oral suction equipment

5.0 Pre-Procedure

- 5.1 Assess current respiratory status and history including:-
 - 5.1.1 Reason for intubation.
 - 5.1.2 Response to intubation.
- 5.2 Auscultate breath sound bilaterally.
- 5.3 Evaluate respiratory effort.
 - 5.3.1 Respiratory rate
 - 5.3.2 Respiratory pattern
 - 5.3.3 Chest expansion: equal and bilateral
 - 5.3.4 Effort exerted: nasal flaring or retractions.
- 5.4 Observe colour and tissue perfusion.
- 5.5 Assess heart rate.
- 5.6 Assess activity and alertness, irritability, confusion, fatigue, lethargy, inappropriate behaviour and coma.
- 5.7 Assess child and family's understanding of need, purpose and functioning of intubation.
- 5.8 Plan care with child and family; discuss ways in which they can assist with care including, bathing, comfort measures, diversional activities, changing diapers.
- 5.9 Assemble equipment.



6.0 Procedure

- 6.1 Maintain secure placement of ETT.
- 6.2 Restrain the child if necessary.
- 6.3 Sedate if necessary.
- 6.4 Reposition and retape the ETT as needed.
 - 6.4.1 Recruit an assistant
 - 6.4.2 Split two pieces of tape two-thirds of the length.
 - 6.4.3 Have the assistant hold the ETT in place and stabilize the child's head.
 - 6.4.4 Measure the length of the tube from the child's lip or nares to the end of the tube.
 - 6.4.5 Remove the old tape. Clean and dry the face with 2 X 2 gauze pads.
 - 6.4.6 Apply benzoin or skin preparation to cheeks and allow to dry.
 - 6.4.7 Check the position of the tape with tape measure.
 - 6.4.8 Apply the upper portion of the first piece of split tape on the upper lip.
 - 6.4.9 Warp the bottom portion of the tape around the ETT.
 - 6.4.10 Apply the second split piece of tape from the opposite side.
 - 6.4.11 Place the third solid piece of tape over the upper lip, covering the other two pieces.
 - 6.4.12 Double check the tube placement by measuring and auscultate breath sounds.

7.0 Post-Procedure

- 7.1 Assess patency of ETT.
 - 7.1.1 Auscultate and observe chest for entry of air into the lungs synchronous with breaths delivered by the ventilator.
 - 7.1.2 Assess ease of passing suction catheter tube through ET tube.
- 7.2 Determine if the ETT is properly secured, noting "landmark" at lip or nares.
- 7.3 Assess fluid balance.
- 7.4 Assess skin integrity with special attention to dependent areas and tissues around the ETT (nares for nasal intubation or corners of mouth, lips for oral intubation).
- 7.5 Assess for presence of subcutaneous emphysema (crepitus) over the head and thorax.
- 7.6 Assess nutritional status.
- 7.7 Assess for complications of endotracheal intubation.
- 7.8 Assess child's ability to communicate.

PARENTERAL FEEDING

1.1 Meaning:

- 1.1 Enteral feeding is an artificial method giving fluids and nutrients. This is process of feeding with the tube (Nasogastric tube) inserted through the nose, pharynx and esophagus and into the stomach.

2.0 Indications/Purposes:

- 2.1 To feed the children who are unable to take feeds orally
- 2.2 To feed the children who are under going oral surgery
- 2.3 In condition of difficulty in swallowing
- 2.4 When child is unconscious
- 2.5 When the condition is not supportive to take large amount of food orally
- 2.6 Conditions when the patient is unable to retain the food

3.0 Articles

- 3.1 The appropriate size and type of tube
- 3.2 Sterile water to lubricate the tube
- 3.3 Steel bowl and gauze
- 3.4 20ml syringe to withdraw aspirate from the stomach
- 3.5 Sterile water to flush the tube clear of aspirate once correct placement has been confirmed
- 3.6 Non-sterile gloves
- 3.7 Tape to secure the tube to the child's skin
- 3.8 A drink with a straw or a dummy for the child to suck on.

4.0 Types of Tubes

- 4.1 Wide bore tubes (usually PVC): These tubes are for short-term use only. They should be changed every 7 days. In general size 6FR - 10 FR are the range of sizes for paediatric use.
- 4.2 Fine bore tubes (polyurethane): These tubes are intended for long-term use.
- 4.3 In general a tube size of 6FR is used for standard feeds, and 7 FR is used for higher density and fibre feeds. The tubes come in a range of lengths, usually 55cm, 75cm or 85cm.

5.0 Pre-Procedure Care

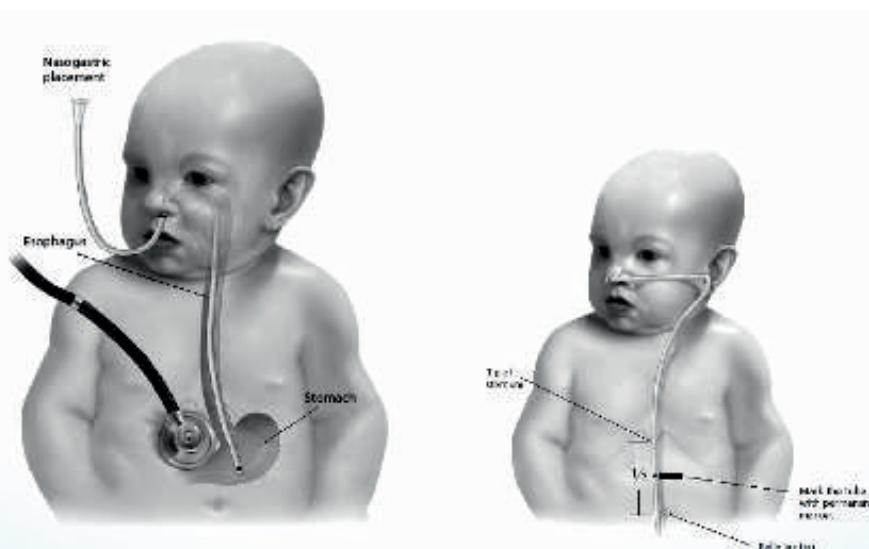
- 5.1 Provide the child and family with adequate information on the reasons and need for enteral feeding and the procedure to be performed.
- 5.2 Assist in preparing the child and family by using picture books, toys and video aids. Consider the use of distraction techniques during the procedure.
- 5.3 If the child's condition allows, use a procedure room to pass the tube.
- 5.4 If possible/practicable the child should be NPO for approximately 2 hours prior to the procedure.
- 5.5 Prepare the equipment.

- 5.6 An assessment of the child's requirements must be made to determine if there is a requirement for long or short term feeding, or need for a tube for reasons other than nutritional support, for example the administration of medicines.
- 5.7 Find the most appropriate position for the child, depending on age and ability to co-operate. For example, an older child may be able to sit upright with support to their back and head. Younger children may sit on a parent/carer(s) lap, or an infant may be wrapped in a sheet or blanket.

6.0 Procedure

Steps

- 6.1 Ensure the chosen nostril is clear of debris. Ask the child, if age appropriate, which side they would prefer to have the tube positioned.
- 6.2 Wash and dry hands thoroughly, put on non-sterile gloves and apron.
- 6.3 Check that the tube is intact.
- 6.4 Stretch the tube.
- 6.5 Measure the length of tube to be inserted. Measure from the bridge of the nose to the ear lobe, then from the ear lobe to xiphisternum. The length of tube can be marked with indelible pen or a note taken of the measurement marks on the tube, if present.
- 6.6 Lubricate the end of the tube in sterile water. Do not use KY jelly.
- 6.7 Bend the child's head slightly forward, and gently pass the tube into the child's nostril advancing it along the floor of the nasopharynx to the oropharynx. At this point ask the child to swallow a little water or offer a younger child their pacifier to assist passage of the tube down the oesophagus until the required length of tube has been inserted.
- 6.8 Never advance the tube against resistance.
- 6.9 If the child shows signs of breathlessness or severe coughing, remove the tube immediately.
- 6.10 Lightly secure the tube with tape, or have assistant hold the tube in place until the position has been checked.
- 6.11 Confirm correct placement of the tube
- 6.12 Once correct placement has been confirmed, secure the tube to the skin with a suitable tape or dressing and flush the tube with water
- 6.13 Wash hands
- 6.14 Record in the child's notes the size and type of tube that has been used



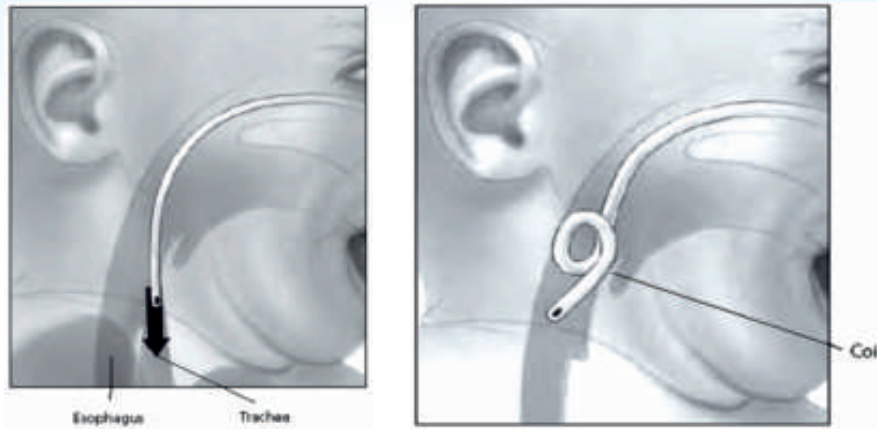
7.0 Confirming position of tube

Correct NG tube position must be confirmed:

- 7.1 At the time of insertion
- 7.2 Before each use
- 7.3 In the event of the child having an episode of:
 - a. Retching
 - b. Vomiting
 - c. Excessive coughing
 - d. Respiratory distress
- 7.4 Following a successful attempt to resolve a blocked tube.
- 7.5 In the event that the tube appears to have been partially dislodged, E.G. when visible tube length has increased.
- 7.6 Check that the tube is in the right place.
- 7.7 Attach the 3cc syringe to the end of the feeding tube.
- 7.8 Pull the plunger back to check for stomach contents.
- 7.9 If you do withdraw stomach contents, (old breast milk/formula), you have almost certainly placed the tube correctly. Return the stomach contents that you have withdrawn from the stomach. If you do not withdraw stomach contents, your placement is less certain.
- 7.10 Disconnect the syringe and pull the plunger back to the 2cc mark.
- 7.11 Attach the syringe to the end of the feeding tube.
- 7.12 Push 2 cc of air quickly into the stomach while listening over the infant's stomach with a stethoscope. You should hear a "whooshing" sound as the air enters the stomach. You should also be able to withdraw the air you pushed in.
- 7.13 If you don't hear anything, check to make sure that all the other unused openings of the feeding tube are closed.



- 7.14 The tube position should be checked 6 hourly where possible, or at least once per shift during continuous feeds. To check position of the tube, aspirate a small amount of stomach content using a 20ml or 50ml syringe (except in neonates)
- 7.15 If no aspirate can be obtained insert the tube a further few centimetres or change the child's position and try again. If still unable to aspirate and it is safe to do so offer the child a drink of water and try again.



OROGASTRIC FEEDING

8.0 Indications

- 8.1 A baby who has choanal atresia.
- 8.2 A baby requiring nasal prong continuous positive airway pressure (CPAP).
- 8.3 A baby whose airway would be compromised if a naso-gastric tube was inserted, eg., a baby with a craniofacial anomaly.
- 8.4 Oro-gastric tubes must be inserted in children with a suspected or confirmed basal skull fracture.
- 8.5 How to insert an Oro-gastric tube
 - 8.5.1 The technique and precautions taken are the same as those for the passage of a naso-gastric tube, except that the tube is passed directly through the mouth.
 - 8.5.2 The length of the tube must be adjusted appropriately, the measurement being taken from the xiphisternum to the lips.
- 8.6 Securing an oro-gastric tube
 - 8.6.1 The tube should, if possible, be secured to the chin using a suitable hypoallergenic tape. Care should be taken not to damage the lips or gums.
 - 8.6.2 It may prove very difficult to secure an oro-gastric tube, particularly when the baby becomes more active.
- 8.7 Gastrostomy tubes
 - 8.7.1 Traditionally gastrostomy tubes have been performed surgically and involve the creation of a tract between the stomach and the abdominal surface. Endoscopic placement is now the preferred method of placement. Gastrostomy tubes are recommended for long term feeding.
 - 8.7.2 Most endoscopically placed gastrostomy tubes last for up to 3 years.
- 8.8 Skin care for gastrostomies
 - 8.8.1 Inspect the stoma site daily for cleanliness and check for signs of redness or irritation.
 - 8.8.2 Gently wash the stoma site with soap and water using a soft wash cloth. Dry the stoma site thoroughly.

- 8.8.3 Ensure child to sit at 30-45° upright position during feeding time and for at least one hour afterwards.
 - 8.8.4 Careful feeding using a pump, to regulate the rate should reduce the risk of vomiting
- 8.9 Gastrostomy site infections
- 8.9.1 If discharge is present, take a swab of the site and await further advice from microbiology.
 - 8.9.2 Overgranulation
 - 8.9.3 Insufficient rotation of a gastrostomy tube or excess movement of the tube can cause granulation tissue. The overgranulated site may be constantly wet, bleed easily on contact and be prone to infection

9.0 Gavage Feeding

- 9.1 Make sure the tube is in the stomach, then proceed with the following steps:
- 9.2 Position child comfortably for the feeding. Whenever possible, hold child during the feeding. If this is not possible, place baby on his side during the feeding. Never leave child alone while gavage feeding!
- 9.3 Remove the plunger from the large syringe and attach the large syringe to the end of the tube or extension tubing.
- 9.4 Add breast milk/formula, and apply slight pressure with the plunger (you may feel a little resistance). Then remove plunger.
- 9.5 Let the feeding run in by gravity by raising the syringe 8-12 inches above baby's head. The feeding normally should take 20-30 minutes. Lower the syringe if the feeding is running too fast.

CARE OF BABY IN RADIANT WARMER

1.0 Meaning

Radiant warmer is a electronically based device which is used to maintain the baby's body temperature.

2.0 Indications/Purposes:

- 2.1 To maintain the body temperature just after the birth.
- 2.2 To observe the newborn.
- 2.3 To suction or resuscitate the baby.
- 2.4 To introduce the medication for long durations.

3.0 Articles:



4.0 Pre-Procedure

- 4.1 Check the physicians order and instructions.
- 4.2 Keep the warmer on before placing the baby and set the temperature as prescribed.
- 4.3 Place the sheet over the mattress and tuck it properly.
- 4.4 Raise the side rails properly.

5.0 Procedure

- 5.1 Place the baby carefully on the mattress.
- 5.2 Do the observation of baby under the observation lights.
- 5.3 Provide the feed to the baby intermittently to prevent dehydration.
- 5.4 Do not touch the child without hand washing.
- 5.5 Maintain the hygiene of baby properly by changing the clothes time to time.

6.0 Post procedure

- 6.1 Infant should not be left unattended when used in manual mode.
- 6.2 Measure to maintain desired fluid balance since open radiant warming causes insensible water loss.

CARE OF BABY IN PHOTOTHERAPY UNIT

1.0 Meaning

It is a specially designed electronically based instrument which has an effective light source for the therapeutic purposes.

2.0 Indications/Purposes:

- 2.1 To treat the neonatal jaundice by decreasing the serum bilirubin at normal range.



- 2.2 Smaller infants
- 2.3 Sick infants (particularly with haemolysis) where jaundice is present sooner
- 2.4 Healthy term infants jaundiced after 48 hours
- 2.5 Preterm infants < 1500 g

3.0 Articles

- 3.1 Fluorescent lamp - light source
- 3.2 Side rails
- 3.3 Platform
- 3.4 Mattress
- 3.5 Power cord
- 3.6 On/off switch
- 3.7 Adjusting screw

4.0 Types of Phototherapy

- 4.1 Single layer phototherapy unit
- 4.2 Double layer phototherapy unit

5.0 Articles

- 5.1 Cotton swab
- 5.2 Sterile water
- 5.3 Kidney tray
- 5.4 Waste bin
- 5.5 Eye shields or eye pads
- 5.6 Disposable napkin
- 5.7 Baby sheets

6.0 Mechanism of Action

Fluorescent light of phototherapy unit breaks down the bilirubin. It acts by photo oxidising the tissue bilirubin and converts yellow lipid bilirubin into the colourless non-toxic water soluble bilirubin which can be easily excreted in the urine and bile.

7.0 Pre Procedure

- 7.1 Check the physician's order and instructions.
- 7.2 Wash hands and clean the phototherapy unit with cotton swab properly.
- 7.3 Check the working conditions of the phototherapy unit.
- 7.4 Advise the mother to feed the baby.

8.0 Procedure

- 8.1 Remove the baby's clothes
- 8.2 Place the baby in the phototherapy unit.
- 8.3 Apply eye shield properly
- 8.4 Apply the napkin
- 8.5 Raise side rails.
- 8.6 Switch on the fluorescent lights.
- 8.7 Continuously change the positions every 2 hours.
- 8.8 Record and report.

9.0 Post procedure

- 9.1 Feed the baby at regular intervals.
- 9.2 Change napkins regularly.
- 9.3 Do not apply pressure over eyes.
- 9.4 Continuously observe skin for rashes.
- 9.5 Do not apply oil to the skin.
- 9.6 Observe for side effects.

INCUBATOR CARE

1.0 Meaning

- 1.1 The incubator is an equipment that provides an ideal environment for the infant who is unable to maintain thermoregulation. The ambient temperature of the incubator can be controlled manually via air temperature control or skin temperature control.

2.0 Indications/Purposes:

- 2.1 Maintenance of thermoneutral ambient temperature
 2.2 Provision of desired humidity and oxygenation
 2.3 Observation of very sick neonate

3.0 Mechanism in Incubator Radiant and convective heat loss is prevented.

- 3.1 Maintains thermal stability-the capacity to balance heat production and conservation and heat dissipation.
 3.2 Maintains a neutral thermal environment that permits the infant to maintain a normal core temperature with minimum oxygen consumption and calorie expenditure.



4.0 Parts of Incubator

- 4.1 Deck
 4.2 A mattress which is enclosed by clear plastic canopy
 4.3 Thermostat
 4.4 Oxygen inlet
 4.5 Two arm ports

- 4.6 **Hood:** It is rectangular in shape. Hood has a large size door for placing or removing the baby from incubator. It is having 4 elbow operated parts for doing the small procedures. It has inlet for IV tubes, endotracheal tubes and probes. When there is need of cleaning, canopy can be lifted.
- 4.7 **Control Panel:** It is electronically based to control the temperature.
- 4.8 **Lower Unit:** It contains the control box, touch sensor, front panel, humidifier, air ducts and air filters. The front panel displays - patients body temperature, air temperature, control temperature, alarm mute/on, power off/on.
- 4.9 **Cabinet:** Gives support to the hood, canopy and lower unit. It has main switch, fuse and power cord connector. Some have drawers for storage purposes.
- 4.10 **Humidity Maintainance:** Air is circulated by the blower. Fresh air enters through the air filters which are located at the end of the incubators. This fresh air is mixed with circulating air from incubator canopy and passed over the heater and humidifier. The temperature inside the incubator is made by the sensor placed on hood and heated air flows surrounding the infant.
- 4.11 Methods of temperature control
- 4.1 Use of an incubator
 - 4.2 Radiant warming panel
 - 4.3 Open bassinet with cotton blankets
- 4.12 Thermoregulation
- 4.12.1 Body temperature of term infant-36.6 to 37°C.
 - 4.12.2 Preterm infant temp as low as 35°C.
 - 4.12.3 Thermoregulation is difficult in preterm, LBW and VLBW infants because of small muscle mass, less deposit of brown fat, lack insulating subcutaneous fat and poor reflexes control of skin capillaries
- 4.13 Required temperature of incubator
- 4.13.1 Incubator temperature of preterm - 32-33°C
 - 4.13.2 Air temperature-35-37°C
 - 4.13.3 If clothed, decrease air temp around 2-4°C.

5.0 Pre - Procedure”

- 5.1 Warm and oxygenate the incubator as you receive the message of expected arrival of neonate, generally 10-15 minutes earlier.
- 5.2 Check the physician's order.
- 5.3 Explain the needs of incubator care to the parents of neonate.
- 5.4 Adjust the incubation parameters and maintain, follow the chart.
- 5.5 Remove the cloths of the neonate and place inside the incubator.
- 5.6 Provide meticulous care as long neonate remains in side.
- 5.7 Continue care through port hole.
- 5.8 Report to the doctor if baby is not maintaining the temperature, generally after two abnormal readings.
- 5.9 Do not bring the neonate out without justifiable cause.
- 5.10 Document time and condition of the neonate.
- 5.11 In open care system, cover the baby with warm cloths or to minimize heat loss.

6.0 Post procedure:

6.1 Care of child in incubator

- 6.1.1 Appropriate assessment and adjustment of air temperature according to infant's needs
- 6.1.2 Portholes and doors must be kept closed unless a specific intervention is carried out.
- 6.1.3 If open, temperature drops to several degrees and takes 10-20 minutes to be restored.
- 6.1.4 Close monitoring of skin temperature.
- 6.1.5 Collaboration with other team members to prevent temperature fluctuation.
- 6.1.6 Maintain appropriate humidity-add water to the reservoir
- 6.1.7 To keep oxygen consumption to a minimum during re-warming, the incubator temperature should be adjusted to 1-1.5°C higher than infant's temp.
- 6.1.8 If infant temp is severely low, raise incubator temp 1°C hourly till temp stabilizes. Can apply plastic wrap, caps, heat shields.
- 6.1.9 Prevent overheating. This can be assessed by
 - 6.1.10 Less activity
 - 6.1.11 Restlessness/irritable
 - 6.1.12 Flaccid posture
 - 6.1.13 Color changes from pink to red
 - 6.1.14 Apnea
 - 6.1.15 Hearing loss
 - 6.1.16 Pre-warm the incubator before placing infant in it.
 - 6.1.17 Careful observation is very essential.



6.2 Cleaning and sterilization

When the incubator is occupied, it should be cleaned daily with mild detergent. Humidifier chamber must be emptied and cleaned daily, fill with fresh distilled water. After seven days neonate should be shifted to another incubator and used incubator should be cleaned with antiseptic solution. 1-2 ml of Glacial acetic acid or vinegar can be added to water in the humidifier to prevent bacterial growth.

6.3 Special considerations

1. It is important that the incubator should not interfere with observation of the neonate and quality of care
2. Sensory stimuli like light and pain should be kept to the minimal
3. When neonate develops fever, the incubator modes have to be changed in normal modes
4. When the neonate is nursed in prone position, skin sensor is placed over the flank and it should not touch the bed
5. The neonate in the incubator should not be bathed
6. The daily linens should be kept within the Nursery to keep warm

EXCHANGE TRANSFUSION

1.0 Meaning

Infant's blood is removed in small amounts (5-10 ml) at a time and replaced with compatible blood. It is used to treat severe hyperbilirubinaemia. It is a sterile procedure where catheter is inserted into the umbilical vein and threaded into inferior venacava.

2.0 Indications/Purposes:

- 2.1 Positive direct coomb's test.
- 2.2 In hemolytic disease, immediate exchange transfusion is usually indicated if:
 - 2.2.1 The cord bilirubin level is over 4.5 mg/dl and the cord hemoglobin level is below 11 gm/dl.
 - 2.2.2 The bilirubin level is rising 1 mg/dl per hour despite phototherapy.
 - 2.2.3 The hemoglobin level is between 11 and 13 gm/dl and the bilirubin level is rising over 0.5 mg/dl per hour despite phototherapy.
 - 2.2.4 The bilirubin level is 20 mg/dl or it appears that it will reach 20 mg/dl at the rate it is rising.
 - 2.2.5 There is progression of anemia despite control of bilirubin by other methods, e.g. phototherapy.
- 2.3 Late exchange transfusion are indicated at:-Bilirubin levels that may be toxic
- 2.4 Repeat exchanges are usually indicated, when, after the early rebound, the bilirubin continues to rise over 1 mg/dl per hour or when there is a severe persistent hemolytic anemia.

