

2026 |



# SKILL BASED TRAINING MANUAL

Centre For Skill Development and Training



[www.csdtmc.org](http://www.csdtmc.org)

# About

## CSDT

### Centre for Skill Development and Training (CSDT)

The **Centre for Skill Development and Training (CSDT)** is a dedicated facility established to enhance the practical competencies of healthcare professionals through structured hands-on training. The centre focuses on developing clinical, surgical, and emergency management skills using modern simulation technologies, skill stations, and cadaveric training modules.

CSDT provides training programs in areas such as **Basic Life Support (BLS)**, **Advanced Cardiac Life Support (ACLS)**, **laparoscopic skills**, **trauma care**, and **first aid**, enabling students, interns, residents, and practicing clinicians to refine their procedural abilities in a safe learning environment. By integrating simulation-based education with practical workshops, the centre aims to bridge the gap between theoretical knowledge and real-world clinical practice, ultimately improving patient care and safety.

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**GENERAL MEDICINE and AIRWAY MANAGEMENT**

**AIRWAY MANAGEMENT IN ADULTS**  
**(MED 1)**

## **AIRWAY MANAGEMENT IN ADULTS**

### **Skill:**

Airway Management in Adults

### **Competency Phase: II and III**

SU 11.3 Demonstrate the maintenance of an airway in a mannequin or equivalent (S/SH)

OR 13.2 participate as a member in team for resuscitation of poly trauma victim by doing the following a) IV access central, peripheral b) bladder catheterization c) endotracheal intubation d) splintage

### **Objectives:**

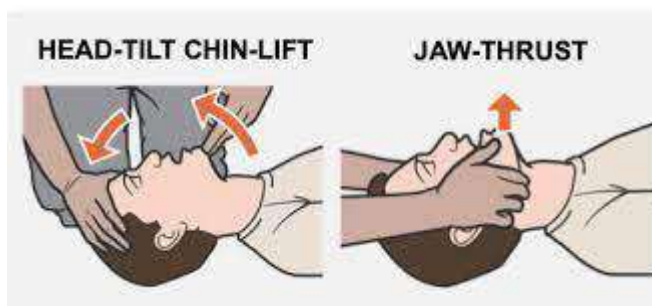
At the end of the module, the participant should be able to demonstrate

1. Airway assessment in adult
2. Airway manoeuvres in adult manikin
3. Insertion of Oropharyngeal and Nasopharyngeal airway in manikin
4. Bag mask ventilation in manikin
5. Insertion of supraglottic airway devices
6. Conventional Laryngoscopy and Endotracheal intubation
7. Identify the need for surgical airway

### **Background Knowledge**

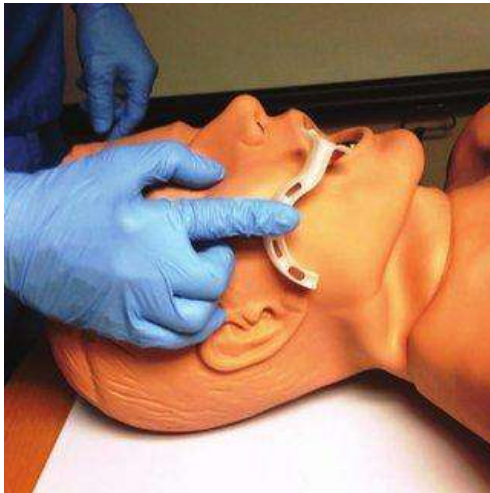
Before attending the simulation on airway management students should have adequate understanding of the following

1. Anatomy of adult and pediatric airway
2. Airway assessment in adults
3. Indications for Advanced Airway management
4. Different airway gadgets- Masks, Oropharyngeal airway, nasopharyngeal airway, Endotracheal tubes, Laryngoscopes, Supraglottic airway devices
5. Airway manoeuvres
6. Assessment of difficult airway, difficult Bag Mask Ventilation, difficult Supra Glottic Airway placement & difficult surgical airway
7. Indications for surgical airway

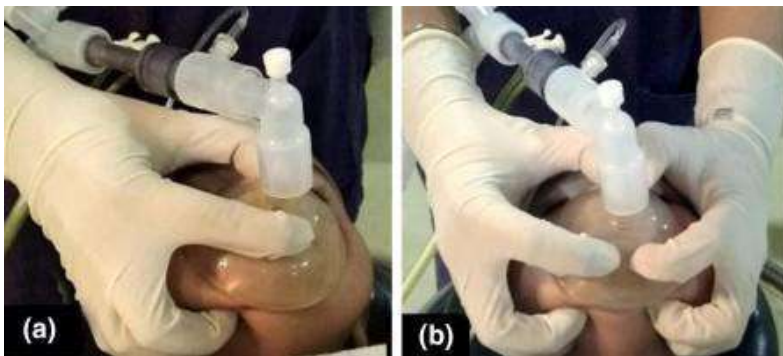


Oropharyngeal airway size selection

Nasopharyngeal airway size selection



One handed (a) and two-handed technique (b) of mask holding



### Equipment

1. Airway Mannequin - Adult
2. Airway equipment: Bag mask devices, Oropharyngeal airway, nasopharyngeal airway, supraglottic airway devices, endotracheal tubes of different sizes, laryngoscope with different size blades, stylets, bougie, syringes
3. Audio-visual aids

### Case Scenarios

1. A 72-year-old male with a history of diabetes mellitus (DM) and coronary artery disease (CAD) arrived at the emergency department experiencing shortness of breath and a decrease in oxygen saturation levels
2. Obese patient develops tongue fall and desaturation in the postoperative care unit. He is drowsy but responds to calls but desaturates when not stimulated. How will you manage?

### Steps

1. PPE and Airway assessment

2. Check all equipment for resuscitation are available including emergency drugs and suction
3. Airway manoeuvres
  - a. Head tilt and Chin Lift
  - b. Jaw thrust (If suspecting cervical spine injury)
4. Insertion of Oropharyngeal airway/Nasopharyngeal airway
  - a. Size calculation
  - b. Method of insertion
5. Bag mask ventilation
  - a. E-C clamp technique
  - b. Single handed technique
  - c. Two handed technique
  - d. Confirm visible chest rise
6. Insertion of Supraglottic airway devices (SGA) - eg. Laryngeal Mask Airway (LMA)
  - a. Selection of correct size SGA
  - b. Checking & lubrication of SGA
  - c. Placement of SGA
  - d. Confirming correct placement
7. Conventional laryngoscopy and intubation
  - a. Selection and checking of Endotracheal tube
  - b. Steps of laryngoscopy
  - c. Intubation and inflation of cuff
  - d. Confirmation of correct placement of Endotracheal tube
  - e. Securing the endotracheal tube

### Observation guide

Please observe the student behaviour and mark Yes /no as it occurs

SI No.	Question	Yes	No
1	Followed aseptic precautions during the procedure		
2	Able to perform airway manoeuvres		
3	Selected the correct size of mask and airways		
4	Followed the correct technique for the insertion of airways		
5	Able to identify the correct placement of different airway gadgets		
6	Secured the airway correctly		
7	Described when to consider a surgical airway		

**Assessment**

1. Multiple Choice Questions
2. Skill assessment Checklist

SI No.	Assessment Point	(√)/(X)
1	Airway assessment	
2	Check availability of resuscitation equipment	
3	Aseptic precautions and PPE followed	
4	Airway manoeuvres	
5	Selection of the correct size of OPA/NPA	
6	Placement of OPA/NPA	
7	Mask holding technique	
8	Selection of correct size of SGA	
9	Method of insertion of SGA	
10	Steps of laryngoscopy	
11	Selection and checking of endotracheal tube	
12	Insertion of ETT and inflation of cuff	
13	Confirmation of correct placement of ETT	
14	Able to identify need for surgical airway	
<b>Test results</b>	<b>Pass/Needs Remediation</b>	

**References & Suggested Reading:**

- i. Benumof's airway management- Carin A Hagberg-2<sup>nd</sup> edition
- ii. Understanding anaesthesia equipment - Dorsch & Dorsch – 5<sup>th</sup> edition
- iii. Understanding Anaesthetic equipment and procedures- Dwarkadas K Baheti 3<sup>rd</sup> edition

**BASIC LIFE SUPPORT**  
**(MED 2)**



## **BASIC LIFE SUPPORT**

**Skill:** Emergency Basic Life Support

### **Competency in phase 1 & 2**

PY 11.14 Demonstrate Basic Life support (BLS) in a simulated environment.

Vertical Integration with General medicine, General surgery, and Anaesthesiology

SU.11.3 Demonstrate maintenance of an airway in a mannequin or equivalent

SU,17.2 Demonstrate steps in basic life support. Transport of injured patient in a simulated environment

AS2.1 Enumerate the indications, describe the steps, and demonstrate in a simulated environment Basic life support in adults, children, and neonates

IM2.22 Perform and demonstrate in a manikin basic life support

### **Objectives**

At the end of the session students will be able to

1. Explain and demonstrate the key principles and techniques of BLS and explain its significance in saving lives
2. Recognise when to initiate BLS.
3. Describe the steps in the BLS
4. Explain the differences between adult, child and infant BLS.
5. Demonstrate proper chest compression techniques on adult manikins.
6. Show how to open the airway and deliver effective breaths
7. Demonstrate use of an automated external defibrillator (AED) on a manikin.
8. Perform BLS in a team-based scenario.

### **Teaching Learning Methods**

1. Lectures
2. DOAP
3. Small group discussions
4. Role play
5. Case based Simulation

### **Background knowledge**

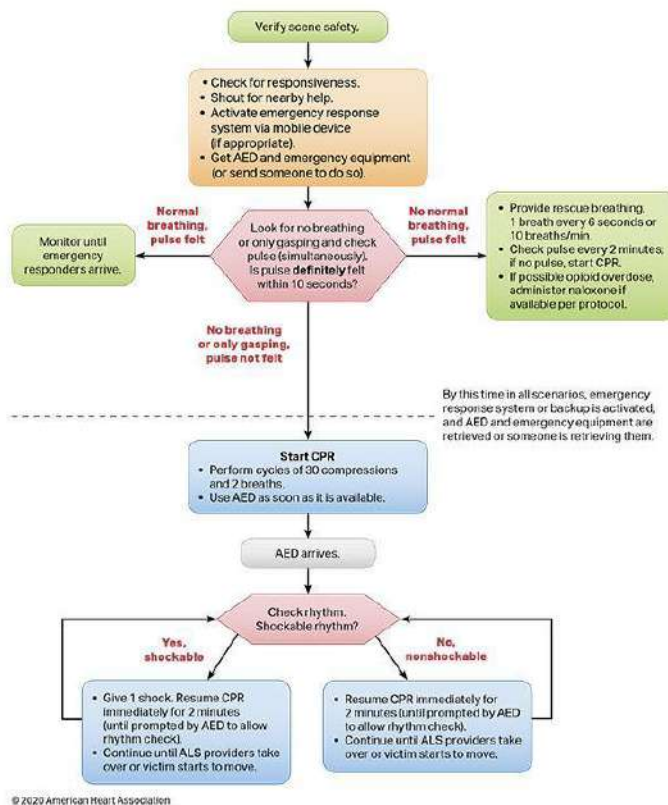
BLS is the first line of response in emergencies, and early intervention can significantly improve a victim's chances of survival. BLS is used in a person who is unresponsive with no pulse (cardiac arrest) or no breathing/ agonal gasp (respiratory arrest).

Before attending this simulation, the students should be familiar with

1. Cardiopulmonary physiology
2. Chain of survival

3. Recognition of cardiac arrest
4. Functioning of AED/Defibrillator
5. Components of high-quality CPR
6. Differences between Adult, child and infant BLS
7. Compression only Life Support (COLS)

Adult Basic Life Support Algorithm for Healthcare Providers



## Equipment

1. Adult CPR manikin
2. Automated External Defibrillator (AED)
3. Airway accessories- Pocket masks, Bag Mask Devices
5. Audio Visual aids
7. BLS Checklist

- Case scenarios:**
1. A 50-year-old man collapsed suddenly while crossing the road, and you are the only person present at the scene
  2. Elderly man found unresponsive by the side of the river while you were jogging
  3. You are in a crowded restaurant when a fellow diner collapses, becomes unresponsive, and shows no signs of breathing

## Steps

1. Verify premises safety
2. Check for response: Tap both the shoulders and call out loud
3. Shout for help
4. Check for Central pulse (Adult-Carotid, Children-Carotid/femoral, Infant-Brachial) and look for chest rise simultaneously in 5 -10 seconds If no pulse, Activate Emergency Response System
5. Start chest compression if there is no pulse / doubtful presence of pulse.
  - a. Lower half of sternum
  - b. Depth At least 5 cm \* in adult (At least 1/3<sup>rd</sup> of anteroposterior diameter of chest in child and infant\*\*)
  - c. Rate 100-120 compressions per minute
  - d. Full recoil of chest
  - e. Minimum interruption between compressions (Less than 10 seconds)

\* Depth not more than 6 cm in adults

\*\* Approximately 5 cm in children and 4 cm in infants
6. Ventilation
  - a. Ensure Patency of airway- Head tilt, Chin lift / Jaw thrust
  - b. Provide breaths: Mouth to mouth/Pocket mask/ Bag Mask Ventilation
  - c. Administer two breaths of one second each sufficient for a visible chest rise
  - d. Compression: ventilation ratio 30:2 (15:2 for child / infant hen two rescuers are present)
  - e. Avoid excessive ventilation
7. Check pulse after 5 cycles of CPR
8. Change compressor after 5 cycles of CPR or sooner if fatigued
9. Automated External Defibrillator (To be used as soon as available)
  - a. Power on
  - b. Follow visual and auditory prompts
  - c. Attach the pads - anterolateral and anteroposterior
  - d. Deliver shocks when advised
  - e. Resume CPR
10. If pulse present and no breathing /agonal gasp
  - a. Rescue breaths: One breath every 6 seconds/10 breaths per minute
  - b. Check pulse every 2 minutes and start CPR if no pulse
11. Pulse felt and normal breathing- Put the patient in recovery position and monitor pulse and respiration till Advanced life Support team arrives
12. Can stop CPR
  - a. On return of spontaneous circulation (ROSC)

- b. On arrival of Advanced Life Support team
- c. If the single rescuer is too fatigued to continue
- d. If scene becomes unsafe

**Observation guide:**

Please observe the behaviour and mark Yes /no as it occurs

Si No.	Question	Yes	No
1	Ensured that the scene is safe Identified cardiac arrest by assessing responsiveness, pulse, and breathing		
2	Responded effectively by activating the emergency response system and starting CPR		
3	Provided high-quality CPR		
4	Used AED properly		
5	Resumed chest compression immediately after delivery of shock		
6	Identified ROSC		
7	Performed well as a single responder and as part of a team with effective team dynamics		

**Assessment**

1. Multiple Choice questions
2. Skill assessment checklist

SI No.	Assessment Points	(√)/(X)
1	Verify scene safety	
2	Check for responsiveness	
3	Shout for help and Activate Emergency Response System	
4	Check for pulse	
5	Start chest compression (when there is no pulse)	
6	Site of compression	
7	Depth of compression	
8	Rate 100-120 compressions per minute	
9	Full recoil of chest allowed	
10	Minimal Interruption between compressions	
11	Ensure Patency of airway- (Head tilt, Chin lift / Jaw thrust)	
12	Adequate chest rise with ventilation	
13	Compression: ventilation ratio 30:2	
14	Check pulse after 5 cycles	
15	Automated External Defibrillator- To be used as soon as available	
16	Turn on AED	
17	Apply AED pads to chest in correct position	
18	Verify no one is touching the patient during Rhythm analysis	
19	Verify no one is touching the patient during shock	
20	Resume CPR	
21	Team dynamics	
Test results	(Pass/Needs Remediation)	

**Suggested Reading**

- i. The 2020 American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care
- ii. Basic Cardiopulmonary Life Support (BCLS) guidelines by Indian Resuscitation Council federation
- iii. Circulation journal Volume 142 No.16 supplement 2 part 3



**CARDIO PULMONARY RESUSCITATION-  
ADVANCED LIFE SUPPORT  
(MED 3)**



# **CARDIO PULMONARY RESUSCITATION- ADVANCED LIFE SUPPORT**

**Skill:** Emergency Cardio Pulmonary Resuscitation-Advanced Life Support

**Competency Phase: II and III**

AS2.2 Enumerate the indications, describe the steps, and demonstrate in a simulated environment

Advanced life support in adults and children

Horizontal Integration with General medicine, General surgery

IM2.21 Observe and participate in a controlled environment in an ALS program

SU.11.3 Demonstrate maintenance of an airway in a mannequin or equivalent

**Objectives:**

At the end of the module, the participant should be able to

1. Describe the importance of early high-quality CPR in improving outcome of cardiac arrest.
2. Describe the theoretical foundations of CPR including the chain of survival and the reversible causes of cardiac arrest
3. Identify the different cardiac arrest rhythms.
4. Perform defibrillation in manikin
5. Describe the drugs and interventions in the management of cardiac arrest
6. Describe the components of early Post cardiac arrest care
7. Define Team roles and the Importance of team dynamics in the successful resuscitation of cardiac arrest victims

**Teaching Learning Methods**

1. Lectures
2. DOAP
3. Small group discussions
4. Role play
5. Case based Simulation

**Background Knowledge**

Successful completion of BLS module is mandatory before Advanced life support simulation and the students should have adequate understanding of the following

1. The chain of survival
2. High-quality CPR
3. Reversible causes of cardiac arrest
4. Cardiac arrest rhythms
5. Science of defibrillation
6. Medications used in cardiac arrest
7. Immediate care of post cardiac arrest care

## 8. Team dynamics

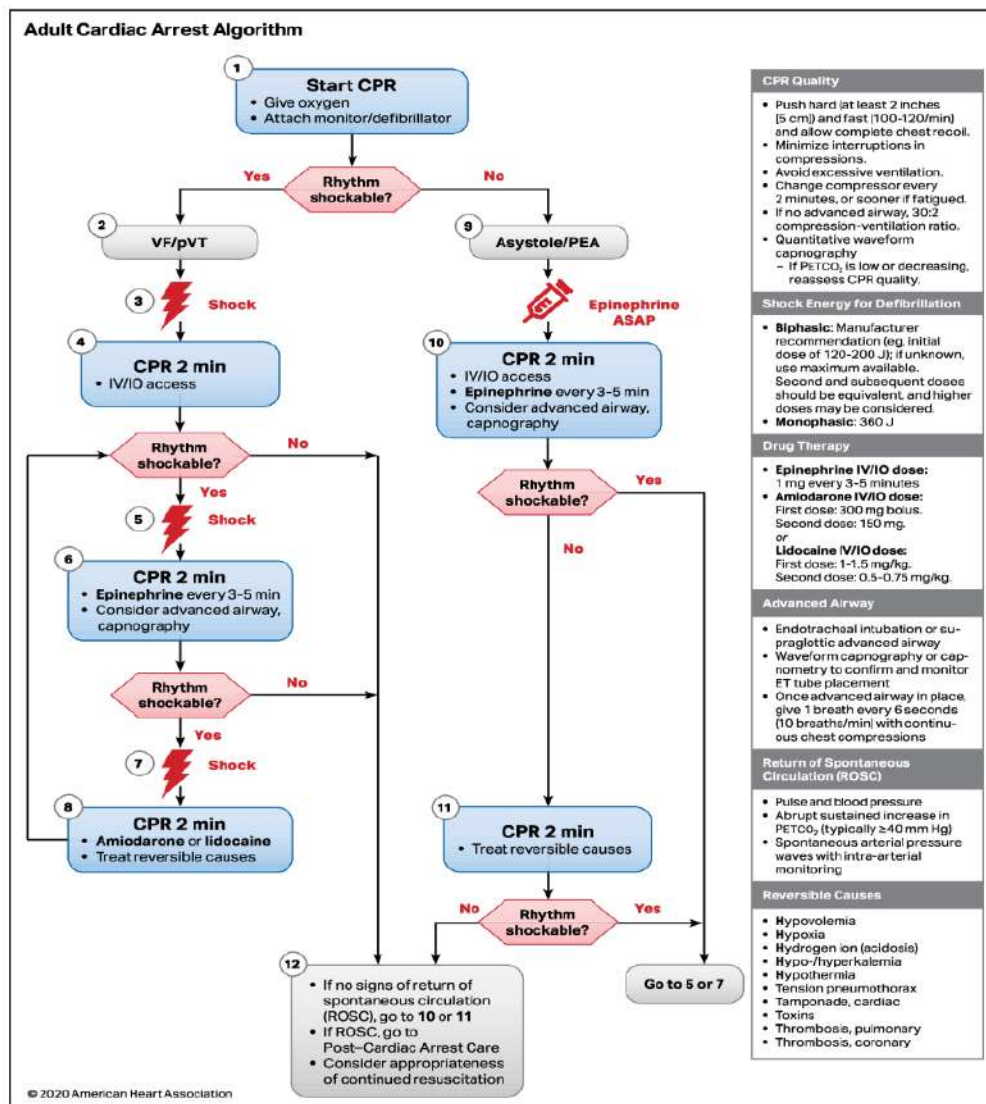


Figure 3. Adult Cardiac Arrest Algorithm.