3.0 Articles

- 3.1 Radiant warmer
- 3.2 Cross board
- 3.3 Charts
- 3.4 Blood with identification
- 3.5 Syringes
- 3.6 Umbilical catheter
- 3.7 Life saving drugs-Adrenalin, calcium gluconate, inj.aminophylline
- 3.8 Kidney tray
- 3.9 Suture scissors
- 3.10 Toothed forceps
- 3.11 Curved mosquito forceps
- 3.12 Dressing forceps
- 3.13 Surgical towel
- 3.14 Bandages
- 3.15 Dressing pack
- 3.16 Sterile scalpel blade
- 3.17 IV stand
- 3.18 Injection-Heparin and normal saline
- 3.19 Resuscitation equipments

- 3.20 Oxygen source
- 3.21 3or 4 stopcock
- 3.22 Umbilical vein catheter
- 3.23 Gloves and mask
- 3.24 Specimen containers
- 3.25 Cord tie
- 3.26 Scissors
- 3.27 Fresh blood

4.0 Pre-Procedure

- 4.1 Fresh whole blood is grouped and cross matched to mother's serum.
- 4.2 It should be performed either in the operation theatre or in the nursery with due aseptic precautions.
- 4.3 Amount of donor blood used is double the blood volume of infant Blood should be slowly warmed to the infant's body temperature.
- 4.4 Fresh heparinised blood is used.
- 4.5 About 20-30 ml of blood is withdrawn and about 10-20ml of blood is replaced each time.

5.0 Procedure

- 5.1 Keep the baby warm during the procedure with the help of a radiant warmer.
- 5.2 Aspirate stomach contents.
- 5.3 Place the baby fastened on to a well-padded crossboard.
- 5.4 After full aseptic precautions, the umbilical vein is to be cannulated by the doctor. The catheter is attached to two three-way tapes so that its leads are connected to the umbilical catheter, syringe, donor blood and a sterile container for waste.
- 5.5 The blood is withdrawn with gentle suction and donor's blood is injected slowly in amounts of 10 - 15 ml depending upon the size of the baby.
- 5.6 Blood should be gently agitated from time to time
- 5.7 Maintain an accurate record of the blood flowing in and out as well as the condition of the baby.
- 5.8 Watch for heart rate, temperature, respiration, colour, etc. during the procedure.
- 5.9 Catheter should be rinsed with heparanised saline before and injection of calcium gluconate
- 5.10 Spray umbilical stump with an antibiotic powder and covered with a light dressing.

6.0 Post -Procedure

- 6.1 After transfusion, place the baby in a radiant warmer.
- 6.2 Observe the umbilicus for bleeding.
- 6.3 Monitor blood glucose after transfusion
- 6.4 Take care that 1 ml calcium gluconate should be injected slowly after every 50 ml of exchange.

INDUCTION OF LABOUR

1.0 Meaning

- 1.1 Deliberate termination of pregnancy after 28 weeks of gestation.

2.0 Indications/Purposes:

- 2.1 Post term pregnancy
- 2.2 Maternal risk in continuing pregnancy, eg; preeclampsia ,heart disease, renal disease
- 2.3 Fetal risk in continuing pregnancy, eg. IUGR, chorioamnionitis
- 2.4 Intrauterine fetal death
- 2.5 Prolonged rupture of membranes
- 2.6 Social indications

3.0 Contraindications

- 3.1 Any condition that increases the risk of uterine rupture, eg. Previous caesarean section, previous uterine surgery like myomectomy
- 3.2 Any contraindication to vaginal birth such as contracted pelvis, abnormal placentation, genital herpes, pelvic abnormalities, cord presentation and invasive cervical cancer

4.0 Articles

Facilities should be made available in the labour room

- 4.1 Hand washing facility
- 4.2 Screen for maintaining privacy
- 4.3 Spot light
- 4.4 Vital signs tray
- 4.5 P V examination tray
- 4.6 ARM (artificial rupture of membrane) tray with sponge holding forceps - 1, Kocher's forceps - 1
- 4.7 Medication trolley containing articles for IV cannulation, IV fluids, Inj. Oxytocin, syringes and needles, sterile gloves etc.
- 4.8 Refrigerator to keep prostaglandins
- 4.9 Perineal skin preparation tray

5.0 Pre procedure

- 5.1 Assess the patient for indication for induction of labour
- 5.2 Check the vital signs, uterine contractions, FHR
- 5.3 Verify gestational age from US result and by clinical examination
- 5.4 Perform a vaginal examination to assess Bishop's score
- 5.5 Prepare the perineal area and give an enema
- 5.6 If Bishop's score is less than 5, proceed with intra cervical instillation of prostaglandins

6.0 Procedure

- 6.1 Explain the procedure to the patient and get her written consent
- 6.2 Ask mother to empty bladder to make her comfortable
- 6.3 Assist doctor to insert Dinaprostone gel or balloon catheter into the endocervical canal or mesoprostol into the posterior fornix depends on the indication
- 6.4 Instruct the mother to lie in left lateral position for at least half an hour after the procedure
- 6.5 Assess the mother every half hourly for progress of labour
- 6.6 When the mother starts getting regular uterine contractions, assess for the Bishop's score
- 6.7 If the bishop's score is more than 6, then augment labour by oxytocin infusion as per doctor's order
- 6.8 Monitor the mother every half hourly for vital signs, FHR, uterine contraction and maternal hydration and progress of labour
- 6.9 Once the labour has established, surgical induction - artificial rupture of membrane(ARM)-can be done

7.0 Procedure for surgical induction

- 7.1 Explain procedure to the mother and get the written consent
- 7.2 Check for the written order of the doctor
- 7.3 After perineal toileting, perform a PV examination with sterile gloved right hands
- 7.4 Insert the two fingers of the gloved right hand into the cervical canal through the vagina and reach the presenting part
- 7.5 Feel for the bag of membrane below the presenting part. The bag of membrane become tensed during the contraction
- 7.6 The membrane is swept free from the lower segment as far as reached by the finger
- 7.7 Introduce the Kocher's forceps with the left hand with its blade closed into the cervical canal using the fingers of the right hand which is still in the vagina as guide
- 7.8 Once the membrane is reached, open the blade of the forceps and seize the membrane and rupture by twisting movement, which is followed by visible escape of amniotic fluid
- 7.9 Hold a large kidney tray at the vulva to receive the amniotic fluid. Observe the quantity, colour and consistency of the amniotic fluid

8.0 Post procedure

- 8.1 Remove the article from the bedside, remove gloves and wash hands
- 8.2 Assess the fetal heart rate immediately after the ROM
- 8.3 Change the soiled linen if any, and make the mother comfortable by assisting her to assume left lateral position
- 8.4 Wash the instruments and send for sterilization
- 8.5 Inform the doctor if any abnormal findings
- 8.6 Record all the procedures in detail with the condition of the mother and fetus during the procedure
- 8.7 Discard all used items into the appropriate containers

FORCEPS DELIVERY

1.0 Meaning

- 1.1 This is an obstetric operation where delivery of the head of the fetus is assisted by use of an instrument called obstetric forceps

2.0 Indications/Purposes:

2.1 Maternal indications

- 2.1.1 Maternal distress
- 2.1.2 Shortening of second stage of labour to benefit the mother
 - 2.1.2.1 Severe preeclampsia
 - 2.1.2.2 Cardiac conditions
 - 2.1.2.3 Bleeding
- 2.1.3 Prolonged second stage of labour
- 2.1.4 To deliver the after coming head in breech vaginal delivery

2.2 Fetal indications

- 2.2.1 Fetal distress
- 2.2.2 Low birth weight
- 2.2.3 Prematurity

3.0 Contraindications

- 3.1 Any contra indication to vaginal delivery
- 3.2 A cervix that is not fully dilated
- 3.3 Malpresentations and positions
- 3.4 Inadequate pelvis
- 3.5 Confirmed CPD
- 3.6 An insufficiently experienced operator

4.0 Articles

- 4.1 Articles for conducting normal delivery (refer procedure normal delivery)
- 4.2 Articles for giving and suturing episiotomy (refer procedure episiotomy and suturing)
- 4.3 Articles for neonatal resuscitation
- 4.4 A pair of obstetric forceps (choose according to the station of the fetal head)
- 4.5 Lubricating cream /jelly
- 4.6 Red rubber catheter
- 4.7 Drugs - oxytocin, methergin or as per the standing order and other emergency medications
- 4.8 I/V fluids, tubings, canula No. 18 or 20

5.0 Pre procedure

- 5.1 Explain the procedure to the family and the patient and obtain informed consent
- 5.2 Start an IV line and IV fluid if not done prior
- 5.3 Confirm full dilatation of cervix and adequacy of the pelvis
- 5.4 Rupture membranes
- 5.5 Station of the fetal head (+2 or below, depending on the type of the forceps application)
- 5.6 Identify ideal presentation and the fetal head is rotated to antero posterior diameter of the pelvic outlet or < 45° rotation is required
- 5.7 Assess the fetal heart rate, uterine contractions and maternal bearing down efforts
- 5.8 Place the patient in lithotomy position

6.0 Procedure

- 6.1 Perform surgical hand washing and wear complete PPE
- 6.2 Empty the bladder with red rubber catheter
- 6.3 Infiltrate the perineum with 1% Lignocain or administer pudental nerve block
- 6.4 Wait for the anesthetic drug to act while assessing for the uterine contraction and advancing of the presenting part
- 6.5 Perform episiotomy with next contraction
- 6.6 Reconfirm the fetal position (the presence of sagittal suture in the antero posterior diameter of the pelvic outlet)
- 6.7 Identify the right and left forceps blades by placing the locked forceps in front of the maternal pelvis with blades pointing upward, pelvic curve forward and cephalic curve inward
- 6.8 The left blade is held with the operator's left hand vertically in a 'pen holding' manner while the fingers of the right hand is introduced along the left lateral vaginal wall.
- 6.9 Gently introduce the blade into the posterior half of the left side of the pelvis and is guided with the fingers of the right hand to the appropriate position along the fetal head . as the blade is pushed up along the side of the head, the handle is carried downward and backward to a horizontal position(when correctly applied, the blade should be over the parital eminence, the shank in contact with the perineum and handle is directed upward)
- 6.10 Introduction of the right blade is done in the same fashion after introducing two fingers of the left hand along right lateral wall of the vagina
- 6.11 With the right blade over the left one, the Obstetrician articulates and lock the blades. In case of any difficulty in locking, remove the blades and reapplied and wait for the next contraction
- 6.12 During the next uterine contraction, traction is applied at right angle to the fetal head corresponding to the axis of the birth canal
- 6.13 Once the head is crowned, the direction of the pull is gradually changed to upward and forward towards the mother's abdomen
- 6.14 Once the baby's head is delivered, the blades are removed one after the other, the right one first and then the left
- 6.15 Further steps are to be followed as in normal vaginal delivery
- 6.16 Administer the utero tonic drugs as per the standing order.

7.0 Post procedure

- 7.1 Explore the genital tract after the delivery of placenta in good light for any tear or injury
- 7.2 Massage the uterus to expel the clots
- 7.3 Repair the episiotomy following the aseptic precaution
- 7.4 Clean the patient and apply fresh peripad
- 7.5 Remove the PPE and wash hands
- 7.6 Assist the patient to a comfortable position
- 7.7 Record the procedure and delivery note in detail and the patient's condition during and after the procedure
- 7.8 Wash the instruments and send for sterilization
- 7.9 Dispose the waste to the appropriate containers

EPISIOTOMY AND SUTURING

1.0 Meaning

- 1.1 It is a planned incision through the perineal tissues that is designed to enlarge the vulval outlet during delivery

2.0 Indications/Purposes:

- 2.1 Inelastic or rigid perineum
 2.2 Anticipating perineal tear eg. Primigravida, big baby etc
 2.3 Before operative delivery
 2.4 Previous perineal surgery

3.0 Articles

- 3.1 A good source of light
 3.2 An adjustable stool
 3.3 A sterile tray containing(should be set in advance, to be rechecked before delivery)
 3.4 Sterile gown
 3.5 Sterile gloves
 3.6 Bowl with cotton swabs
 3.7 Antiseptic solution
 3.8 Medium sized towel - 4 (hole towel)
 3.8 Big pads - 2
 3.9 Straight sponge holding forceps - 1
 3.10 Perineal infiltration set
 3.10.1 10 ml syringe - 1
 3.10.2 18 & 20 gauge needles - 1 each
 3.10.3 Inj. Xylocaine 2% / 1% - 1 vial
 3.11 Blunt pointed straight mayo scissors - 1
 3.12 Mosquito forceps - 2
 3.13 Other articles and instruments to conduct the delivery.
 3.14 Articles for suturing (may be arranged in a separate trolley)
 3.15 Allis forceps - 1
 3.16 Toothed dissecting forceps - 1
 3.17 Needle holder - 1
 3.18 Suturing materials with or without attached needles (round bodied and cutting)
 3.19 Bowl with wet cotton swabs
 3.20 Dry cotton pad
 3.21 Sharp ended small scissors - 1 to cut the suturing material

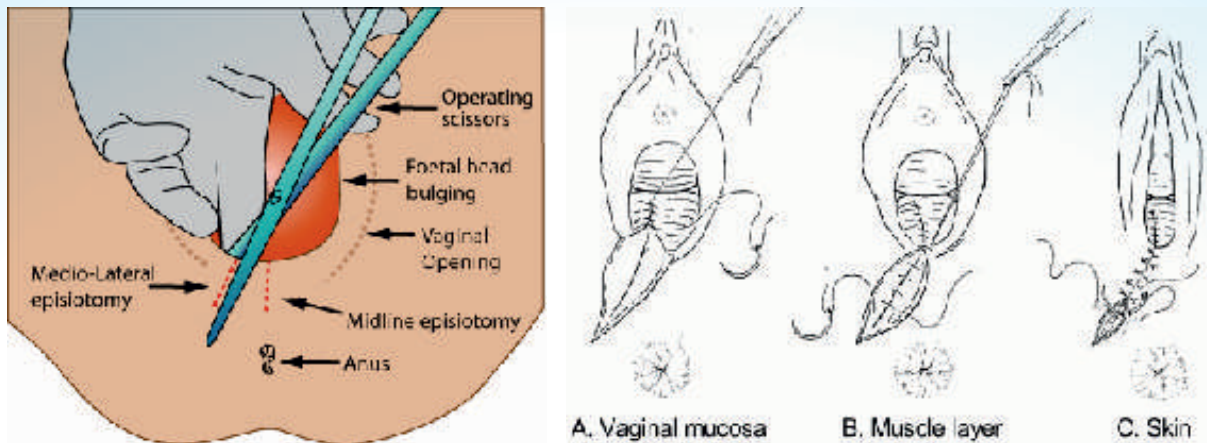
4.0 Pre procedure

- 4.1 Shift the patient on to the labour table when it is time for delivery
 4.2 Position the patient - dorsal recumbent with legs well flexed or lithotomy

- 4.3 Preliminary assessment
 - 4.3.1 Assess for indications of episiotomy
 - 4.3.2 Assess whether the fetal head is stretching the perineal muscles and the head is crowned / in the pelvic floor

5.0 Procedure

- 5.1 Giving an episiotomy
 - 5.1.1 Wash hands following surgical method
 - 5.1.2 Wear surgical gown and gloves
 - 5.1.3 Clean perineum, lower abdomen and thighs thoroughly using sponge holding forceps
 - 5.1.4 Draw Inj. Xylocaine in the syringe and change the needle
 - 5.1.5 Insert two fingers of the left hand into the vagina along the line of proposed incision
 - 5.1.6 Infiltrate beneath the vaginal mucosa, beneath the skin of the perineum and deeply into the perineal muscle using about 10 ml of Inj. Xylocaine. Before injecting, make sure the tip of the needle is not in the blood vessels by withdrawing the plunger. Never inject if blood is aspirated.
 - 5.1.7 At the conclusion of the set of injections, wait for one to two contractions to occur (Anaesthetize early to provide sufficient time for effect)
 - 5.1.8 Wait to perform episiotomy until the perineum is thinned out and about 3 - 4 cm of the baby's head is visible during the contraction. Performing an episiotomy will cause bleeding. It should not, therefore, be done too early.
 - 5.1.9 During the next contraction, place the two fingers of the left hand as before between the baby's head and the perineum on either side of the proposed line of incision. Give a deliberate cut 3 to 4cm in the mediolateral direction
 - 5.1.10 Control the baby's head and shoulders as they deliver, ensuring that the shoulders have rotated to the midline to prevent an extension of episiotomy
- 5.2 Repair of episiotomy
 - 5.2.1 Immediately after the delivery of the placenta and membranes, clean the perineum, change the drape of the patient if it is soiled with motion and change the gloves
 - 5.2.2 Clean the episiotomy site
 - 5.2.3 Explore the external genitalia, vagina and cervix for any tear or laceration which is bleeding. (Any tear or laceration which is bleeding should be repaired first. If the episiotomy is extended through the anal sphincter or rectal mucosa, manage as third or fourth degree tears respectively)
 - 5.2.4 If no other tear apart from episiotomy, suture the episiotomy from apex downwards. Suturing should be done in three layers
 - 5.2.5 Close the vaginal mucosa using continuous 2-0 suture
 - 5.2.6 Start the repair about 1cm above the apex of the episiotomy. Continue the suture to the level of the vaginal opening
 - 5.2.7 At the opening of the vagina, bring together the cut edges of the vaginal opening
 - 5.2.8 Bring the needle under the vaginal opening and out through the incision and tie.
 - 5.2.9 Close the perineal muscle using interrupted 2-0 sutures
 - 5.2.10 Close the skin using interrupted or subcuticular 2-0 sutures



6.0 Post procedure

- 6.1 Massage the uterus and see if any clots are being expelled. Assess the consistency and check the fundal height
- 6.2 Apply sterile vaginal pad and secure
- 6.3 Clean the patient and put on a clean gown and make her comfortable
- 6.4 Check the patient's vital signs
- 6.5 Document the procedure

Points to remember

- Apex should be identified properly using Allis forceps. Any gap left, there can be bleeding into these gaps and formation of haematoma. If the cut edges are properly aligned, the blood is less likely seep into the deeper tissues and the chances of leaving the blind pouches are minimal.
- It is important that absorbable sutures be used for closure. Polyglycolic sutures are preferred over chromic catgut for their tensile strength, non allergenic properties and lower probability of infectious complications and episiotomy breakdown. Chromic catgut is an acceptable alternative, but is not ideal
- Sutures should not be too close and too tight. At least 1 cm distance should be there between two sutures
- Tissues and muscles should be properly aligned while suturing
- Episiotomy and suturing should be done under strict aseptic technique and under a good source of light

ASSISTING FOR LOWER SEGMENT CAESAREAN SECTION

1.0 Meaning

- 1.1 A cesarean section is an operative procedure to abdominally deliver the fetus by systematic incision through the maternal abdomen and uterus

2.0 Indications/Purposes:

- 2.1 Absolute indications where vaginal delivery is not possible
- 2.1.1 Contracted pelvis and cephalopelvic disproportion
 - 2.1.2 Abnormal pelvic mass
 - 2.1.3 Central placenta previa
 - 2.1.4 Advanced cervical carcinoma
 - 2.1.5 Uterine rupture
 - 2.1.6 Fetal abnormalities eg. Conjoined twin foetuses, fetalascitis
- 2.2 Relative indications
- 2.2.1 Maternal disease like eclampsia, HIV infection, genital herpes etc
 - 2.2.2 Previous caesarean section
 - 2.2.3 Cord prolapsed
 - 2.2.4 Abnormal presentation and position
 - 2.2.5 Multiple pregnancy
 - 2.2.6 Fetal bleeding
 - 2.2.7 Fetal macrosomia
 - 2.2.8 Fetal distress

3.0 Articles

- 3.1 Autoclaved linen should be ready which includes draping sheets and gown for the surgeon
- 3.2 Trolley set up for lower segment caesarean section
- 3.2.1 Sponge holding forceps -1 to clean
 - 3.2.2 Scalpel and blade - 1 to cut the skin and subcutaneous fat
 - 3.2.3 Artery forceps - for holding bleeding vessels
 - 3.2.4 Dissecting forceps plain -1 to hold the tissue
 - 3.2.5 Metzenbaum scissors - 1 to cut rectus muscle, sheath, peritoneum and rectovesicle fold
 - 3.2.6 Suture cutting scissors -1 to cut the sutures
 - 3.2.7 Cautery pick up -1 for cauterization
 - 3.2.8 Doyen's retractors -1 to retract the bladder away from the lower uterine segment
 - 3.2.9 Mosquito artery forceps -1 to lift peritoneum
 - 3.2.10 Hemostatic (green Armytage) forceps - 2 to stop bleeding and hold angles and edges of the uterine incision
 - 3.2.11 Allis forceps -2 to hold rectus and lift it up during operation as well as during closure

- 3.2.12 Needle holder , needles, different sutures and stapler
 - 3.2.13 Dissecting forceps toothed and non toothed - 1 each
 - 3.2.14 Large kidney tray to receive the placenta
 - 3.2.15 Towel clips - 5 to hold drapes
 - 3.2.16 Kocher' forceps - 2 to clamp the cord
 - 3.2.17 Sponges and gauzes as required for mopping the blood
 - 3.2.18 Large bowl - 1
 - 3.2.19 Suction tube to remove amniotic fluid
- 3.3 Other articles
- 3.3.1 Sterile gloves, razor, enema, lubricating jelly shaving blade. Basin, gown and pyjama
 - 3.3.2 Catheterization tray, Foley's catheter No. 14, and urobag, kidney tray etc

4.0 Pre procedure

- 4.1 Explain the procedure to the patient and relatives and take informed consent
- 4.2 Prepare the skin(shaving and cleaning with an antiseptic solution) from umbilicus to the mid thigh. A thorough bath is preferable
- 4.3 Keep the patient NPO for at least 6 hours and an enema before preparing if it is elective LSCS
- 4.4 For emergency LSCS if the mother had any solid food within 6 hours, pass a Ryle's tube and aspirate the content
- 4.5 Provide pre medications as per doctor's order
- 4.6 Remove all the jewellery, patient's own clothes and nail paint, provide the mother with a clean hospital gown and head cap to reduce the chance of infection
- 4.7 Catheterise the mother with Folley's catheter and connect with urobag
- 4.8 Shift the mother to OT

5.0 Procedure

- 5.1 Position the patient for anaesthesia depend on the type
- 5.2 Perform surgical hand washing, wear PPE and surgical gown
- 5.3 Re position the mother onto supine position
- 5.4 Paint the abdomen and drape the mother with sterile sheets and expose only the proposed surgical site
- 5.5 Abdomen is opened with transverse(Pfannenstiel) or vertical incision
- 5.6 Doyen's retractor is introduced in the lower part and the upper part is retracted with Leyen's forceps
- 5.7 Two sponges or packs are introduced to prevent the spillage of uterine content into the abdominal cavity
- 5.8 Utero- vesicle fold of the peritoneum is opened with a transverse incision and the bladder is pushed down to avoid injury
- 5.9 Uterine muscles are opened 1 - 2cm below the junction with the upper segment with a transverse incision gently to prevent rupture of the membrane
- 5.10 Membranes are ruptured and quickly the amniotic fluid is suctioned
- 5.11 Doyen's retractor is removed and baby should be delivered quickly
- 5.12 The surgeon's hand is introduced into the uterine cavity well below the fetal head and the head is delivered by flexion
- 5.13 The baby's mouth and eyes are cleaned with a sterile pad

- 5.14 Rest of the baby is delivered by holding the baby's head while an assistant giving constant fundal pressure
- 5.15 Cord is clamped and cut and the baby is handed over to the paediatrician
- 5.16 Placenta is removed completely along with the membranes
- 5.17 Uterus is carefully inspected for retained bits of placenta and clots
- 5.18 Doyen's retractor is reintroduced
- 5.19 The uterine edges are held by hemostatic Green Armytage forceps and sutured with No 1 catgut or Vicryl suture in two layers
- 5.20 Abdominal pack (sponges) are removed and abdominal toileting is done to remove clots
- 5.21 Sponge count is done before closing the abdomen to ensure that no sponge or gauze is left inside the abdomen
- 5.22 Abdominal muscles are sutured in layers
- 5.23 The skin is closed with staples
- 5.24 Clean the wound and apply dressing

6.0 Post procedure care

- 6.1 Shift the mother to the recovery room on a trolley
- 6.2 Shift the instrument trolley to the washing area with the instruments, clean thoroughly, dry the instrument, repack and send for autoclaving
- 6.3 Dispose the linen as per the policy of the hospital
- 6.4 Wash the hands and document the procedure

ASSISTING FOR PAP SMEAR

1.0 Meaning

- 1.1 The papain colou (PAP-Smear) test is method of cervical screening used to detect potentially precancerous and cancerous processes in the cervix

2.0 Indications / purposes

- 2.1 To identify any premalignant changes in cervical cells
- 2.2 To detect cervical cancer or any abnormal growth

3.0 Articles

- 3.1 A sterile trolley containing
 - 3.1.1 Sponge holding forceps
 - 3.1.2 Dissecting forceps
 - 3.1.3 Kidney tray (small)
 - 3.1.4 Cuscus vaginal speculum
 - 3.1.5 Wooden spatula
 - 3.1.6 Small bowl, gauze pieces
 - 3.1.7 Hole towel
 - 3.1.8 Pair of leggings
 - 3.1.9 Sterile gloves - 2 pair
- 3.2 Clean tray containing (bottom portion of the trolley)
 - 3.2.1 Syringe 5ml and 2 ml
 - 3.2.2 Head cap, mask and clean gloves
 - 3.2.3 Betadine solution
 - 3.2.4 Premedication drugs. Inj. Phenargan and inj. Fortwin 1 ampoules each
 - 3.2.5 Sterile vaginal pads
- 3.3 Other articles
 - 3.3.1 Spot light
 - 3.3.2 Disposable delivery drape
 - 3.3.3 Plastic apron

4.0 Pre procedure

- 4.1 Identify the client and check doctor's orders
- 4.2 Shave and clean the perineal area
- 4.3 Ensure that client has voided prior to the procedure
- 4.4 NPO for at least 2 hrs
- 4.5 See that the client has given written consent for the procedure
- 4.6 Shift the client to D & C room with the necessary articles
- 4.7 Cover the D & C table with delivery drape

5.0 Procedure

- 5.1 Wash hands
- 5.2 Explain the procedure
- 5.3 Administer pre medication as per doctor's order
- 5.4 Place the client in lithotomy position
- 5.5 Drape the client appropriately
- 5.6 Assist the doctor during the procedure
- 5.7 Communicate with the client if she is awake and provide psychological support

6.0 Post procedure

- 6.1 Remove the drape and place the client in dorsal recumbent position
- 6.2 Apply perineal pad if required
- 6.3 Shift the client to her bed by wheel chair
- 6.4 Send the specimen to the lab with appropriate client identifications
- 6.5 Clean, dry and replace the equipments in its proper place
- 6.6 Wash hands
- 6.7 Record the procedure with the date and time and the observations of the client's condition during and after the procedure

ASSISTING FOR DILATATION AND CURETTAGE

1.0 Meaning

- 1.1 Dilatation and curettage (D& C) refers to the dilatation of the cervix and surgical removal of part of the lining of the uterus and/ contents of the uterus by scraping and scooping

2.0 Indications / purposes

2.1 Therapeutic

- 2.1.1 To evacuate the uterus in case of
- 2.1.2 Incomplete abortion
- 2.1.3 Gestational trophoblastic disorders
- 2.1.4 Medical termination of pregnancy
- 2.1.5 Septic abortion
- 2.1.6 To stop bleeding in dysfunctional uterine bleeding
- 2.1.7 To remove misplaced intra uterine contraceptive device

2.2 Diagnostic

- 2.2.1 To collect PAP smear or any biopsy
- 2.2.2 To diagnose the cause of DUB

3.0 Articles

3.1 A sterile top portion of the trolley containing

- 3.1.1 Sterile D & C tray containing
- 3.1.2 Sponge holding forceps - 2 (straight and curved)
- 3.1.3 Small towel to dry the hand
- 3.1.4 Posterior vaginal wall / sim's speculum
- 3.1.5 Valsallum forceps
- 3.1.6 Uterine sound
- 3.1.7 Graduated cervical dilators/ Hegar's dilators (if cervix need to be dilated)
- 3.1.8 Ovum forceps - 2 (big and small)
- 3.1.9 Anterior vaginal wall retractor
- 3.1.10 Uterine curette
- 3.1.11 Thumb forceps
- 3.1.12 Endometrial biopsy curette
- 3.1.13 Small bowl and gauze pieces
- 3.1.14 Sterile gloves
- 3.1.15 Hole towel, leggings -2

3.2 Another trolley containing (the bottom portion of the sterile trolley also can be used)

- 3.2.1 Delivery drape
- 3.2.2 Gauze bin
- 3.2.3 Transfer forceps

- 3.2.4 Sterile specimen bottles - 2 (one containing formalin and the other containing normal saline)
- 3.2.5 Pre medication - Inj. Fortwin and Inj. Phenargan
- 3.2.6 Syringes - 5ml and 2 ml
- 3.2.7 Spirit swab bottle
- 3.2.8 Mask, head cap and clean glove box

4.0 Pre procedure

- 4.1 Identify the client and check the doctor's orders
- 4.2 Assess the general condition of the client
- 4.3 Obtain informed written consent
- 4.4 Ensure the client is fasting for 4 - 6 hrs
- 4.5 Shave and clean the perineal area
- 4.6 Ensure that the client is voided prior to the procedure
- 4.7 Prepare the D & C table with delivery drape
- 4.8 Shift the client to the D & C room
- 4.9 Administer premedication as ordered

5.0 Procedure

- 5.1 Wash hands
- 5.2 Explain the procedure to the client
- 5.3 Place the client in lithotomy position
- 5.4 Drape the client appropriately
- 5.5 Assist doctor during the procedure
- 5.6 Communicate with the client between the procedure if awake
- 5.7 Collect the curetted material in the properly labelled specimen bottles

6.0 Post procedure

- 6.1 Remove the drape
- 6.2 Position the client into dorsal recumbent and apply the perineal pad
- 6.3 Check vital signs and vaginal bleeding
- 6.4 Send the specimens to the lab with the duly filled forms
- 6.5 Clean, dry and send the articles for autoclave, replace the articles
- 6.6 Wash hands
- 6.7 Record the date and time, observations and the client's condition during and after the procedure

ASSISTING IN BONE MARROW ASPIRATION

1.0 Meaning

- 1.1 Aspiration of bone marrow from the iliac crest or sternum to obtain specimen for microscopic examination and biopsy.

2.0 Indications/Purposes:

- 2.1 Diagnosis of hematologic disorders
- 2.2 Diagnosis of blood dyscrasias such as aplastic anemia, leukemia, thrombocytopenia, etc
- 2.3 Diagnosis of primary and metastatic tumors
- 2.4 To diagnose deficiency states of vitamin B12, folic acid , iron, etc

3.0 Articles required

- 3.1 Bone puncture needle with obturator
- 3.2 Aspiration syringe,
- 3.3 Syringe with needles 2
- 3.4 Sponge holding forceps
- 3.5 Dissecting forceps
- 3.6 Small bowl 2
- 3.7 BP handle with blades
- 3.8 Dressing towels
- 3.9 Cotton swab
- 3.10 Gauze pieces
- 3.11 Cotton pads
- 3.12 Slides to make smear.

4.0 Pre- Procedure

- 4.1 Explain the procedure to patient and relative
- 4.2 Obtain written informed consent
- 4.3 Prepare the area by shaving
- 4.4 Give analgesic as ordered 30 minutes before procedure
- 4.5 Check the reports of bleeding time and clotting time
- 4.6 Sedation to be given as per order.
- 4.7 Place the patient in prone or supine position

5.0 Procedure

- 5.1 Position the patient on the abdomen or on side with top knee flexed
- 5.2 Prepare the skin area and drape
- 5.3 Mark the area
- 5.4 Assist the physician in:
 - 5.4.1 Infiltrating with local anesthetic through the skin and subcutaneous tissue to the periosteum of the bone

- 5.4.2 Making a small incision
- 5.4.3 introducing the bone marrow needle with stylet in place through the incision
- 5.4.4 Apply pressure to the site after the physician obtains the biopsy

6.0 Post Procedure

- 6.1 Observe any bleeding following aspiration.
- 6.2 Apply firm pressure directly over the site and apply pressure bandage
- 6.3 Check the vitals and record.
- 6.4 Label the slides and send to laboratory immediately.
- 6.5 Allow the patient to rest for few hours.
- 6.6 Clean the articles with cold water then with warm water, dry and send to auto-clave.
- 6.7 Record the procedure, observations made , vitals and any complications

ASSISTING IN CEREBRAL ANGIOGRAPHY, ANGIOPLASTY AND STENTING

1.0 Meaning

- 1.1 Cerebral angiography is a type of fluoroscopy technique used in interventional radiology to clearly visualize cerebral blood vessels. Angioplasty is dilation of narrowed blood vessel with balloon and stent

2.0 Indications/Purposes:

- 2.1 Diagnosis of cerebral aneurysms and arterio-venous malformations (AVM).
- 2.2 Determine and treat vascular occlusion and thrombi.

3.0 Contraindications

- 3.1 Impaired renal function
- 3.2 Patients on anticoagulant therapy
- 3.3 Unstable cardiopulmonary status
- 3.4 Unstable neurological status
- 3.5 Contrast media allergy

4.0 Articles required

- 4.1 Four vessel angio set
- 4.2 Heparinised saline
- 4.3 Three way stop cock
- 4.4 Pressure bags
- 4.5 Pressure injectors
- 4.6 Long connectors
- 4.7 Guide wires
- 4.8 J-wire
- 4.9 Puncture needles
- 4.10 Local anesthesia- lignocaine 2% & bupevacaine 0.5%
- 4.11 Normal saline 500ml and 1000ml
- 4.12 Povidone iodine 9%
- 4.13 Sheaths
- 4.14 Scalpel blade - no 11
- 4.15 Syringes 10 cc
- 4.16 Mask
- 4.17 Cap
- 4.18 Disposable apron
- 4.19 Gloves
- 4.20 Screen
- 4.21 Intra Venous fluid stand
- 4.22 21 gauge needles
- 4.23 Intra Venous infusion sets

- 4.24 Contrast media
- 4.25 Embolisation tray containing
 - 4.25.1 Steel basin
 - 4.25.2 Lambda
 - 4.25.3 Short connectors
 - 4.25.4 One ways
 - 4.25.5 Sequels
 - 4.25.6 Activated Clotting Time testing tubes
 - 4.25.7 Caudenc syringes
 - 4.25.8 Arterial Transducer inducer
 - 4.25.9 Micro catheters
 - 4.25.10 Micro guide wires

5.0 Pre procedure

- 5.1 Prepare the unit for procedure
- 5.2 Check the functioning of ventilator, cardiac monitor, oxygen supply, suction system.
- 5.3 Keep the drugs needed for anesthesia ready
- 5.4 Keep the emergency medications ready
- 5.5 Receive the patient with case file / with appointment slip
- 5.6 Check the following-
 - 5.6.1 Nil Per Oral for 6 hrs
 - 5.6.2 Blood investigations
 - 5.6.3 Electro Cardiogram (patients > 40 yrs)
 - 5.6.4 Weight
 - 5.6.5 Presence of any respiratory tract infections.
 - 5.6.6 Diabetic status, hypertension, any renal problems.
 - 5.6.7 Any drug allergy
 - 5.6.8 Informed consent
 - 5.6.9 Payment
- 5.7 Provide hospital cotton dress.
- 5.8 Catheterize female patients , provide condom drainage for male patients
- 5.9 Check the vital signs

6.0 Procedure

- 6.1 Provide comfortable position
- 6.2 Connect the cardiac monitor
- 6.3 Administer oxygen by face mask , as prescribed
- 6.4 Prepare heparinised saline (1000 International Units of Inj heparin in 500 ml Normal Saline) for pressure bag infusion
- 6.5 Perform oral suctioning if needed
- 6.6 Supply sterile linen / protective devices
- 6.7 Assist in intubation and administer drugs periodically
- 6.8 Assist the radiologists in cleaning and draping
- 6.9 Assist the radiologists in the procedure
- 6.10 Maintain heparin chart

- 6.11 Apply pressure bandage to the puncture site
- 6.12 Assist in reversal and extubation.
- 6.13 Carry out the post anesthetic instructions

7.0 Post procedure

- 7.1 Make the patient comfortable
- 7.2 Administer analgesics as ordered
- 7.3 Monitor vital signs and peripheral pulses
- 7.4 Check the extremity for warmth, colour and numbness
- 7.5 Provide extra blankets, if needed to keep the patient warm.
- 7.6 Watch for bleeding from the site of insertion
- 7.7 Educate the patient and the relatives regarding post procedure care and follow up

ASSISTING IN COMPUTERIZED TOMOGRAPHY

1.0 Meaning

- 1.1 CT is a medical imaging method employing tomography created by computer processing. The word "tomography" is derived from the Greek tomos (slice) and graphein (to write).

2.0 Indications/Purposes:

- 2.1 Infarction
- 2.2 Tumors
- 2.3 Calcifications
- 2.4 Hemorrhage
- 2.5 Fractures
- 2.6 Abscess
- 2.7 Hydrocephalus

3.0 Pre procedure

- 3.1 CT plain study
 - 3.1.1 No need for Nil per Oral
 - 3.1.2 No blood investigations are needed.
 - 3.1.3 Provide lead guard if history of amenorrhea is present.
 - 3.1.4 All metal ornaments are to be removed to prevent artifacts.
- 3.2 CT with contrast study
 - 3.2.1 Nil per Oral for 4 hrs.
 - 3.2.2 Collect history of-
 - 3.2.2.1 Allergy to iodine/shell fish
 - 3.2.2.2 Asthma
 - 3.2.2.3 Cardiac illness
 - 3.2.2.4 Renal diseases
 - 3.2.2.5 Allergy to drugs.
 - 3.2.3 Keep the following articles ready (to use in case of emergency)
 - 3.2.3.1 Oxygen supply
 - 3.2.3.2 Suction apparatus
 - 3.2.3.3 Cardiac monitor
 - 3.2.3.4 Ventilator.
 - 3.2.3.5 Emergency drugs
 - 3.2.3.6 Laryngoscopes
 - 3.2.3.7 All size endotracheal tubes
 - 3.2.3.8 Anesthetic drugs
 - 3.2.4 Explain the patient regarding the need for staying still during the procedure.
 - 3.2.5 Administer contrast

- 3.3.6 Administer drugs as per doctors' advice if the patient develops allergic reaction towards contrast media.
- 3.2.7 Record the procedure in contrast maintenance register.
- 3.3 CT under general anesthesia
 - 3.3.1 Ensure Nil per Oral overnight
 - 3.3.2 Check Blood investigations- Hemoglobin, Total White Blood Count, Biochemistry, Renal Function Test and Liver Function Test.
 - 3.3.3 Check the Body weight
 - 3.3.4 Provide hospital dress
 - 3.3.5 Remove all metal ornaments.
 - 3.3.6 Collect history regarding- hyperthermia, upper respiratory tract infection, asthma, allergy to drugs.
 - 3.3.7 Get an informed consent.
 - 3.3.8 Gain Intra Venous access by cannula.
 - 3.3.9 Provide comfortable position and blankets
 - 3.3.10 Ensure the functioning of all emergency equipments.
 - 3.3.11 Connect the patient to cardiac monitor and record the vital signs.
 - 3.3.12 Administer drugs as per anesthetists' advice.

4.0 Post procedure

- 4.1 Provide lateral position.
- 4.2 Administer Oxygen through face mask.
- 4.3 Monitor and record vital signs.
- 4.4 Advice on nil per oral for 2-3 hrs.
- 4.5 Continue Intra Venous fluid infusion
- 4.6 Explain regarding - mode of payment, collection of reports and follow-up

ASSISTING IN ELECTRO MYOGRAPHY (EMG)

1.0 Meaning

- 1.1 Assessment of the electrical activity of the skeletal muscles

2.0 Indications/Purposes:

- 2.1 Diagnosis of Myasthenia gravis
- 2.2 Differentiate among lesion of anterior horn cell, root plexus and specific nerve and muscle.

3.0 Contraindications

- 3.1 Patient with bleeding disorders.
- 3.2 Cardiac pacemaker implantation for nerve conduction.

4.0 Pre- Procedure

- 4.1 Explain the procedure and purpose of test
- 4.2 Inform that this test may take up to two hours or more
- 4.3 Tell the patient that a needle will be inserted into the muscle through the skin and thus can expect some degree of discomfort
- 4.4 Advise the patient to have good breakfast/lunch 1 hour before the test (fasting not required)
- 4.5 Put only cotton clothes.

5.0 Post Procedure

- 5.1 Receive the patient from ENMG room
- 5.2 Keep the patient comfortable
- 5.3 Observe the needle insertion site for bleeding or hematoma
- 5.4 Document the test in case sheet with time and date.
- 5.5 Wipe any ball pen/sketch pen marks on the limbs.

ASSISTING IN EVOKED POTENTIAL STUDIES

1.0 Meaning

- 1.1 These include checking of pathways of brain's electrical responses to visual, auditory or sensory with respective external stimuli.

2.0 Indications/Purposes:

- 2.1 Diagnosis of multiple sclerosis, Spinal cord injury etc, optic atrophy, hearing loss and other demyelinating diseases.
- 2.2 Verify and localize brain stem lesion

3.0 Pre-Procedure

- 3.1 Explain the procedure to the patient.
- 3.2 Explain that the electrodes will be applied to the scalp.
- 3.3 Instruct the patient to wash hair thoroughly (Avoid applying oil over the head after bath.)
- 3.4 Have good breakfast/lunch before the test (fasting not required)
- 3.5 Instruct the patient to wear only cotton clothes

4.0 Post Procedure

- 4.1 Wash hair and remove the electrode using affixing paste.
- 4.2 Document the test in case file with time and date.

ASSISTING IN LUMBAR PUNCTURE

1.0 Meaning

- 1.1 Insertion of the hollow needle with a styllet in to the sub arachnoid space of lumbar spinal canal.

2.0 Indications/Purposes:

- 2.1 Diagnostic
 - 2.1.1 Cerebro spinal fluid collection for tests
 - 2.1.2 To measure Cerebro spinal fluid pressure
 - 2.1.3 To inject oxygen or radio opaque substances in radiology.
 - 2.1.4 To obtain spinal dynamics.
- 2.2 Therapeutic
 - 2.2.1 To remove blood or Cerebro spinal fluid from the sub arachnoid space.
 - 2.2.2 To reduce intra cranial pressure.
 - 2.2.3 To give spinal anesthesia for surgeries.
 - 2.2.4 For intrathecal injections eg; anti biotics and antimetabolites

3.0 Contraindications

- 3.1 Cutaneous or osseous infections at the puncture site.
- 3.2 Patients having severely increased Intra Cranial Pressure.

4.0 Articles required

- 4.1 Lumbar Puncture needles with the stylette, two different sizes as per the need.
- 4.2 Sponge holding forceps.
- 4.3 5ml syringe with needle
- 4.4 Specimen bottles.
- 4.5 Cotton balls gauze pieces and cotton pad.
- 4.6 Glove bag with pair of glove, gown and mask.
- 4.7 Drape and hand towel.
- 4.8 Three way adapter manometer and tubing's to measure the Cerebral Spinal Fluid pressure (if necessary)
- 4.9 An clean tray containing.
 - 4.9.1 Mackintosh and towel or draw sheet.
 - 4.9.2 Kidney tray and paper bag.
 - 4.9.3 Spirit, betadine and tincture benzoin.
 - 4.9.4 Lignocaine 2%.
 - 4.9.5 Sterile normal saline to fill the manometer.
 - 4.9.6 Adhesive plaster and scissors.

5.0 Pre procedure

- 5.1 Explain the procedure to the patient
- 5.2 Obtain written informed consent from the patient
- 5.3 Assess vital signs, level of consciousness, and neurological status.
- 5.4 Assemble the articles.
- 5.5 Ask the patient to empty the bowel and bladder before the procedure.
- 5.6 Position the patient laterally in fetal position, head bent towards the chest and knees bent towards the abdomen. (Alternatively, the patient may be sitting, flexed forward and supported by stable table or assistant)
- 5.7 Place a small pillow under the head so the spine will be straight in alignment.
- 5.8 Drape the patient to expose only lumbar space.

6.0 Procedure

- 6.1 Support the clients neck , back and knees
- 6.2 Open the Lumbar Puncture set and assist the physician in the procedure.
- 6.3 Make the client to remain in the same position throughout the procedure.
- 6.4 Reassure the patient throughout the procedure to breath normally.
- 6.5 Encourage the patient to relax as much as possible.
- 6.6 After physician performs the procedure, apply dressing at the site of puncture.
- 6.7 Label the specimen bottles.

7.0 Post procedure

- 7.1 Check vital signs, level of consciousness
- 7.2 Position patient in dorsal recumbent position, with one pillow under the head.
- 7.3 Instruct the patient not to sit for 24 hours.
- 7.4 Administer analgesics as per the order of a doctor.
- 7.5 Assess the patient for any other reactions like fainting, nausea or vomiting.
- 7.6 Watch for any numbness, radiating pain or tingling sensation to lower limbs.
- 7.7 Observe for any Cerebro Spinal Fluid leak from the puncture site.
- 7.8 Send the specimen to laboratory.
- 7.9 Change the linen if soiled.
- 7.10 Take all the articles to the utility room.
- 7.11 Clean all the articles with soap and water and send for sterilization
- 7.12 Disinfect the towel mackintosh and kidney tray
- 7.13 Send the linen to laundry for washing.
- 7.14 Replace all the articles.
- 7.15 Burn the punctured needle and put it in a puncture proof container.
- 7.16 Record the procedure, color of specimen and amount of CSF obtained, pressure reading if any samples send to the lab for investigation and any abnormal observations.

ASSISTING IN MAGNETIC RESONANCE IMAGING (BRAIN AND SPINAL CORD)

1.0 Meaning

- 1.1 Magnetic resonance imaging is a medical imaging technique used in radiology to visualize detailed internal structures

2.0 Indications/Purposes:

- 2.1 Central Nervous system malignancies.
- 2.2 Spinal cord lesions
- 2.3 Cerebral edema
- 2.4 Cerebral infarction.
- 2.5 Head trauma
- 2.6 Degenerative diseases

3.0 Contraindications

- 3.1 Presence of any metallic implants

4.0 Pre-Procedure

- 4.1 Explain the procedure and purpose of scan.
- 4.2 Obtain informed consent.
- 4.3 Provide Psychological support.
- 4.4 Note the presence of any metal objects such as prosthesis or pacemaker
- 4.5 Ask the patient to remove all the electro-magnetic gadgets like mobile, watch, Automatic Teller Machine cards, coins, hair pins, keys etc
- 4.6 Use special monitoring device such as pulse oximetry, Electro Cardio Gram leads.
- 4.7 Advise the client to be Nil per oral from midnight in case of General Anesthesia.
- 4.8 Advise the client to eat normally and take prescribed medication before the test.
- 4.9 Advise the client to lie still during procedure.
- 4.10 Inform regarding the provision of audio- communication device throughout the procedure.
- 4.11 Provide comfortable position.
- 4.12 Provide blankets, extra blankets if it is necessary
- 4.13 Provide reassurance
- 4.14 Administer sedatives as per order.
- 4.15 If a contrast agent is planned
 - 4.15.1 Ask the client if he/she had an allergic to contrast dye or iodine/shell fish
 - 4.15.2 Tell the client that when the dye is injected he may have flushed sensation and metallic taste in the mouth.
 - 4.15.3 Tell the client to report if he has difficulty in breathing.
 - 4.15.4 Keep emergency cart ready
 - 4.15.5 Tell the client to wear ear plugs or headphones during the test as there will be noise heard during the procedure.
- 4.15.6 Check blood urea and creatinine level.

5.0 Post Procedure

- 5.1 Advise the client to resume previous activities and diet.
- 5.2 Encourage plenty of fluid to flush the dye.
- 5.3 Assess the fluid balance, replace fluid if needed.
- 5.4 Avoid driving for at least 12 hours after the scan for sedated patient.
- 5.5 Check and record vital signs in the nurses chart.
- 5.6 Record administered medication, dose route and time.
- 5.7 Record post MRI vitals, receiving time, level of consciousness of the patient.

ASSISTING PERFUSION MRI

1.0 Meaning

- 1.1 MRI perfusion is the process of studying nutritive delivery of arterial blood to a capillary bed in the biological tissue using MRI technology.

2.0 Indications/Purposes:

- 2.1 Analyse blood flow to the Brain.
- 2.2 Calculate the rate of cerebral blood flow (CBF) following an ischemic stroke or aneurysmal subarachnoid hemorrhage.
- 2.3 Understand the blood supply to tumors.