## Equipment

1. CPR Mannequin - Adult
2. Defibrillator with cardiac rhythm simulator
3. Airway equipment: Bag mask devices, Oropharyngeal airway, nasopharyngeal airway, supraglottic airway devices, endotracheal tubes of different sizes, laryngoscope with different size blades, stylets, bougies, syringes
4. Intravenous cannulas and drugs (Adrenaline, amiodarone, magnesium sulfate, lignocaine, dopamine, dobutamine, noradrenaline, crystalloid, calcium gluconate, potassium chloride, sodium bicarbonate)
5. Cardiac arrest algorithms by AHA
6. Audio-visual aids
7. ABG machine, if feasible

## Case Scenarios

1. An elderly male, aged 72, with a history of diabetes (DM) and coronary artery disease, arrived at the emergency department due to complaints of shortness of breath and chest pain. While in the ED, he lost consciousness while recording the ECG. (This scenario involves a cardiac arrest rhythm that can be shocked: Ventricular Fibrillation (VF) or pulseless Ventricular Tachycardia (pVT)).
2. 86-year-old female, admitted in ward with fracture neck of femur, became suddenly unresponsive in the ward. (Scenario based on non-shockable cardiac arrest rhythm (Pulseless Electrical Activity (PEA) or Asystole)

### Steps

1. Recognition of cardiac arrest
2. Immediately activate emergency response system - Code Blue
3. Initiating early high-quality CPR
4. ALS team - Assign team roles and responsibilities
  - a. Team leader
  - b. Compressor
  - c. Airway
  - d. Monitor/Defibrillator/CPR coach
  - e. IV/IO medications
  - f. Timer/recorder
5. Administer oxygen, attach monitor/defibrillator, and identify the rhythm associated with cardiac arrest: Shockable or non-Shockable
  - Shockable rhythm (Ventricular fibrillation/ Ventricular Tachycardia)
  - Non- Shockable Rhythms (Asystole / Pulseless electrical activity (PEA))
6. Perform early defibrillation if Shockable rhythm- Biphasic 200 Joules and resume CPR after defibrillation.
7. If non shockable rhythm, continue CPR.
8. Administer medications as appropriate:
  - Inj. Epinephrine iv/io 1 mg every 3-5 minutes (As early as possible in Non-shockable rhythms and after second defibrillation in Shockable rhythms)
  - Inj. Amiodarone 300 mg IV bolus/Inj. Lignocaine 1-1.5mg/kg for refractory VF/ pVT after delivery of third shock. Half the initial dose may be repeated once if needed
9. Discuss the reversible causes of cardiac arrest (5H and 5Ts) and manage accordingly.
  - 5H- Hypoxia, Hypovolemia, Hyper/Hypokalemia, Hypothermia, Hydrogen ions(acidosis)
  - 5T- Toxins, Tension Pneumothorax, Thrombosis-Coronary, Thrombosis-Pulmonary, Tamponade
10. Identify Return of spontaneous circulation (ROSC)

(Monitor shows organized rhythm with return of Pulse)

11. Perform the steps of immediate post cardiac arrest care
  - a. Maintain patent airway/ Secure definite airway
  - b. Support breathing to maintain SpO<sub>2</sub> 92 - 98%, PaCO<sub>2</sub> 35-45mmHg
  - c. Support circulation with Fluids, inotropes, and vasopressors to maintain MAP greater than 65 mm and systolic BP more than 90 mmHg
  - d. Performs ECG to look for ST elevation MI, EEG & CT scan as required
  - e. Disability- Initiate Targeted temperature management for comatose patients

Continue advanced care in ICU/CCU

**Observation guide:** Please observe the behaviour and mark Yes /no as it occurs

SI No.	Question	Yes	No
1	Ensured scene is safe and uses appropriate PPE		
2	Identified cardiac arrest by assessing response, pulse, and breathing		
3	Responded effectively by activating the emergency response system and starting CPR		
4	Identified different rhythms associated with cardiac arrest		
5	Differentiated between Shockable and non-Shockable rhythms		
6	Performed the steps of successful defibrillation correctly		
7	Restarted chest compression immediately after defibrillation		
8	Used medications appropriately for resuscitating a patient with cardiac arrest		
9	Looked for the reversible causes of cardiac arrest		
10	Identified ROSC		
11	Performed the steps of Post cardiac arrest care correctly		
12	Performed well as a single responder and as part of a team with effective team dynamics		

#### Assessment

1. Multiple Choice Questions
2. Skill assessment Checklist

SI No.	Assessment Point	(√)/(X)
1	Student ensures that the scene is safe	
2	Appropriate PPE	
3	Identifies cardiac arrest	
4	Activates Emergency response system	
5	Performs early high-quality CPR	
6	Assigns team roles when ALS team arrives	
7	Identifies the rhythm associated with cardiac arrest	
8	Performs Defibrillation in case of Shockable rhythm	
9	Immediate resumes chest compression following defibrillation	
10	Administer medications as appropriate	
11	Identify ROSC	
12	Performs Early post cardiac arrest care appropriately	
13	Ensure a patent airway/ secures definite airway	
14	Assess and support breathing and BP.	
15	Takes ECG and disposition according to the results	
16	Identify that patient is a candidate for TTM	
17	Student exhibits effective team dynamics	
18	Able to verbalize reversible causes of cardiac arrest	
<b>Test results</b>	<b>Pass/Needs Remediation</b>	

**Suggested Reading:**

- i. The 2020 American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care
- ii. Basic Cardiopulmonary Life Support (BCLS) guidelines by Indian Resuscitation Council federation
- iii. Circulation journal Volume 142 No.16 supplement 2 part 3



**RYLE'S TUBE INSERTION**  
**(MED 4)**



## **RYLE'S TUBE INSERTION.**

**Skill:** Ryle's Tube insertion

**Competency:** - PHASE III

**Level:** Shows How

**Objectives:** - By the end of the module, a student should be able to:

- 1) To list the indications for Ryle's tube insertion.
- 2) Selection of equipment for Ryle's tube insertion
- 3) Describe the potential contraindications and complications of Ryle's tube insertion
- 4) Identify the appropriate equipment required for Ryle's tube insertion
- 5) Demonstrate the ability to insert a Ryle's tube and confirm placement.

**Background Knowledge:** -

### Indications

A. Therapeutic

- 1) Feeding Purpose – Indicated in those who having
  - malnutrition or risk of malnutrition and have insufficient or unsafe oral intake
  - Neurological conditions causing dysphagia/unsafe swallow such as in stroke, head injury, Multiple Sclerosis, Parkinsonism, MND.
  - Unconscious patients such as those in Coma, Persistent vegetative state, hepatic encephalopathy, diabetic ketoacidosis, cerebral malaria, encephalitis, meningitis, burns
  - Following upper gastrointestinal surgery where a high anastomosis must be protected in the initial post-operative period
  - Tracheostomized patients.
- 2) Nasogastric suction in,
  - a) Acute intestinal obstruction,
  - b) Bowel rest in acute pancreatitis, Crohn's disease, and intestinal fistula,
  - c) Acute dilatation of stomach,
  - d) Acute abdomen,
  - e) Post-operative, and
  - f) G.I. tract haemorrhage or perforation (paralytic ileus).
- 3) Gastric wash or lavage done in,
  - a) Pyloric stenosis,
  - b) Non-corrosive poisoning, drug overdose, and
  - c) Severe hiccough (by ice-cold water or sodium bicarbonate solution).

4) Medication Delivery - can be used to deliver certain medications directly into the stomach of patients

5) Removal of gastric contents. :-

- Gastric decompression in the endotracheal intubated patients
- Symptomatic relief and bowel rest in bowel obstruction (the “drip and suck” conservative management – aspiration of stomach contents in conjunction with intravenous fluid administration)
- Toxic substance ingestion.

B) Diagnostic

- Assessment of volume of upper gastrointestinal bleeding
- Administration of radiographic contrast.
- To isolate AFB from gastric juice in a child who is suspected to have pulmonary tuberculosis (children usually swallow their sputum) and who cannot expectorate sputum
- To find out malignant cells in gastric carcinoma.
- For forensic purpose—Determining the cause of death in a suspected case of poisoning by subsequent analysis of the gastric aspirate (barbiturate, organophosphorus, copper sulphate, alcohol etc).
- Analysing duodenal secretions for
  - a) Pancreatic function,
  - b) Detection of typhoid carriers, and
  - c) Detection of Giardia lamblia infestation.
- To diagnose gastric outlet obstruction (gastric aspirate will exceed 200 ml after overnight fasting).

Contraindications :-

- Basal skull fractures
- Unstable cervical spinal injuries
- Nasal/pharyngeal /oesophageal obstruction or ulceration
- Choanal atresia
- Tracheoesophageal fistula
- Oesophageal/pharyngeal pouch
- Oesophageal stricture or other abnormalities of the oesophagus
- Oesophageal tumours or have undergone oesophageal surgery
- Oropharyngeal tumours or have undergone oropharyngeal surgery
- Post laryngectomy
- Actively bleeding oesophageal or gastric varices
- Intestinal obstruction
- Clotting disorders

Complications: -

- Bronchial placement
- Pleural space placement
- Intracranial insertion
- Gastro-oesophageal junction placement of the tip
- Nasal Trauma
- Pharyngeal or oesophageal pouch perforation
- Precipitation of variceal bleeding

Never force the nasogastric tube if resistance is felt. A maximum of 3 attempts should be made at one time. If the procedure is unsuccessful after 3 attempts stop and seek senior specialist advice.

### **Equipments**

- Clean tray/trolley
- Disposable gloves
- Apron
- Fine Bore nasogastric tube-Large NG tube(16FG) for aspiration, small bore (3mm) for feeding purpose.
- Swab
- Sterile lubricating jelly
- syringe (50/60ml)
- Disposable sick bowl
- Appropriate securing device/hypoallergenic tape
- Stethoscope
- Pulse Oximetry
- Torch

### Case Scenario

Case 1: A 20 year old male is brought to the Emergency Dept following a road traffic accident, presenting with complaints of loss of consciousness, seizures. On examination, he was found to have GCS score of 13/15, CT Brain showed Sub Arachnoid Haemorrhage. You are the intern posted in the Emergency Dept and you have been instructed to insert a Ryle's Tube.

Case 2: 75 year old male patient known case of old CVA, Type 2 Diabetes Mellitus, HTN, Parkinsonism came with history of reduced food intake, altered sensorium, multiple episodes of vomiting. Blood investigations showed severe hyponatremia. You are the intern posted in the medicine ward, and you have been instructed to carry out a Ryle's tube insertion.

### Steps

#### Preparation: -

1. Explain procedure to patient and relatives
2. Obtain informed consent to proceed.
3. Where possible assist the patient to sit upright with their head well supported and chin tilted downwards.
4. Discuss with the patient non-verbal communication to indicate if they wish the procedure e.g., a hand raises to indicate stop
5. Ascertain if patient has known nasal obstruction, e.g., previous fracture, polyps, previous surgery. Ensure no contraindications to carrying out procedure. If possible, ask patient to blow nose and check nostrils are clean prior to commencement of procedure.
6. Where necessary carry out oral hygiene prior to commencement of procedure.

#### Procedure:

- 1) Clean surface of trolley as per decontamination procedure.
- 2) Assemble equipment onto trolley.
- 3) Perform handwash or hand rub with alcohol.
- 4) Put on apron
- 5) Provide privacy and confirm patient identity.
- 6) Put on disposable gloves
- 7) Examine the nose and nasal cavity for any obstruction/ injury.
- 8) Check the Ryle's tube and ensure that all the ports are closed.
- 9) Measure the length of the tube to be inserted, place the exit port at the tip of the nose to the ear lobe then to the xiphisternum.
- 10) Lubricate the proximal tip of the tube with water soluble lubricant
- 11) Insert the distal end of the tube into the nostril and advance posteriorly along the floor of the nose to the nasopharynx.

- 12) As the tube passes down to the oropharynx ask the patient to keep the chin tilted forwards
- 13) Ask the patient to swallow as the tube is progressed.
- 14) Ensure placement of the tip of the tube within the stomach by the following methods:
  - With a 50 ml syringe push air into the tube with a single rapid thrust, and simultaneously auscultate over the epigastrium, gurgling sound suggests the position of the tip within the stomach. (if available.. Chest Xray can be taken)
- 15) Secure the tube with hypoallergenic tape.
- 16) Dispose the waste according HIC guidelines.
- 17) Perform hand hygiene.
- 18) Document details of the procedure.
- 19) Assess patient's vitals, comfort levels, and reposition.

## Observation Guide

### Assessment

Sl No	Steps to be performed	Completion	Remarks
1	Clean surface of trolley as per decontamination procedure.		
2	Assemble equipment onto trolley.		
3	Perform handwash or hand rub with alcohol.		
4	Put on apron		
5	Provide privacy and confirm patient identity.		
6	Put on disposable gloves		
7	Examine the nose and nasal cavity for any obstruction/ injury.		
8	Check the Ryle's tube and ensure that all the ports are closed.		
9	Measure the length of the tube to be inserted		
10	Lubricate the proximal tip of the tube with water soluble lubricant		
11	Insertion of tube into nostril		
12	As the tube passes down to the oropharynx ask the patient to keep the chin tilted forwards		
13	Ask the patient to swallow as the tube is progressed.		
14	Once the Ryles tube has reached the desired length, stop insertion.		
15	Confirm the position of the Ryles tube.		
16	Secure the tube with hypoallergenic tape.		
17	Dispose the waste according HIC guidelines.		
18	Perform hand hygiene.		

### Suggested Reading

- i. Robert and Hedges Clinical Procedures in Emergency medicine and Acute care
- ii. [https://www.gla.ac.uk/media/Media\\_678213\\_smxx.pdf](https://www.gla.ac.uk/media/Media_678213_smxx.pdf)
- iii. <http://www.med.uottawa.ca/procedures/ng/>

## **URINARY CATHETERIZATION (MED 5)**



## URINARY CATHETERIZATION

**Skill:** To insert a urinary catheter in an adult patient

**Objectives:** By the completion of this module, the student will be able to:

- a. List the indications for urinary catheterisation
- b. Select the equipment for female/male urinary catheterization and choose appropriate catheter type/size
- c. Enumerate the risks associated with catheterization
- d. Communicate to the patient about the procedure and care of catheter, including the need for aseptic care
- e. Demonstrate correct method of urinary catheterization with strict aseptic technique in mannequin as well as in patients (male & female).

### **Background Knowledge:**

Indications:

1. Urinary retention

Causes of acute urinary retention

1. BPH
2. Urethral injury
3. Infections- cystitis
4. Drug induced
5. Calculi
6. Post surgical
7. Spinal cord injury

Causes of Chronic urinary retention

Strictures, Stenosis, CNS Lesions

2. For urine output monitoring
3. Collection of sterile urine for diagnostic purpose
4. Study of lower urinary tract

Choosing the appropriate catheter depends on

- i. The size of the patient's urethral canal
- ii. The expected duration of catheterization (e.g., intermittent or indwelling)
- iii. Knowledge of any allergies to latex or plastic and cleansing solutions

Catheter diameters: 5Fr, 6Fr, 8Fr 10Fr, 12Fr, 14Fr, 16Fr, 18Fr, 20Fr, 22Fr, 24Fr, 26Fr.

Commonly used range is from 12 to 16 Fr

The higher the number the larger the diameter of the catheter.

3Fr. = 1mm (i.e., a 24fr. catheter is 8mm in diameter)

Contraindications

1. Gross haematuria
2. Evidence of urethral injury
3. Urethral pain or discomfort
4. Patient refusal

#### Complications

1. Injury to urethra
2. Urinary tract infections
3. Pain and discomfort
4. Paraphimosis
5. Urine leakage
6. Catheter obstruction.

#### Equipment:

- Catheterization tray consists of disposable sterile gloves, (sterile gown)
- one fenestrated drape,
- lubricant, (label as 2% lignocaine)
- cotton balls with container,
- artery forceps (2),
- prefilled 10ml syringe with sterile water to inflate the balloon,
- sterile specimen container for urine sample collection;
- sterile catheter of appropriate size, latex (rubber) or silicone:
- chlorhexidine 2% aqueous solution,
- Sterile water 10cc,
- catheter-secure device or adhesive tape,
- urinary drainage bag.

#### Case Scenario:

1. 65 year old patient with history of BPH, presents to the ED with complaints of severe lower abdominal pain and unable to pass urine for past 6 hours. On palpation, you feel a distended bladder with lower abdomen tenderness. Despite non-invasive management, patient is still unable to void urine. You are the intern on duty and is asked to manage the patient.
2. 46 year old woman admitted to post surgical ward after hysterectomy, foleys was removed 6 hours ago, patient now complaints of lower abdominal pain and inability to pass urine.

#### Steps –

Preparation:

1. Doctor introduces self to the patient, takes a brief history and discuss the procedure.
2. Informed consent is taken from the patient.
3. Instructs the nurse/attendant to ensure that equipment is made available.

Procedure:

- Ensure that personal protective equipment is donned.
- Place the patient in the supine position with legs extended and flat on the bed.
- Clean the surrounding area (lower abdomen, inner thigh and perineum)
- Prepare the catheterization tray and catheter and drape the patient appropriately using the sterile drapes provided. Place the fenestrated (drape with hole) drape over the penis.
- With your non-dominant hand, grasp the penis just below the glans using a sterile gauze and hold upright. If the patient is uncircumcised, retract the foreskin.
- With your dominant hand, cleanse the glans using chlorhexidine-soaked cotton balls.
- Use each cotton ball for a single circular motion from meatus outward.
- Change the gloves before the next step
- Push 5ml of water-soluble aesthetic lubricant through the meatal tip.
- Apply water-soluble lubricant to the catheter tip.
- With your non-dominant hand, gently straighten and stretch the penis. Lift it to an angle of 60-90 degrees.
- With your dominant hand, insert the lubricated tip of the catheter into the urinary meatus.
- Continue to advance the catheter ensuring that catheter is not touching any unsterile area, completely to the bifurcation i.e., until only the inflation and drainage ports are exposed and urine flows (this is to ensure proper placement of the catheter in the bladder and prevent urethral injuries and haematuria that result when the Foley catheter balloon is inflated in the urethra).
- Place the drainage basin containing the catheter on or next to the thighs.
- Note: If resistance is met during advancement of the catheter, pause for 10-20 seconds. Instruct the patient to breathe deeply and evenly. Apply gentle pressure as the patient exhales.
- If you still meet resistance, stop the procedure, and repeat above steps with a smaller size.
- Before inflating the balloon, ensure that urine is draining through drain port.
- Attach the syringe to the inflation port with the sterile water and inflate the balloon. It is recommended to inflate the 10cc balloon with 10cc of sterile water. Improperly inflated balloons can cause drainage and leakage difficulties.
- Gently pull back on the catheter until the balloon engages the bladder neck.

- Attach the urinary drainage bag and position it below the bladder level. Secure the catheter to the thigh. Avoid applying tension to the catheter.
- Remove drapes and cover patient. Ensure drainage bag is attached to bed frame. Remove your gloves and wash hands.
- Note: Never inflate a balloon before establishing that the catheter is in the bladder and not just in the urethra. If the patient reports discomfort, withdraw the fluid from the balloon and advance the catheter a little further, then re-inflate the balloon.
- Replace the foreskin at the end of the procedure.

#### Steps in female catheterization

- Place the patient in the supine position with the knees flexed and separated and feet flat on the bed, about 60 cm apart. If this position is uncomfortable, instruct the patient either to flex only one knee and keep the other leg flat on the bed, or to spread her legs as far apart as possible. A lateral position may also be used for elderly or disabled patients.
- Clean the surrounding area (lower abdomen, inner thigh and perineum)
- Drape the patient appropriately using the sterile drapes provided.
- With the thumb, middle and index fingers of the non-dominant hand, separate the labia majora and labia minora. Pull slightly upward to locate the urinary meatus. Maintain this position to avoid contamination during the procedure.
- With your dominant hand, cleanse the urinary meatus, using forceps and chlorhexidine-soaked cotton balls. Use each cotton ball for a single downward stroke only.
- Place the drainage basin containing the catheter between the patient's thighs.
- Change the gloves before the next step
- Pick up the catheter with your dominant hand.
- Insert the lubricated tip of the catheter into the urinary meatus.
- Advance the catheter about 5-6 cm, until urine begins to flow, then advance the catheter a further 1-2 cm.
- Note: If the catheter slips into the vagina, leave it there to assist as a landmark. With another lubricated sterile catheter, insert into the urinary meatus until you get urine back. Remove the catheter left in the vagina at this time.
- Attach the syringe with the sterile water and inflate the balloon. It is recommended to inflate the balloon with 10cc of sterile water.
- If resistance is met during advancement of the catheter, pause for 10-20 seconds. Instruct the patient to breathe deeply and evenly. Apply gentle pressure as the patient exhales.
- Improperly inflated balloons can cause drainage and leakage difficulties.