3.0 Contraindications

- 3.1 Allergy to contrast media

4.0 Articles required

- 4.1 Magnetic Resonance perfusion syringe set (2 no's with connectors)
- 4.2 Normal saline 100 ml
- 4.3 18 Gauge Intra venous cannula
- 4.4 Spirit swab
- 4.5 Plaster
- 4.6 Disposable gloves
- 4.7 Sterile syringe 10ml

5.0 Pre-procedure

- 5.1 Receive the patient from the ward with the case file, out patient Dept patients with appointment slip.
- 5.2 Check whether one adult attender has come with the patient.
- 5.3 Collect history regarding any metal implants, cardiac pacemakers. (by using metal detectors)
- 5.4 Ask the patient to remove all the electro-magnetic gadgets like mobile, watch, ATM cards, coins, hair pins, keys etc.
- 5.5 To provide pure cotton hospital dress.
- 5.6 Explain the appropriate duration of MRI
- 5.7 Explain about the heavy noise inside the MRI room.
- 5.8 Inform regarding the provision of audio- communication device throughout the procedure.
- 5.9 Provide comfortable position.
- 5.10 Provide blankets, extra blankets if it is necessary.
- 5.11 Provide reassurance.
- 5.12 Explain the patient regarding the procedure.
- 5.13 Get a largest possible bore Intra venous access (>18 G).

- 5.14 Prepare the Magnetic Resonance PERFUSION syringes with Magnetic Resonance contrast (0.1 -0.2 ml/kg body wt) and normal saline flush (20 - 30 ml)
- 5.15 Connect the perfusion syringes to Intra venous access using venous extension.

6.0 Procedure

- 6.1 Reassure the patient
- 6.2 Inform the patient not to move the head

7.0 Post-procedure

- 7.1 Check the Injection site for contrast infiltration.
- 7.2 Remove the Intra venous line.
- 7.3 Record in the register.

ASSISTING IN URO DYNAMIC STUDIES

1.0 Meaning

- 1.1 Urodynamic studies are diagnostic procedures done to assess the functions of lower urinary tract.

2.0 Indications/Purposes:

- 2.1 Incontinence
- 2.2 Frequent urination
- 2.3 Urge incontinence
- 2.4 Problems in initiating a urine stream
- 2.5 Painful urination
- 2.6 Problems in emptying bladder completely
- 2.7 Recurrent urinary tract infections

3.0 Contraindications

- 3.1 Hydrocele
- 3.2 Tumor and peri-urethral abscess and fistula
- 3.3 Pregnant women
- 3.4 Unconscious patient

4.0 Articles required

- 4.1 Catheterization set
- 4.2 Double lumen catheter
- 4.3 Apron
- 4.4 Betadine solution
- 4.5 Xylocaine jelly 2%
- 4.6 Disposable syringe 20 ml and 50 ml
- 4.7 Kidney tray
- 4.8 1000 ml saline
- 4.9 Intra venous set with extension tube
- 4.10 Measuring jug

5.0 Pre procedure

- 5.1 Obtain appointment from uro dynamic lab
- 5.2 Explain the procedure and obtain consent from the patient
- 5.3 Ensure that the patient is nil orally over night
- 5.4 Administer Dulcolax suppository(2) at HS
- 5.5 Soap and water enema at CMS
- 5.6 Prepare the pubic area and give bath
- 5.7 Change the hospital linen
- 5.8 Give prophylactic antibiotic and inj. Tetenus Toxoid as prescribed

- 5.9 Check report of urine routine and culture
- 5.10 Report of blood haemogram, Renal Function Tests, serum electrolytes
- 5.11 Bladder and bowel to be emptied before standing

6.0 Procedure

- 6.1 Provide privacy
- 6.2 Adjust the position of uro dynamic table in supine
- 6.3 Cover the patient with bed sheet or blanket one corner is wrapped securely around one foot
- 6.4 Drape the patient completely, expose only perineum
- 6.5 Catheterize the patient using double lumen catheter
- 6.6 Explain the patient to report all sensations during test

7.0 Post procedure

- 7.1 Wash and dry the perineum
- 7.2 Remove and replace the garments and linen
- 7.3 Make the patient comfortable
- 7.4 Check the vital signs
- 7.5 Watch the patient for sensation of sweating, pain, nausea, bladder fullness and urge to void
- 7.6 Maintain intake output chart
- 7.7 Clean and replace the articles
- 7.8 Record the procedure and follow the instructions

ASSISTING IN VIDEO ELECTRO ENCEPHALOGRAPHY (VEEG)

1.0 Meaning

- 1.1 Advanced video recording done simultaneously with electro encephalography

2.0 Indications/Purposes:

- 2.1 Uncontrolled seizures to characterize the seizure type
- 2.2 Medial temporal sclerosis for pre and post surgical evolution
- 2.3 To differentiate epileptic / non epileptic seizures

3.0 Articles required

- 3.1 Cot with side rails /padded side boards.
- 3.2 Electrodes
- 3.3 Paste. (Elefix)
- 3.4 Spirit
- 3.5 Plaster (G plaster)
- 3.6 Cotton (small balls)
- 3.7 Bandages (to fix/tie scalp)

4.0 Pre procedure

- 4.1 Explain the procedure and ensure patients co operation
- 4.2 Re assure the patient that he/she will not receive electric shock
- 4.3 With hold the medication if any as indicated by the physicians
- 4.4 Instruct the patient to take thorough hair wash with soap or shampoo
- 4.5 Instruct the patient to wear cotton dress
- 4.6 Instruct the patient to have breakfast/meal before EEG (fasting not required)
- 4.7 Inform that patient attendant has to stay with the patient during the VEEG recording day and night and necessary things are to be brought from home for attender as well as for the patient
- 4.8 Instruct that mobile phones needs to be switched off throughout video recording
- 4.9 Instruct patient not to alter diet pattern during VEEG.
- 4.10 Instruct the patient to inform staff when he/she needs to use toilet.

5.0 Procedure

- 5.1 Explain the procedure and ensure the patient co operation
- 5.2 Apply the electrodes on the scalp to record electrical activity from various regions of the brain.
- 5.3 Secure the electrodes in place using the Elefix (paste)

- 5.4 Video EEG is done for 3 consecutive days and 2 nights, which may be terminated earlier if sufficient clinical attacks are recorded.
- 5.5 Ensure that the patient remain in the field of the camera at all times
- 5.6 Ensure that patient attendant is available in the room all through the recording.
- 5.7 Instruct the attender to press the call button in case of seizures (at the onset of seizures)

- 5.8 Perform the following testing in the event of seizure
 - 5.8.1 Response testing:
 - 5.8.1.1 Remove the bed sheets covering the patient.
 - 5.8.1.2 Do not block the camera

 - 5.8.2 Assess the level of consciousness by asking patient:
 - 5.8.2.1 Lift up right hand
 - 5.8.2.2 lift up left hand
 - 5.8.2.3 Close eyes
 - 5.8.2.4 To show tongue

 - 5.8.3 Language testing
 - 5.8.3.1 Ask the name of the patient
 - 5.8.3.2 Show a pen and ask what it is?
 - 5.8.3.3 Show the watch and ask what it is?
 - 5.8.3.4 Ask to read the card in the language known to him / her
 - 5.8.3.5 Show the picture and ask what/who this is.
 - 5.8.3.6 If the patient does not answer repeat test every 30-60 seconds until he is able to tell.

 - 5.8.4 Memory testing: (after 10mins of -ictus)
 - 5.8.4.1 Do you remember the questions I asked?
 - 5.8.4.2 Do you recall the picture I showed?

- 5.9 Generalized seizures (primary / secondary)
 - 5.9.1 Do not restrain hands / legs leave the patient freely
 - 5.9.2 Do not block the camera
 - 5.9.3 Remove the bed sheet if covered
 - 5.9.4 Remove the pillow, turn the patient to lie on his side
 - 5.9.5 Maintain air way /breathing by putting the patient on one side.
 - 5.9.6 Do not forcibly open the jaws or place a wooden spatula/tongue depressor by force.
 - 5.9.7 Do not perform suction during attack.
 - 5.9.8 Check the level of sensorium and inform on duty doctor
 - 5.9.9 Reorient the patient by asking name, place etc.
 - 5.9.10 Administer inj Lorezapam 4mg slow IV over 4 minutes for Generalized Tonic Clonic Seizures and inj Gardenal sodium 200mg IM (for adults)50 - 100mg (for children) with partial seizures (simple /complex),(if standing order exist)
 - 5.9.11 To restart oral Anti Epileptic Drugs if the patient is conscious.

5.9.12 If patient do not regain consciousness patient is shifted to casualty to manage further as a case of clusters/ status epilepticus protocol.

6.0 Post procedure

- 6.1 Discontinue video recording after two brief generalized seizures partial/CPs attacks
- 6.2 Clean the hair to remove the electrode paste.
- 6.3 Resume any drug that was withheld specifically for EEG
- 6.4 Record the date, time, duration of the procedure and any seizures if occurred during the procedure
- 6.5 Ensure the copying and storing of soft copy of the recording

COMPUTERIZED TOMOGRAM ANGIOGRAPHY

1.0 Meaning

- 1.1 Computerized tomogram angiography is used to examine blood vessels in key areas of the body, including the brain, kidneys, pelvis, legs, lungs, heart, neck and abdomen.

2.0 Indications/Purposes:

- 2.1 Identify disease and aneurysms in the aorta, both in the chest and abdomen, or in other major blood vessels.
- 2.2 Detect atherosclerosis disease in the carotid artery of the neck, which may limit blood flow to the brain and cause a stroke.
- 2.3 Identify a small aneurysm or arteriovenous malformation inside the brain.
- 2.4 Detect atherosclerotic disease that has narrowed the arteries to the legs and help prepare for endovascular intervention or surgery.
- 2.5 Detect disease in the arteries to the kidneys or visualize blood flow to help prepare for a kidney transplant.
- 2.6 Guide interventional radiologists and surgeons making repairs to diseased blood vessels, such as implanting stents or evaluating a stent after implantation.
- 2.7 Detect injury to one of more arteries in the neck, chest, abdomen, pelvis or extremities in trauma patients.
- 2.8 Evaluate arteries feeding a tumor prior to surgery or other procedures such as chemoembolization or selective internal radiation therapy.
- 2.9 Identify dissection or splitting in the aorta in the chest or abdomen or its major branches.
- 2.10 Show the extent and severity of atherosclerosis in the coronary arteries and plan for a surgical operation, such as a coronary bypass and stenting.
- 2.11 Examine pulmonary arteries in the lungs to detect pulmonary embolism (blood clots from leg veins).

3.0 Articles required

- 3.1 Intra venous cannula (18 Gauge) with plasters
- 3.2 Pressure injector with syringes
- 3.3 Intra venous extension.
- 3.4 Contrast (non-ionic) media
- 3.5 Plaster
- 3.6 Spirit swabs
- 3.7 Disposable gloves

4.0 Pre-procedure

- 4.1 Explain the procedure
- 4.2 Check Nil Per Oral status (4 hrs)

- 4.3 Check blood parameters
- 4.4 Obtain an informed consent
- 4.5 Provide comfortable position.
- 4.6 Gain Intra venous access (> 18G)

5.0 Procedure

- 5.1 Connect angio- syringe to Intra venous cannula using Intra venous extension.
- 5.2 Inform that the body becomes warm while injecting the contrast.
- 5.3 Advice on absolute immobilization during the scan.
- 5.4 Advice the patient to follow instructions which will be given throughout the procedure.
- 5.5 Reassure the patient throughout the procedure.

6.0 Post procedure

- 6.1 Check the Injection site for infiltration & remove Intra venous cannula.
- 6.2 Explain regarding- mode of payment, collection of reports, follow-up plan

ELECTROCARDIOGRAM

1.0 Meaning

- 1.1 It is a transthoracic interpretation of the electrical activity of the heart using externally placed skin electrodes

2.0 Indications/Purposes:

- 2.1 Chest pain
- 2.2 History of syncope
- 2.3 Palpitation
- 2.4 Routine health check up

3.0 Articles required

- 3.1 Electrocardiogram Machine with leads
- 3.2 Electrocardiogram electrodes
- 3.3 Conducting Gel
- 3.4 Cotton

4.0 Pre procedure

- 4.1 Explain the test and provide privacy
- 4.2 Ensure the skin is dry and non greasy
- 4.3 Attach electrodes to the skin on the specific sites
- 4.4 Connect electrodes to the monitor
- 4.5 Adjusting the monitor to obtain recordable Electrocardiogram.

5.0 Procedure

- 5.1 Advise the patient to lie still, breathe normally and refrain from talking.
- 5.2 Switch on the Electrocardiogram machine and obtain the recording

6.0 Post Procedure

- 6.1 Disconnect the equipment; wipe the gel from the patient's skin.
- 6.2 Replace the articles in proper place.
- 6.3 Document patient name, identification no, age and unit on Electrocardiogram sheet.
- 6.4 Record the test in case sheet with time and date.

ELECTRO ENCEPHALOGRAPHY

1.0 Meaning

- 1.1 Electro encephalography consists of graphic records of electrical activity of the brain using multiple scalp electrodes.

2.0 Indications/Purposes:

- 2.1 To diagnose epilepsies
- 2.2 Used to ascertain the cause of coma and other organic brain syndrome / to monitor coma progress
- 2.3 Indicator of brain death
- 2.4 To characterize specific pattern seen in Central Nervous System infection SSPE/HSV

3.0 Articles required

- 3.1 Electrodes
- 3.2 Paste (Elefix)
- 3.3 Spirit
- 3.4 Plaster (micro pore)
- 3.5 Cotton (small-balls)

4.0 Pre-procedure

- 4.1 Explain the procedure and ensure patients co operation
- 4.2 Re assure the patient that he/she will not receive electric shock
- 4.3 Instruct the patient not to sleep previous night of the procedure if sleep deprivation is needed for activation
- 4.4 Instruct the patient to take thorough hair wash with soap or shampoo
- 4.5 Instruct the patient to wear cotton dress
- 4.6 Instruct the patient to have good breakfast/meal half an hour before EEG(fasting not required)

5.0 Procedure

- 5.1 Instruct the patient to lie quietly with the eyes closed.
- 5.2 Apply the electrodes are arranged on the scalp to record electrical activity in various regions of the brain.
- 5.3 Provide photo stimulation by flashing lights, if indicated for activation
- 5.4 Ask the patient to hyperventilate by taking deep and rapid breaths for 3mts continuously and then to relax (post hyperventilation) for 3mts., if indicated

6.0 Post procedure

- 6.1 Clean the hair to remove the electrode paste.
- 6.2 Record the date, time, duration of the procedure and any seizures if occurred during the procedure
- 6.3 Ensure the copying and storing of soft copy of the recording

MUSCLE BIOPSY

1.0 Meaning

- 1.1 Procedure of obtaining a small piece of muscle tissue from affected area for diagnostic purpose.

2.0 Indications/Purposes:

- 2.1 Presence of some evidence of muscle disease.

3.0 Contraindications

- 3.1 Bleeding disorders

4.0 Articles required

- 4.1 Glove
- 4.2 Mask
- 4.3 Local anesthesia - lignocaine 2% with adrenaline 0.01 mg
- 4.4 Disposable syringes and needle
- 4.5 Betadine solution and spirit to clean the site.
- 4.6 Normal saline
- 4.7 Mackintosh and draw sheet
- 4.8 Adhesive plaster/Dynapast
- 4.9 Scalpel blade
- 4.10 Spot light
- 4.11 Kidney tray
- 4.12 Sterile biopsy set (cut down set) include
 - 4.12.1 Sponge holding forceps for painting.
 - 4.12.2 Artery forceps -2
 - 4.12.3 Alice forceps -2
 - 4.12.4 Needle holder -1
 - 4.12.5 Curved artery forceps -2
 - 4.12.6 Toothed forceps -1
 - 4.12.7 B.P. handle -1
 - 4.12.8 Sterile bowl -1
 - 4.12.9 Dressing material
 - 4.12.10 Suturing needle and material

5.0 Pre procedure

- 5.1 Explain the procedure to the patient and obtain written informed consent
- 5.2 Prepare the site by shaving the area
- 5.3 Give the patient a comfortable position
- 5.4 Set the spot light

6.0 Procedure

- 6.1 Wear a cap and mask
- 6.2 Wash hands and wear sterile gloves
- 6.3 Assist the surgeon during the procedure
- 6.4 Keep collected sample under aseptic technique in a normal saline soaked gauze piece
- 6.5 Place it in a sterile container.
- 6.6 Do not add large volumes of saline as it causes artifacts.
- 6.7 Collected sample has to be sent immediately to the laboratory along with the request form.
- 6.8 Replace the articles

7.0 Post procedure

- 7.1 Dress the wound with betadine ointment
- 7.2 Observe for any swelling, hematoma or bleeding from the site
- 7.3 Administer antibiotics and analgesics as ordered.
- 7.4 Administer Inj. Tetanus toxoid-one ampoule, intramuscular, stat as ordered
- 7.5 Soak all instruments and linen and wash with soap and running water
- 7.6 Dry and repack the set as per list
- 7.7 Send the articles for autoclave
- 7.8 Segregate waste and dispose into respective containers.
- 7.9 Record the procedure, time, date and person in the nurse's record.
- 7.10 Record the details of specimen in the specimen book.
- 7.11 Record the medications given, vitals and observation in the nurse's record.

NERVE BIOPSY

1.0 Meaning

- 1.1 A procedure of obtaining a small piece of nerve for diagnostic information.

2.0 Indications/Purposes:

- 2.1 To help distinguish between demyelination and axonal degeneration.
- 2.2 To identify inflammatory nerve conditions.
- 2.3 To confirm specific diagnosis.

3.0 Contraindications

- 3.1 Bleeding disorders

4.0 Articles required

- 4.1 A sterile biopsy set
- 4.2 Gloves
- 4.3 Mask
- 4.4 Local anesthesia - lignocaine 2%
- 4.5 Disposable syringes and needle
- 4.6 Betadine solution and spirit to clean the site.
- 4.7 One small bottle with 3% Gluteraldehyde.
- 4.8 Mackintosh and draw sheet
- 4.9 Adhesive plaster
- 4.10 Scalpel blade
- 4.11 Spot light
- 4.12 Kidney tray
- 4.13 Sterile biopsy set (cut down set)
 - 4.13.1 Sponge holding forceps for painting.
 - 4.13.2 Artery forceps -2
 - 4.13.3 Alice forceps -2
 - 4.13.4 Needle holder -1
 - 4.13.5 Curved artery forceps -2
 - 4.13.6 Toothed forceps -1
 - 4.13.7 B.P handle -1
 - 4.13.8 Sterile bowl -1
 - 4.13.9 Dressing material
 - 4.13.10 Suturing needle and material

5.0 Pre procedure

- 5.1 Explain the procedure to the patient and obtain written informed consent
- 5.2 Prepare the site by shaving the area
- 5.3 Put the patient in a comfortable position (if sural nerve biopsy is done , keep leg elevated)
- 5.4 Set the spot light

6.0 Procedure

- 6.1 Wear a cap and mask
- 6.2 Wash hands and wear sterile gloves
- 6.3 Assist the surgeon during the procedure
- 6.4 Keep collected sample under aseptic technique into 2% Gluteraldehyde solution.
- 6.5 Place it in a sterile container.
- 6.6 Send the sample immediately to the laboratory along with the request form
- 6.7 Replace the articles

7.0 Post procedure

- 7.1 Dress the wound with betadine ointment
- 7.2 Observe for any swelling, hematoma or bleeding from the site
- 7.3 Administer Inj. Tetanus toxoid-one ampule I.M stat as ordered
- 7.4 Administer antibiotics and analgesics as ordered.
- 7.5 Soak all instruments and linen and wash with soap and running water
- 7.6 Dry and repack the set as per list
- 7.7 Send the articles for sterilization
- 7.8 Segregate waste and dispose into respective containers.
- 7.9 Record the procedure, time, date and person in the nurse's record.
- 7.10 Record the details of specimen in the specimen book.
- 7.11 Record the medications given, vitals and observation in the nurse's record.

SKIN BIOPSY

1.0 Meaning

- 1.1 Skin biopsy is a surgical procedure in which a small piece of living skin is removed from the body for microscopic examination and diagnosis.

2.0 Indications/Purposes:

- 2.1 To obtain a tissue sample for diagnostic testing.
- 2.2 To obtain deep tissue culture.

3.0 Contraindications

- 3.1 Infections at the site
- 3.2 Bleeding disorders
- 3.3 Allergic reactions.

4.0 Articles required

- 4.1 A sterile biopsy set
- 4.2 Gloves
- 4.3 Mask
- 4.4 Local anesthesia - lignocaine 2%
- 4.5 Disposable syringes and needle
- 4.6 Betadine solution and spirit to clean the site.
- 4.7 Normal saline
- 4.8 Mackintosh and draw sheet
- 4.9 Adhesive plaster
- 4.10 Scalpel blade
- 4.11 Spot light
- 4.12 Kidney tray
- 4.13 Vial with formalin
- 4.14 Sterile biopsy set (cut down set)
- 4.15 Sponge holding forceps for painting.
- 4.16 Artery forceps -2
- 4.17 Alice forceps -2
- 4.18 Needle holder -1
- 4.19 Curved artery forceps -2
- 4.20 Toothed forceps -1
- 4.21 B.P handle -1
- 4.22 Sterile bowl -1
- 4.23 Dressing material
- 4.24 Suturing needle and material

5.0 Pre procedure

- 5.1 Explain the procedure to the patient and obtain written informed consent
- 5.2 Give the patient a comfortable position
- 5.3 Expose the area and keep the part in proper position
- 5.4 Set the spot light

6.0 Procedure

- 6.1 Wash hands and wear sterile mask and gloves.
- 6.2 Assist the surgeon in the procedure
- 6.3 Collect the sample in a formalin vial and seal it with adhesive plaster
- 6.4 Label the sample with patient's details and send it to the laboratory immediately along with the filled in request form.
- 6.5 Record vital signs and make the patient comfortable.
- 6.6 Clean and replace the articles used.
- 6.7 Wash, dry and repack the instruments and linen used as per list
- 6.8 Make sure the specimen reaches the laboratory along with specimen entry book.
- 6.9 Wash hands after removing the gloves & mask.

7.0 Post procedure

- 7.1 Make the client comfortable.
- 7.2 Dress the wound with betadine ointment
- 7.3 Check vital signs.
- 7.4 Administer antibiotics and Analgesics as ordered
- 7.5 Administer Inj. Tetanus toxoid-one ampule I.M stat as ordered
- 7.6 Soak all instruments and linen and wash with soap and running water
- 7.7 Dry and repack the set as per list
- 7.8 Send the articles for autoclave
- 7.9 Segregate waste and dispose into respective containers.
- 7.10 Record the procedure, time, date and person in the nurse's record.
- 7.11 Record the details of specimen in the specimen book.
- 7.12 Record the medications given, vitals and observation in the nurse's record.

STEREOTACTIC BRAIN BIOPSY

1.0 Meaning

- 1.1 Stereotactic neurosurgery is a method for locating points within the brain using an external, three dimensional frame of reference. It is one of the minimally invasive procedure. "Stereo" means three dimensions, "tactus" means to touch.

2.0 Indications/Purposes:

- 2.1 Brain tumor (for biopsy and treatment)
- 2.2 Brain hematoma, abscess (evacuation)
- 2.3 Stereo tactic guided micro neuro surgery.