- Gently pull back on the catheter until the balloon engages the bladder neck.
  - Attach the urinary drainage bag and position it below the bladder level. Secure the catheter to the thigh. Avoid applying tension to the catheter.
  - Remove drapes and cover patient. Ensure drainage bag is attached to bed frame.
- Remove your gloves and wash hands.

### Observation Guide

#### Assessment

#### OSCE checklist

Sl No	Steps of Procedure	Completion	Remarks
1	Review the patient and confirm		
2	Self-introduction		
3	Informed consent		
4	Setting up the equipment		
5	Washing and donning PPE		
6	Positioning the patient		
7	Draping and cleaning the area		
8	Applying anaesthetic lubricant into the meatus & catheter tip		
9	Holding the shaft of penis 60-90 degrees before insertion		
10	Insert the catheter up to the bifurcation (in males)/ Insert the catheter up to 5-6 cms (in females)		
11	Look for urine drainage		
12	Inflate the bulb with 10cc of sterile water after urine drains		
13	Connect the catheter with urinary bag		
14	Replace the foreskin in males		
15	Fixing the catheter to the thighs		
15	Safe disposal of all waste in appropriate containers		
17	Communicating with patient for their compliance		
18	Documentation		

### **Suggested Reading**

- i. Robert and Hedges Clinical Procedures in Emergency medicine and Acute care
- ii. NMC Skill Module.

**STANDARDIZED PATIENT**  
**(MED 6)**



## STANDARDIZED PATIENT

**Skill:** To assess/ demonstrate clinical skills/ disease condition

**Competency:** Phase II, Phase III

**Level:** Shows how

**Objectives:** By the completion of this module, the student should be able to:

1. Elicit the clinical skill/ identification of the disease condition.
2. Learn the basic etiquette of patient interaction

**Background Knowledge:** The cognitive part of the relevant clinical skill/ disease condition

### Equipment

1. Standardised patient with or without moulages
2. Relevant equipment for skill demonstration
3. Room with adequate privacy for the standardised patient
4. Training of standardised patient
5. Preparation of Standardised patient
  - a. Inform regarding the clinical history including the chief complaints & opening statement.
  - b. Scripted response to anticipated questions relevant to the clinical scenario.
  - c. Appropriate clinical response to the skill being elicited/ disease condition.

### Case scenario:

Appropriate case scenario depending on the skill being taught.

### Steps:

1. Approach the patient after taking precautions as per HIC policy.
2. Self-introduction of the learner.
3. Consent for examination and history taking.
4. Ensure adequate privacy and comfort for the patient.
5. Sequential steps relevant to attaining the objective.
6. Thanking the patient and closure communication.
7. Ensuring that privacy of patient is maintained after the examination.
8. Disposal of waste as per the HIC policy.
9. Hand washing

**Assessment:**

SI No	Skill	Completion	Remarks
1	Approach the patient after taking precautions as per HIC policy.		
2	Self-introduction of the learner.		
3	Consent for examination and history taking.		
4	Ensure adequate privacy and comfort for the patient.		
5	Sequential steps relevant to attaining the objective.		
6	Thanking the patient and closure communication.		
7	Ensuring that privacy of patient is maintained after the examination.		
8	Disposal of waste as per the HIC policy.		
9	Hand washing		

**Suggested Reading;**

- i. [https://www.kumc.edu/documents/ome/neis/SP\\_Handbook.pdf](https://www.kumc.edu/documents/ome/neis/SP_Handbook.pdf)
- ii. <https://www.ncbi.nlm.nih.gov/books/NBK558997/>

# **GENERAL SURGERY**



**INTRAMUSCULAR INJECTION**  
**(SUR 1)**



## INTRAMUSCULAR INJECTION

### Skill:

Intramuscular Injections

### Competency:

Phase 3 - IM1.30 Administer an intramuscular injection with an appropriate explanation to the patient.

### Objective:

At the end of the session the student should be able to:

- 1) Identify the safe anatomical landmarks for intramuscular injection.
- 2) Describe the technique of intramuscular injections.
- 3) Summarize the potential complications of intramuscular injection.

### Background Knowledge

Intramuscular injection (IM) is installing medications into the depth of specifically selected muscles. The bulky muscles have good vascularity, and therefore the injected drug quickly reaches the systemic circulation and thereafter into the specific region of action, bypassing the first-pass metabolism. It is one of the most common medical procedures to be performed frequently. Drugs may be given intramuscularly both for prophylactic (around 5% for immunization) as well as curative purposes (accounting for more than 95% of IM injections). The most common medications given by IM route include:

Antibiotics- penicillin G, benzathine penicillin, streptomycin

Biologicals- immunoglobins, vaccines, and toxoids

Hormonal agents- testosterone, medroxyprogesterone

Any non-irritant and soluble drugs may be given IM during an emergency scenario.

### Anatomical Landmarks

There are specific landmarks to be considered while giving IM injections to avoid any neurovascular complications. The specific landmarks for the most used sites are discussed below.

Gluteal region

- 1) Upper outer quadrant within the buttocks  
5 to 7.5 cm below the iliac crest
- 2) The heel of the opposing hand is placed in the greater trochanter, the index finger in the anterior superior iliac spine, and the middle finger below the iliac crest - the drug is injected into the triangle formed by the index, middle finger, and the iliac crest.

Vastus lateralis: The middle third of the line joining the greater trochanter of the femur and the lateral femoral condyle of the knee.

Deltoid : 2.5 to 5 cm below the acromion process.

**Indications**

IM for therapeutic purposes is indicated for the following patients:

- Noncompliant
- Uncooperative
- Reluctant
- Unable to receive drugs through other common routes
- Does not tolerate oral medications
- Oral preparation not available

**Contraindications**

- Active infection, cellulitis, or dermatitis at the site of administration.
- Known allergy or hypersensitivity to the drug.
- Thrombocytopenia.
- Coagulation defects.
- Hypovolemic shock - the drug's absorption may be hampered due to compromised vascularity of the muscle.
- Myopathies.
- Associated muscular atrophy - leads to delayed drug absorption and increases the risk of neurovascular complications.

**Equipment:**

- 1) Mannequin
- 2) Dry Cotton Swab
- 3) Alcohol based antiseptic solution
- 4) An appropriately sized syringe with a correct needle length  
(For infants, vastus lateralis, 22 and 25 mm during 'bunching,' 16-mm needle while stretching the skin  
For toddlers and older children, deltoid, or VL, is preferred, 25mm to 38 mm)
- 5) ampoule
- 6) Ampoule breaker
- 7) Gloves
- 8) Self-adhesive bandage
- 9) The safe needle and waste disposal unit

**Case Scenario:**

- 1) A 30 year old male presented to casualty with history of trauma with contaminated rusty iron piece on foot.

- 2) A 40 year old male was given an intragluteal IM injection. As the medical practitioner inserted the needle into muscle, he experienced sudden, sharp pain and discomfort. The injection site began to bleed, and he felt a warm sensation spreading around the injection site. The provider quickly removed the needle and examined the area. It was evident that the needle had accidentally struck a blood vessel, causing a hematoma (collection of blood) to form in the muscle tissue.

### Steps

Counseling the patient

Consent

Choose an appropriate site for injection : Infants-vastus lateralis

Children-vastus lateralis and deltoid

Adults-gluteal and deltoid

### Technique

Preparation:

- The healthcare provider verifies Patient identity, checks her medical history, and ensures that he/she has no known allergies or contraindications to the medication.
- The provider washes their hands thoroughly and puts on disposable gloves to maintain aseptic technique.
- The provider gathers the necessary supplies: a syringe, a vial of the prescribed medication, an alcohol swab, a cotton ball or gauze pad, and a sharps disposal container.

Positioning:

- Patient is asked to sit comfortably on an examination table with her left shoulder exposed.
- He/she is instructed to relax arm and shoulder muscles to make the injection site more accessible.

Site Preparation:

- The healthcare provider selects the appropriate injection site on patient .

Cleaning:

- The provider cleans the selected injection site with an alcohol swab, starting from the center and moving outward in a circular motion. This ensures that the area is free from any potential contaminants.

Needle Insertion:

- The provider holds the syringe with their dominant hand and uses their non-dominant hand to stretch the skin slightly at the injection site to create a taut surface.
- The needle is inserted quickly and at a 90-degree angle into the muscle.

- The provider aspirates by pulling back on the plunger slightly to check for blood. If blood enters the syringe, the needle may be in a blood vessel, and the injection should not proceed. If no blood is aspirated, the medication is slowly injected into the muscle.

#### Removal of Needle:

- After the medication is injected, the provider removes the needle swiftly and applies gentle pressure to the injection site with a cotton ball or gauze pad.

#### Disposal:

- The used needle and syringe are placed into a sharp's disposal container for safe disposal.

#### Post-Injection Care:

- Patient is instructed to move the left shoulder gently to disperse the medication within the muscle.
- The healthcare provider monitors patient for any immediate adverse reactions.

#### Documentation:

- The details of the injection, including the medication, dosage, date, and location, are documented in patient medical records.

#### Follow-Up:

- Patient is advised on any potential side effects or symptoms to watch for and is scheduled for a follow-up appointment to assess the progress.

### **Complications**

- Persistent pain at the site of injection
- Abscess at the injection site
- Nerve injury -the sciatic nerve in gluteal injection, the femoral nerve in vastus lateralis injection, the superior gluteal nerve in dorsogluteal injection, radial nerve in deltoid injection
- Transmission of HIV, hepatitis virus
- Inadvertent injection of glass particles while using glass vials and ampoules.
- Vascular injury

## Assessment

### Check list

- 1) Whether the patient's identity, medical history and consent taken
- 2) Whether hands washed and worn gloves
- 3) Whether the injection site is exposed and privacy maintained
- 4) Whether appropriate injection site based on the patient's condition and physician's orders chosen
- 5) Site Preparation
- 6) Needle insertion and removal
- 7) Post injection care
- 8) Patient education
- 9) Documentation

### **Suggested Reading**

- i. **Ağaç E, Güneş UY** (2011) Effect on pain of changing the needle prior to administering medicines intramuscularly: a randomized controlled trial. *Journal of Advanced Nursing*; 67: 3, 563-568.
- ii. **Dougherty L, Lister S** (2015) *The Royal Marsden Hospital Manual of Clinical Nursing Procedures*. Oxford: Wiley-Blackwell.
- iii. **Greenway K** (2014) Rituals in nursing: intramuscular injection. *Journal of Clinical Nursing*; 23: 23-24, 3583-3588. **Nursing2019 Drug Handbook** by Lippincott.
- iv. [https://www.rch.org.au/rchcpg/hospital\\_clinical\\_guideline\\_index/Intramuscular\\_Injections/](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Intramuscular_Injections/)
- v. **Centers for Disease Control and Prevention (CDC) - Vaccine Administration:** <https://www.cdc.gov/vaccines/hcp/admin/index.html>



**INTRAVENOUS INJECTION**  
**(SUR 2)**



## INTRAVENOUS INJECTION

### **Skill:**

Intravenous Injections

### **Competency:**

Phase 3 - IM10.21 Describe and discuss the indications for and insert a peripheral intravenous catheter

### **Objective:**

At the end of the session the student should be able to:

1. Know some of the indications and contraindications for starting a peripheral IV.
2. Be able to demonstrate the technique for establishing a peripheral IV on a model.

### **Background Knowledge**

By starting a peripheral IV line, we are gaining access to the peripheral circulation of a patient which will enable to sample blood as well as infuse fluids and IV medications. IV access is essential to manage problems in critically ill patients. High volume fluid resuscitation may be required for the trauma patient, in which case large bore (#16) IV catheters are usually inserted. The patient with cardiac ischemia is at risk for numerous complications such as arrhythmias, a peripheral IV is usually started in anticipation of problems.

### **Anatomical Landmarks**

- Generally, IV lines are started at the most peripheral site that is available and appropriate for the situation. This allows cannulation of a more proximal site if your attempt fails. If you puncture a proximal vein first, and then try to start an IV distal to the site, the fluid may leak from the injured proximal vessel.
- The veins on the dorsum of the hand are selected most commonly because they are easily accessible. If unable to start an IV on the dorsum of the hand the next preferred site is the veins of the forearm and then the median cubital vein that crosses the antecubital fossa.
- In trauma patients it is common to go directly to the median cubital vein as the first choice because it will accommodate a large bore IV and it is generally easy to catheterize.
- In circumstances where the veins of the upper extremities are inaccessible, the veins of the dorsum of the foot or the saphenous vein of the lower leg can be used.
- In circumstances where no peripheral IV access is possible a central IV can be started. Central IV lines are beyond the scope of this module and so will not be discussed further.

## Contraindications

- Some patients have anatomy that poses a risk for fluid extravasation or inadequate flow and peripheral IVs should be avoided in these situations. Examples include extremities that have massive edema, burns or injury.
- For the patient with severe abdominal trauma, it is preferable to start the IV in an upper extremity because of the potential for injury to vessels between the lower extremities and the heart.
- For the patient with cellulitis of an extremity, the area of infection should be avoided when starting an IV because of the risk of inoculating the circulation with bacteria.
- Extremities on the side of a mastectomy or that have an indwelling fistula should be avoided because of concerns about adequate flow.

## Complications

- **Infection:** Infection is one of the most significant concerns with IV cannulation. It can occur at the insertion site or travel through the bloodstream. Signs of infection include redness, swelling, warmth, tenderness, and discharge at the insertion site, as well as fever, chills, and malaise.
- **Phlebitis:** Phlebitis is inflammation of the vein and is characterized by redness, pain, and swelling along the vein. It can be caused by irritation from the IV catheter, the type of solution being infused, or inadequate flushing of the catheter.
- **Extravasation:** Extravasation is a severe form of infiltration in which vesicant medications (those that can cause tissue damage) leak into the surrounding tissue. This can result in significant tissue damage, ulceration, and scarring.
- **Thrombophlebitis:** Thrombophlebitis is the inflammation of a vein with the formation of a blood clot (thrombus).
- **Catheter-Related Bloodstream Infection (CRBSI):** This is a serious complication in which bacteria enter the bloodstream through the IV catheter. It can lead to sepsis and other life-threatening conditions.
- **Air Embolism:** Air can enter the bloodstream if the IV tubing or syringe contains air bubbles. Large air embolisms can block blood flow and cause severe respiratory and cardiovascular distress.
- **Hematoma:** Hematomas can occur if there is bleeding at the insertion site. They appear as a localized swelling filled with blood and may be painful.
- **Mechanical Complications:** These include dislodgement of the catheter, kinking of the tubing, or obstruction of the catheter tip, which can affect the flow of fluids or medications.

**Equipment:**

- 1) Mannequin
- 2) Dry Cotton Swab
- 3) Alcohol based antiseptic solution
- 4) IV Catheters
- 5) IV Tubing and Solutions
- 6) Tourniquet:
- 7) Sterile Gloves
- 8) Adhesive Dressings:
- 9) Gauze Pads or Cotton Balls:
- 10) IV Pole.
- 11) The safe needle and waste disposal unit
- 12) Documentation Tools: - Pens, paper, or electronic devices for recording the procedure and vital information.

**Case Scenario:**

A 30 year old male presented to casualty with history of trauma to abdomen. His PR is 120/mt and BP 80/60. His airway is secured and breathing normal. How will you proceed further?

**Steps****1. Hand Hygiene:**

- Wash your hands thoroughly with soap and water or use hand sanitizer to maintain proper hand hygiene.

**2. Patient Assessment:**

- Assess the patient's medical history, allergies, and any contraindications for the procedure.
- Explain the procedure to the patient, addressing any questions or concerns.

**3. Select the IV Site:**

- Choose an appropriate vein for cannulation based on the patient's condition, the type of treatment, and the patient's comfort.
- Common sites include the forearm, hand, wrist, or antecubital fossa.

**4. Positioning:**

- Place the patient in a comfortable position with the chosen arm extended and supported.

**5. Apply Tourniquet:**

- Apply a tourniquet proximal to the selected site to constrict the veins, making them easier to visualize and access.

**6. Prepare the Site:**

- Cleanse the selected site with an alcohol swab using circular motion, starting from the center, and moving outward.
- Allow the site to air dry or use a sterile gauze pad to dry it, maintaining aseptic technique.

7. Don Sterile Gloves:

- Put on sterile gloves to reduce the risk of contamination during the procedure.

8. Insert the IV Catheter:

- Hold the catheter with the dominant hand and create a 15-30 degree angle to the skin.
- With the non-dominant hand, stabilize the vein proximal to the insertion site.
- Insert the catheter into the vein using a quick, smooth motion.
- Observe for a "flashback" of blood in the catheter's flashback chamber, indicating that the catheter is in the vein.
- Advance the catheter slightly further into the vein and withdraw the needle.
- Maintain pressure on the vein with a finger to prevent blood leakage.

9. Secure the Catheter: - Hold the catheter hub in place with the non-dominant hand. - Slide the protective sheath over the catheter to secure it. - Connect the IV tubing to the catheter hub and secure it in place.

10. Remove the Tourniquet: - Release the tourniquet to allow blood flow to resume.

11. Flush and Connect the IV Bag: - Flush the IV tubing to remove air and ensure proper flow. - Connect the IV bag to the tubing and initiate the flow rate as prescribed.

12. Secure the Site: - Apply an adhesive dressing to secure the catheter and IV tubing in place. - Label the dressing with the date, time, and your initials.

13. Monitor and Document: - Continuously monitor the IV site for signs of infiltration or infection. - Document the procedure, including the catheter size, site, date, time, and any patient reactions or complications.

14. Patient Education: - Educate the patient on the importance of keeping the IV site clean and dry. - Provide instructions on what to report, such as signs of infection or discomfort.

15. Dispose of Equipment: - Dispose of used needles and other sharps in an appropriate sharp's container. - Dispose of any contaminated materials properly.

### **Assessment**

#### Check list

- a. Whether the patient's identity, medical history and consent taken
- b. Whether hands washed and worn gloves
- c. Whether the injection site is exposed and privacy maintained
- d. Whether appropriate injection site based on the patient's condition and physician's orders chosen
- e. Site preparation
- f. Needle insertion and removal
- g. Post injection care
- h. Patient education
- i. Documentation

**Suggested Reading**

- i. "Nursing2019 Drug Handbook" by Lippincott.
- ii. Arbaee, I. (2016). Nurses knowledge and practice towards care and maintenance of. *Qualitative Research*, 1(3), 385–405oudra, B. G. , Galvin, E. , Singh, P. M. , & Lions, J. (2014).
- iii. Effect of site selection on pain of intravenous cannula insertion: A prospective randomised study. *Indian Journal of Anaesthesia*, 58(6), 732 10.4103/0019-5049.147166
- iv. Lavery, I. (2011). Intravenous therapy: Preparation and administration of IV medicines. *British Journal of Nursing*, 20(4), S28–S34. 10.12968/bjon.2011.20.4.S28



**SUBCUTANEOUS INJECTIONS**  
**(SUR 3)**



## SUBCUTANEOUS INJECTIONS

### Skill:

Subcutaneous Injections

### Competency:

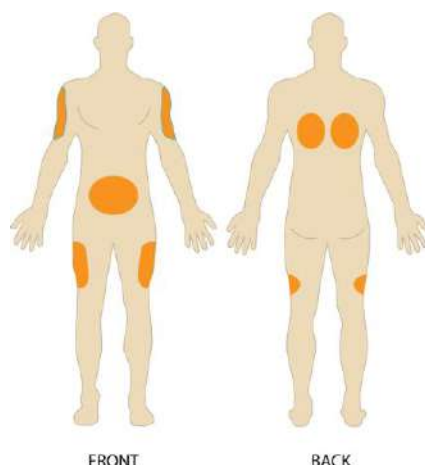
### Objective:

At the end of the session the student should be able to:

- To administer a subcutaneous injection

### Background Knowledge

Subcutaneous (SC) injections are administered into the adipose tissue layer just below the epidermis and dermis. This tissue has few blood vessels, so drugs administered by this route have a slow, sustained rate of absorption. Sites for SC injections include the outer aspect of the upper arm, the abdomen (from below the costal margin to the iliac crest) within one inch of the belly button, anterior aspects of the thighs, upper back, and upper ventral gluteal area. Choose a site that is free of skin lesions and bony prominences. Site rotation prevents the formation of lipohypertrophy or lipoatrophy in the skin. Examples of subcutaneous medications include insulin, opioids, heparin, epinephrine, and allergy medication



### Contraindications

- Any condition that impairs that blood flow to the subcutaneous tissue contradicts the use of subcutaneous injections

### Safety Considerations:

- Do not aspirate (pull back on the plunger) after injection.
- Review lab values and assessment data prior to injection.
- Avoid sites that are bruised, tender, hard, or swollen.
- Be vigilant when preparing and administering high-alert medications.