3.0 Advantages

- 3.1 Minimally invasive - performed through small entry point, minimal operative scar
- 3.2 Can be done under local anesthesia.
- 3.3 Less time consuming (avoids long duration operation time)
- 3.4 Cost-effective
- 3.5 Less hospital stay (patient can be discharged next day)
- 3.6 Less neurological complication
- 3.7 Can be performed in high risk patients
- 3.8 Can be performed for deep seated lesions (eloquent areas, motor cortex, brain stem, thalamus, basal ganglia)
- 3.9 Minimal blood loss

4.0 Contraindications

- 4.1 Any scalp infections
- 4.2 Bleeding disorders

5.0 Articles required

- 5.1 Stereo Tactic Biopsy (STB) SET-2
- 5.2 STB needle set-1
- 5.3 STB- I- 1
- 5.4 STB-II-1
- 5.5 Twist drill set-1
- 5.6 Local anesthesia- lignocaine 2% & bupevacaine 0.5%
- 5.7 Normal saline 100 ml
- 5.8 Povidine iodine 9%
- 5.9 Formalin solution
- 5.10 Scalpel blade - no 11
- 5.11 Syringes 10 cc
- 5.12 Mask
- 5.13 Cap
- 5.14 Disposable apron

- 5.15 Gloves
- 5.16 Screen
- 5.17 Intra venous fluid stand
- 5.18 21 g needle
- 5.19 C T/MRI adopter
- 5.20 C T/MRI coordinator

6.0 Pre-procedure

- 6.1 Receive the patient from Out Patient Dept or ward with file
- 6.2 Keep Nil Per Oral for 6 hrs
- 6.3 Provide hospital dress
- 6.4 Explain about the procedure
- 6.5 Check Consent
- 6.6 Provide comfortable position
- 6.7 Check blood parameters/ Blood Pressure/ blood sugar/ history of allergy
- 6.8 Administer prophylactic antibiotics

7.0 Procedure

- 7.1 Provide comfortable position.
- 7.2 Assist the neuro-surgeons in painting with betadine
- 7.3 Assist in giving local anesthesia (ant- two points and post-two points)
- 7.4 Assist in stereo tactic frame fixation
- 7.5 Shift the patient to CT /MRI scan
- 7.6 Fix the patients head frame to CT base adopter and CT co-ordinator
- 7.7 Plan to locate the lesion/target in three dimension plan by the surgeons which is computer assisted
- 7.8 Obtain the X Y & Z values
- 7.9 Shift the patient to procedure room
- 7.10 Fix Lekshell "G" frame arc is fixed to stereo tactic frame based on acquired X Y Z axis values
- 7.11 Select On the "G" frame safest area as the point of entry
- 7.12 Have the site of entry, clean, give local anesthesia, and make a small scalpel incision.
- 7.13 Perform twist drilling (burr hole / craniotomy in Operation Theatre)
- 7.14 Pass STB needle with stillet through the burr hole to reach the target
- 7.15 Turn the Stillet to open position
- 7.16 Apply Negative pressure using a syringe on needle.
- 7.17 The target lesion herniate into needle
- 7.18 Now stillet is turned to close position and withdrawn out of penetration point
- 7.19 The sample is removed out of needle by saline flush and put into formalin solution.
- 7.20 If needed the steps can be repeated (under sterile techniques) to get more samples.

8.0 Post procedure

- 8.1 Label the samples.
- 8.2 Assist in removal of the frame
- 8.3 Check for bleeding from site
- 8.4 Clean the pin site
- 8.5 Apply adhesive plasters
- 8.6 Provide comfortable position
- 8.7 Check and record vital parameters
- 8.8 Shift back the patient to ward with post STB orders
- 8.9 Clean the set with hydrogen peroxide and spirit and packing it.
- 8.10 Enter the details of STB and dispatch of samples in the biopsy register.
- 8.11 Clean the unit

ADMINISTRATION OF MEDICATION (MENTAL HEALTH)

1.0 Meaning:

Psychoactive medications are the administration of drugs that are used to treat psychiatric disorders

2.0 Indications/Purposes:

- 2.1 To treat the psychiatric disorders
- 2.2 To ensure drug compliance

3.0 Articles

- 3.1 Prescribed medicine
- 3.2 Order for medication
- 3.3 Drug containers
- 3.4 Drinking water with disposable glass.

4.0 Pre procedure

- 4.1 Keep the articles for medication administration ready.

5.0 Procedure

- 5.1 Check whether the correct drug is being administered
- 5.2 Ensure that the right dosage of prescribed drug is being given
- 5.3 Administer the drug through the correct route
- 5.4 Make sure that there is no delay in drug administration
- 5.5 Follow the correct procedure while administering the drug
- 5.6 Check the right prescript and the right patient before administering the medication
- 5.7 Make sure that patient swallowed the medicines by asking the client to open the mouth and check under the tongue.
- 5.8 Follow the clean (for oral administration)/sterile (for injectables) technique.
- 5.9 Check the expiry date of the drug before administration
- 5.10 Replace the articles correctly after administering the drug
- 5.11 Document the name of the drug, date, time, dose etc.

6.0 Post procedure

- 6.1 Document the name of the drug, date, time, dose etc.
- 6.2 Communication to the next shift nurses about the drug administration
- 6.3 Inform the patient/relatives about the action & side-effects of the drugs
- 6.4 Observe, record and inform the doctor about the side effects/complications of the drug, if any.
- 6.5 Sign after documenting the drug administration.
- 6.6 Check whether the drug is stored properly

PROCEDURE FOR GROUP THERAPY

1.0 Meaning:

Group Psychotherapy is a treatment in which carefully selected people who are emotionally ill meet in a group guided by a trained therapist, and help one another for effective personality change

2.0 Indications/Purposes:

- 2.1 To intervene in psychopathology
- 2.2 To reveal, examine and resolve distortions in the interpersonal relationship
- 2.3 To improve the skill of relating to others
- 2.4 To learn coping skills
- 2.5 Personality disorder

3.0 Articles

- 3.1 Chairs - 10-15 Nos
- 3.2 Writing pad & pen for writing the evaluation and summary of the group meeting

4.0 Contraindications

- 4.1 Anti-social patients
- 4.2 Actively suicidal or depressed patients
- 4.3 Patients who are delusional and who may incorporate the group into their delusional system.

5.0 Pre procedure

- 5.1 Have adequate knowledge about the nature and goal of the group.

6.0 Procedure

- 6.1 Identify the patients, family members who require group therapy
- 5.2 Prepare the patients and family members for the group therapy
- 6.3 Establish rules for the group
- 6.4 Take the responsibility of the therapist
- 6.5 Control the group effectively
- 6.6 Encourage the participation of all group members
- 6.7 Clarify the thoughts, feelings and ideas of the group members
- 6.8 Give periodic feedback and suggestions to the group members
- 6.9 Summarize the discussion and present it to the group in a clear, concise and easy to understand manner.

7.0 Post Procedure

- 7.1 Document the proceedings of the group therapy.

PROCEDURE FOR PREVENTION OF SUICIDE / HOMICIDE / DSH (DELIBERATE SELF HARM)

1.0 Meaning:

- 1.1 The ward procedures which ensures the safety and prevention of suicide/homicide/DSH of the psychiatric patient

2.0 Indications/Purposes:

- 2.1 To prevent suicide/homicide/DSH occurring in the ward

3.0 Pre procedure

- 3.1 The nurse should have adequate knowledge of necessary precautionary measures for prevention of such incidents.

4.0 Procedure

- 4.1 Establish rapport with the client
- 4.2 Elicit suicidal, homicidal, DSH ideas from the client, report to the concerned doctor, colleagues & next shift nurses & document.
- 4.3 Observe for any suicide, homicide, DSH gestures by the client, report to the concerned doctor, colleagues & next shift nurses & document
- 4.4 Document any previous suicidal attempts
- 4.5 Check and remove sharp instruments, blades, knives, glass bangles, hairpins, loose clothes etc. at the time of admission.
- 4.6 Give clear instructions to the family members about the danger of all these items.
- 4.7 Keep such patients under close observation round the clock
- 4.8 Enhance observation by informing all hospital personnel in the ward about such patients
- 4.9 Do not leave such patients alone at any time
- 4.10 Ensure that someone accompanies the client to the toilet, bath etc.
- 4.11 Inform supervisors, concerned authorities about any structural defects which can aid in such harmful acts.
- 4.12 Administer SOS drugs on time, record and inform to the concerned personnel
- 4.13 Keep the drugs under lock and key

ELECTROCONVULSIVE THERAPY (ECT)

1.0 Meaning:

Electroconvulsive Therapy is the artificial induction of a grandmal seizure through the application of electrical current to the brain.

2.0 Indications/Purposes:

- 2.1 Major Depression
- 2.2 Severe catatonia (functional)
- 2.3 Severe Psychosis (schizophrenia/Mania)
- 2.4 Organic mental disorder

3.0 Contraindications

- 3.1 Raised ICP, cerebral aneurysm, cerebral haemorrhage, brain tumors, acute myocardial infection, congestive cardiac failure, pneumonia or aortic aneurysm, retinal detachment.

4.0 Articles

- 4.1 Two pieces. Loose fitting dress.
- 4.2 Tray with Injection Pentathol sodium, distilled water, spirit swab, tourniquet, disposable syringes & needles, sterile tray to keep the loaded syringes, B.P. apparatus, suction catheter, ECT machine with electrodes, lubricant jelly, Boyle's apparatus, Anaesthetist's trolley with emergency drugs, endotracheal tubes, laryngoscope, adhesive plaster, ambu bag, O2 mask .

5.0 Pre-procedure

- 5.1 Check written order for ECT for the patient
- 5.2 Check for informed written consent from the patient or relative
- 5.3 Explain about the procedure to the patient / relatives
- 5.4 Check whether physical examination has been carried out
- 5.5 Send for required investigations (Hb %, serum electrolytes, urea, creatinine, RBS, urine analysis, ECG etc) on time and report for any abnormalities.
- 5.6 Check for the presence of all relevant reports before sending the patient for ECT.
- 5.7 Check if all metallic articles viz., Bangles, ring, hairclip, watch etc are removed
- 5.8 Check and remove dentures and contact lenses
- 5.9 Check for presence of loose teeth. If present inform the concerned doctors and ECT room nurse.
- 5.10 Check and remove lipstick, nailpolish, make-up etc.
- 5.11 Ensure that the patient empty bowel & bladder before sending to ECT room
- 5.12 Ensure that the patient's hair is oil free
- 5.13 Administer necessary medications, if advise
- 5.14 Accompany the patient to ECT room
- 5.15 Keep the articles ready in working condition in ECT room.

6.0 Procedure

- 6.1 Reassure the patient
- 6.2 Place the patient on a trolley in dorsal position in pre-ECT room
- 6.3 Verify the dosage of Inj. Scoline, Inj. Atropine and Inj. Thiopentathol to be administered as per the list prepared after checking for the expiry date of these drugs.
- 6.4 Insert the airway. Support the shoulders, arms and thighs and restrain slightly with straps.
- 6.5 Hyper extend the patient's head with support to the chin.
- 6.6 Administer the oxygen at prescribed level
- 6.7 Ensure that jelly is applied on the electrodes before placing on the temporal region.
- 6.8 Do the suctioning following generalized seizures occurrence
- 6.9 Confirm O₂ administration by mask for the prescribed time.
- 6.10 Position the patient comfortably with head to the side or lateral position and shift the patient to post ECT room

7.0 Post-procedure

- 7.1 Ensure that the patient is breathing normally
- 7.2 Ensure that the side rails of the cot is raised
- 7.3 Nurse the patient in lateral or head to the side position
- 7.4 Do the suctioning when required
- 7.5 Record the vital signs, B.P and level of consciousness once every 15 minutes and once stable, every 30 minutes till complete recovery
- 7.6 Reassure the patient
- 7.7 Record the patient's complaints (headache etc) and inform to the doctor
- 7.8 Transfer the patient to the respective ward
- 7.9 Make sure the patient is accompanied by relatives and ward nurse
- 7.10 Reorient the patient to ward, toilet etc.
- 7.11 Encourage the patient to have clear liquids followed by solids
- 7.12 Monitor the patient for any delayed ECT complications and inform if necessary
- 7.13 Document the condition of the patient in the case file
- 7.14 Encourage the patient to carry with the daily activities.

RECEPTION ORDER ADMISSION PROCEDURE THROUGH MAGISTRATE

1.0 Meaning:

Any mentally ill patient who is unwilling for admission on a voluntary basis is admitted and kept as an inpatient in a psychiatric hospital

2.0 Indications/Purposes:

- 2.1 To treat the person who is insane and creating nuisance in the public/causing harm to public or public property.
- 2.2 To treat the insane where no responsible person is available to take care of him/her

3.0 Articles

- 3.1 Reception Order with Magistrate's sign and seal
- 3.2 Admission order from the concerned psychiatrist
- 3.3 Registers like census book, admission book, treatment book, communication book and book of statistics of reception order clients under Section 26.
- 3.4 Weighing machine
- 3.5 B.P Apparatus
- 3.6 Thermometer tray
- 3.7 Bed sheets, counter pane, pillow case, blanket, if necessary

4.0 Pre Procedure

- 4.1 Check for the Reception Order from the Magistrate while admitting the client
- 4.2 If the Reception Order is not yet obtained, check for instructions from RMO to admit the client.
- 4.3 Check for the admission instruction by the treating psychiatrist

5.0 Procedure

- 5.1 Check and document the level of consciousness, orientation, appearance, personal hygiene and physical condition of the patient
- 5.2 Document and inform concerned psychiatrist about any injuries / wounds / scars / marks / deformities at the time of admission.
- 5.3 Check and remove mobile/any sharps/any harmful objects, put it in a cover, label and keep under the safe custody of the Ward Supervisor.
- 5.4 Obtain signatures, ID numbers, name of the police escorts, police station, jurisdiction while admitting the client.
- 5.5 Provide hospital uniform to the client
- 5.6 Explain the role of police escorts inside the ward in terms of escorting the client and taking care of weapons, loaded rifles, handcuffs.

- 5.7 Explain the police escorts about restriction in smoking, consuming alcohol, abusing the client etc and restriction of visitors.
- 5.8 Explain the police escorts not to provide mobile, eatables, alcohol and beedis / cigarettes to the clients.

6.0 Post procedure

- 6.1 Ensure that the Reception Order is obtained subsequently in case the same is not produced during admission.
- 6.2 Document in all the relevant books like census book, treatment book, admission book, communication, treatment book, book of statistics of Reception Order clients under Section 26.

DISCHARGE PROCEDURE (MENTAL HEALTH INSTITUTE)

1.0 Meaning

- 1.1 It is a dynamic, collaborative process that involves return of a patient from hospital confinement.

2.0 Purpose

- 2.1 To integrate the patient to the community
- 2.2 To transfer the patient to a half-way home so that the patient can be prepared to live in the community.
- 2.3 To plan for rehabilitation subsequently
- 2.4 To avail bed for emergency and elective admissions
 - 2.4.1 Patient is discharged so that he/she is reunited with the family or under the care of some voluntary agencies.
 - 2.4.2 Patient is discharged so that he can be produced in the court for trial.

3.0 Articles

- 3.1 Case file with written order for discharge from the treating team
- 3.2 Account settlement form, discharge summary, prescription for medication, free drug slip if relevant.
- 3.3 All relevant books for discharge like admission and discharge book, census book, treatment book, communication book, Day & Night report book etc.
 - 3.3.1 Court order patients : reception order, clients under Section 26.
 - 3.3.2 Book of statistics of prisoners under Section 27.
 - 3.3.3 Form of waiver of charges, if needed.
 - 3.3.4 Form of waiver of charges
 - 3.3.5 Transportation facility and escorts

4.0 Pre-Procedure

- 4.1 Check for discharge instructions from the treating doctor.
- 4.2 Check whether the family members are aware of the discharge
- 4.3 Fill the account settling form duly signed by the treating doctor with all relevant charges, i.e. ECT, ECG, EEG, Psychometry, Diet, DPNR charges, Family therapy, Behaviour Therapy, Lab. Investigation & other charges.
- 4.4 Get the completed account settlement form, counter checked by the Ward Supervisor.
- 4.5 Make arrangement for sending the case file to the billing section without delay.
- 4.6 Collect the case file from billing section and check for 'No Due' seal.
- 4.7 Explain to the patient regarding reimbursement procedure.

5.0 Procedure

- 5.1 Hand over the discharge summary , prescription and the remaining medication to the client and the family member and voluntary agency.
- 5.2 Explain regarding the medication , follow-up and home-care to the client and to the family member.
- 5.3 Obtain signature from the patient's relative whoever is taking care of the patient after discharge. Also obtain signature in the 'Against Medical Advice Form' if applicable.
- 5.4 Check the ward articles before the patient leaves the ward
- 5.5 Check whether transportation is arranged for the patient
- 5.6 Ensure that the De-certification process is completed before discharge
- 5.7 Check whether the family members have come to take the patient, if not whether the voluntary agency is informed about the discharge.
- 5.8 Ensure that the account settling form is duly filled in along with waiver of form with consultant's signature.
- 5.9 Arrange for escorts like social workers and security guard to accompany the patient
- 5.10 Hand over prescription, discharge summary and pre-medication to the patient's family or escorts after proper explanation.
- 5.11 Check whether the discharge intimation has been sent to the Jail Superintendent and the concerned police station.
- 5.12 Make sure the discharge summary is filled in duplicate and handed over one copy to the Police for the Jail Superintendent and one copy to the case file.
- 5.13 Ensure that observation report has been sent to Central Jail, Police Station, the Medical Superintendent every 15 days without fail and keep copies in the case files for reference.
- 5.14 Inform the concerned doctor about the arrival of escorts and vehicle for discharge of the patients.
- 5.15 Check the escorts' ID proof, inform the client and police escorts regarding the regular treatment and follow-up.
- 5.16 Collect escort's name, ID no. designation, police station jurisdiction and obtain the signature in the nurse's notes.

Ensure discharge order from magistrate in case of patient admitted though the magistrate

6.0 Post Procedure

- 6.1 Document the discharge procedure in all related registers
- 6.2 Return the case file to MRD following discharge after obtaining the signature of MRD clerk.
- 6.3 Make sure that the charges are waived off after approval of competent authorities

PROCESS RECORDING

1.0 Meaning:

A process recording is a method in which students record all the communications, both verbal and non verbal, spoken and observed through an interview.

Process recording is a written account or verbatim recording of all that transpired, during & immediately following the nurse- patient interaction.

2.0 Indications/Purposes:

- 2.1 To improve the quality of the interaction for better effect to the patient & as a learning experience for the nurse to continuously improve his/her clinical interaction pattern.
- 2.2 Assist the nurse or student to plan, structure & evaluate the interaction on a conscious rather than an intuitive level.
- 2.3 Assist her to gain competency in interpreting &
- 2.4 Synthesizing raw data under supervision.
- 2.5 Helps to consciously apply theory to practice.
- 2.6 Helps her to develop an increased awareness of her habitual, verbal & non-verbal communication pattern & the effect of those patterns on others.
- 2.7 Helps the nurse to learn to identify thoughts & feelings in relation to self & others.
- 2.8 Helps to increase observational skills, as there is a conscious process involved in thinking, sorting & classifying the interaction under the various headings
- 2.9 Helps to increase the ability to identify problems & gain skills in solving them.

3.0 Sample outline for Process Recording

I. IDENTIFICATION DATA

Name:	Age:	Sex:	Literacy:
Ward No:	Bed No:	Religion:	Income:
Reliability:	Marital Status:		Occupation:
Language:	Date of Admission:		Address:

II. Present Complaints:

- a) According to the patient :
- b) According to the relatives

III. History of presenting complaints:

IV. Aims and objectives of interview:

- Patient's point of view:
- Student's point of view:

First Interview

Date:

Place of interaction
Time and Duration:

Specific Objectives:

Verbatim dialogue	Feelings & reactions	Observations & analysis	Final comments

Summary

1. Summary list of reference
2. Introspective observation
3. Interview techniques used.

Annexures

MENTAL HEALTH NURSING

Psychiatric : History Collection Format

I. Demographic data:

Name: Age: Sex:
 Marital Status: Married / unmarried Religion: Education:
 Occupation: Income:Rs /month
 Socio-economic status: Address:
 Date of admission: Ward admitted: IP no :
 Informant : Information (Reliable or not) adequate or not :

II. Chief Complaints/Presenting Complaints (list with duration)

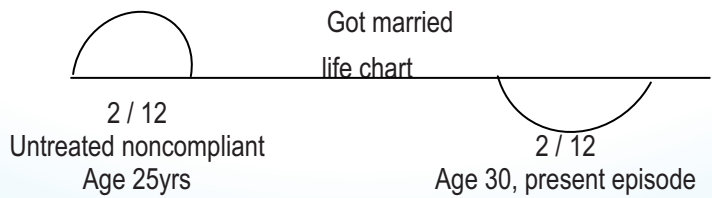
In patient's own words and in informants own words in chronological order.
 E.g. : - • Sleeplessness x 3 weeks • Loss of appetite & hearing voices x2 weeks • Talking to self x 3 days

III. History of Present Illness (HOPI) /Nature of the current episode

Mode of Onset - Abrupt/Acute/Sub acute/Insidious /chronic (<48 hrs /<1 wk/ 1-2 wk/within few weeks /months)
Course - continuous/episodic/unclear (fluctuating/ deteriorating / improving)
Precipitating factors - yes/no (if yes explain physical/psychological)
History of current episode (explain in detail regarding the presenting Complaints).....
Treatment history: note the details regarding treatment received.....
Associated disturbances - includes present medical problems (E.g. Disturbance in sleep, appetite, IPR & social functioning, occupation etc).....
Negative history; major features that are usually present in the given syndrome. Head injury, memory loss, and disorientation, history of trauma, fever, headache, vomiting, confusion, history of physical illness like hypertension, diabetes and history of substance abuse and any organic causes.

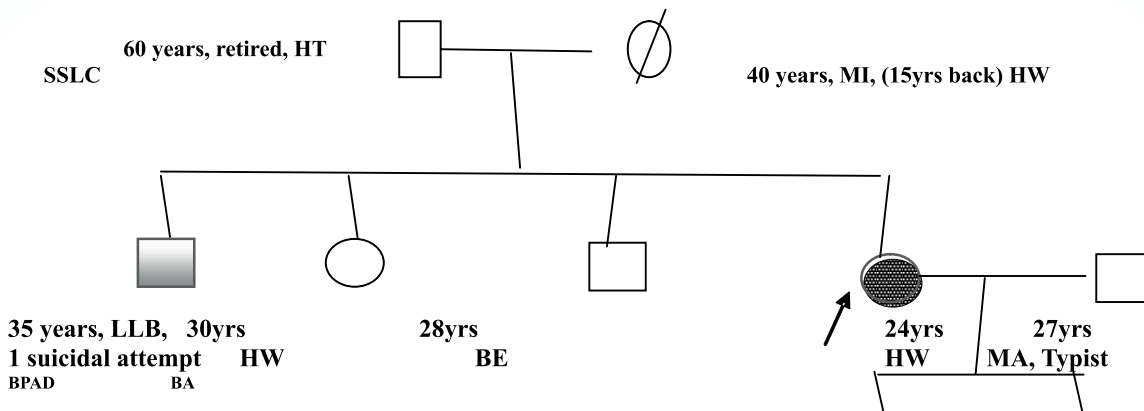
IV. Past Psychiatric history:

Number of episode with onset and course
 Complete or incomplete remission
 Duration of each episode
 Treatment details and its side effects if any
 Treatment outcomes
 Details if any precipitating factors is present



V. Family History: Family genogram -

5 generations include only grandparents. But if there is a family history include the particular generation.



INDEX

Male	Female	Death	5yrs Nursery	2yrs
Psychiatric disorder		Present patient	Special emotional attachment	

		Indicates consanguinity		

History of illness in family: Psychiatric; similar illness, other illness, Other major behavioral problems like delinquency, personality problems, suicide, substance use, epilepsy, MR.

Medical: Especially hereditary

VI. Personal History:

Pre-natal history	Maternal infections/ Exposure to radiation etc. Check ups, Any complications
Natal history	Type of delivery - normal, instrumental/caesarian. - Any complications o Breath and cried at birth/Neonatal infections/ Mile stones: Normal or delayed
Birth	Full term / premature/post mature
Birth cry	Immediate / delayed
Birth defects	Yes/no (if yes specify) :
Postnatal	Complications if any: Cyanosis / convulsions/ jaundice / neonatal infections any other.

Behavior during childhood: Enquire about sleep disturbances, thumb sucking, nail biting, temper tantrums, bed wetting, stammering, tics and mannerisms. Look for conduct disturbances in the form of frequent fights, truancy, stealing, lying and gang activities also enquire about relationship with parents, siblings and peers.

Physical Illness during childhood: Record physical illness suffered in childhood; enquire specially regarding epilepsy, meningitis, encephalitis.

Schooling: Enquire about Age of going to School, Performance in the School, and Relationship with peers. Relationship with teachers (Specifically look for Learning Disability and Attention deficit). Position in class (top, middle, low), special ability, active participation in games/extracurricular activities.

Occupational history: Age of joining job, Relationship with superiors, subordinates & Colleagues Any changes in the job - if any give details (In chronological order) Reasons for changing jobs- Frequent absenteeism. Satisfied with work (if no reason).

Sexual history: Age of attaining puberty (female-menstrualcycles are regular)Source and extent of knowledge about sex: any exposures. Sexual experiences (homo/hetro/pre and extra marital/ preferences)

Marital history: Enquire regarding age at time of marriage, whether arranged by elders or by self, was there mutual consent of the partners: age, education, occupation health and personality of partner, quality of marital relationship, any separation or divorcer, note the number of children, their ages and health status.

VII. Pre morbid personality:

Personality of a patient consists of those habitual attitudes and patterns of behavior which characterize an individual. Personality sometimes changes after the onset of an illness. Get a description of the personality before the onset of the illness. Aim to build up a picture of the individual, not a type. Enquire with respect to the following areas:

1. **Attitude to others in social, family and sexual relationship:** Ability to trust other, make and sustain relationship, anxious or secure, leader or follower, participation, responsibility, capacity to make decision, dominant or submissive, friendly or emotionally cold, etc. Difficulty in role taking - gender, sexual, family.
2. **Attitudes to self:** Egocentric, selfish, indulgent, dramatizing, critical, depreciatory, over concerned, self conscious, satisfaction or dissatisfaction with work. Attitudes towards health and bodily functions. Attitudes to past achievements and failure, and to the future.
3. **Moral and religious attitudes and standards:** Evidence of rigidity or compliance, permissiveness or over conscientiousness, conformity, or rebellion. Enquire specifically about religious beliefs. Excessive religiosity.

4. **Mood:** Enquire about stability of mood, mood swings, whether anxious, irritable, worrying or tense. Whether lively or gloomy. Ability to express and control feelings of anger, anxiety, or depression.
5. **Leisure activities and hobbies:** Interest in reading, play, music, movies etc. Enquire about creative ability. Whether leisure time is spent alone or with friends. Is the circle of friends large or small?
6. **Fantasy life:** Enquire about content of day dreams and dreams. Amount of time spent in day dreaming.
7. **Reaction pattern to stress:** Ability to tolerate frustrations, losses, disappointments, and circumstances arousing anger, anxiety or depression. Evidence for the excessive use of particular defense mechanisms such as denial, rationalization, projection, etc.
8. **Habits:** Eating, sleeping and excretory functions, alcohol consumption, tobacco consumption, self medication with drugs.

VIII. Mental Status Examination (MSE)

A systematically conducted mental status examination is an important component of case taking it is essential or records the observations properly, whenever positive findings are obtained. MSE has to be repeated several times during the course of the illness to know the evolution of symptoms, effectiveness of treatment etc. the time frame covered by the MSE is restricted to the hour of observation but extends longer, while the following account highlight the major components of MSE, details should be obtained from other sources cited .

a. General appearance and behavior

- a) Facial expression (E.g. Anxiety, pleasure, confidence, blunted, pleasant)
- b) Posture (stooped, stiff, guarded, normal)
- c) Mannerisms (stereotype, negativism, tics, normal)
- d) Eye to eye contact (maintained or not)
- e) Rapport (built easily or not built or built with difficulty)
- f) Consciousness (conscious or drowsy or unconscious)
- g) Behavior (includes social behavior, E.g. Over friendly, disinherited, Preoccupied, aggressive)
- h) Dressing and grooming - well dressed/ appropriate/ inappropriate /neat and tidy/ dirty)
- i) Physical features:- look older/ younger than his or her age/ underweight / overweight etc..
- j) Attitude towards examiner; Co-operative / friendly / attentive / perplexed/ apathetic /hostile /playful / guarded

b. Psycho-motor Activity:

Increased/decreased/ Compulsive/echopraxia/ Stereotypy/ negativism/automatic obedience

c. Speech:

One sample of speech (verbatim in 2 or 3 paragraphs)

- a) Coherence-coherent/ incoherent
- b) Relevance (answer the questions appropriately) - relevant / irrelevant.
- c) Volume (soft, loud or normal)
- d) Tone (high pitch, low pitch, or normal/ monotonous)
- e) Manner - Excessive formal / relaxed/ inappropriately familiar.
- f) Reaction time (time taken to answer the question) - increased, decreased or normal

d. Thought

- **Form of thought/** formal thought disorder - not understandable /normal/ circumstantiality / tangentiality / neologism/ word salad/perservation/ ambivalence).
- **Stream of thought/** flow of thought- pressure of speech/ flight of ideas/thought retardation/ mutism/ aphonia/ thought block/ Clang association.)
- **Content of thought**
- **Delusions-** specify type and give example- Persecutory/ delusion of reference/ delusions of influence or passivity/ hypochondriac delusions/ delusions of grandeur/ nihilistic- / delusions of infidelity.
- **Possessions of thought:** Obsession, compulsions, Phobia, preoccupation, thought alienation, fantasy - Creative / day dreaming.

e. **Mood** (subjective) and **Affect** (objective): Appropriate/ inappropriate (Relevance to situation and thought congruent).

f. Perception:**a) Illusion**

b) Hallucinations- (specify type and give example) - auditory/ visual/olfactory/ gustatory/ tactile

First person: False perception of hearing an echo of one's own thoughts.

Second person :False perception of hearing two voices talking to the client.

Third person: False perception of hearing many voices discussing about the Client

c) Others- hypnologic / hypnopombic / lilliputian / kinesthetic / macropsia / micropsia / derealization / depersonalization

Depersonalization; A person's subjective sense of being unreal, strange or unfamiliar.

Derealization: A person's subjective sense that the environment is strange or unreal.

g. Cognitive functions:

1. Consciousness
2. Orientation
3. Attention and concentration
4. Memory
5. Intelligence
 - a. General information
 - b. Comprehension
 - c. Arithmetic
 - d. Abstract thinking
 - e. Proverbs
6. Judgment
7. Insight

1. Consciousness: conscious/cloudy/comatose.

2. Orientation

- o Time: appropriate time/day/night/date/month/year
- o Place: kind of place/area/city
- o Person: self/close associates/hospital staff.

3. Attention: Normally aroused / aroused with difficulty/distractible / attention sustained or not.

Digit forward

5-7-3
5-3-8-7
1-6-4-9-5
3-4-1-7-9-6
7-2-5-9-4-8-9
4-7-2-9-1-6-8-5

Digit backward

4-1-7
6-1-5-8
2-9-7-6-3
6-1-5-8-3-9
4-7-1-5-3-8-6
9-2-5-8-3-1-7-4

(Read digits at the rate of one per second to the patient, notes whether the immediate response of the patient is correct or incorrect)

Concentration: Normally sustained/sustained with difficulty/distractible.

- o 100-7
- o 40-3
- o 20-1 (subtraction)
- o Name of the month backwards Name of the weeks backwards.

4. Memory:

- o Immediate memory: same test as attention
- o Recent memory: recent happenings, last meal, visitors etc.
Verbal recall - 3 unrelated objects/ 5unrelated objects /Address of 5 items
- o Remote memory: personal events, impersonal events, illness related events.

Inference; Impaired or intact

5. Intelligence:

General information: name of prime minister/ 5 river cities or states./Capitals of states/ Current events.

For illiterates: Seasons/ Groups of fruits growing in particular seasons/Prices of land

Comprehension:

- What will you do when you feel cold?
- What will you do if it rains when you start to walk?
- Why should we be away from bad company?

Inference; good or bad**Arithmetic**

- The following question may be asked with increasing time units.
- I borrowed 6 rupees from a friend and returned 2 rupees how much do I still owe to him/
- If 18 boys are divided into groups of 6 how groups may will there be?

Inference: Good, Average or Bad

Abstraction : Tested by a similarities, differences and proverbs**Similarities:**

- Orange - banana (fruits): • Dog - lion (animal) • Eye - ear (sense organs)

Differences:

- Stone - potato • Fly - butterfly (small large, not colorful - colorful) • Cinema - radio (audio-visual - audio)

Proverbs: an example of a proverb and what it means

- Slow and steady wins the race • A barking dogs never bites Empty vessels make noise • It is useless to cry over spilt milk.

Inference; • Abstraction present at concrete level (when specific explanation is given)Or concrete or abstract level (when both specific and abstract explanations are given).

6. Judgment

- Personal (future plans) • Social (perception of the society) • Test (presents a situation and ask their response to the situation) Inference: • Intact or impaired.

7. Insight

- i. Complete denial of illness
- ii. Slight awareness of being sick
- iii. Awareness of being sick attributes it to external / physical factor.

- iv. Awareness of being sick, but due to some thing unknown in
- v. himself
- vi. Intellectual insight
- vii. True emotional insight

IX. Physical examination

1. Review of systems & physical examination:
 - General :
 - Skin :
 - Head :
 - Eyes :
 - Ears :
 - Nose / Sinuses:
 - Mouth & throat :
 - Neck :
 - Breast :
 - Respiratory :
 - Cardiovascular :
 - Gastro intestinal:
 - Genito urinary :
 - Genito to reproductive :
 - Musculo-skeletal :
 - Neurologic
 - General comments, if any:

X. Investigations

SI	Name of the Investigation	Patient value	Normal value	Remarks

XI. Treatment

SI	Name of the drug	Dose and route	Action	Side effect	Nurse' responsibilities

- XII. Diagnostic formulation :**
- XIII. Provisional diagnosis :**
- XIV. Clinical Diagnosis (with ICD-10 or DSM-IV) :**
- XV. Nursing process :**
- XVI. Process recording:**
- XVII. Health Education:**
- XVIII. Progress notes :**
- XIX. Bibliography :**

PAEDIATRIC GROWTH AND DEVELOPMENT ASSESSMENT FORMAT

1.0 Meaning

1.1 Growth is the progressive increase in the size of a child or parts of a child.

Development is progressive acquisition of various skills (abilities) such as head support, speaking, learning, expressing the feelings and relating with other people

2.0 Indications/Purposes:

- 2.1 To assess physical health.
- 2.2 To find nutritional deviation.
- 2.3 To identify any illness.
- 2.4 To ensure normal personality development.

3.0 Articles

- 3.1 Pediatric / adult weighing scale
- 3.2 Adult weighing scale whichever is appropriate
- 3.3 Measuring tape
- 3.4 Infantometre
- 3.5 Pain scale, tongue depressor, vital sign recording set.

4.0 AGE GROUP: INFANT :Age between 0 to 1year

- 4.1 Base line data:
 - 4.1.1 Name of the child :
 - 4.1.2 Age :
 - 4.1.3 Gender :
- 4.2 Anthropometric measurement:

Sl. no	Parameters	Child values	Normal values
4.2.1	Weight (kg)		
4.2.2	Length/height (cm)		
4.2.3	Head circumference (cm)		
4.2.4	Chest circumference (cm)		

4.3 Assessment of nutritional status : (Use growth chart)

- A. Anthropometric
- B. Biochemical
- C. Clinical
- D. Dietary

- Degree of malnutrition $\frac{\text{Actual weight}}{\text{Expected weight}} \times 100$

Age	Book picture	Child picture
Birth to 1 month	<p>Physical growth:</p> <p>4.3.1 Gains 140-200 g/week 4.3.2 Grows 1.5 cm in first month 4.3.3 Head circumference increases 1.5 cm /month</p> <p>Gross motor development:</p> <p>4.3.4 Reflexes such as startle and rooting are predominant. 4.3.4 May lift head briefly if prone 4.3.5 Alerts to high-pitched voices 4.3.6 Comforts with touch</p> <p>Fine motor development:</p> <p>4.3.7 Holds hand in fist 4.3.8 Draws arms and legs to body when crying</p>	
2-4 months	<p>Physical growth:</p> <p>4.3.9 Gains 140-200 g/week 4.3.10 Grows 1.5 cm/month 4.3.11 Head circumference increases 1.5 cm /month</p> <p>Gross motor development:</p> <p>4.3.12 Moro reflex fading in strength 4.3.13 Can turn from side to back and then return 4.3.14 Decrease in head lag when pulled to sitting; sits with head held in midline with some nodding 4.3.15 When prone, holds head and supports weight on forearms</p> <p>Fine motor development:</p> <p>4.3.16 Holds rattle when placed in hand, Looks at and plays with own fingers 4.3.17 Readily brings objects from hand to mouth</p>	
4 -6 months	<p>Physical growth:</p> <p>4.3.18 Gains 140-200 g/week, doubles birth weight 5-6 months 4.3.19 Grows 1.5 cm/month, Head circumference increases 1.5 cm /month, Teeth may begin erupting by 6 months</p> <p>Gross motor development:</p> <p>4.3.20 Head held steady and no head lag when pulled to sitting 4.3.21 Turns from abdomen to back by 4 months and then back to abdomen by 6 months 4.3.22 When held standing supports much of own weight.</p>	

Age	Book picture	Child picture
	<p>Fine motor development: 4.3.23 Grasps rattles and other objects at will, drops them to pick up another offered object. 4.3.24 Holds and mouths objects and holds feet and pulls to mouth 4.3.25 Grasps objects with whole hand (palmar grasp)</p>	
6-8 months	<p>Physical growth: 4.3.26 Gains 85 -140g/week 4.3.27 Grows 1 cm/month 4.3.28 Growth rate slower than first 6 months</p> <p>Gross motor development: 4.3.29 Most inborn reflexes extinguished 4.3.30 Sits alone steadily without support by 8 months 4.3.31 Likes to bounce on legs when held in standing position</p> <p>Fine motor development: 4.3.32 Bangs objects held in hands 4.3.33 Transfers objects from one hand to the other. 4.3.34 Beginning pincer grasp at times</p>	
8-10 months	<p>Physical growth: 4.3.35 Gains 85-140 g/week 4.3.36 Grows 1 cm/month</p> <p>Gross motor development: 4.3.37 Crawls or pulls whole body along floor by arms 4.3.38 Creeps by using hands and knees to keep trunk off floor 4.3.39 Pulls self to standing and sitting by 10 months. 4.3.40 Recovers balance when sitting</p> <p>Fine motor development: 4.3.41 Picks up small objects, Uses pincer grasp well</p>	
10-12 months	<p>Physical growth: 4.3.42 Gains 85-140 g/week 4.3.43 Grows 1 cm /month 4.3.44 Head circumference equals chest circumference 4.3.45 Triples birth weight by 1 year.</p> <p>Gross motor development: 4.3.46 Stands alone , Walks holding onto furniture 4.3.47 Sits down from standing</p> <p>Fine motor development: 4.3.48 May hold crayon or pencil and make mark on paper 4.3.49 Places objects into containers</p>	

5.0 AGE GROUP: TODDLER (Age between 1-3 YEARS)

5.1 Base line data:

- 5.1.1 Name of the child :
 5.1.2 Age :
 5.1.3. Gender :

5.2 Anthropometric measurement:

Sl. no	Parameters	Child values	Normal values
5.2.1	Weight (kg)		
5.2.2	Length/height (cm)		
5.2.3	Head circumference (cm)		
5.2.4	Chest circumference (cm)		
5.2.5	Mid arm circumference(cm)		

6.0 Assessment of nutritional status : (Use growth chart)

- 6.1 Degree of malnutrition: $\frac{\text{Actual weight}}{\text{Expected weight}} \times 100$

Age	Book picture	Child picture
Physical growth	(1- 2 years) 6.1.1 Gains 250 g per month, Grows 9-12 cm per year 6.1.2 Anterior fontanel closes, Legs appear bowed. (2-3 years) 6.1.3 Gains 1.4-2.3 kg/year, Grows 5-6.5 cm per year	
Gross motor development	6.1.4 Assumes standing position without help. 6.1.5 Walks without support at 13 months, wide based gait. 6.1.6 Loses balance when walking around corners or stopping suddenly. 6.1.7 Kneels without support, Creeps up stairs. 6.1.8 Throws small objects repeatedly and picks them up again, but may fall. Cannot throw ball without falling. Jumps, Kicks ball and throws ball overhand	
Fine motor development	6.1.9 Builds a tower of 2-3 cubes, by 15 months and 8 cubes by 30 months Opens boxes. 6.1.10 Scribbles spontaneously, makes line with crayon, pats pictures in books and begins to turn pages. 6.1.11 Inserts pellet in narrow-necked bottle. 6.1.12 Draws a circle and other rudimentary forms 6.1.13 Learns to transfer objects, Learns to dress self	

7.0 AGE GROUP: PRESCHOOLER (Age between 3 -5 years)

7.1 Base line data:

- 7.1.1 Name of the child :
- 7.1.2 Age :
- 7.1.3 Gender :+

7.2 Anthropometric measurement:

Sl. no	Parameters	Child values	Normal values
7.2.1	Weight (kg)		
7.2.2	Length/height (cm)		
7.2.3	Head circumference (cm)		
7.2.4	Chest circumference (cm)		
7.2.5	Mid arm circumference (cm)		

7.3 Assessment of nutritional status : (Use growth chart)

7.3.1 Degree of malnutrition: $\frac{\text{Actual weight}}{\text{Expected weight}} \times 100$

Age	Book picture	Child picture
Physical growth	7.3.2 Weight: approximately 13.5 - 19.5 kg. Gains 1.5-2.5 kg/year. 7.3.3 Height: approximately 95 - 109 cm. Grows 4-6 cm/year. Has doubled birth length. 7.3.4 Pulse: 100 + 10beats/minute (average 95 beats/ minute) 7.3.5 Respirations : 24 + 4 per minute, 7.3.6 Blood pressure: 100/66 + 20 mm of Hg.	
Gross motor development	7.3.7 Throws a ball overhand 7.3.8 Runs on tiptoe, balances on one foot 3-5 seconds, 7.3.9 Jumps from greater heights, 7.3.10 Pedals a tricycle quickly, 7.3.11 Catches ball with extended arms and with hands, 7.3.12 Climbs ladders, trees, playground equipment, alternates feet when descending stairs.	
Fine motor development	7.3.13 Copies a square, cuts around picture with scissors 7.3.14 Draws circle, square, cross 7.3.15 Draws at least a six-part of a person 7.3.16 Strings beads, Laces shoe, Brushes teeth 7.3.17 Unbuttons buttons on side or front	

8.0 AGE GROUP: SCHOOL AGE

8.1. Base line data:

- 8.1.1 Name of the child :
- 8.1.2 Age :
- 8.1.3 Gender :

8.2 Anthropometric measurement:

Sl. no	Parameters	Child values	Normal values
8.2.1.1	Weight (kg)		
8.2.2	Length/height (cm)		

8.3 Assessment of nutritional status : (Use growth chart)

8.3.1 Degree of malnutrition: $\frac{\text{Actual weight}}{\text{Expected weight}} \times 100$

Age	Book picture	Child picture
Physical growth	8.3.2 Weight: Approximately 17.5-25.5 kg and gains 1.4-2.2 kg per year 8.3.3 Height: Approximately 110-124 cm and gains 4-6 cm per year, 8.3.4 Pulse: 90 ± 15 beats/minute 8.3.5 Respirations : 21 ± 3 breaths per minute 8.3.6 Blood pressure: 100/60 ± 16/10 mm of Hg 8.3.7 Starts to lose temporary teeth; acquires first permanent molars, medial incisors, lateral incisors.	
Gross motor development	8.3.8 Rides bicycle, 8.3.9 Runs, jumps, climbs, constantly in motion, 8.3.10 Clumsy and awkward, 8.3.11 Improvement in coordination.	
Fine motor development	8.3.12 Knows right from left hand, 8.3.13 Draws a person with 12-16 parts, 8.3.14 Prints words; learns cursive writing, 8.3.15 Has improved eye-hand coordination	

PEDIATRIC HISTORY & PHYSICAL EXAMINATION

1.0 CHILD ASSESSMENT FORMAT

1.1 BASELINE DATA:

- 1.1.1 Child's Name :
- 1.1.2 Age :
- 1.1.3 Developmental age of the child :
- 1.1.4 Gender :
- 1.1.5 Religion :
- 1.1.6 Date of Admission :
- 1.1.7 I.P. No. :
- 1.1.8 Ward :
- 1.1.9 Address :
- 1.1.10 Education status of parents :
- 1.1.11 Occupation of parents :
- 1.1.12 Monthly Family Income :
- 1.1.13 Provisional/ Final Diagnosis :
- 1.1.14 Name of the Surgery with date :
- 1.1.15 Informant :

2.0 Chief Complaints with Duration (write each health problem present at the time of admission in chronological order)

2.1 History of Present Illness:

- 2.1.1 Onset, Progression, Treatment taken out side and Reason for Referral.
- 2.1.2 Medical History :
- 2.1.3 Surgical History :

2.2 History of Past Illness

- 2.2.1 Medical History :
- 2.2.2 Surgical History :

2.3 Family History

- 2.3.1 Type of Family :
- 2.3.2 Number of Members in the family :
- 2.3.3 Family tree with genogram including age :
- 2.3.4 Any hereditary illness or known chronic illness in the family :

2.4. Socio - Economic History :

- 2.4.1 Type of Housing, rooms, occupancy, ventilation, lighting, electricity, water Supply, relationship among the family members.

2.5 Personal History (Write in paragraph)

- 2.5.1 Current skills, play, sleep pattern, hygiene

2.6 Birth History :

- 2.6.1. Antenatal History: Nutritional status, antenatal checkup, consumption of Iron/Folic Acid, deviation from normal, any exposure to teratogens (drugs, infection, radiations, any antenatal complications.
- 2.6.2. Natal History: Birth order, Mode of delivery, APGAR Score, place of delivery, weight of the baby - Term/Pre Term/Post Term.