**Equipment:**

- a) Mannequin
- b) Dry Cotton Swab
- c) Alcohol based antiseptic solution
- d) Insulin syringe
- e) Sterile Gloves
- f) Adhesive Dressings:
- g) Gauze Pads or Cotton Balls
- h) The safe needle and waste disposal unit
- i) Documentation Tools: - Pens, paper, or electronic devices for recording the procedure and vital information.

**Case Scenario:**

Robert is a 60-year-old male with a history of hypertension and Type 2 diabetes. He has been prescribed a new medication, an insulin analog, to help manage his blood sugar levels. The healthcare provider has determined that Robert requires subcutaneous injections of insulin to maintain better control of his diabetes.

**Steps**

## 1. Hand Hygiene:

- Wash your hands thoroughly with soap and water or use hand sanitizer to maintain proper hand hygiene.

## 2. Patient Assessment:

- Assess the patient's medical history, allergies, and any contraindications for the procedure.
- Explain the procedure to the patient, addressing any questions or concerns.

## 3. Select the site:

## 4. Positioning:

- Place the patient in a comfortable position

## 6. Prepare the site:

- Cleanse the selected site with an alcohol swab using circular motion, starting from the centre, and moving outward.
- Allow the site to air dry or use a sterile gauze pad to dry it, maintaining aseptic technique.

## 7. Don Sterile Gloves:

- Put on sterile gloves to reduce the risk of contamination during the procedure.

8. To administer an SC injection, a 25 to 30 gauge, 3/8 in. to 5/8 in. needle is used. Some subcutaneous injections come prefilled with the syringe attached. Always confirm that the right-size needle is appropriate for the patient before use. Subcutaneous injections are usually given at a 45- to 90-degree angle. The angle is based on the amount of subcutaneous tissue present. Generally, give shorter needles at a 90-degree angle and longer needles at a 45-degree angle. SC injections do not need to be aspirated

as the likelihood of injecting into a blood vessel is small. Usually, no more than 1 ml of medication is given subcutaneously, as larger amounts may cause discomfort to the patient and may not be absorbed appropriately.

There are varying opinions on whether to pinch the skin during administration. Pinching is advised for thinner patients in order to lift the adipose tissue up and away from the underlying muscle and tissue. If pinching is used, release the pinch when the needle is inserted to avoid injecting into compressed tissue. Note, too, that elevating or pinching the skin has been found to increase the risk of injury, as the needle may pierce the opposite side of the skin fold and enter the skin of the health care worker. The abdomen is the best location for an SC injection if a patient has little peripheral SC tissue. If patient is obese, use a needle that is long enough to insert through the tissue at the base of the skin fold.

13. Monitor and Document: - Continuously monitor the site for signs of infiltration or infection. - Document the procedure, including the dose, date, time, and any patient reactions or complications.

14. Patient Education: - Educate the patient on the importance of keeping the site clean and dry. - Provide instructions on what to report, such as signs of infection or discomfort.

15. Dispose of Equipment: - Dispose of used needles and other sharps in an appropriate sharp's container. - Dispose of any contaminated materials properly.

### **Assessment**

#### Check list

- a) Whether the patient's identity, medical history and consent taken
- b) Whether hands washed and worn gloves
- c) Whether the injection site is exposed and privacy maintained
- d) Whether appropriate injection site based on the patient's condition and physician's orders chosen
- e) **Site Preparation**
- f) **Needle insertion and removal**
- g) **Post injection care**
- h) **Patient education**
- i) **Documentation**

### **Suggested Reading**

- i. **"Nursing2019 Drug Handbook" by Lippincott.**
- ii. Clinical Procedures for Safer Patient Care Authors: Glynda Rees Doyle and Jodie Anita McCutcheon



**SUTURING A WOUND**  
**(SUR 4)**



# SUTURING A WOUND

## – SIMPLE SUTURES

### **Skill:**

Suturing a wound using simple sutures

### **Relevant competencies:**

Phase III Part 2

- SU14.3 Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots, and needles).
- SU14.4 Demonstrate the techniques of asepsis and suturing in a simulated environment
- Regulations on Graduate Medical Education, Part II, 2019 - Table 11: Certifiable Procedural Skills: General Surgery: Basic suturing

### *Objectives:*

By the completion of this module, the student will be able to suture a wound by simple suture in a simulated environment.

- Suggested Teaching Learning Method: DOAP sessions

### *Background Knowledge:*

Knowledge about normal wound healing and factors affecting healing,

History taking in a patient presenting with wounds.

Differentiate the various types of wounds, plan and observe management of wounds.

Medico-legal aspects of wounds.

Knowledge about different suture materials, advantages, disadvantages, and selection of appropriate suture material.

Wound cleaning and administration of local anaesthesia.

### *Equipment:*

Suturing task training models / part mannequins.

Appropriate Suture material like 2-zero nylon/silk with atraumatic reverse cutting needle.

Suturing instruments – Thumb forceps, Needle holder and scissors.

Sterile gloves, gown, surgical hand scrub, antiseptic solution, local anaesthetic solution 1%

Lignocaine.

### Case Scenario

An 18-year old boy is brought to the emergency department with alleged history of slip and fall at home 4 hours back. On examination vitals stable, systemic examination within normal limits. Local examination of the upper limb shows a 3 X 0.5 cm incised wound over the right forearm without active bleeding. No distal neurovascular deficit. No other injuries noted. X-ray of forearm does not show any bony injury.

	<u>Steps for simple suturing: preparation, procedure</u>
1	Explain to patient or relatives regarding need of procedure and record informed consent.
2	Wear well-fitting surgical gloves. Clean the wound and surroundings with appropriate antiseptic solution and maintain asepsis during procedure.
3	Local anaesthesia is given / tested/ confirmed
4	Hold the toothed forceps with non-dominant hand to grasp the skin edge 5mm from margin.
5	Hold a needle holder in dominant hand by partially inserting the thumb and ring finger into the loops of the handle
6	Needle grasped at its centre or 50 – 60 % back from pointed end.
7	The needle grasped 1-2 mm from the tip of needle holder.
8	Placement of the 1 <sup>st</sup> suture is begun by grasping the skin edge, slightly everting and needle entering perpendicular from outside -in 1 cm from the edge of the wound.
9	The needle is re-grasped with forceps after being driven through the full thickness of the skin from outside in.
10	Same technique is followed on the other skin edge exactly opposite to the previous bite from inside out.
11	The suture material is drawn through the skin leaving 2-3 cm protruding from the skin surface.
12	The long strand is wrapped around needle holder twice in clockwise direction to form loop for throw.
13	The short strand is grasped and pulled through the loop to form a square knot, just tight enough to approximate the wound edges [surgeon's knot]
14	The second throw of the square knot is initiated with the long strand wrapped around the needle holder once in anticlockwise direction
15	Hold the short end with the needle holder and pull the strand out to make a knot and tightened securely over the first knot [safety knot].

16	The suture material is cut with scissor 1 – 2 cm away from the knot.
17	The procedure is repeated 1.5 cm away.
18	Wound is cleaned, local antibiotic ointment/ cream is applied and proper dressing is given
19	Postoperative care is explained to the patient
20	<u>Steps for vertical mattress suturing- procedure</u> Before tying the knot in simple suturing, re-load the needle facing the opposite direction. to throw another suture across the wound directly above the original throw, taking smaller bites of the skin edge (5mm) to evert the wound edges. Need to bring suture back to the side of original entry so that the knot can be made away from the wound.
21	Lift the skin with the forceps, and pierce the skin surface with the needle perpendicular to the skin. Because needle is loaded facing away, need to pronate the wrist so that the needle passes through the epidermo-dermal junction and rises out of the wound
22	Use forceps to hold the needle whilst the needle holder is released.
23	Re-grasp the needle in the same place with needle holder.
24	Lift the opposing skin edge (5mm) with forceps. Pass the needle perpendicular through the epidermo-dermal junction from inside to outside. Use the curvature of the needle and pronate wrist to move the needle through the skin back to where it started
25	Put the surgeon's and safety knots as in simple suturing

### Observation Guide

#### checklist.

	<b>Steps for simple suturing:</b> preparation, procedure	Performed Correct / Not correct	Remarks
1	Explain to patient or relatives regarding need of procedure and record informed consent.		
2	Clean the wound and surroundings with appropriate antiseptic solution and maintain asepsis during procedure. Wear well-fitting surgical glove.		
3	Local or general anaesthesia is given / tested/ confirmed		
4	Hold the toothed forceps with non-dominant hand to grasp the skin edge 5mm from margin. If necessary, debride edge		
5	Hold a needle holder in dominant hand by partially inserting the thumb and ring finger into the loops of the handle		

6	Needle grasped at its Centre or 50 – 60 % back from pointed end.		
7	The needle grasped 1-2 mm from the tip of needle holder.		
8	Placement of the 1 <sup>st</sup> suture is begun by grasping the skin edge, slightly everting and needle entering perpendicular from outside-in 1 cm from the edge of the wound.		
9	The needle is re-grasped with forceps after being driven through the full thickness of the skin from outside in.		
10	Same technique is followed on the other skin edge exactly opposite to the previous bite from inside out.		
11	The suture material is drawn through the skin leaving 2-3 cm protruding from the skin surface.		
12	The long strand is wrapped around needle holder twice in clockwise direction to form loop for throw.		
13	The short strand is grasped and pulled through the loop to form a square knot, just tight enough to approximate the wound edges [surgeon's knot]		
14	The second throw of the square knot is initiated with the long strand warped around the needle holder once in anticlockwise direction		
15	Hold the short end with the needle holder and pull the strand out to make a knot and tightened securely over the first knot [safety knot].		
16	The suture material is cut with a scissor 1 – 2 cm away from the knot.		
17	The procedure is repeated 1.5 cm away.		
18	The wound is cleaned, local antibiotic ointment/ cream is applied and proper dressing is given.		
19	Patient is explained about postoperative care.		

**Assessment:**

OSCE stations, where observer or their group members can observe with the check list.

**Reznick Global Rating Scale**

Please rate the candidate's performance on the following scale					
Respect for tissue	1	2	3	4	5
	Frequently used unnecessary force on tissues or caused damage by inappropriate instrument use		Careful handling of tissue but occasional inadvertent damage		Consistently handled tissues appropriately with minimal damage
Time in motion	1	2	3	4	5
	Many unnecessary moves		Efficient time and motion, unnecessary moves		Clear economy of movement efficiency
Instrument handling	1	2	3	4	5
	Repeatedly makes tentative or awkward moves with instrument		Competent use of instruments, but awkward		Fluid movements
Suture training	1	2	3	4	5
	Awkward and unsure with poor knot tying and inability to maintain tension		Competent suturing with good knot placement and appropriate tension		Excellent suture control with correct suture placement tension
Flow of operation	1	2	3	4	5
	Frequently stopped operating seemed unsure of next move		Demonstrated some forward planning reasonable progression of procedure		Obviously planned operation
Knowledge of procedure	1	2	3	4	5
	Inefficient knowledge of procedure. looked unsure and hesitant		Knew all important steps of procedure		Demonstrated familiarity of all steps of procedure
Final product	1	2	3	4	5
	Final product of unacceptable quality		Final product of average quality		Final product of superior quality
Overall performance	1	2	3	4	5
	Very poor		competent		Very good

Maximum total score (40)

Total score ( )

Overall, on this task, should the candidate: Remedial Pass

**Note:** Apart from the Psychomotor skill, the module can be further expanded to include communication skill (counselling, obtaining consent) and attitude (respond to the patient's concerns, inform the patient of your findings, and conclude). This can be done either with check lists or by using global ratings.

*Suggested Reading*

- i. Pye's surgical handcraft*
- ii. University of Glasgow: suturing procedures guidance*
- iii. Duke university suturing techniques course video*
- iv. NMC skills training module for UG medical education program 2019*

**TRAUMA**  
**(SUR 5)**



# TRAUMA

**Competency** –\_Early trauma assessment and management

**Objective**

By the end of this schedule, Phase III Part II student should be able to:

- 1.) Perform Primary Survey and management.
- 2.) Perform brief history taking and detailed Secondary Survey.

**Background Knowledge –**

Airway (SU 17.2, SU17.10)

Oral suctioning and foreign body removal

Manual Inline Neck Stabilisation

Cervical collar

Airway manoeuvres – Jaw thrust

Airway adjuncts – OPA, NPA

Endotracheal intubation

Surgical airways – Needle Cricothyroidotomy, Surgical Cricothyroidotomy, Tracheostomy

Breathing (SU17.8, 17.9)

Three sided bandaging

Triangle of safety

Needle Thoracostomy

Tube Thoracostomy

Circulation (SU2.1, SU2.2, SU3.1, SU 3.2, SU17.8, SU17.9)

Shock – Hypovolemic shock, Obstructive shock, Neurogenic shock.

Fluid resuscitation.

Pelvic binder.

Splinting.

Disability (SU17.5, SU17.6)

GCS

Pupil – Size, Reaction

Disability

Exposure (SU17.2, SU17.5)

Prevention of hypothermia

Log roll movement

Spine examination

**Equipment:**During patient receipt

Stethoscope  
Sphygmomanometer  
Pulse Oximeter  
ECG Machine/ Multipara monitor  
Defibrillator  
16/18 G iv canula  
Ringer Lactate fluid  
Yankauer Suction tube  
Torch  
Gloves  
Scissors

For Airway Management and Neck stabilisation

Helmet with chin strap  
Philadelphia collar  
Oxygen mask, Bag-valve mask device  
Oropharyngeal Airway  
Nasopharyngeal Airway  
Endotracheal tube  
Tracheostomy tube  
No 11, 15 surgical knives with BP Handle

For Breathing management

16 G Canula  
Needle decompression kit  
Chest tube insertion kit  
28/32F ICD TUBE  
Underwater seal apparatus

For Circulation management

16/18 G IV CANULA  
Ringer lactate fluid  
Blood products  
Tranexamic acid  
Tourniquet  
Gauze and compression bandage  
Pelvic binder  
SPLINT – Thomas splint

For Disability management

Torch

Disposable gloves

For Exposure

Blankets

Spine board

**Case Scenarios**Case Scenario 1

A 28 year old male presents in ER with h/o head on collision motor cycle accident and his helmet came off during the accident. He is unconscious, not responding to vocal commands, has noisy breathing. His pulse rate is 110/mt, BP 100/70 mm Hg and respiratory rate is 32/mt. He has not received any treatment at the scene of accident.

Case Scenario 2

A young motorcyclist riding at high-speed crashes into two labourers carrying metal rods. He is brought into ER complaining of pain in neck, hoarseness, and difficulty in breathing. On examination, bruising and swelling in neck and subcutaneous emphysema is observed with PR 126/mt, BP – 90/60 and SpO2 82%

Case Scenario 3

A young man is brought to ER after he was hit accidentally in the upper abdomen while practising karate. He is semiconscious and complains of pain abdomen. O/E – PR – 140/mt, BP- 90/60 mmHg, RR – 22/mt. Chest – Bony crepitus over Lt Lower ribs and air entry diminished (L) base. P/A – Distended and tenderness in left hypochondrium. Bowel sounds are sluggish

Case Scenario 4

A boy falls from a height of 6ft onto a cement slab, hitting his head first and unable to move all four limbs. He is complaining of severe neck pain and there are no features of respiratory distress. O/E – He is alert, talking and following commands PR– 60/min., BP – 70/40 mmHg and has warm extremities.

**Steps.**Preparation

Familiarize yourself with the ATLS 10th edition guidelines and SU 17.2 – 17.10, SU 2.1, SU 2.2, SU 3.1, 3.2.

Ensure that you have the necessary equipment and supplies for trauma assessment, such as Monitoring devices, Oxygen supply, Airway, and cervical spine management tools, IV catheters, and monitoring devices.

Work with a team of healthcare professionals to ensure coordinated care for the injured patient and to maintain closed loop communication.

Procedures.Initial steps:

1. Check instruments, staff availability, oxygen supply, blood bank availability and lab preparedness prior to patient receipt.
2. Review the patient's records if any.
3. Call for help and assemble the team and debrief them.
4. Ensure self-protective measures prior to patient handling
5. Introduce yourself to the patient (including your name and role) and confirm patient details
6. Ask the name of patient and how the patient is feeling (if conscious)
7. Assess the vitals, two 16G canula and collect blood for grouping and crossmatching and other emergency investigations.
8. Start warm Ringer lactate solution
9. If the patient is unconscious and there are no signs of life, start basic life support

Airway Management with Neck stabilization

10. Check the patency of the airway (look for signs of airway compromise, listen for airway noises, inspect inside the mouth), and start oxygen therapy via mask  
Stabilize the neck with hard cervical collar.
11. If required: perform basic airway manoeuvres (Jaw thrust) and consider
12. Inserting an airway adjunct (OP/NP) if needed  
If still not maintaining saturation or at-risk airway compromise, consider bag – valve mask ventilation followed by endotracheal intubation.
13. Re-assess the patient after any intervention

Breathing

14. Review respiratory rate and oxygen saturation
15. Assess tracheal position

Inspect chest for abnormal breathing, chest expansion, percussion, auscultation

16. Needle thoracostomy at triangle of safety if signs of tension pneumothorax, followed by ipsilateral ICD insertion.

17. Re-assess the patient after any intervention

Circulation

18. Review heart rate and blood pressure

19. Assess the radial/brachial pulse

20. Briefly auscultate for heart sounds

21. Consider continuous cardiac monitoring and perform a 12-lead ECG if indicated

22. Identify shock

23. Administer intravenous fluid bolus if hypovolemic

24. Initiate Tranexamic acid intravenous bolus, apply pelvic binder and splinting of broken extremities if needed.

25. Initiate massive transfusion protocol if persistent shock

26. Re-assess the patient after any intervention

Disability

27. Assess level of consciousness using ACVPU or GCS

28. Assess the pupils

29. Perform a brief neurological assessment (ask patient to move their limbs if able)

30. Request CT head if intracranial pathology suspected (e.g., stroke)

31. Re-assess the patient after any intervention.

Exposure

32. Exposure the patient as appropriate and inspect for relevant clinical signs.

33. Review the patient's temperature and prevent hypothermia with blankets.

Log roll movement with minimum 4 staff with cervical collar and pelvic binder on

34. Re-assess the patient after any intervention

Adjuncts to Primary Survey

Two Tubes – Ryle's tube insertion, Foley's Catheterisation

Imaging – Chest Xray, Xray C spine, Xray Pelvis, FAST USG examination

ECG – 12 leads

Blood Investigations – ABG/VBG, Routine blood investigations

Inj. Tetanus Toxoid, Empirical Intravenous Antibiotic therapy according to the hospital policy

Secondary Survey

35. AMPLE History

A – Allergy

M – Medications

P – Past History

L - Last meal

E – Events leading to the incident

## Detailed Head to foot examination

## Observation Guide

Pre-arrival Plan	
Check or prepare:	
<input type="checkbox"/> Oxygen <input type="checkbox"/> Suction <input type="checkbox"/> Bag and mask <input type="checkbox"/> Intubation tray <input type="checkbox"/> Intubation medications <input type="checkbox"/> Defibrillator <input type="checkbox"/> CPR board	
<input type="checkbox"/> Consider ordering blood	
Assign team roles:	
<input type="checkbox"/> Airway <input type="checkbox"/> IV/IO access <input type="checkbox"/> Primary survey <input type="checkbox"/> Team leadership	
<input type="checkbox"/> Brief team on incoming patient	
<input type="checkbox"/> Estimate weight: ____ kg	

Primary Survey	
<b>A</b>	<input type="checkbox"/> Confirm C-spine is immobilized <input type="checkbox"/> Confirm airway is protected
<b>B</b>	<input type="checkbox"/> Place O <sub>2</sub> mask or connect existing mask to O <sub>2</sub>
<b>C</b>	<input type="checkbox"/> Check pulses <input type="checkbox"/> Establish IV/IO access <input type="checkbox"/> Consider ordering blood
<b>D</b>	<input type="checkbox"/> State GCS (eyes, verbal, motor) <input type="checkbox"/> State pupil size and response
<b>E</b>	<input type="checkbox"/> Completely remove patient's clothing <input type="checkbox"/> Cover patient with warm blanket
<b>RE-EVALUATE AIRWAY</b>	<input type="checkbox"/> Evaluate need for intubation <input type="checkbox"/> Report ET tube size and depth (if applicable) <input type="checkbox"/> Confirm ETCO <sub>2</sub> color change (if applicable)
<b>MONITOR</b>	<input type="checkbox"/> Confirm heart rate is displayed <input type="checkbox"/> Confirm pulse ox waveform is displayed
<b>VITALS</b>	State and evaluate whether WNL: <input type="checkbox"/> Heart rate <input type="checkbox"/> Respiratory rate <input type="checkbox"/> Blood pressure <input type="checkbox"/> Oxygen saturation <input type="checkbox"/> Temperature

Secondary Survey
Evaluate and state findings:
<input type="checkbox"/> Head <input type="checkbox"/> Ears <input type="checkbox"/> Eyes <input type="checkbox"/> Facial bones <input type="checkbox"/> Nose <input type="checkbox"/> Mouth <input type="checkbox"/> Neck/C-spine <input type="checkbox"/> Chest <input type="checkbox"/> Abdomen <input type="checkbox"/> Pelvis <input type="checkbox"/> Upper extremities <input type="checkbox"/> Lower extremities <input type="checkbox"/> Log roll and back exam

Plan of Care
Determine need for:
Laboratory tests <input type="checkbox"/> Yes <input type="checkbox"/> No
X-rays <input type="checkbox"/> Yes <input type="checkbox"/> No
CT scans <input type="checkbox"/> Yes <input type="checkbox"/> No
OR notification <input type="checkbox"/> Yes <input type="checkbox"/> No
PICU notification <input type="checkbox"/> Yes <input type="checkbox"/> No

Departure Plan
<input type="checkbox"/> State patient destination
Prepare patient for travel:
<input type="checkbox"/> Equipment <input type="checkbox"/> Medications <input type="checkbox"/> Identify who will travel with patient

**Assessment**

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Further Reading

- i. ATLS Student Course Manual: Advanced Trauma Life Support by American College of Surgeon
- ii. ATLS Study Guide for Physicians
- iii. ATLS Test Questions and Answers 10th Edition
- iv. Bailey & love textbook of surgery
- v. Washington manual of Surgery
- vi. Hamilton Bailey Emergency Surgery
- vii. Tintinalli Emergency MEDICINE

**TRIAGE**  
**(SUR 6)**



# TRIAGE

## Competency

- Triage

## Objectives

- By the end of this 30 minutes schedule, Phase III Part II student should be able to Triage patients and tag them according to severity of their condition in an emergency room setting.