2.7 Postnatal History:

- 2.7.1 Condition of Mother: Normal, Postpartum Hemorrhage, any infection, any breast feeding related problems.
- 2.7.2 Condition of Neonate: Cried immediately after birth, Meconium passed within 24 hrs, any infection, any congenital deformity. Asphyxia / Cyanosis / Jaundice / Birth injuries.
- 2.7.3 Feeding : Breast feeding, Prolactal feeds.
- 2.8 Dietary history: Exclusive Breast Feeding, complementary feeding and present diet history - 24 hours dietary recall.
- 2.9 Elimination (bladder and bowel): Pattern and Control.
- 2.10 Behavioural problems if any :
- 2.11 Personal hygiene: Oral hygiene, bathing and dressing.
- 2.12 Hobbies/habits (for adolescents):-
- 2.13 Problems in communication if any:
- 2.14 Reaction of child to the hospitalization.
- 2.15 Response of parents to child's illness

2.8 IMMUNIZATION HISTORY: (for under-five children)

Age of child	Name of the vaccine	Age of the child when vaccinated	Remarks

3.0 PHYSICAL ASSESSMENT**3.1 General appearance:**

- 3.1.1 Body Built :
- 2.1.2 Sensorium :
- 2.1.3 Emotional State :
- 2.1.4 Posture :
- 2.1.5 Foul Body odour :
- 2.1.6 Foul Breath :

3.2 Vital Signs

Sl. no	Vital Signs	Date	Patient Value	Normal Value	Remarks
3.2.1	Temperature				
3.2.2	Pulse				
3.2.3	Respiration				
3.2.4	Blood Pressure				

3.3	Skin Condition	
3.3.1	Skin Colour	:
3.3.2	Skin Lesions	:
3.3.3	Texture	:
3.4.4	Turgor and elasticity	:
3.4.5	Edema	:
3.4	Hair	
3.4.1	Colour	:
3.4.2	Distribution	:
3.5	Nails	
3.5.1	Hygiene	:
3.5.2	Condition	:
3.5.3	Nail Bed Colour	:
3.6	Head And Face	
3.6.1	Shape	:
3.6.2	Facial Appearance	:
3.6.3	Cyanosis	:
3.6.4	Tenderness	:
3.7	Ophthalmological examination	
3.7.1	Eye Brows	:
3.7.2	Eye lashes	:
3.7.3	Eye lids	:
3.7.4	Sclera	:
3.7.5	Conjunctiva	:
3.7.6	Cornea	:
3.7.7	Pupils (PERRLA)	:
3.8	Ear	
3.8.1	Position	:
3.8.2	Shape and Size	:
3.8.3	Tympanic membrane	:
3.8.4	Hearing	:
3.9	Nose	
3.9.1	Size	:
3.9.2	Shape	:
3.9.3	Internal nasal mucosa	:
3.9.4	Sense of smell	:
3.10	Throat	
3.10.1	Tonsils	:
3.10.2	Nasopharynx	:
3.10.3	Uvula	:

3.11 Gastrointestinal System :

3.11.1 Mouth

- 3.11.1.1 Lips : Colour, Shape & Condition
- 3.11.1.2 Teeth : Colour, Condition & Gums
- 3.11.1.3 Tongue
- 3.11.1.4 Abdomen: Inspection, Auscultation, Percussion & Palpation
- 3.11.1.5 Rectum and Anus

3.12 Cardiothoracic System

- 3.12.1 Breast
- 3.12.2 Thorax : Inspection, Auscultation, Percussion & Palpation
- 3.12.3 Heart : Inspection, Auscultation, Percussion & Palpation

3.13 Genitourinary System

- 3.13.1 Male /Female genitalia

3.14 Musculoskeletal System

- 3.14.1 Neck : Range of motion, Thyroid gland and lymph node
- 3.14.2 Upper /Lower extremities
- 3.14.3 Back (Hip and Spine)

4.0 Neurological Examination (If Necessary)

4.1 Reflexes (Newborn and young infant)

Sl. No.	Reflexes	Book picture	Patient assessment
4.1.1	Glabellar		
4.1.2	Blinking		
4.1.3	Sneezing		
4.1.4	Rooting		
4.1.5	Gagging		
4.1.6	Swallowing		
4.1.7	Tonic Neck		
4.1.8	Startle		
4.1.9	Moro reflex		
4.1.10	Palmer Grasping		
4.1.11	Dancing		
4.1.12	Babinski		
4.1.13	Parachute		
4.1.14	Plantar grasping		
4.1.15	Stepping		

- 5.0 Neurological examination (for toddler, preschooler, schooler and adolescence)
- 5.1 Level of consciousness : Alert, lethargic, stuporous, semicomatose, comatose
- 5.2 Mental status examination : attention span, orientation, memory, general knowledge, mood and behavior, appearance
- 5.3 Cranial nerve function : each cranial nerve to be examined systematically
- 5.4 Motor function : assessment of muscle strength (upper and lower extremities)
- 5.5 Sensory function : assessment of response to touch, pain, temperature
- 5.6 Cerebellar function :
 - 5.6.1 Finger to finger test
 - 5.6.2 Finger to nose test
 - 5.6.3 Romberg test to test balance
(ask patient to stand with feet together and close eyes for 10 seconds)
 - 5.6.4 Walking test

6.0 Nutritional Assessment

Anthropometric measurement:

Parameters	Date	Actual Patient Value	Expected Normal Value	Remarks
Weight (kg)				
Length/Height (cm)				
Head circumference (cm)				
Chest circumference (cm)				
Mid arm circumference (cm)				
(for child > 1 year of age)				

7.0 Expected weight formula

- 7.1 (0-3 months) = birth weight + (number of days after birth X 0.03 kg)
- 7.2 (3-12 months) = $\frac{\text{age (month)} + 9}{2}$
- 7.3. (1-6 years) = (age in years) x 2+8 = (2x) +8
- 7.4. 6- 12 years = $\frac{(\text{age in months X 7}) - 5}{2}$
- 7.5 Body mass index (BMI) = after 12 years of age

$\text{Degree of malnutrition} = \frac{\text{Actual weight}}{\text{Expected weight}} \times 100$
--

7.6 Classification of Malnutrition according Indian Academy of Paediatric (IAP)

Percentage of expected weight	Nutritional Grade
71-80%	Grade I
61-70%	Grade II
51-60%	Grade III
<50%	Grade IV

8.0 Growth And Development

Components	Book picture	Patient picture
Physical development		
- Gross and fine motor		
Psychosocial development		
Psychosexual development		
Cognitive development		
Moral development		
Spiritual development		
Language development		
Play		

9.0 Investigation

Sl. No.	Investigation	Date	Patient Value	Normal Value	Remarks

10.0 Medication

Sl. No.	Date	Drug Name	Dosage	Route	Frequency	Action	Indication	Contraindication	Side Effects	Nurses Responsibilities

NEW BORN ASSESSMENT

1.0 Identification Data

- 1.1 Name of the baby / Baby of Mother :
- 1.2 Age in days :
- 1.3 Gender :
- 1.4 Gestational Age :
- 1.5 Type of delivery :
- 1.6 Date & time of birth :
- 1.7 Birth weight :
- 1.8 Weight on the day of examination :

2.0 Assessment of The Newborn :

2.1 Anthropometric Measurement

Characteristics	Normal Value	Baby Value	Remarks
Length	48-53 cm		
Weight	2.5 - 3.5 kg		
Head circumference	33-35 cm		
Chest Circumference	31-33m		

2.2 Vital Signs :

Characteristics	Normal Value	Baby Value	Remarks
Temperature	97 - 99° F		
Heart rate	120-140 beats/minute		
Respiration	30-60breaths/minute		

3.0 Physical Examination

3.1 General appearance:

- 3.1.1 Skin colour, integrity, perfusion, Vernix Caseosa, Lanugo, Milia, Mongolian spots
- 3.1.2 State of alertness
- 3.1.3 Activity, range of spontaneous movement Posture, muscle tone

3.2 Head

- 3.2.1 Head shape, size :
- Scalp :
- 3.2.2 Anterior fontanelle :
- 3.2.3 Posterior fontanelle :
- 3.2.4 Sutures :

- 3.3 Face
- 3.4 Eyes: Lids, colour, tears, corneal reflex, pupillary reaction:
- 3.5 Nose : Patency ,placement, discharge, septum :
- 3.6 Ears : Position, pinna, cartilage :
- 3.7 Mouth and throat: Palate, uvula, frenellum of tongue, epstein pearls, oral thrush :
- 3.8 Neck : Lymph nodes, clavicle, skin folds:
- 3.9 Chest
 - 3.9.1. Size, shape, symmetry, movement :
 - 3.9.2. Breast tissue, nipples, witch's milk :
 - 3.9.3. Heart sounds, rate, pulses :
 - 3.9.4. Breath sounds, respiratory rate :
- 3.10 Abdomen
 - 3.10.1 Size, shape, symmetry and movement :
 - 3.10.2 Palpate liver, spleen, kidneys :
 - 3.10.3 Umbilicus :
- 3.11 Genitourinary
 - 3.11.1 Male :penis, foreskin, testis
 - 3.11.2 Female : clitoris, labia, hymen, Pseudo menstruation
 - 3.11.3 Anal position, patency
 - 3.11.4 Passage of urine, stool.
- 3.12 Hips, legs, feet :
 - 3.12.1 Ortolani and Barlow's manoeuvres
 - 3.12.2 Leg length, proportions, symmetry and digits
- 3.13 Back
 - 3.13.1 Spinal column, skin :
 - 3.13.2 Symmetry of scapula, buttocks :
- 3.14 Neurological assessment:
 - 3.14.1 Behaviour, posture
 - 3.14.2 Muscle tone, spontaneous movements
 - 3.14.3 Cry
 - 3.14.4 Reflexes

Reflexes:

Reflexes	Book picture	
Localised Reflexes : Rooting and sucking	Newborn turns head in direction of stimulus, opens mouth and begins to suck when cheek, lip or corner of mouth is touched with finger or nipple.	
Swallowing	Newborn swallows in co-ordination with sucking when fluid is placed on back of tongue	

Palmar grasp	Newborn's finger will curl around object and hold on momentarily when finger is placed in palms of newborn's hand.	
MASS REFLEXES Moro reflex	Bilateral symmetrical extension and abduction of all extremities, with thumb and forefinger forming characteristic "C" are followed by adduction of extremities and return to relaxed flexion when newborn's position changes suddenly or when newborn is placed on back on flat.	

3.15 Assess newborn problems at birth:

- 3.15.1 Was the baby resuscitated ?
- 3.15.2 Did the baby have any problems during the first days of life (fever, jaundice, breathing difficulties, convulsions, skin or eyes problems, etc)?
- 3.15.3 Had baby received any treatment?

3.16 Immunization:

- 3.16.1 BCG,
- 3.16.2 Polio (0 - dose)
- 3.16.3 Hepatitis - B

4.0 Assessment of breast feeding:

4.1 Ask the mother to put the baby to her breast and observe the newborn

- 4.1.1 Is the attachment correct?
- 4.1.2 Is the position correct?
- 4.1.3 Does the baby suckle effectively?
- 4.1.4 Does the baby receive any artificial feeding
- 4.1.5 How many times baby is breast feeding?
- 4.1.6 Did the baby vomit or regurgitate?
- 4.1.7 Did the baby is gaining weight ?
- 4.1.8 Whether the baby is passing enough urine or stools?

5.0 Counselling :

- 5.1 If the newborn is not correctly attached help the mother to find a comfortable breast feeding position and help her to attach the newborn properly.
- 5.2 Advice mother and the family members to promote exclusive breast feeding.

APGAR SCORING



Assessment of the newborn immediately starts the moment he or she is delivered, and there are a lot of standard assessments used to evaluate them rapidly.

1.0 Meaning:

The Apgar scoring is done during the first 1 minute and 5 minutes of life. The heart rate, respiratory rate, muscle tone, reflex irritability, and the color are evaluated in an infant. Apgar score is the baseline for all future observations.

2.0 Purposes:

- 2.1 To assess overall condition of new born.
- 2.2 To identify new born who need special project.

3.0 Procedure:

- 3.1 Each parameter can have the highest score of two and the lowest is 0.
- 3.2 The scores of the five parameters are added to determine the status of the infant.

- 3.3 0-3 points: the baby is serious condition and need immediate resuscitation.
- 3.4 4-6 points: the baby's condition is guarded and may need more extensive clearing of the airway and supplementary oxygen.
- 3.5 7-10 points: are considered good and in the best possible health.

Parameter	0	1	2
A - Appearance	Asym	Body blue/white	White
P - Pulse	Absent	Below 100bpm	Over 100bpm
G - Grimace	None	Minimal response to stimuli	Facial grimace to stimuli
A - Arm/leg	Supple	Partially flexed	Flex
R - Reflex/Irritability	Absent	Some response	Withdrawal

CALCULATION OF DRUG DOSAGE

1.0 Meaning

- 1.1 Administration of proper dose of medication is a very essential responsibility of the pediatric nurse. The child dosages are calculated on the base of the child's body surface area, age and body weight. The two most frequently used methods of calculating safe doses are based on weight or body surface area.

2.0 Dose Based On Weight In Kilograms

- 2.0.1 If necessary, convert child's weight in pounds to kilograms.
 2.0.2 Review medication reference to determine recommended safe range in milligrams/kilograms(mg/kg).
 2.0.3 Multiply child's weight by the lower and upper limits of the dose range.
 2.0.4 Compare physician's order with dose range to determine if medication dose is safe.
 2.0.5 Doses outside recommended range should be verified with physician.

3.0 Dose Based on Body Surface Area (BSA)

- 3.0.1 Obtain child's height and weight measurements.
 3.0.2 Use nomogram to determine child's BSA.
 3.0.3 Find and mark child's height on left column, weight on right column.
 3.0.4 Place a ruler between the two measurements and connect with a line.
 3.0.5 Find BSA in the middle column.
 3.0.6 Review medication reference to determine recommended child dose. Multiply BSA by recommended mg/m².
 3.0.7 If child's recommended dose in mg/m² is not given, adult dose may be used for calculation.
 3.0.8 Divide child's BSA by 1.73 (normal adult BSA)
 3.0.9 Multiply result by recommended adult dose.
 3.0.10 Prescribe dose which differs from calculation should be verified with physician.

4.0 Formula for drug dosage and fluids

- 4.1 According to Body Surface Area

$$\text{Child's dose} = \frac{\text{Child's body surface area}}{\text{Adult's body surface area}} \times \text{Adult dose}$$

4.2 Young's Formula

According to age of child (1 to 12 years of age)

$$\text{Child's dose} = \frac{\text{Age of child in years}}{\text{Age in years} + 12} \times \text{Adult dose}$$

4.3 Fried's Formula (under 1 year of age)

$$\text{Child's dose} = \frac{\text{Age of child (in months)}}{150} \times \text{Adult dose}$$

4.4 Clark's Formula

According to body weight

$$\text{Child's dose} = \frac{\text{Weight of child (in pounds)}}{150} \times \text{Adult dose}$$

5.0 Calculation of Body Surface Area**5.1 Lowe's formula**

$$\text{Body surface area (m}^2\text{)} = \sqrt{\text{Weight (kg)} \times 0.1}$$

5.2 Costeff's formula

$$\text{Body surface area (m}^2\text{)} = \frac{4W+7}{W+90}$$

'W' is weight in kg

6.0 Calculating The Flow Rate

$$\text{Drop per minute} = \frac{\text{Total volume}}{\text{Time in minutes}} \times \text{Drop factor}$$

7.0 Infusion Time Calculation

$$\text{Infusion time} = \frac{\text{Total volume to infuse}}{\text{ml per hour being infused}}$$

8.0 Fluid Replacement Formula**8.1 Parkland formula (For burns patients)**

For first 24 hours:

Total amount of fluid requirement = 4ml of RL solution X wt in kg X % of total BSA burnt.

One half of fluid should be given in first 8 hours, from the time of incident.

Remaining half of fluid should be given in next 16 hours.

For next 24 hours

Total amount of fluid requirement = 2ml of RL solution per kg % of burns.

9.0 Preparing the Solution by Using a Formula

In case of diluted medicines, this formula helps to find out the strength of the formula.

$$\text{Amount of stock solution required (A)} = \frac{\text{Desired strength (d)}}{\text{Strength of what we have in stock (H)}} \times \text{Quantity Required (Q)}$$

$$(A) = (d)/(h) \times Q$$

10.0 Calculation of Fluid Drop Rate

Infusion or flow rates are adjusted to the desired drops per minute by a clamp on the tubing. The flow rate is calculated by the nurse in drops per minute (gtts/min). To calculate this, one must know the drop factor, which is a constant

$$\text{Fluid rate} = \frac{\text{Volume in ml}}{\text{Time in minute}} \times \text{Drop factor}$$

10.1 Purposes

- 10.1.1 Perform calculations correctly.
- 10.1.2 Determine correct dosages.

HOW TO CALCULATE IV FLOW RATES!

What is a drop factor?

Drop factor is the number of drops in one milliliter used in IV fluid administration (also called drip factor). A number of different drop factors are available but the Commonest are:

- 10 drops/ml (blood set)
- 15 drops/ml (regular set)
- 60 drops/ml (micro drop, burette)



11.0 Common drop factors are:

10 drops/ml (blood set), 15 drops / ml (regular set), 60 drops / ml (microdrop).
To measure the rate we must know:

- 11.0.1 The number of drops
- 11.0.2 Time in minutes.

The formula for working out flow rates is:

$$\frac{\text{volume (ml)} \times \text{drop factor (drops/ml)}}{\text{time (min)}} = \text{drops / min (flow rate)}$$

Example:

500 ml IV Saline is ordered over 12 hours. Using a drop factor of 60 drops / ml, how many drops per minute need to be delivered?

$$\frac{600 \text{ (ml)} \times 60 \text{ (drops/ml)}}{12 \times 60 \text{ (gives us total minutes)}} = 50 \text{ drops / minute}$$

IMMUNIZATION

1.0 Meaning

- 1.1 Immunization is a way of protecting the human body against infectious diseases through vaccination.



2.0 Indications/Purposes:


- 2.1 To protect infants from communicable diseases.
- 2.2 To reduce morbidity and mortality rates in children.

3.0 Contraindications:

If child has -

- 3.1 A high fever;
- 3.2 A bad reaction to another immunization;
- 3.3 A severe reaction after eating eggs; or
- 3.4 Convulsions (fits) in the past. (With the right advice, children who have had fits in the past can be immunized.)
- 3.5 Undergoing treatment for cancer;
- 3.6 Any illness which affects the immune system, for example, HIV or AIDS.
- 3.7 Taking any medicine which affects the immune system, for example, immunosuppressant's (given after organ transplant or for malignant disease) or high-dose steroids

 National Immunization Schedule 						
for PREGNANT WOMEN						
Vaccine	When to give	Dose	Diluent	Route	Site	
TT-1	Early in pregnancy	0.5 ml	NO	Intramuscular	Upper Arm	
TT-2 #	4 weeks after TT-1	0.5 ml	NO	Intramuscular	Upper Arm	
TT-Booster#	If received TT doses in a pregnancy within the last 3 yrs.	0.5 ml	NO	Intramuscular	Upper Arm	

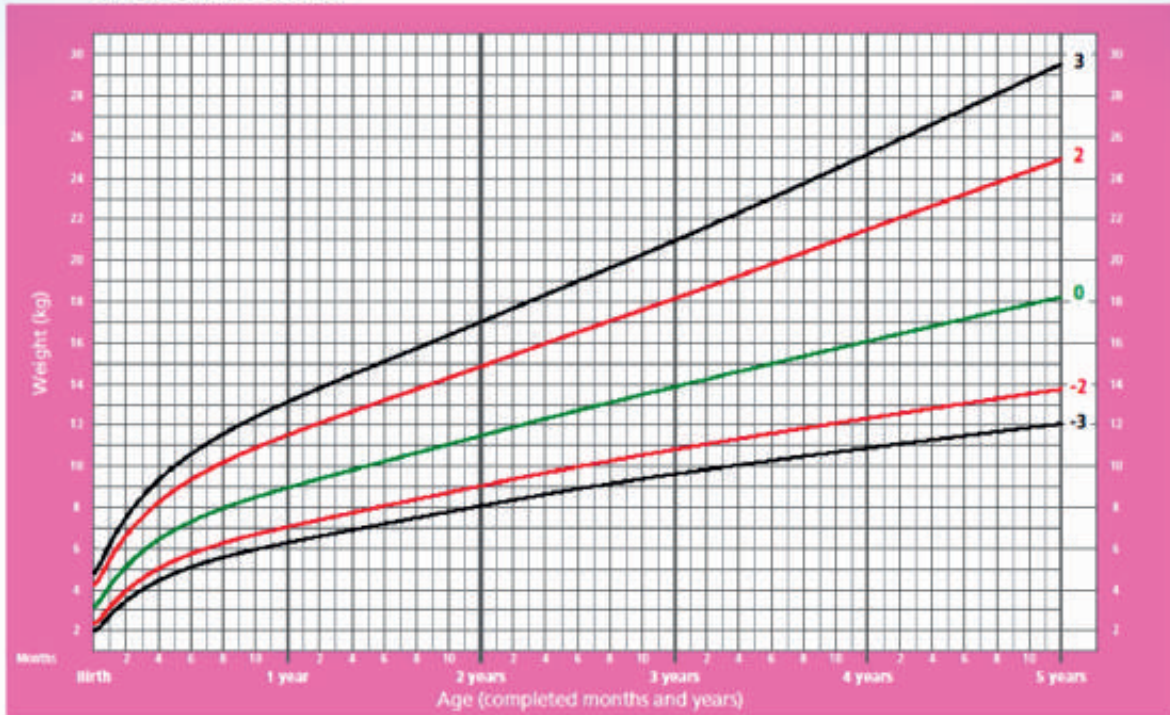


for INFANTS						
Vaccine	When to give	Max. Age	Dose	Diluent	Route	Site
BCG ##	At birth as early as possible	Till one year of age	0.1 ml (0.05 ml until 1 month age)	Sodium Chloride	Intra-dermal	Left Upper Arm
Hepatitis B Birth Dose ###	At birth as early as possible	within 24 Hours	0.5 ml	NO	Intramuscular	Anterolateral side of mid-thigh LEFT
OPV-0*#	At birth as early as possible	within the first 15 days	2 drops	NO	Oral	-
OPV 1, 2 & 3	At 6, 10 & 14 weeks	Till 5 years of age	2 drops	NO	Oral	-
Rota Virus Vaccine*	At 6, 10 & 14 weeks	Till 1 year of age	5 drops	NO	Oral	-
IPV (Inactivated Polio Vaccine)	At 6 & 14 weeks	Up to 1 yr. of age	0.1 ml	NO	Intradermal	Right Upper Arm
Pentavalent** 1, 2 & 3	At 6, 10 & 14 weeks	Till one year of age	0.5 ml	NO	Intramuscular	Anterolateral side of mid-thigh LEFT
Measles - 1 st Dose	9 - 12 completed months	Given till 5 yr of age	0.5 ml	Sterile Water	Subcutaneous	Right Upper Arm
Japanese Encephalities 1 st dose	9 - 12 completed months	Till 15 yrs.	0.5 ml	Phosphate Buffer	Subcutaneous	Left Upper Arm
Vitamin A (1 st Dose)	At 9 completed months with measles	Till 5 years of age	1 ml (1 lakh IU)	NO	Oral	-

for CHILDREN						
Vaccine	When to give	Max. Age	Dose	Diluent	Route	Site
DPT Booster - 1	16-24 months	7 years	0.5 ml	NO	Intramuscular	Anterolateral side of mid-thigh LEFT
Measles 2 nd dose	16-24 months	Till 5 years of age	0.5 ml	Sterile Water	Subcutaneous	Right upper Arm
OPV Booster	16-24 months	Till 5 years of age	2 drops	NO	Oral	-
Japanese Encephalities 2nd dose	16-24 months	-	0.5 ml	Phosphate Buffer	Subcutaneous	Left Upper Arm
Vitamin A (2nd to 9th dose)	16 months. Then, 1 dose every 6 months	Till 5 years of age	2 ml (2 lakh IU)	NO	Oral	-
DPT Booster - 2	5-6 years	7 years	0.5 ml	NO	Intramuscular	Upper Arm (Left)
TT	10 years & 16 years	-	0.5 ml	NO	Intramuscular	Upper Arm

Weight-for-age GIRLS

Birth to 5 years (z-scores)

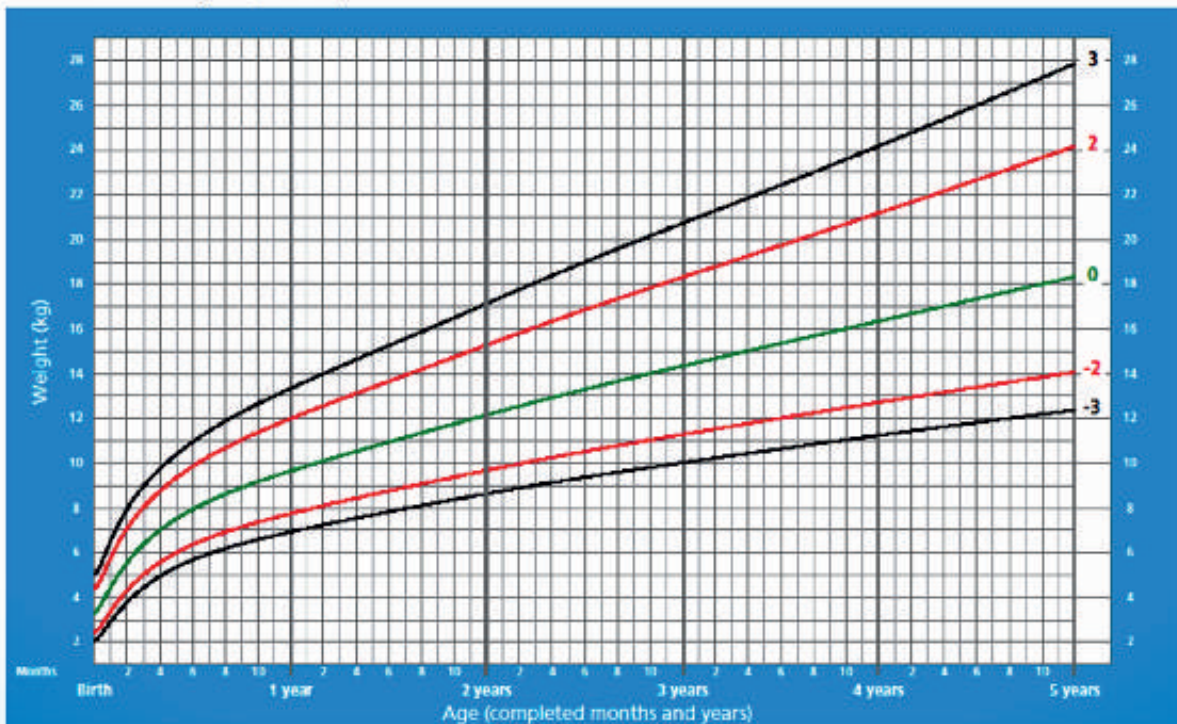


WHO Child Growth Standards

GROWTH CHART

Weight-for-age BOYS

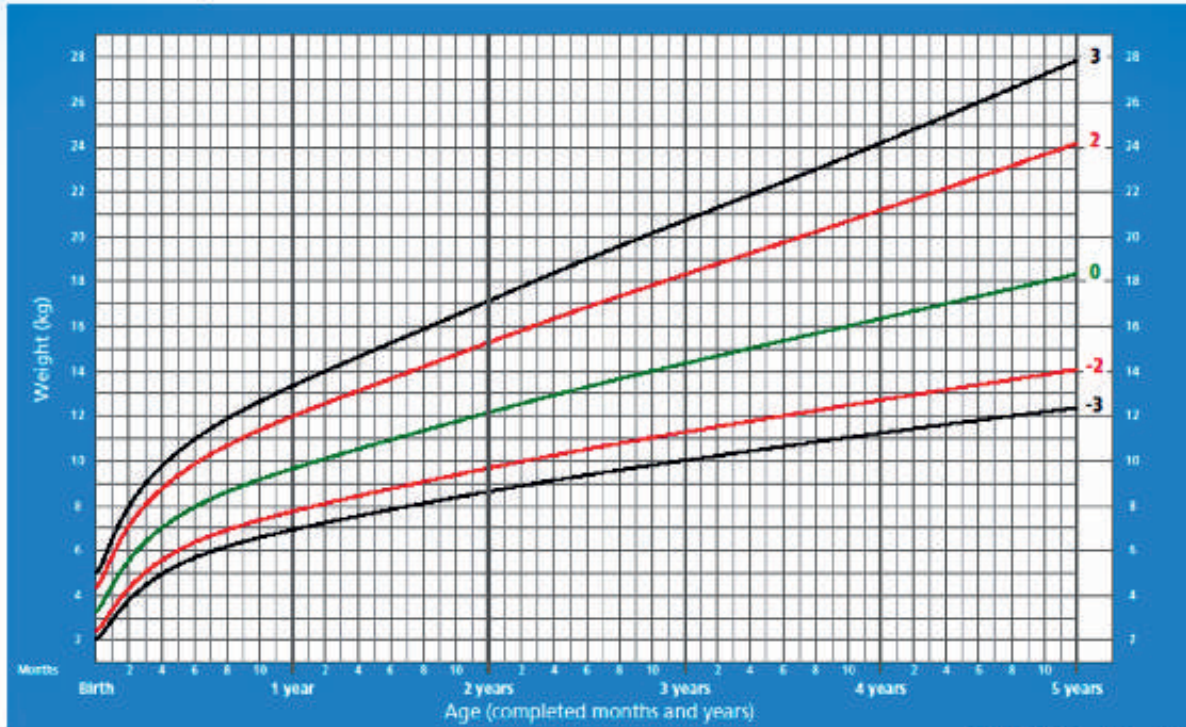
Birth to 5 years (z-scores)



WHO Child Growth Standards

Weight-for-age BOYS

Birth to 5 years (z-scores)



WHO Child Growth Standards

BODY MASS INDEX [BMI]

1.0 Meaning:

BMI is a number calculated by dividing a person's weight in kilograms by his or her height in meters squared. BMI is used in determining obesity.