## Background

### TRIAGE (SU17.1 – 17.3)

- Principles of FIRST AID (SU17.1)
- Principles in management of Mass Casualties (SU17.3)
- Steps in Basic Life Support and Transport of injured patient in a simulated environment (SU 17.2)

## Equipment:

- Stethoscope
- BP Apparatus
- Pulse Oximeter
- Torch
- Colour coded ribbon (Red, yellow, Green, Black)
- Colour coded stickers (Red, yellow, Green, Black)
- Card with vital (GCS, Systolic BP, Respiratory Rate)

## Case Scenarios

THREE CASE SCENARIOS FOR EACH COLOR-CODING IN TRIAGE:

### RED TAG:

- 1.) A patient with severe burns covering 80% of their body is brought to the emergency department. The patient is not breathing and requires immediate treatment to survive.
- 2.) A patient with a gunshot wound to the head is brought to the emergency department. The patient is in critical condition and requires immediate treatment to survive.
- 3.) A patient with a severe allergic reaction is brought to the emergency department. The patient is unable to breathe and requires immediate treatment to survive.

YELLOW TAG:

- 1.) A patient with a broken arm is brought to the emergency department. The patient is in pain but is stable and can wait for medical care.
- 2.) A patient with a laceration on the forehead is brought to the emergency department. The patient is bleeding but is stable and can wait for medical care.
- 3.) A patient with a fever and cough is brought to the emergency department. The patient is stable but requires medical attention.

GREEN TAG:

- 1.) A patient with a minor cut on the finger is brought to the emergency department. The patient is not in pain and can wait for medical care.
- 2.) A patient with a sprained ankle is brought to the emergency department. The patient is not in pain and can wait for medical care.
- 3.) A patient with a headache is brought to the emergency department. The patient is stable but requires medical attention.

BLACK TAG:

- 1.) A patient with severe head trauma is brought to the emergency department. The patient is not breathing and cannot be saved with the limited resources available.
- 2.) A patient with a cardiac arrest is brought to the emergency department. The patient is not breathing and cannot be saved with the limited resources available.
- 3.) A patient with severe hypothermia is brought to the emergency department. The patient is not breathing and cannot be saved with the limited resources available.

Steps

- 1) Introduce yourself, if patient is conscious
- 2) If not conscious, check record Name, Age, Systolic BP, Respiratory Rate, GCS, Mode of Injury.
- 3) Paste the sticker according to triage category on case sheet and tie the ribbon on patient.
- 4) Give instructions to the patient or communicate to the team leader and transport the patient according to the priority.
- 5) Use spine board if indicated.

**Assessment**

## Observer Guide

Parameters	Not assessed (0)	Incomplete(1)	Complete(2)
Introduction and Attitude towards patient			
Patient assessment – GCS, Syst. BP, SpO2			
Recording – Patient ID and clinical parameters			
Colour coded tagging			
Patient transport			
Team dynamics and communication			

**Further reading**

- i. ATLS Student Course Manual: Advanced Trauma Life Support by American College of Surgeons
- ii. ATLS Study Guide for Physicians
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**BREAST EXAMINATION**  
**(SUR 7)**



## BREAST EXAMINATION

The ability to perform a thorough and accurate breast exam is an important skill for medical practitioners of many levels and across many specialties. A clinical breast exam is a key step in the diagnosis and surveillance of several benign and malignant breast diseases. When used as part of a multimodal evaluation, the breast exam provides important information that is utilized in both the workup and management of many diseases of the breast. Current recommendations for breast cancer screening intervals and tests vary; however, many guidelines agree that a clinical breast exam is warranted for women with abnormal findings on mammography and as part of annual screening for certain groups of women at increased risk for breast cancer.

**Skill:** demonstrate the correct technique to palpate the breast for a swelling in a manikin/ equivalent

**Competency:** Phase III part 2; SU 25.5

**Objectives** – by the completion of this module, the student should be able to demonstrate the correct technique to palpate the breast

**Background knowledge** – cognitive (requires a session on examination of breast), equipment (a manikin)

**Equipment:** manikin, gloves, gown/drape, tape measure

**Case scenarios** –

- a) A 20 year old woman presents with a lump in the upper outer aspect of her right breast. On examination, she has a firm yet mobile mass in the upper outer quadrant. What is the most likely underlying disease process?
- b) A 55 year old woman presents with nipple discharge. On examination, she has a slit-like retraction of the nipple with the centre exuding dark blood. No discrete mass or lesions are palpable in the underlying breast. What is the most common diagnosis?

**Steps** – preparation, procedure

Task
Getting ready
<ol style="list-style-type: none"> <li>a. Greet the woman respectfully</li> <li>b. provide privacy</li> <li>c. take permission to touch the breast</li> <li>d. History taking (HRT, family history of breast cancer)</li> </ol>
<ol style="list-style-type: none"> <li>e. Tell the woman her breasts are going to be examined</li> <li>f. Ask the woman to undress from the waist up. Have her sitting on the examination table.</li> <li>g. Wash hands thoroughly, dry and warm them.</li> <li>h. Examine and compare both sides</li> <li>i. Start examination of normal side</li> </ol>

<p>Breast examination</p> <p>Inspection – a. skin changes – dimpling, puckering, engorged veins, thickening, nodularity, discoloration, ulceration, cancer en cuirasse, peau d’orange, scars of previous procedures</p> <p>b. mass – site, size, shape, surface, number</p> <p>c. nipple areola complex – site, size, shape, surface, discharge, asymmetry</p> <p>d. expose the undersurface of breast and note for any hidden abnormality</p>
<p>Positions for palpation – a. hands rested on thighs</p> <p>b. hands firmly pressed onto hips</p> <p>c. arms raised above the head</p> <p>d. leaning forwards</p> <p>e. semi recumbent</p>
<p>Palpation – palpate in all above 5 positions</p> <p>Mass – site, size, shape, surface, edge, consistency, local rise of temperature &amp; tenderness</p>
<p>Intrinsic mobility – a. relation to breast – hold the breast with one hand &amp; move the mass with the other</p> <p>b. relation to nipple – hold the nipple with one hand &amp; move the mass with the other hand</p> <p>c. relation to muscle – ask patient to rest her hand on hip with arm relaxed. Hold lump &amp; check mobility in horizontal &amp; vertical dimensions. Ask her to press her hands against the hip to contract the pectoral muscles, and check the mobility of the lump.</p> <p>d. relation to chest wall – ask patient to push against the wall</p> <p>e. relation to skin – pinch the skin to check the plane</p>
<p>Nipple areola complex – press the nipple to look for discharge &amp; nipple eversion</p>
<p>Axilla – keep arm elevated &amp; nodes are palpated against the chest wall for number, consistency, mobility, matting, distribution</p> <p>Groups – anterior, posterior, interpectoral, central, apical, lateral (APICAL)</p> <p>Examine patient from front for anterior, central, apical &amp; lateral groups &amp; from behind for posterior.</p> <p>Right axilla examined by left hand &amp; vice versa.</p> <p>Other groups – supraclavicular: from front &amp; behind</p>
<p>After completion of the examination, ask the woman to cover herself. If there are abnormal findings, communicate regarding further work up sensitively. If normal, tell her that all is well &amp; when she should return for follow up.</p>
<p>Educate her on the importance of monthly self breast examination &amp; steps to do so.</p>
<p>Examination of male breast is carried out in the same manner as in the female.</p>
<p>Suggest further investigations &amp; management.</p>

## Assessment

### OSCE checklist

Tasks	Marks
Introduction, consent, patient position	
Privacy	
Inspection – site, size, shape, surface, skin over the swelling, number	
Nipple areola complex – discharge, displacement, deviation, destruction, depression, discoloration	
Skin changes – puckering, peau d' orange, tethering, ulceration	
Palpation in all 5 positions	
Palpation – local rise of temperature, tenderness	
Intrinsic mobility – movement with & within the breast tissue	
Fixity to underlying structures – skin, pectoral fascia & muscle, chest wall	
Axilla – group of lymph nodes	
Other groups of lymph nodes – supra/infra clavicular, intramammary	
Other systems – abdomen, chest, PV, PR	

### Suggested reading:

- i. LANGE Q & A: Mammography Examination 5<sup>th</sup> edition
- ii. Manual of Clinical Surgery S. Das 13<sup>th</sup> edition
- iii. Hamilton Bailey's Demonstration of physical signs 19<sup>th</sup> edition



# **OBSTETRICS & GYNAECOLOGY**

**OBSTETRIC EXAMINATION**  
**(OBG 1)**



## OBSTETRIC EXAMINATION

**Skill:** Obstetric Examination

**Level:** Shows How(SH)/Performs(P) (under supervision)

**Competency:**

For phase II + phase III part I students

OG 8.3 Describe, demonstrate ,document and perform obstetric examination including general and abdominal examination and clinical monitoring of maternal and fetal wellbeing

OG 35.7 Obtain informed consent for any examination / procedure

**Objective:**

By the end of this session, the student should be able to demonstrate obstetric examination on a mannequin or perform it on a patient.

**Background Knowledge:**

OG 8.1.1 Enumerate, describe and discuss the objectives of antenatal care , assessment of period of gestation, screening for high risk factors

OG 8.1.2 Elicit ,document and present an obstetric history including menstrual history, LMP ,previous obstetric history, past medical and surgical history

Level of fundus at different gestational ages:

- Presentation: The part of the fetus which occupies the lower part of the uterus
- Lie: The lie refers to the relationship of the long axis of the fetus to the long axis of the mother.
- Attitude: The relation of the different parts of the fetus to one another is called the attitude of the fetus. Universal attitude is flexion
- Position: It is the relation of the denominator to different quadrants of the pelvis
- Engagement: When the greatest horizontal plane, the biparietal diameter has passed through the plane of the pelvic brim, the head is said to be engaged
- Importance of SFH and Abdominal circumference

**Equipments:**

- Low fidelity Obstetric examination Mannequin / simulated patient
- Stethoscope / fetoscope
- Measuring tape
- Patient drapes

**Suggested teaching learning Method:**

- Bed side clinic
- DOAP on mannequin

**Case Scenario:**

A 28yr old lady G<sub>2</sub>P<sub>1</sub>L<sub>1</sub> , 1<sup>st</sup> FTND at 38weeks 5 days gestation attended OP clinic for antenatal check-up. Perform obstetric examination.

### **Steps – preparation:**

#### Prior to examination

- Ensure clean and warm hands
- Introduce yourself and establish rapport
- Confirm patient's name, age, and take a brief history
- Calculate gestational age from LMP
- Briefly explain what the examination will involve using patient-friendly language
- Offer a female chaperone, if a male doctor is examining the patient
- Get a verbal consent
- Make sure she has emptied the bladder
- Respect the privacy and dignity of the patient
- Proper exposure of abdomen from xiphisternum to pubic symphysis
- Expose only the area to be examined.

#### Procedure / Method:

Stand on the right side of the woman

#### Inspection:

- Look whether the abdomen is longitudinally or transversely distended or overdistended
- Flanks full/ not
- Look for linea nigra, striae gravidarum , scars
- Hernial orifices
- Dilated vessels
- Visible foetal movements

#### Palpation (Be gentle, use warm hands):

- Correct Dextrorotation
- Using the ulnar border of the left hand, start palpating from the xiphisternum downwards until you meet the first resistance
- Fundal height in weeks of gestation
- Symphysiofundal height in cm [From fundus to public symphysis]
- Abdominal girth in inches

#### Leopold Manoeuvres:

- Fundal Grip: Full or not of the fundal area is palpated using both hands on it to find out which pole of the fetus is occupying the fundus.
- Soft, broad non ballotable mass[breech] / Hard, round ballotable mass[head]
- Neither of the fetal poles are palpated in the fundal area is likely to be transverse lie

- Umbilical Grip/ Lateral Grip: The hands are to be placed flat on either side of the umbilicus to palpate one after other. Uniform resistance of the back on one side and irregular limb nodules on opposite side
- First pelvic Grip / Pawlik's Grip: The over stretched thumbs and four fingers of the right hand are placed over the lower pole of the uterus keeping the ulnar border of the palm on the upper border of pubic symphysis  
Cephalic / Podalic / Empty
- Head palpable in expressed by Crichton method: If able to feel the entire head in the abdomen or 5/5 palpable (not engaged)
- If not able to feel the head at all, abdominally or 1/5 palpable (fully engaged)
- Second pelvic grip: Student facing the foot end of the patient  
Attitude of the head: Flexed / Deflexed / Extended --- how to find the attitude?  
Engaged [ Divergence of fingers] / Unengaged [ Convergence of fingers]

#### Auscultation:

- Using bell of stethoscope
- Listen for one complete minute [Normal HR 110 – 160/min]

#### To complete the examination:

- Explain to the patient that the examination is now finished and explain the findings to the patient
- Thank the patient for their time
- Wash your hands
- Document your findings – Lie, presentation, engagement, position, altitude, FHR

#### **Observation guide**

Ensure the following

- calculation of gestational age
- consent (verbal)
- bladder is empty
- Privacy
- Position and adequate exposure
- Being gentle while examining

**Assessment:****OSCE Checklist:**

Task	Score	Remarks
Introduce yourself to the patient	1	
Confirm patient's name and age, identity , gestational age	1	
Briefly explain what the examination will involve using patient-friendly language	1	
Gain consent to proceed with the examination	1	
Hand hygiene, warm hands	1	
Ensure empty bladder	1	
Ensure privacy, dignity and chaperone	1	
Corrects dextrorotation	1	
Measures fundal height and symphysio fundal height	2	
Measures abdominal circumference	1	
Demonstrates 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> grips correctly	4	
Checks to ensure no pain	1	
Auscultation of FHS	1	
Summarises findings to patient	1	
Documents all findings	1	
Thanks the patient	1	

Pass mark proposed 80% (16/20)

**Suggested Reading:**

- i. Mudaliar Text book 13<sup>th</sup> Edition
- ii. Text book of obstetrics: Dr. Sheila Balakrishnan 3<sup>rd</sup> Edition
- iii. Williams Text Book of Obstetrics 26<sup>th</sup> Edition
- iv. Geekey Medics.com for video and OSCE checklist



**NORMAL VAGINAL DELIVERY**  
**(OBG 2)**



# NORMAL VAGINAL DELIVERY

## INCLUDING DELIVERY OF PLACENTA

**Competency** – OG13.5 Phase III part2

**Level** - shows how/assist /perform (under supervision)

**Objective** – By the end of the session the student will be able to conduct normal vaginal delivery.

**Background Knowledge** –

OG13.1 Discuss the physiology of normal labor, mechanism of labor.

OG13.5 Observe and assist the conduct of a normal vaginal delivery.

OG15.1 Enumerate and describe the indications and steps of common obstetric procedures, technique and complication: Episiotomy.

**Suggested teaching learning method** – DOAP in an obstetric mannequin

**Pre-requisites / checklists** –

All equipment, medicines, disposables should be kept ready before the pregnant woman is received in delivery room.

Ensure respectful maternity care.

Encourage the presence of a birth companion and provide emotional support and reassurance.

Women should be shifted to the labour table or preparation for delivery should be done only in the active second stage. Unnecessary pushing in between contractions should be avoided.

All neonatal equipment for ENBC and resuscitation should be pre-checked and kept in readiness

Radiant warmer should be plugged in, should be functional and switched on at least half an hour before the delivery time.

Maintain aseptic technique throughout the procedure.

**Equipments:**

1. Low fidelity obstetric mannequin in skill lab.
2. Personal protection barriers(goggles, mask, cap, shoe cover, plastic apron).
3. Sterile delivery kit
4. IV cannula 18G, Nelaton catheter, Syringe 20 cc with needle, episiotomy scissors, suture cutting scissors, cord clamps, Local anaesthetic, sutures (polygactin)

**Case Scenario** –Mrs X, a second gravida with previous normal delivery, now in 2<sup>nd</sup> stage of labour, with adequate uterine contractions and head of the fetus is stretching the perineum. (crowning)

**Steps**

Preparations –

- 1) Preparation of woman and her birth companion -
  - a)Ensure privacy and dignity of the woman/mannequin.
 Introduce yourself and maintain rapport.

- b) Make her feel comfortable. A male doctor must have a female assistant while performing the examination and conducting delivery.
  - c) Explain to her and her partner how you are going to conduct the delivery.
  - d) Ensure that informed written consent is taken prior and including consent for episiotomy if indicated.
- 2) Personal preparation –
- Wear personal protective barriers (goggles, mask, cap, shoe cover, plastic apron).
- 3) Position the woman/mannequin in dorsal lithotomy position (commonly preferred position) with legs supported in stirrups and buttocks brought to the edge of the table.
- 4) Perform proper hand wash and put on a sterile gown and gloves.
- 5) Clean the woman's perineum and inner side of thigh with povidone iodine.
- 6) Drape the painted area with sterile draping and leggings. Place sterile absorbent mat with pouch under the woman's buttocks to collect amniotic fluid and blood.
- 7) Palpate the suprapubic region and ensure that her bladder is empty. If it's full, encourage her to empty the bladder or may do catheterisation.
- 8) Talk to the woman and encourage her to bear down during contractions and to breathe through mouth after every contraction.

#### Conduct of delivery -

- i) Delivery of head –
- a) woman is encouraged to bear down during contractions, this facilitates descent of head.
  - b) Put mediolateral episiotomy (only if indicated), after infiltration of appropriate local anaesthetic, (after ensuring that there are no allergies) with angle of 60 degrees from the midline, when the perineum is fully stretched and head is crowning.
  - c) Support the perineum with the edge of the right palm, allowing the perineum to stretch slowly and keep the head in flexion with left thumb and index finger preventing sudden extension of head (modified Ritgen manoeuvre).
  - d) Once the head is delivered, wipe the blood and mucus over mouth and nose.
  - e) Feel for any cord in the neck and if felt and found tight, make it loose and slip it over the head or shoulders.
- ii) Delivery of shoulders - wait for uterine contractions to come and for the movements of restitution and external rotation of the head to occur. Only then give gentle downward pressure on the head and deliver the anterior shoulder under the pubic symphysis. When the axillary crease of anterior shoulder is visible, lift the head gently upwards to deliver the posterior shoulder.
- iii) Administer 10 units of oxytocin intramuscularly at the time of delivery of anterior shoulder or within one minute of delivery of baby.

- iv) Delivery of trunk is then completed slowly and support the rest of the baby's body with one hand as the baby slides out. Note the time of birth and gender of the baby and show the baby to the mother.
- v) The baby is placed over the mother's abdomen in a prone position,(skin to skin contact) with the head turned to one side.
- vi) Quickly dry the baby with pre-warmed towel. wrap the baby loosely in a dry towel .
- vii) At this time Active management of the third stage of labor (AMTSL) is done.
- viii) Delayed cord clamping is done after 1-3minutes(if the baby is crying and active) by applying the clamp at least 5 cm from the umbilicus and milk out a small segment and apply the second clamp distally. Cut in between the clamps.
- ix) If the baby is crying and active, transfer to the warmer.
- x) Delivery of placenta – placenta is delivered by controlled cord traction.
- xi) Examine placenta for completeness before disposal.
- xii) Do uterine massage .
- xiii) Inspect vulva and adjacent areas for any tears, other than episiotomy, if done.
- xiv) Initiate breastfeeding as early as possible.
- xv) Do waste disposal according to protocol.
- xvi) Documentation must be done.

**Assessment**– OSCE checklist

Student name:

Date:

Scenario - Mrs X, G2 P1 L1, is fully dilated and head is stretching perineum.

Task - to conduct normal vaginal delivery.

Observation - observe the student while performing each step. A score of 1 is given for correct procedure.

Sl. No	STEP / TASK	Score 1 / 0	Remarks
1.	Ensuring privacy and explaining the procedure to the patient and companion. Take verbal consent (providing respectful maternal care)		
2.	Puts on personal protective barriers(wears goggles, mask, cap, shoe cover, plastic apron)		
3.	Perform hand washing and put on sterile gown and gloves		
4.	Cleans the woman's perineum & places clean drape on abdomen and sterile adsorbent mat behind the buttock		
5.	Encourages woman for breathing and small pushes with Contractions		
6.	Perform modified Ritgen manoeuvre for delivery of head		
7.	Allows the baby's head to turn spontaneously(restitution) and with the hands on either side of the baby's head, delivers the anterior shoulder after restriction of the external rotation of the head.		
8.	When the axillary crease is seen, guides the head upward to deliver the posterior shoulder.		
9.	Supports the rest of the baby's body with one hand as it slides out		
10	After drying, places the baby on the mother's abdomen(skin to skin contact) .		
10.	Oxytocin 10 u IM given within one minute of delivery of anterior shoulder		
11.	Delayed cord clamping is done.		
12.	Placental delivery by controlled cord traction		
13.	Uterine massage done		
16.	Checks completion of placental separation		
17	Initiate Breastfeeding as early as possible		

Students score -pass/needs remedial (Pass score- 12/16)

#### Observation guide – Common errors

- 1) Inadequate/improper modified Ritgen manoeuvre - can cause perineal tear.
- 2) Not waiting for restitution and external rotation -can cause shoulder dystocia ,perineal tears.
- 3) Fails to administer oxytocin at the time of delivery of anterior shoulder or within 1 minute of delivery of baby.
- 4) Fails to check the placenta for completeness.
- 5) Delayed cord clamping

**Suggested Readings –**

- i) DAKSH Skills Lab For RMNCH+A Services. <http://nhm.gov.in>
- ii) Skills training module 5 For Undergraduate Medical Education Program 2019 , MCI, New Delhi. NMC Website [http://www.nmc.org.in/wp-content/uploads/2020/08/skill module 23.12.2019.pdf](http://www.nmc.org.in/wp-content/uploads/2020/08/skill_module_23.12.2019.pdf)
- iii) Textbook of Obstetrics, Sheila Balakrishnan.



**EPISIOTOMY**  
**(OBG 3)**



## EPISIOTOMY

**Skill:** Episiotomy during labour

**Level:** Shows How(SH)/assists /Performs(P) (under supervision)

**Competency OG 35.14 in phase 3 part 1/part 2**

Demonstrate the correct technique to perform and suture episiotomies in a simulated/supervised environment.

**Objectives :** By the completion of this module, the student should be able to Demonstrate the correct technique to perform and suture episiotomies in a simulated/ supervised environment

### Background Knowledge

OG 2.1.1	Describe and discuss the development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to Obstetrics and Gynaecology	K	KH
OG 2.1.6	Discuss about the structures which are cut during episiotomy	K	KH
OG 14.2.2	Define Normal labour and describe stages of labour	K	KH
OG 15.1.2	Describe the indications, technique and complications of episiotomy	S	SH
SU 14.3	Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots and needles)	K/S	SH
OG 15.2.1	Assist an episiotomy	K	KH
OG 15.2.2	Demonstrate the correct suturing technique of an episiotomy in a simulated environment	K,S	SH
OG 35.11.1	Demonstrate the correct use of appropriate universal precautions for self-protection against HIV and hepatitis and counsel patients	K /S	KH /SH
OG 35.11.2	Describe the principles of universal precautions and biomedical waste management; Demonstrate proper hand washing, PPE use	S	SH
OG 35.11.3	Infection control practices	S	SH
OG 35.7	Obtain informed consent for any examination /procedure	S	SH
OG 35.14	Demonstrate the correct technique to perform and suture episiotomies in a simulated/ supervised environment	K,S	SH

### Situations

- a. Fetal distress in the second stage of labour, to speed up the delivery of the baby.
- b. Previous (repaired) third or fourth degree tear.
- c. Complicated vaginal delivery, e.g. shoulder dystocia, breech, forceps or vacuum deliveries.
- d. Maternal stress due to exhaustion or heart failure
- e. A very tight perineum that prevents delivery.
  - Classification of episiotomy –mediolateral and median
  - Advantages and disadvantages of different types of episiotomy

**General principles:**

1. Check Indication for an episiotomy is fulfilled for this patient
  - a) woman in lithotomy position
  - b) use of a good light
  - c) good presentation of the anatomy and careful examination of the vagina, perineum and cervix to assess the extent of the episiotomy, any other tears
  - d) Follow aseptic technique (wash and scrub hands, use gloves, correct cleaning technique of the wound from above downwards using each swab once only etc.)
  - e) gentle handling
  - f) careful use of swabs so that none are “lost” in the vagina
  - g) use of local anaesthetic injected early enough to take effect before the start of suturing, i.e. at least 2 minutes
  - h) explanation and sensitive approach to the woman during the procedure
  - i) the importance of follow up
2. Classification of perineal trauma:
  - First degree tears (most close spontaneously without sutures) First degree tear (involves fourchette only, vaginal and perineal skin torn, muscles intact)
  - Second degree tears (involves fourchette and superficial perineal muscles, vaginal tear often extends up both sides)
  - Third degree tears (involves fourchette and superficial perineal muscles and anal sphincter);
  - Fourth degree tears.

(Third degree +when the damage extends to the rectal mucosa)

## 3. Suturing materials.

Absorbable sutures should be used for closure. Polyglycolic sutures are preferred over chromic catgut for their tensile strength, non-allergic properties, lower probability of infectious complications, less perineal pain in the puerperium and a lower incidence of dyspareunia later

Principles of knot tying

- The knot, when complete, must be firmly tied so that it cannot slip. Therefore, the simplest type of knot is preferred. The knot must be as small as possible to prevent reaction of the tissue (e.g. inflammation). The ends of the knot should be clipped to approximately one–half inch in length

Be careful not to damage suture when you are handling it. If you clamp onto it with the needle holder you can weaken or break the threads.

When pulling tissue together with your suture, be careful not to pull too tightly. This can reduce the circulation to the tissues. Pulling too tightly can also cause the suture to break.

Square knots and surgeon’s knots are the best type of knot. They lie flat, take up a minimum of space, and hold together well. Do per rectal examination to check.

#### 4. Administration of local anaesthesia:

- Check for allergies
- selection of drug (usually lignocaine)
- amount of drug – without adrenaline 3mg/kg – with adrenaline 7 mg/kg
- checking of drug (name, strength and dose before administration).

**Suggested Teaching Learning Method:** Video , DOAP sessions on Mannequin, Labor Room demonstration on Patient

#### **Equipment/ Instrument/ Other requirement :**

- M FOAM//episiotomy trainer
- antiseptic solution
- gloves and appropriate PPE
- sponge holding Forceps
- needle holder
- Episiotomy scissors
- thumb forceps (tissue holding forceps), (Sim's speculum)
- Suture cutting scissors
- Rapidly absorbable suture with round bodied needle (rapid vicryl)( poly galactin 910) 1-0 or chromic catgut 1-0; suture cutting needle
- local anaesthetic such as 1% lignocaine
- 20 cc syringe
- 1½ inch (or 3 cm) 22 gauge needle
- Gauze
- mop

**Case Scenario :** uncomplicated PRIM1 shifted to second stage with scalp hair visible at the perineum ,adequate bearing down efforts , with no cephalopelvic disproportion

#### **Steps**

##### Preparation and Procedure

- Counselling and consent : explain the procedure, relieve apprehension and take verbal consent - Ask if she has understood what is going to be done and ask her permission before undertaking the examination.
- Ensure privacy and dignity of the woman. Make her feel comfortable.
- A male doctor needs a female assistant during the whole procedure.
- Put on personal protective attire (wear goggles, mask, cap, shoe covers, plastic apron)
- Place the plastic sheet or Kelly's pad under the women's buttocks and two clean towels on mother's abdomen.
- Place the perineal sheet/leggings, if available

- Wash hands and put on sterile gloves
- Clean the woman's perineum with sterile swabs

### 1. Timing of Episiotomy

It is best to make the episiotomy when the head is crowning, perineum is thin and bulging and about 3–4 cm of the presenting part is visible.

Put a 22 gauge 1½ inch needle on a 20 cc syringe.

### 2. Infiltration of Local Anaesthetic

- fill the syringe with lignocaine 1% or 2 %.
- protect the baby's head by placing your two fingers between the baby's head and the perineum and insert the whole length of the needle from the fourchette just below the skin down the perineum at an angle of 60 degree from the posterior fourchette
- Before injecting the local anaesthetic, however, pull back on the plunger of the syringe and check for blood each time the needle is reinserted in a new site (if the local anaesthetic is injected directly into a blood vessel it can cause cardiac arrhythmia, seizure and death).
- Infiltrate local anaesthetic beneath the vaginal mucosa, beneath the skin of the perineum and deeply into the perineal muscle around the episiotomy site / tear by inserting the whole length of the needle and withdrawing slowly and evenly injecting while withdrawing.
- At the conclusion of the set of injections, wait for at least two minutes for the local anaesthetic to take effect. Or assess effectiveness of the local anaesthetic, by pinching the area with forceps. If the woman feels the pinch, wait for a further two minutes, then re-test.

### 3. Performing Episiotomy

- Make the episiotomy with one sharp cut 3-4 cm long at an angle of 60 degree from the posterior fourchette. Many tiny cuts may give a ragged edge to the wound making repair and healing more difficult.
- Ensure that the shoulders of the baby have rotated to the midline before delivery to prevent an extension of the episiotomy (Refer normal vaginal delivery module)

### 4. Technique of Repair : done after the delivery of placenta

- Identify the apex of the episiotomy with adequate exposure
- Use appropriate absorbent suturing material, if available, Repair the vaginal mucosa using 2–0 suturing material with a continuous suture
- Start about 1 cm above the apex of the wound and continue the suture to the level of the vaginal opening

- Tie the suture at the hymenal edges
- Repair the perineal muscle layer using interrupted sutures;
- If the tear is deep place a second layer of stitches to close the space
- Finally the perineal skin is sutured with a polglycolic material using interrupted (or subcuticular) sutures, starting at the vaginal opening

5. Per Rectal Examination: to make sure that no stitches are in the rectum;

if there are stitches in the rectum, the suturing must be undone and the tear re-sutured by / with an expert , taking care to avoid stitches in the rectum.

6. Ensure Mop and gauze count

7. Stick to strict BMW disposal practices

8. Aftercare

- Advise the woman to clean the genital area, including the suture line, with clean water twice daily, and always after defecation.
- Examine the sutured perineum for healing and any signs of infection, e.g. marked inflammation, excessive swelling, pus.

**Observation Guide**

1. Does the student maintain aseptic technique?
2. Can the student correctly prepare the necessary equipment?
3. Does the student infiltrate the area of episiotomy effectively with local anaesthetic so as to cause minimum pain?
4. Does the student withdraw the syringe to check for blood before injecting local anaesthetic?
5. Does the student make the incision satisfactorily?
6. Does the student know when to perform episiotomy ? (verbal)
7. Does the student select appropriate suturing material?
8. Does the student repair the episiotomy correctly in layers?
9. Does the student advise the woman correctly on aftercare?

**Assessment**

Cognitive ; Viva, DOPS, LR Discussions

## OSCE Checklist

Number	Task	Performed (Correct / Not Correct)	Remarks- Needs Correction
1.	Explain to the patient the procedure of episiotomy and getting verbal consent		
2	Following Aseptic precautions		
3	Correct technique of Local anaesthesia (aspirate and see)		
4	Guarding by fingers and performing episiotomy at 60 degree angle		
5	Placement of initial suture 1 cm above the apex of episiotomy		
6	The correct way of square knot application		
7	Continuous suturing with adequate care to include entire mucosal depth and avoid rectum		
8	Interrupted sutures in perineal muscles		
9	Skin suturing with interrupted sutures suture and ends cut with one cm length		
10	Vaginal examination to check any gauze /mop (confirming mop/gauze/needle count )		
11	Performing rectal examination after the procedure		
12	Wound is cleaned and patient is reassured		
13	Giving Instructions for aftercare of episiotomy		
14	Performing biomedical waste disposal correctly sharp/contaminated/plastics		
15	Thanking the patient and helping her in mobilizing her back to normal position		
16	Documentation		

**Assessment:** Logbook documentation of the cases observed, assisted and reflective writing

This skill requires **certification** and the required number is to be given, Formative assessment using DOAP , OSCE, log books or portfolios is recommended.

**Suggested Reading:**

- i. WHO midwifery manual pdf
- ii. DHAKSH skill lab pdf SKILL 9 B
- iii. NRHM GUIDELINES Pregnancy care pdf /tripuranrh.gov.in



**PARTOGRAM**  
**(OBG 4)**



## PARTOGRAM

**Skill :** Plotting of Partogram

**Competency:** Phase II ,Phase III OG 13.1,14.2,14.4

**Level:** Shows how to show /perform

**Learning objectives;**

By end of session student should be able to plot a partogram in normal labour

**Background knowledge**

Physiology of labour

Monitor of labour + partogram +pain & relief OG 13.1

**Suggested TLM:**

Small group discussion

**Equipments**

Obstetric Mannequin

Partogram charts

Pencil, Rubber, different colour ink to denote colour of liquor

Gloves, Gel

**Pre requisites/ Checklist**

1. Ensure respectful maternity case
2. All equipment, medicines, disposables should be kept ready before the mannequin is received in the labour room
3. Encourage presence of a birth companion and provide e-emotional support and reassurance
4. Intermittent foetal heart auscultation using Stethoscope/Doppler should be done every 30 minutes.
5. Adequate pain relief by analgesics/epidural should be offered to the mannequin.
6. Mannequin should be encouraged to lie down in left lateral position
7. P/A examination should be done hourly to know about the descend of head
8. P/V examination should be done every 4<sup>th</sup> hourly.

**Case scenario**

Mrs X a second gravid with previous normal delivery 3 years back is admitted in the First stage of the labour Room with adequate uterine contraction and P/A cephalic presentation

One pole palpable; FHS good; P/V Cervix fully effaced,4 cm dilated, Vertex at 0 station, pelvis normal  
Bag of membranes ruptured draining clear mature liquor

## Steps

### Preparations

- Preparation of woman and her birth companion
- Ensure privacy and dignity of the woman/mannequin.
- Introduce yourself and, maintain a rapport.
- Make her feel comfortable. A male doctor must have a female assistant.
- Explain to the patient and her companion about the process
- Adequate pain relief should be offered to the patient.
- FHS to be monitored every 30 minutes –Doppler/Stethoscope
- Or continuous CTG monitoring in high risk patients
- Descent of the head should be checked every hourly
- P/V examination to be done every 4<sup>th</sup> hourly

Patient Information: Fill out name, gravida, parity, hospital number, date and time of admission and time of ruptured membranes.

Fetal heart rate: Every half hour

Amniotic fluid; Record the colour of amniotic fluid at every vaginal examination:

- I: membranes intact
- C: membranes ruptured, clear fluid
- M: meconium stained fluid
- B: blood stained fluid

Moulding

1. Sutures apposed
2. Sutures overlapped but reducible
3. Sutures overlapped and not reducible

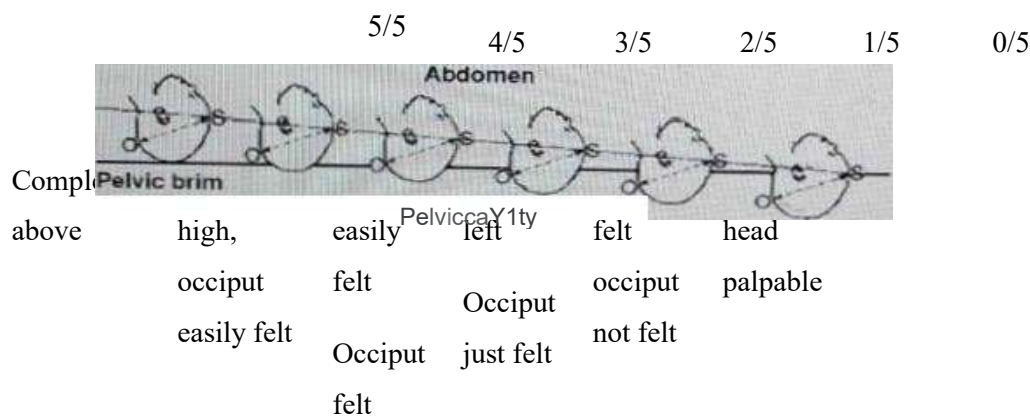
Cervical dilatation Assessed at every vaginal examination and marked with across(X)  
Begin plotting on the partograph at 4cm on the alert line

Alert line A line starts at 4cm of cervical with rate of dilatation at the rate of 1cm/hour

Action line. Parallel and 4hours to the right of the alert line

Descent assessed by Refers to the part of the head (divided into five parts) palpable above the symphysis pubis, recorded as a Circle (O) at every vaginal examination. At 0/5, the synciput (S) is at the level of the symphysis pubis. Note that although new WHO partograph does not explicitly state this, descent of head and position also assessed at vaginal examination and noted

Abdominal palpation



Refers to the time elapsed since onset of active phase of labour (Observed or extrapolated)

Time: Record actual time

Contractions minutes Chart every half hour; palpate the number of contraction in 10 minutes and their duration in seconds

Less than 20 seconds:

Between 20 and 40 seconds

More than 40 seconds

Oxytocin:	Record the amount of oxytocin/ volume Intravenous fluids in drops/ minutes every 30 minutes when used
Drugs given	Record any additional drug given
Pulse:	Record every 30 minutes and mark with arrows
Temperature:	Record every 2 hours
Urine Protein, Acetone and Volume	Record every time urine is passed.

### Case scenario 1-Lower abdominal pain

Mrs. KA is a 20 year old primigravida who presented to the labour ward at 9am with history of lower abdominal pains at 38 weeks She had no history of drainage or liquor this was later confirmed on examination. Her blood pressure was 120/80 mmHg, pulse 90 beats/minute and temperature 37.1 c. Abdominal examination revealed two contractions in 10 minutes, lasting less than 20 seconds. The lie was longitudinal and presentation cephalic the head was 5/5 palpable per abdomen. Fetal heart rate was 140 beats/ minute. Vaginal examination showed that the cervix was 2 cm dilated.

The aim of this exercise is to see if participants know when to start the partograph and how to complete a normal partograph.

Question: What action will you take?

Response: Expect participants to say that she is not in labour. Do not start partograph as not in labour. Give analgesia if needed, observe and discharge home, if possible ,with suitable advice.

Question: Why is it important to provide supportive care during labour?

Response: Supportive care during labour ensures respectful care is available and that medical staff provide or facilitate the availability of psychological and physical support care that is important for the prevention/ management of anxiety, pain and facilitates labour progress.

Question: What is the supportive care during labour?