2.0 Indications/Purposes:

The body mass index categorizes people into four weight classes. The BMI determines whether client is underweight, normal weight, overweight or obese.

Obesity is most commonly calculated using BMI. An adult with a BMI of 30 or greater is clinically obese.

BMI is not used to determine a person's actual percentage of body fat, but it is a good indicator to categorize weight in terms of what is healthy and unhealthy



BMI Calculator

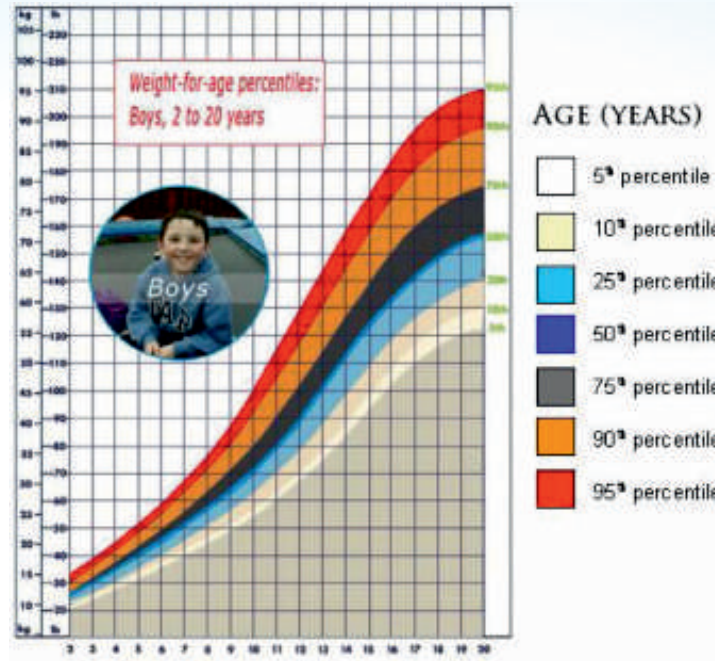
healthy Range = 18.5 to 25
Overweight – 25 to 30
Obese = 30 to 35
Severely obese = Above 35

Body Mass Index is a simple calculation using a person's height and weight. The formula is $BMI = \frac{kg}{m^2}$ where kg is a person's weight in kilograms and m^2 is their height in metres squared. A BMI of 25.0 or more is overweight, while the healthy range is 18.5 to 24.9.

$$BMI = \frac{m}{h^2} = \frac{\text{weight in kg}}{(\text{height in meter})^2}$$

3.0 Measuring Obesity In Children

Weight-to-age percentile are used to measure obesity in children. However, it should be kept in mind that this method, should be used as a tool. A physician can best determine and diagnose weight status in child.

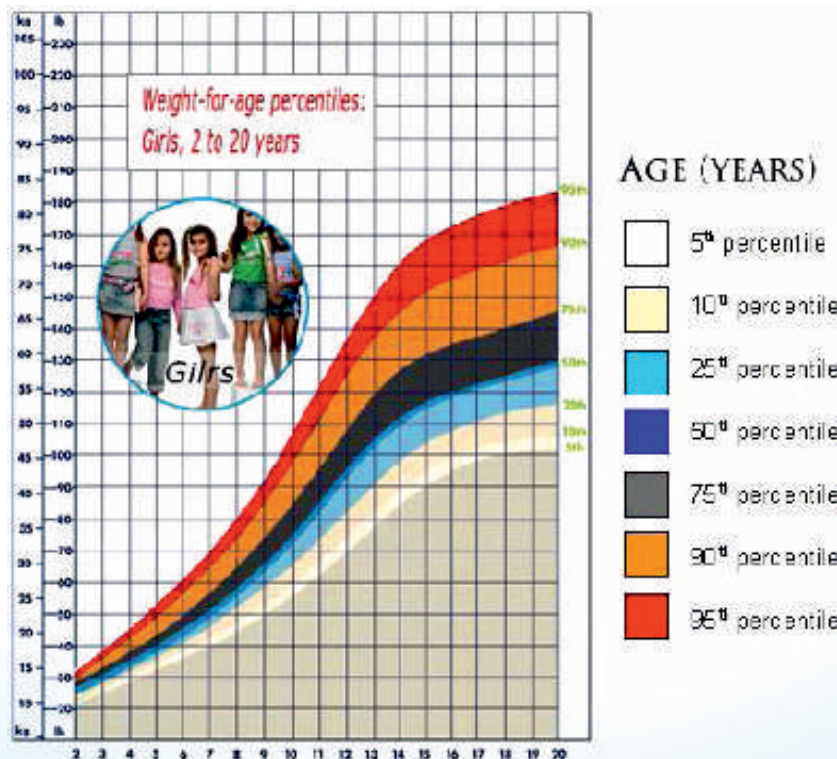


Plotting Child's Weight-to-Age Percentile

To plot child's weight-to-age percentile, find the age of child on the bottom of the chart and look to the left to locate their body weight. Once you locate their weight and age, locate the corresponding shaded color on the bottom of the chart to determine child's percentile.

A child is defined as "overweight" if their weight-to-age percentile is greater than 95 percent. A child is defined as "at risk for overweight" if their weight-to-age percentile is greater than 85 percent and less than 95 percent.

Annexures



COVID-19

COVID-19 is an acronym that stands for **Corona Virus Disease** of 2019. The name was given by the World Health Organization (WHO) on February 11, 2020 for the disease caused by the novel corona virus SARS-CoV-2.

COVID-19 is an acute respiratory illness characterized by:

- Fever
- Dry cough
- Shortness of breath

Some patients may also have aches and pains, nasal congestion, runny nose, sore throat or diarrhea.

The incubation period (time between infection and appearance of first sign/symptom) of COVID-19 is up to 14 days.

The incubation period is up to 14 days.

The disease ranges from mild to severe and has been classified according to severity as syndromes associated with COVID-19.

Syndromes associated with COVID-19

- Uncomplicated illness
- Mild pneumonia
- Severe pneumonia
- Acute Respiratory Distress Syndrome (ARDS)
- Sepsis
- Septic shock

COVID-19 is a new disease which has never existed before. Thus humans do not have any natural immunity against the virus. COVID-19 affects people of all age groups- BUT the following population sub groups are at greater risk of developing severe disease with complications

- Elderly
- People having other co-morbidities (CVD, hypertension, diabetes, respiratory illnesses)
- People who are immunocompromised (on immunosuppressant drugs/people with HIV)

Transmission of COVID-19

Transmission depends on several factors like infectiousness of agent, susceptibility of population and exposure of susceptible population.

How to reduce Transmission:

- Reducing the spread of agent from infected host (eg. Isolation, quarantine)
- Reducing exposure of susceptible host (eg. Social distancing, use of PPE)
- Reducing environmental survival of agent [eg. Disinfection of frequently touched surfaces, such as floors, and other commonly used areas (toilets, wash basins etc.) and objects (doorknobs, handles, keys etc.)]
- Increase resistance of susceptible hosts (eg. Vaccination).

COVID-19 spreads by the viral load present in respiratory droplets of infected persons released into the air when they cough or sneeze

These droplets can spread the infection in two ways:

- Direct spread: by droplets that land on the face (mouth, eyes) or hands of another person. Spread by direct contact has been seen to occur within a distance of 3 feet or 1 meter
- Indirect spread: by contact with a surface contaminated by respiratory droplets. The droplets settle on surfaces (floor, furniture, clothes, keyboards, mobiles etc.). The virus can survive on contaminated surfaces for up to 2-3 days

On 11 th March 2020 WHO declared COVID as Pandemic

Preventing Transmission**1. Control the source of infection**

Source of infection: Confirmed COVID-19 cases (both symptomatic and pre-symptomatic)

Methods to control source of infection: Testing of suspected symptomatic and close contacts (includes pre-symptomatic cases) and isolation of positive cases. Since there is no proved treatment of the disease, isolation of cases remains the mainstay for controlling the source of infection.

2. Break the chain of transmission**Chain of transmission: Direct and indirect spread**

Methods to break the chain of transmission: Reducing direct contact with respiratory droplets from infected persons (hand hygiene, respiratory hygiene, use of masks, social distancing, quarantine of contacts) and reducing indirect contact with surfaces infected with respiratory droplets (infection prevention and control protocols)

3. Reduce susceptibility to infection

Vaccination against COVID-19 is vital to reduce the susceptibility to infection. However till the Vaccination is accessible to all the members of the population, it is vital that we maintain the focus to break the chain of transmission and flatten the curve of disease.

4. Physical (Social) Distancing and methods

The virus can be prevented from spreading by maintaining safe distance (at least one meter).

Since an infected person can spread the virus even before he/she develops symptoms of COVID-19, it is important to practice distancing from people whether they are sick or healthy. Physical distancing methods effectively reduce Transmission.

Method	Description	Rationale
Isolation of cases	Confirmed or suspected cases of COVID-19 are isolated in designated health facility or home (subject to fulfilling stipulated conditions)	Separating the sick from the healthy to avoid transmission of infection.
Home Quarantine of contacts	Healthy person(s) who have had contact with a suspected COVID-19 case are kept in quarantine for 14 days at home or in a facility quarantine. If they develop symptoms, they would be promptly tested.	Separation of potentially infected from others to avoid transmission if disease develops, even during pre-symptomatic* phase of the disease.
Physical distancing	All people are asked to stay at home. Closure of schools & other establishments Ban on gatherings Restricting non-essential travel Physical distancing maintained at markets and during travel	Recommendations for physical distancing of persons, particularly the high-risk groups, in order to reduce transmission, avoid increased morbidity, and thereby decrease the pressure to the health system.

- Wash hands with soap and clean water for at least 40 seconds

- Clean hands with alcohol based hand rub for at least 20 seconds

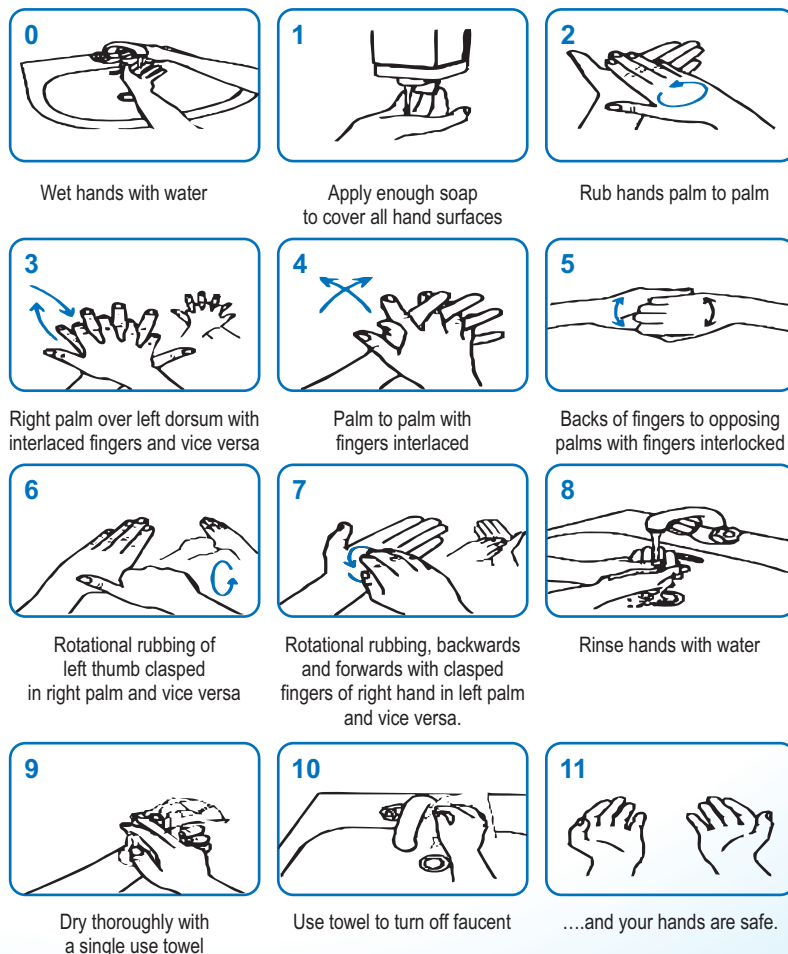
Make sure to wash your hands :

- After coming home from outside or meeting other people especially if they are ill.

- After having touch with the face, & coughing or sneezing.

- Before preparing food, eating or feeding children.

- Before and after using toilet, cleaning etc.



5. Use of masks

- Wash hands after removing and before wearing fresh masks.
- Masks are effective only when used properly in combination with frequent hand washing with soap and water or hand cleaning with alcohol-based hand rub and other physical distancing measures to be followed.

Triple layer surgical mask should be used by

- Persons with respiratory symptoms
- Persons in quarantine
- Healthcare workers in low risk settings (not in direct contact with COVID-19 patients).
- N-95 respirator mask should be used by healthcare workers at high risk settings (e.g. during clinical examination of patients, conducting aerosol generating procedures, etc.)

6. Measures to reduce indirect transmission.

Don't touch surfaces

- The virus survives on surfaces of inanimate objects for a few days.
- Therefore, avoid touching doors, handles, table tops, key boards, mobiles etc. of other people in public places.
- Also wash hands thoroughly after any contact with these.
- Clean and disinfect frequently touched surfaces at least once daily with household disinfectants and 1% sodium hypochlorite. This includes table tops, doorknobs, light switches, countertops, handles, desks, toilets, and sinks.
- Phones, computers, remote controls etc. should be disinfected with alcohol based (70% or more) disinfectant.
- Clothes should be washed with common detergent. If handkerchief is used to cough or sneeze, or as a face mask, it should be washed daily before reusing.
- All tissues and non-reusable masks should be disposed safely by burning or deep burial after disinfection with 1% sodium hypochlorite solution.

Management of cases

Case definitions

A Suspect Case is one who is likely to have been infected and should be tested for the disease immediately at designated testing centers.

Definition of suspect case:

A patient with acute respiratory illness {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath)}, AND a history of travel to or residence in a country/area or territory reporting local transmission of COVID19 disease during the 14 days prior to symptom onset;

OR

A patient/Health care worker with any acute respiratory illness and having been in contact with a confirmed COVID-19 case in the last 14 days prior to onset of symptoms;

OR

A patient with severe acute respiratory infection {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness breath)} AND requiring hospitalization AND with no other etiology that fully explains the clinical presentation;

OR

A case for whom testing for COVID-19 is inconclusive.

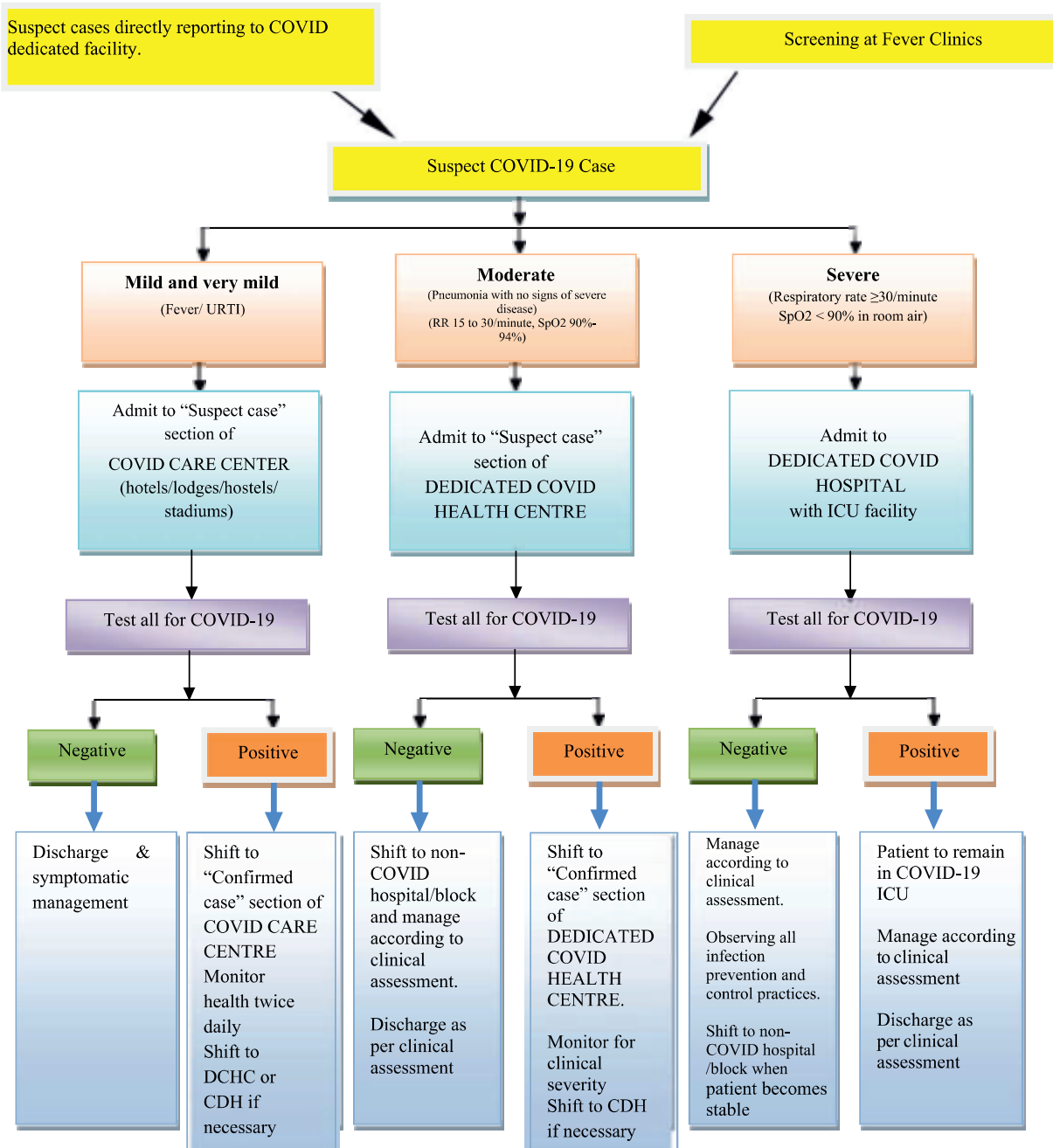
Laboratory Confirmed Case:

A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.

Testing Strategy for Covid 19 (ICMR guidelines)

- All symptomatic individuals who have undertaken international travel in the last 14 days
- All symptomatic contacts of laboratory confirmed cases
- All symptomatic healthcare workers
- All hospitalized patients with Severe Acute Respiratory Illness (fever AND cough and/or shortness of breath)
- Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 of coming in his/her contact
- In hotspots / cluster (as per MOHFW) and in large migration gatherings/evacuee centres:
- All symptomatic ILI (fever, cough, sore throat, runny nose) should get tested.

MOHFW's treatment strategy for COVID-19



<https://www.mohfw.gov.in/pdf/FinalGuidanceonMangaementofCovidcasesversion2.pdf>

Isolation and home quarantine

Isolation in a health facility is for:

- All confirmed positive cases of COVID-19 in order to prevent transmission of infection
- Isolation is for the period of disease (ie, till the person tests negative for the disease)
- Home quarantine is for:
- All asymptomatic individuals who have undertaken international travel from any COVID-19 infected countries or interstate travel from any COVID-19 infected state in the last 28 days.
- Home quarantine is for a period of 14 days* since the day of travel
- All those who fit the definition of 'contact' should be home quarantined and monitored for symptoms of covid 19
- A contact in the context of COVID-19 is one who:
 - Provided direct care to a COVID-19 positive person without personal protective equipment (PPE)
 - Stayed in the same close environment of a COVID-19 patient (including workplace, classroom, household, gatherings).
 - Traveled in close proximity (1 m) with a symptomatic person who later tested positive for COVID-19.

Home isolation of very mild/pre-symptomatic case

However, recent guidelines have been issued by MOHFW for home isolation of very mild/pre-symptomatic

COVID-19 cases, provided the patient has requisite facility at his/her residence for self-isolation.

Eligibility criteria for home isolation:

- Should be clinically assigned as a very mild case/ pre-symptomatic case by the treating doctor.
- Should have the requisite facility at their residence for self-isolation and also for quarantining the family contacts.
- A care giver should be available to provide care on 24 x7 basis.
- A communication link between the caregiver and hospital is a prerequisite for the entire duration of home isolation.
- The care giver and all close contacts of such cases should take Hydroxychloroquine prophylaxis as per protocol and as prescribed by the treating medical officer.

Guidelines for home quarantine

Instructions for contacts being home quarantined

The home quarantined person should

- Stay in a well-ventilated single-room preferably with an attached/separate toilet.

- If another family member needs to stay in the same room, it's advisable to maintain a distance of at least one and a half meter between the two.
- Needs to stay away from elderly people, pregnant women, children and persons with co-morbidities within the household.
- Restrict his/her movement within the house.
- Under no circumstances attend any social/religious gathering e.g. wedding, condolences, etc.
- Instructions for the family members of persons being home quarantined
- Only an assigned family member should be tasked with taking care of the such person
- Avoid shaking the soiled linen or direct contact with skin
- Use disposable gloves when cleaning the surfaces or handling soiled linen
- Wash hands after removing gloves
- Visitors should not be allowed
- In case the person being quarantined becomes symptomatic, all his close contacts will be home quarantined (for 14 days) and followed up for an additional 14 days or till the report of such case turns out negative on lab testing

Vulnerable populations

Stay at home with physical distancing and other preventive measures:

- All people who do not have history of high risk contact but have high risk conditions such as immunocompromised status, heart or lung disease etc.
- All people above age of 60 years
- All these people must be monitored for symptoms of COVID-19 since they are at high risk of getting severe disease if they get infection.



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