Response: (Participants should give examples under each of the following the expected response is in the test box below)

-Where possible ensure that the woman has a companion of her choice and the same health care provider throughout labour and child birth.

Ensure good communication and support by staff

**Assessment**

DOPS with checklist

**Case scenario 2**

Scenario: Mrs Y G2P1L1 with active uterine contraction and P/V 4 cm dilation &amp; Vertex at 0 station

Task: To monitor patient in first stage of labour

Observation: Observe the student while performing each step. A score is given as per the procedure.

Students score

-Pass/Need remedial

Pass 16/21

Task		Score		
		2	1	0
Greeting and personal rapport with the patient Explaining to patient on labour	2			
Patient information	1			
FHR	1			
Amniotic fluid	1			
Moulding	1			
Cervical dilatation plotting	2			
Described by abdominal palpation	2			
P/V plotting	2			
Time recording	1			
Contraction recording	2			
Oxytocin	1			
Drugs	2			
Pulse BP, Temp	1			
Interpretation	2			

**Observation guide**

1. Rapport with the patient
2. Plotting time
3. Plotting cervical dilatation and descend



### Further information

At 1 pm

- Fetal heart rate: 146 beats/minute
- Liquor clear
- Cervix: 8 cm dilated
- Head: 0/5 palpable
- Contractions: 4 in 10 minutes, lasting 45 seconds each

Question: Ask participants to enter data on to partograph  
Any action required?

Response: Expect participants to say that she is making good progress so continue observation  
and anticipate delivery

### Suggested Reading

- i. Managing prolonged and obstructed labour by WHO



**INTRA- UTERINE CONTRACEPTIVE DEVICE (IUCD)  
INSERTION  
(OBG 5)**

# INTRA- UTERINE CONTRACEPTIVE DEVICE (IUCD)

## INSERTION

**Skill:** Intra- Uterine Contraceptive Device (IUCD) insertion & removal (I)

**Phase:** Phase III Part 1

**Level:** Shows How (SH) on Mannequin/Simulated environment

### Competency

- OG 19.4.7 At the end of phase 3 part 1 the student should be able to insert and remove IUCD from a model of uterus following the steps of insertion and removal and aseptic precautions
- OG 35.15 Demonstrate the correct technique to insert and remove an IUCD in a simulated /supervised environment

### Objective

- By the end of this exercise, the participant will be able to demonstrate correct method of insertion and removal of interval Copper IUCD on uterine model /Mannequin / Simulated patient .

### Background knowledge

- OG 19.4 Student should be able to enumerate indications for, describe the steps to insert and remove an intrauterine device in a simulated environment
- OG 21.1.1 Describe and discuss the temporary and permanent methods of contraception, indications ,technique and complications, selection of patients, side effects and failure rates
- OG 21.1.4 Phase III part 1 Student should be able to discuss about IUCD with use ,side effect and complication and its role in emergency contraception
- OG 35.7 Obtain informed consent for any examination or procedure
- OG 35.11.1 Student should be able to describe the principles of Universal precautions and Biomedical waste management

### Equipments

- Mask, apron, Handwash, sterile gloves, povidone iodine, cotton balls, hole towel, under pad /drapes
- IUCD insertion tray with Cusco (Sim's ) speculum, Vulsellum forceps, Allis forceps, uterine sound, scissors, long artery forceps.

### Case Scenario

- You are the doctor in the family health clinic . A 24 year old low risk lady Para 2 Live 2 delivered full term baby vaginally 5 months ago, now breastfeeding , has come for advice on contraception. She is undecided whether she wants more children in the future .She attended counselling with her partner and opted for Copper IUCD.

### Steps for insertion

Preparation

- Introduce yourself to the patient including your name and role.
- Confirm the patient's name and age .
- Confirm the eligibility of the client for IUCD by checking relevant history including history of genital infections , allergies ,breastfeeding .
- Note the date of last menstrual period /check Urine pregnancy test result /time since last childbirth.
- Check whether informed written consent is signed after pre procedure counselling (Procedure, intended outcome, benefits, risks, extra procedures, alternatives. preferences, anaesthesia, information leaflet )
- Ensure oral analgesic taken
- Make sure woman has emptied her bladder and washed the perineal area
- Check the IUCD pack and the necessary instruments. Check the IUCD pack for expiry date and for tears/ defects in the pack.
- Wear appropriate PPE (cap, mask, goggles, apron, shoe cover)
- Perform hand hygiene and put on 2 pairs sterile gloves
- Give a brief outline of the procedure to the patient.
- Ensures privacy and comfort of patient throughout the procedure

Procedure

- Inspect the external genitalia and perform per speculum, per vaginal and bimanual examination, note the size and position of the uterus
- Remove the outer gloves and discard in the appropriate bin
- Insert Cusco speculum and inspect and Clean the cervix and vagina with an antiseptic solution
- Hold the anterior lip of the cervix with Vulsellum / Allis forceps and applies adequate pull to straighten the angle.
- Introduce the uterine sound gently, into the uterine cavity and advance it as far as the uterine fundus. Remove the sound and note the length of uterine cavity
- Use No-touch technique to open the pre-sterilized package containing the IUCD and load it on to the distal end of insertion tube. The horizontal limbs of the IUCD are folded and manipulated inside the inserter tube by no-touch method
- Introduce solid plunger rod inside the insertion tube up to lower end of vertical arm
- Adjust the blue gauge over the insertion tube at the level decided by the utero-cervical length (use measurement scale given in the pack).
- Align the length-gauge and fold arms of the T into the inserter.
- Introduce the inserter tube loaded with Copper-T and plunger into the uterine cavity till blue gauge touches the external os.

- Hold and stabilise the plunger with one hand and withdraw the outer inserter tube over the plunger with other hand for about 2 cm.
- Push the assembly en bloc until blue flange is still touching external os
- Stabilise plunger and pull back the insertion tube until the pusher ring
- Withdraw plunger completely followed by the inserter tube in two steps (Withdrawal Method)
- Cut the thread with sharp scissors leaving around 3 cm outside the external os.
- Gently remove the Vulsellum forceps and the speculum
- Put all the used instruments and used gloves in 0.5% chlorine solution for 10 mins for decontamination before further processing. Dispose PPE appropriately.
- Wash hands thoroughly and dry them
- Explain end of procedure and give post -procedure instructions and warning signs .
- Schedule next visit soon after next periods and offer leaflets and further sources of information
- Document procedure in patient record and register and fill in the IUCD card and handover to patient .

#### **Steps for Removal**

- Check the IUCD tray contains long straight artery forceps apart from instruments given in the above mentioned IUCD tray
- Ask the woman to empty her bladder; wash the perineal area
- Wash hands thoroughly with soap and water and put on sterile gloves on both hands
- Paint and drape perineal area
- Insert sterile speculum and locate the IUCD strings at the cervical opening
- Clean the cervix with an antiseptic solution
- Hold the anterior lip of the cervix with a vulsellum forceps
- Grasp the strings of the IUCD with sterile straight artery forceps
- Gently pull the strings by applying steady but gentle traction with the artery forceps
- Show the IUCD to the woman and place it in 0.5% chlorine solution for 10 mins for decontamination
- Gently remove the Vulsellum forceps and speculum
- Put all the used instruments and gloves in a 0.5% chlorine solution for 10 mins for decontamination before further processing (as per waste disposal protocol)
- Wash hands thoroughly and dry them
- Document in the patient record and register
- Give post removal advice .

#### **Observation guide for Facilitator / Assessor**

Student likely to miss the following

- Ensure pre procedure counselling session is over

- Check for pregnancy done
- Informed written consent taken
- No-touch technique
- Withdrawal method of insertion

**OSCE assessment checklist**

To be used by the Teacher/Facilitator for evaluation of the Learner's skills

Many of the following steps/tasks may be performed simultaneously

Place a tick mark in box if step/task is performed satisfactorily

Place "X" if it is not performed satisfactorily

N/O if not observed.

Satisfactory: Performs the step or task according to the standard procedure or guidelines Unsatisfactory:

Unable to perform the step or task according to the standard procedure or guidelines Not Observed:

Step or task not performed by learner during evaluation by teacher

**Ask questions to assess wherever necessary**

<b>Preparatory Steps</b>	<b>No(0)</b>	<b>Yes(1)</b>	<b>N/O</b>
Confirms patient identity (Patient safety)			
Introduction and rapport(Communication skill)			
Ensures patient has attended pre-procedure counselling			
Checks LMP or UPT			
Enquires about genital infections and allergies			
Uses local plain language, avoids technical jargon to give brief outline of procedure(communication skill)			
Confirms informed written consent signed(patient safety)			
Ensures privacy and chaperone			
Checks IUCD expiry date and manufacturing defect(patient safety)and all required instruments available in tray			
Checks appropriate analgesia given			
Demonstrates appropriate knowledge of patient position, ensures empty bladder			
<b>Procedure of insertion</b>	<b>No(0)</b>	<b>Yes(1)</b>	<b>Remarks</b>
Demonstrates aseptic techniques including handwashing and donning PPE (applied clinical knowledge)			
Performs bimanual pelvic examination to note size and position and discards outer gloves			

Inserts Cusco speculum and cleans cervix and vagina with antiseptic			
Holds cervix with Vulsellum/Allis forceps and pulls gently to straighten angle			
Introduces sound and measures length			
Uses No-touch method of loading Copper T on insertion tube and introduce plunger			
Adjusts blue flange to measured length and align arms in horizontal plane			
Insert insertion tube with IUCD and plunger until flange is at external os			
stabilise the plunger with one hand and withdraw the outer inserter tube over the plunger with other hand for about 2 cm.			
Pushes the assembly en bloc until blue flange is still touching external os			
Stabilises plunger and pulls back the insertion tube until the pusher ring			
Checks patient comfort and tolerance during procedure			
Removes the plunger and inserter in 2 steps			
Cuts thread at app 3 cm from external os			
<b>Post-procedure steps(applied clinical knowledge)</b>	<b>No(0)</b>	<b>Yes(1)</b>	<b>Remarks</b>
Appropriate disposal of materials used			
Documents procedure			
Gives instructions on danger signals and next visit			
<b>IUCD Removal</b>	<b>No(0)</b>	<b>Yes(1)</b>	<b>Remarks</b>
Inserts Cusco speculum and hold anterior lip of cervix			
Pulls on thread gently but firmly with long artery forceps			

<b>Overall Score performance</b>			
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**Suggested Educational Resources**

- i. DC Dutta's Textbook of Gynaecology
- ii. Textbook of Gynaecology Sheila Balakrishnan
- iii. Geeky medics website for Copper coil counselling video
- iv. Global health media project videos – Setting up for an IUD insertion ,Inserting an IUD
- v. FSRH Clinical Guideline: Intrauterine contraception (March 2023, Amended July 2023)

**PER SPECULUM AND PER VAGINAL EXAMINATION**

**(OBG 6)**



## PER SPECULUM AND PER VAGINAL EXAMINATION

**Skill:** Per speculum and per vaginal examination (I)

**Competency** Phase 2

OG 35.1-Obtain a logical sequence of history and perform a humane and thorough clinical examination, including internal examination.

**Level:** Shows How(SH)/Performs(P)

### Objectives

At the end of the session the student must be able to perform gynaecological examination (per speculum and per vaginal examination) in mannequin/simulated patient / patient in a clinical scenario.

### Background knowledge

OG 2.1 -Describe and discuss the development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to Obstetrics and Gynaecology.

OG 35.2-Arrive at a logical provisional diagnosis after examination

OG 35.7-Obtain informed consent for any examination /procedure

### Suggested teaching and learning method

Videos, DOAP sessions on Mannequin and then patient

### Equipment

- Pelvic mannequin
- Gloves
- Betadine solution
- Light source
- Sims speculum /Cusco speculum
- Anterior vaginal wall retractor
- Lubricant jelly

### Case scenario

35 year old lady coming to the gynaecology OPD with complaints of vaginal discharge. Do a speculum and bimanual pelvic examination.

### Steps

#### Preparation

- Introduction by name and role .
- Confirm the patient's name and age.
- Adequate counselling regarding the need of procedure obtain verbal consent.
- Wash hands and don appropriate PPE
- Ensure bladder is empty before the examination

- Ensure privacy, ensure that female chaperone is present .
- Patient should be positioned in the dorsal position with legs semi flexed at hips and flexed at knees, feet resting on the table
- Cover her with a drape up to knees maintaining dignity.
- Bring patient to edge of examining couch.

#### Procedure

##### Per Speculum examination

1. Inspect the vulva. Look for any ulcers ,scars , mass, varicosities, white lesions
2. Part the labia with left hand (non - dominant hand ) and introduce lubricated and warmed Sim's speculum with right hand ( dominant hand ) in anteroposterior axis . Once inside the vagina turn it to the transverse axis so that the inner blade rests over the posterior vaginal wall . Look for any lesion in the anterior and lateral vaginal wall .
3. Introduce the anterior vaginal wall retractor /move the Sims speculum along the anterior vaginal wall . Look for any lesions in the posterior vaginal wall .
4. Retract both the vaginal walls to visualise the cervix .
  - Assess position of cervix
  - Nature of external os
  - Inspect cervical lip for any erosion ,growth ,ulcer , bleeding
  - Look for any discharge if present.
  - Examine in Valsalva manoeuvre.
- Bimanual pelvic examination:
  1. Sims speculum and anterior vaginal wall retractor are removed gently, lubricate the gloved index and middle finger of the right hand .
  2. After talking to the patient ,With the left hand part the labia and introduce two fingers of the right hand into vagina gently and feel the cervix .
  3. Keep the left hand on the suprapubic area .
  4. Palpate the walls of vagina feel for any irregularities or masses.
  5. Examine cervix to assess the following
    - Position (anterior or posterior)
    - Consistency ( irregular ,smooth)
    - Cervical motion tenderness ( if pain felt during palpation may suggest pelvic inflammatory disease or ectopic pregnancy )
  6. Examine uterus to assess the following
    - Position of uterus (anteverted or retroverted)
    - Size of uterus
    - Shape (distorted by mass like fibroid )

- Surface ( smooth or nodular)
  - Mobility of uterus -vaginal fingers can be used to move the cervix - normally the uterus is mobile . It is immobile in case of adhesions.
  - Tenderness -normally no tenderness is present while doing bimanual pelvic examination or while moving the cervix unlike in case of pelvic inflammatory disease , endometriosis , adenomyosis , ectopic pregnancy.
7. Examine the adnexa with vaginal fingers in the left fornix and external hand on the left iliac fossa , same assessment done on right side .
  8. Feel for any mass , if present its size ,surface consistency ,tenderness , transmitted mobility should be assessed .
  9. Inspect for blood or abnormal discharge after withdrawing the fingers.
  - 10 Disposal of PPE and wash hands.
  - 11 Document the procedure in the medical notes
  - 12 Summarise the finding.
  - 13 Discuss with the patient.

**Observation guide**

- Maintaining asepsis .
- Taking consent
- Ensure empty bladder
- Proper technique
- Proper disposal of waste

**Assessment OSCE checklist**

SN	TASK	SCORE 0/1
1	Assimilate the equipment	
2	Washing hands and donning PPE	
3	Introduction to the patient by name and role	
4	Confirm the patient's name and age	
5	Explain what the procedure , need for a chaperone if required	
6	Consent to proceed with the examination	
7	Ensure bladder is empty	
8	Position the patient	
9	Inspection of the vulva	
10	Lubricate the speculum	
11	Technique of speculum insertion	
12	Inspection of the cervix	
13	Gentle removal of the speculum	
14	Technique of bimanual pelvic examination	
15	Palpation of the vaginal walls	
16	Palpation of the vaginal fornices	
17	Palpation of the uterus	
18	Palpation of the adnexa	
19	Check for blood or abnormal discharge after withdrawing the fingers	
20	Disposal of the used equipment into a clinical waste bin	
21	Disposal of PPE appropriately and washing hands	
22	Summarise the findings	
23	Thank / reassure the patient	

### **Suggested Reading**

- i. Williams Obstetrics 26th edition
- ii. Williams Gynaecology 4th edition
- iii. [geekymedics .com](http://geekymedics.com)

## **PAP SMEAR**



## PAP SMEAR

collection & interpretation

**Competency:** Phase III, part 1 OG-35:12

Obtain a Pap smear on a volunteer/ in a simulated environment.

**Level—**SH/P

**Objectives:**

By the completion of this module, the student will be able to take a pap smear from the cervix properly in a simulated environment.

Suggested teaching learning method- DOAP sessions

Suggested assessment method- OSCE skill assessment

**Background knowledge-**

- OG 2.1-Describe the histological anatomy of ectocervix, endocervix & transformation zone
- OG 2.1-Define & discuss the transformation zone of cervix and its relation to malignancy.
- OG 35.12.1- Importance of pap smear, its indications, contra-indications & timings.
- OG-33.3-Describe & discuss the recommended screening protocol for carcinoma cervix.
- OG 33.3.2- Describe the Bethesda system for reporting cervical cytological abnormalities for interpretation of pap smear cytology result.
- OG 35.1- Obtain a logical sequence of history and clinical examination
- OG 35.2 -To correlate history & clinical examination to arrive at a provisional diagnosis
- OG 35.7-To obtain informed consent for any examination & procedure.

**Equipment/instruments/other requirements**

- Sim's/Cusco's speculum
- Ayre's spatula
- Cytobrush
- Pap smear kit including Koplík's jar with fixative
- Glass slides
- Marking pencil
- Volunteer/Mannequin
- Hand-outs/Check list
- Bed/couch
- Light source
- Cytology lab request forms

**Case scenarios**

1. 27 year old married, nulliparous lady comes for pap smear screening.
2. 30 year old primigravida to be screened as a part of evaluation.
3. 45 year old parous lady, family completed; is under evaluation for heavy menstrual bleeding.

### Steps in collecting Pap smear

#### Preparation

- Patient counselling & consent. Ensure a chaperone present.
- Get all the equipment ready
- Check the light source, and pap smear kit.
- Ensure appropriate position of the patient (lithotomy position with empty bladder)

#### Procedure

- Choose the appropriate size speculum to retract vaginal wall.
- Ensure that the cervix is well exposed and the mucus is cleared with a sterile saline swab under good light source.
- Examine the cervix for its size, colour, direction, identify Squamo-columnar junction, any discharge/ulcer/visible growth or any other pathology and document the findings.
- Pre label the glass slides with patient's name & registration number.
- Scrape out the cells from the ectocervix using Ayre 's spatula by rotating it 360<sup>0</sup>.
- Similarly, collect sample from endocervix by inserting a cytobrush gently into the cervical canal.
- Prepare smear by evenly spreading the cytological sample on the slide using separate slides for ecto & endocervix.
- Place the slides immediately (before drying) carefully inside the jar without disturbing the sample.
- Close the lid of Koplik's jar & send the labelled sample for cytological study.
- Check for any spotting/ bleeding from the cervix.
- Wipe the cervix with a sterile swab & counsel the patient for probable spotting/bleeding p/v.
- Advise the patient to collect the pap smear result at denoted time.

#### **Observation guide:** Ensure the followings

Informed consent

Adequate exposure of cervix

Sample from endocervix

Pre labelling slides to prevent air drying

Remind the woman to collect report and for follow-up

**Assessment**

S.No	Task	Score 0/1	Remarks
1	Counselling		
2	Informed consent		
3	Labelling		
4	Adequate exposure		
5	Endocervical element		
6	Check for bleeding		
7	Avoid air-drying		
8	Collect report/FU		

**Suggested reading:**

- i. William's Gynaecology- Text book of Gynaecology; 4<sup>th</sup> edition.
- ii. Berek & Hacker's Gynaecological Oncology- Textbook of Gynaecological Oncology; 7<sup>th</sup> edition.



# **PEDIATRICS**



**OROGASTRIC TUBE INSERTION**  
**(PED 1)**



## OROGASTRIC TUBE INSERTION

**Competency:** in phase III

PE 20.3 (Neonatal Resuscitation) Demonstrate the method of placement of Orogastric tube during prolonged PPV in a mannequin

**Objective:** At the end of the session the learner should be able to insert OG tube in a mannequin in the correct technique

**Introduction:**

An orogastric tube is inserted to prevent vomiting and aspiration, to improve ventilation, to decrease intestinal distention, and to facilitate visceral reduction. During CPAP or PPV with a mask, gas enters the oesophagus and stomach. Gas in the stomach may interfere with ventilation. Hence decompression of the stomach is important to improve ventilation of the lungs.

Basic Knowledge: Anatomy of nose and oesophagus, Universal precautions, BMW management

Requirements: Infant feeding tube of 8Fr size, stethoscope, 5ml syringe, gloves, paper plaster etc

Indications:

1. If a newborn requires CPAP or PPV with a mask for longer than several minutes, consider placing an orogastric tube and leaving it uncapped to act as a vent for the stomach.

**Equipment:**

- 8F feeding tube
- Large syringe
- Tape
- Hand sanitiser, gloves

Procedure

1. Measure the distance from the bridge of the nose to the earlobe and from the earlobe to a point halfway between the xiphoid process (the lower tip of the sternum) and the umbilicus. This is the length to be inserted.
2. Insert the tube through the mouth. (Ventilation can be resumed as soon as the tube has been placed. Reassess the face-mask seal).
3. Once the tube is inserted to the desired distance, attach a syringe, and remove the gastric contents.
4. Remove the syringe from the tube and leave the end of the tube open to provide a vent for air entering the stomach
5. Tape the tube to the baby's cheek

Complications

1. Patient discomfort with tube in situ

**Observation guide:**

- Measure the length of the tube to be inserted
- Checking and confirming the position of the tube

Suggested method of evaluation- DOPS using checklist

**Checklist**

1. Introduces self and explain the need for OG tube insertion
2. Arrange the procedure tray with the necessary equipment.
3. Obtain Informed consent
4. Hand hygiene
5. Identifies the correct size of the tube and measures the length of fixation
6. Gently inserts looking for signs of choking
7. Check the position by pushing in air using a 5-cc syringe
8. Fix the OG tube
9. Try feeds and see for any difficulties

**Suggested reading**

- i. Current Pediatric Procedures
- ii. Text Book of Neonatal Resuscitation; 7<sup>th</sup> edition
- iii. Essentials of Pediatrics, OP Ghai 10<sup>th</sup> Edition

**NASO-GASTRIC TUBE INSERTION  
(PED 2)**



## NASO-GASTRIC TUBE INSERTION

**Skill:** Insertion of the Naso-gastric tube

**Competency:** PE 24.15 Perform NG tube insertion in a mannequin. phase III

**Objective:** Perform insertion of NG tube in a mannequin

**Case Scenario:**

1. 18 month old baby was brought to the emergency room with loose stools and vomiting of one-day duration, Examination showed evidence of some dehydration and child is refusing oral fluids (IV access could not be obtained at the moment).
2. Nine month old baby with CHD-VSD (large) presented in cardiac failure, Baby has respiratory distress and he is on respiratory supports and unable feed orally. How to feed this baby?

**Indications:**

1. NG feeding
2. Correction of dehydration (IV access not available)
3. Diagnostic- collection of gastric aspirates for AFB
4. Gastric lavage in cases of poisoning
5. NG aspiration post operative

**Basic Knowledge:** Anatomy of nose and oesophagus, universal precautions, BMW management

**Requirements:** NG tubes of different sizes, Lignocaine gel 2%, Stethoscope, 5ml syringe, Cup of water, gloves, paper plaster etc.

Selecting the tube size:

0-5 months (3-6 kg)	6-12 months (4-9 kg)	1-3 years (10-15 kg)	4-7 years (16-20 kg)
8 Fr	10 Fr	10-12 Fr	12 Fr

**Procedure**

1. Introduce oneself, explain the procedure and need in a clear language, obtain informed consent.
2. Do hand washing and universal precautions including a face mask. (Restrain the child if needed with help of assistants)
3. Measure the length of the tube to be inserted. Take the tube from the tip of the nose to the earlobe, then to the middle of the belly (which is halfway between the lower tip of xiphisternum and the umbilicus).
4. Apply Lignocaine\* gel 2% or a water-soluble lubricant on the tip of the tube and gently insert the NG tube along the floor of the nose, and advance it parallel to the nasal floor (i.e., directly perpendicular to the patient's head, not angled up into the nose) until it reaches the back of the nasopharynx, where resistance will be felt. Push gently into the nasopharynx and the subject may feel uncomfortable or gag (not in a mannequin) when the tip touches the posterior pharyngeal wall.

5. Ask the subject to have a swallowing movement, gently advance the tube to the desired length, or ask to take a deep breath and hold. Stop and withdraw the tube if the subject gasps, cough, or show distress. Then try it again after a short break. Open the mouth to see any coiling inside the oropharynx or mouth (not in a mannequin).
6. The position of the tube should be checked by pushing 5 ml air through the nasogastric tube and hearing for a gush of air below the xiphisternum. Gastric contents can be aspirated with a syringe if gastric contents are present, which can confirm the position. Confirmation of tube position is critical before you administer anything through the NG tube.
7. If the tube inadvertently enters the larynx or trachea the subject will have choking, violent cough, and bluish discoloration. Bubbling of air can be noted if you dip the free end in a cup of water. In that case the tube should be immediately removed.
8. Fix the tube at the desired length by applying plasters.
9. Start feeds with small quantity of clear fluids and make sure the baby is comfortable.  
\*2-3 drops Normal Saline may be instilled in the nostrils instead of Lignocaine gel in case of neonates.

#### Complications

1. Patient discomfort with tube in situ
2. Nasal trauma
3. Epistaxis
4. Throat irritation

#### **Observation guide:**

Make sure the student performs the following

- Measuring the length of the tube to be inserted
- Checking and confirming the position of the tube

#### **Assessment-** DOPS using checklist

1. Introduces self and explain the need for NG tube insertion
2. Arrange the procedure tray with the necessary equipment.
3. Obtain Informed consent
4. Hand hygiene
5. Identifies the correct size of the tube and measures the length of fixation
6. Gently inserts looking for signs of choking
7. Check the position by pushing in air using a 5-cc syringe
8. Fix the NG tube
9. Try feeds and see for any difficulties

#### **Suggested Reading**

- i. Current Pediatric Procedures
- ii. Essentials of Pediatrics, OP Ghai





**PEDIATRIC IV CANNULATION**  
**(PED 3)**



## **PEDIATRIC IV CANNULATION**

**Skill :** Pediatric IV Cannulation

**Competency** in Phase III

PE 24.16, PE 15.6: Demonstrate the steps of inserting an IV cannula in a model

PE 27.20: Secure an IV access in a simulated environment

### **Objectives**

By completion of this module, the student should be able to secure an intravascular access in a task trainer/mannequin in a simulated environment.

### **Background Knowledge**

AN 13.7 Anatomical knowledge of cephalic vein, brachial vein, median cubital vein

AN11.3 Describe the anatomical basis of Venipuncture of cubital veins

AN20.9 Identify & demonstrate Palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins

CM14.1 Define and classify hospital waste

CM14.2 Describe various methods of treatment of hospital waste

CM14.3 Describe laws related to hospital waste management

### **Introduction**

Intravenous (IV) cannulation is a technique in which a cannula is placed inside a vein to provide venous access. Venous access allows sampling of blood, as well as administration of fluids, IV medications, parenteral nutrition, chemotherapy, and blood products. Peripheral access is safer, easier to obtain, and less painful than central access.

An IMG is required to independently perform pediatric IV cannulation, before being certified.

### **Suggested Teaching Learning method:**

Mannequin in a Skills lab

### **Background Knowledge**

Knowledge of superficial veins on the limbs,

Knowledge of indications/ contraindications of IV access

### **Equipment:**

IV arm (mannequin)

70% Isopropyl alcohol, Chlorhexidine ,

IV drip set & stand,

Infusion pump, PMO line, splint

Gloves, which fit comfortably but are tight, especially at finger tips,

Skin disinfectant (Alcohol Swabs),

22-26 gauge IV catheter / butterfly needle,

Adhesive tape,  
Syringe (2 to 10 cc, depending on the age of the child)  
EMLA patch  
Gauze pieces  
IV fluids-Normal saline  
Sample collection bottles  
elastic tourniquet  
sterile transparent dressing  
Clinical waste dustbin.

### **Steps in Pediatric intravenous cannulation**

#### Preparation

video training sessions on IV cannulation

#### Procedure

- Patient identification- ask for any allergies
- Explain the procedure to the child and the family without using technical jargon. Tell about the indication for cannulation.
- Obtain informed or implied consent, following procedure discussion, risks, and benefits. Consider the age and competence of the child for consent or assent to the procedure.
- Select the vein to be cannulated. The vein should be wide, straight, palpable, non-tortuous and non-sclerosed. Avoid veins close to the joints or bony prominences. Avoid using dominant hand or paralyzed limb.
- Always apply universal precautions.
- Both visualize and palpate the vein to be cannulated. There is a slight 'give' over the vessel compared to other tissues.
- Disinfect overlying skin. Can apply EMLA patch prior to the procedure.
- Use appropriate procedures (toys, music, stories etc.) to distract the child during procedure. For a very irritable child, use of oral sedatives may be considered in consultation with the consultant.
- Avoid using the bed for performing the procedure. A procedure room is better. The room should be adequately lighted and have provision for a spot light.
- Select the correct type and size of the cannula, depending on the indication for cannulation. Should be able to identify the size of the cannula by its color coding.
- Have all the equipments on an autoclaved tray.
- Perform hand hygiene
- Seek the assistance of a colleague or a nurse to hold the child's limb.
- Position yourself comfortably. Wear the appropriate size gloves using all antiseptic precautions.

- Apply a tourniquet 2-3 inches above the intended site. Check for signs of arterial occlusion like blanching or absence of pulse.
- Instruct the child to clench the fist which will improve venous filling.
- Disinfect the site with appropriate antiseptic swabs and allow it to dry naturally.
- Take out the cannula and hold it firmly, bevel side up. Look for any signs of breakage.
- Stabilize the vein by stretching the skin over it.
- Using a 'no-touch' technique, insert the cannula distal to and along the line of the vein keeping it 10-45 degrees to the skin. This will prevent the cannula piercing the opposite wall. After insertion, check the flashback of blood into the hub. If blood is seen, advance cannula slightly further and stabilize. Apply pressure to the tip of cannula to stabilize it and remove stylet.
- Release the tourniquet.
- Flush the cannula with normal saline to see the free flow.
- Once in place, lower the cannula so that it is now resting on the skin. Request your colleague to help with securing the cannula using a hypo-allergenic tape. Avoid elastic tapes.
- Push 1-2 ml Saline gently to see a free flow without resistance and extravasation. Connect a 3-way connector/ IV set depending on the indication.
- Start the flow of fluid. Watch for any extravasation of fluid. If it happens, stop the flow. Re-attempt the cannulation at a site proximal to the previous one. Do not make more than 2 attempts. Request a senior colleague if you are not successful even after 2 attempts.
- Apply a clean splint to stabilize the limb. Dress with a sterile dressing.
- Fingers/toes should not be covered and remain visible.
- Write the date and time of insertion on a sticker and place it over the dressing.

### Observation Guide

- ✓ Setting up the tray for the procedure
- ✓ Identifying the vein for cannulation
- ✓ Cleaning and draping the area
- ✓ Sterile precautions
- ✓ Correct holding of the cannula and angle of puncturing
- ✓ Steps of fixing the IV cannula
- ✓ Minimum wastage of the disposables and spillage
- ✓ Biomedical waste disposal

**Assessment:**

	Step	D	PD	ND
1.	Identify patient and introduce yourself			
2	Explain procedure and obtain consent			
3	Proper Hand washing			
4	Gather essential materials and 2/5 cc syringe with NS			
5	Position patient comfortably			
6	Wear gloves of appropriate size			
7	Apply tourniquet -2 inches above the site -check not too tight			
8	Select an appropriate vein by palpating			
9	Clean the site with alcohol swab and let it air dry			
10	Select appropriate cannula and inspect for any defects			
11	Stabilise the vein by stretching			
12	Insert the needle through the skin at an angle of 30-45 degrees with bevel upwards			
13	Observe for flash back of blood in the hub			
14	Withdraw the stylet and gradually advance the catheter in the vein			
15	Release the tourniquet and push normal saline using 2ml syringe, look for extravasation			
16	Securely fix the catheter in place with adhesive tape and transparent dressing after labelling time and date			
17	Ensure the patient is comfortable post procedure and start iv fluid as per ordered drip rate			
18	Dispose the sharps and other waste materials in appropriate disposal bins			
19	Remove gloves and wash hands			
20	Documentation			

**Suggested Reading:**

- i. NMC Skill module
- ii. PG Textbook of Pediatrics, IAP P Gupta et al (Editors)
- iii. Clinical Methods in Pediatrics, P Gupta
- iv. Nelsons Textbook of pediatrics
- v. Fluids and electrolytes in pediatrics- G.Feld, J.Kaskel
- vi.

**PAEDIATRIC INTRAVENOUS INFUSION  
(PED 4)**



## PAEDIATRIC INTRAVENOUS INFUSION and calculating drip rate

### Competency in phase III

PE 15.1: Discuss the fluid and electrolyte requirement in health and disease

PE 15.2: Discuss the clinical features and complications of fluid and electrolyte imbalance and outline the management

PE 15.3: Calculate the fluid and electrolyte requirement in health

PE 15.5: Calculate fluid and electrolyte imbalance

PE 24.10: Assess for signs of dehydration, document and present

PE 24.14: Plan fluid management as per WHO criteria

PE 27.21: Choose the type of fluid and calculate the fluid requirement in shock

### Objectives:

By the completion of this module, the student should be able to set up a paediatric intravenous infusion set and calculate the drip rate.

### Background Knowledge:

#### 1. Know how to calculate Paediatric IV fluid Maintenance Requirement

The Holliday-Segar 4-2-1 Rule

$$4 \times (\text{first } 10 \text{ kg}) + 2 \times (\text{next } 10 \text{ kg}) + 1 \times (\text{every kg over } 20 \text{ kg}) = \text{maintenance deficits}$$

Weight (Kg)	Hourly	Daily
<10 Kg	4ml/kg/hr	100ml/Kg/day
10-20 Kg	40ml + 2ml/kg for every Kg>10	1000ml + 50ml/kg/day for every Kg>10
>20 Kg	60ml + 1ml/kg for every Kg>20	1500ml + 20ml/kg/day for every Kg>20

2. Know how to calculate the volume of fluid to be infused in one hour in ml and how to convert that into micro drops/minute and macro drops /minute.

➤ 1ml = 60 micro drops

➤ 1ml = 15 macro drops

(If 60ml is to be infused in one hour rate is 60 micro drops/min; Divide this by 4 to calculate the macro drops)

## 3. Know the composition of different types of IV fluids:

Fluid	Osmolarity (mOsm/L)	Glucose (gm/L)	Na (mEq/L)	Cl (mEq/L)	K (mEq/L)	Others
5% D	252	50	-	-	-	-
10% D	505	100	-	-	-	-
50% D	2520	500	-	-	-	-
Isolyte-P	368	50	25-26	22	20	Acetate-23
DNS	432	50	154	154	-	-
½ DNS		50	77	77	-	
0.9% NS	308	-	154	154	-	
0.45% (½NS)	154	-	77	77	-	
3.0% NaCl	1026	-	513	513	-	
Ringers's Lactate	273	-	130	109	4	HCO <sub>3</sub> / lactate- 28; Calcium-2.7

## 4. Know which fluid to be used in different clinical scenarios

- NS is used as IV Fluid in managing shock and DKA
- RL is the preferred fluid in acute diarrhoeal disease.
- DNS with added KCl is the preferred maintenance fluid in older children.
- Isolyte-P may be used as maintenance fluid in infants.

**Equipment:**

- IV fluid of choice (e.g., crystalloid, colloid)
- Measured volume infusion set

A volume control IV administration set is free- flow IV tubing that uses a 150- mL volumetric cylinder (chamber) to closely control fluid administration. This is most often used for small paediatric patients (<1 year old), when only a small volume of IV fluid is desired.

- Gloves, hand sanitizer, gauze pieces

**Case scenario:**

A 7-year-old child with 20 kg weight who is a post op case of appendicectomy is admitted in paediatric surgery ward. He must be kept nil per mouth. Calculate the IV fluid maintenance rate for the next 24 hours. Also calculate the rate to be infused in micro drops and macro drops?

➤ For a child of 20 Kg

According to Holiday- Segar method.

$$10 \times 4 + 10 \times 2 = 40 + 20 = 60\text{ml/hr}$$

$$60 \times 24 = 1440 \text{ ml/day}$$

To calculate the micro drip rate:

Note that  $60\text{ml/hr} = 60/60 \text{ ml/min} = 1 \text{ ml /min}$

1ml = 60 micro drops

Drops per minute = 60 micro drops/min (note that ml/hour=micro drops/minute)

To calculate the macro drip rate:

Divide the micro drip rate by 4:

$$60/4 \text{ macro drops/min} = 15 \text{ macro drops /min}$$

### **Case scenario:**

A 3-year-old baby with 10 kg weight comes to the paediatric casualty with history of multiple episodes of loose stools since last 2 days. On examination signs of severe dehydration were present.

Calculate the IV fluid rate to be given in micro drops/minute.

Steps:

#### 1.Preparation

Explain the procedure and need of IV fluid to the child and care giver. Implied or informed consent as the situation is applicable.

#### 2.Procedure –

1. Proper hand hygiene and wear appropriately sized gloves
2. Spike the IV bag. Clamp both above and below the volumetric chamber, and then spike the IV bag.
3. Fill the volumetric chamber. Unclamp the clamp above the volumetric chamber (between the IV bag and chamber) and allow the chamber to fill to the desired level. Reclamp the clamp above the volumetric chamber.
4. Prime the tubing. Unclamp the clamp below the volumetric chamber and allow the tubing to prime by gravity.
5. Raise the volumetric chamber. Hang the volumetric chamber on the IV drip stand adjacent to the IV fluid bag to facilitate flow. Connect the IV line to the IV access carefully as to prevent an air bubble entering.

All of the above steps must be completed, and tubing must be fully primed, with no air bubbles, before attaching the tubing to the patient's IV line.

Please note that:

A) To avoid accidental administration of too much fluid, never keep more than 2 hours of maintenance fluid in the chamber.

B) Always ensure that the flange inside of the volumetric chamber (on the bottom) is open. The flange can inadvertently close and inhibit IV flow. Squeezing or lightly tapping the chamber often solves this problem.

C) Avoidance of air emboli in infants and small children requires that all air be expelled from IV lines and syringes. To do this, aspirate each injection port to remove air trapped at junctions. Also, before administering a drug intravenously, make sure that no air is trapped in the dead space of the needle or syringe. A volume of air that is clinically inconsequential to an adult may prove disastrous to an infant.

**Observation guide:**

Able to connect the infusion set properly.

Calculate the rate of fluid infusion accurately.

Removes air from the tubing before starting IV infusion.

**Assessment:**

OSCE checklist:

1. Introduction
2. Identifies patient and rechecks the infusion order
3. Asks for any drug allergies
4. Explains the procedure and takes informed/implicit consent
5. Hand wash
6. Sets up an IV infusion set as per the instructions
7. Removes air bubbles from the tubing before starting the infusion
8. Calculates and sets the infusion rate in micro drops and macro drops.
9. Anticipates and knows the signs of extravasation
10. Anticipates and knows the signs of anaphylaxis
11. Proper waste disposal
12. Proper documentation of the procedure

**Suggested readings:**

- i. Fluid and electrolyte chapter (chapter 6) OP Ghai textbook of Paediatrics' 10<sup>th</sup> edition
- ii. NELS provider course manual for doctors



**INTRA OSSEOUS INFUSION in CHILD**  
**(PED 5)**



## INTRA OSSEOUS INFUSION in CHILD

**Skill:** Demonstrate the steps of inserting an intraosseous line in a mannequin

**Competency:**

- PE 15.7; 24.16: Demonstrate the steps of inserting an intraosseous line in a mannequin.
- AN14.3 Describe the importance of ossification of lower end of femur & upper end of tibia K KH
- AN20.7 Identify & demonstrate important bony landmarks of lower limb: -Vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, -Tibial tuberosity, head of fibula,
- MI1.5 Choose the most appropriate method of 6 and disinfection to be used in specific situations in the laboratory, in clinical and surgical practice.
- CM14.1 Define and classify hospital waste.
- CM14.2 Describe various methods of treatment of hospital waste.
- CM14.3 Describe laws related to hospital waste management.
- PE 24.10: Assess for signs of dehydration, document and present.
- PE 24.14: Plan fluid management as per WHO criteria
- PE 27.5: Describe the etio-pathogenesis, clinical approach, and management of shock in children.
- PE 27.19: Check for signs of shock i.e., pulse, Blood Pressure, CRT
- PE 27.21: Choose the type of fluid and calculate the fluid requirement in shock.
- PE 27.23: Assess for signs of severe dehydration.

**Objectives:**

At the end of the session the student should be able to independently perform the steps of inserting an intraosseous line in a mannequin.

**Background Knowledge:**

**Introduction**

Intraosseous access permits rapid delivery of most fluids and medications when venous access is not possible. Intraosseous access is achieved by introducing a hollow needle into the bone marrow, either by punching or drilling through the bone cortex, so that the tip of the needle is located within the marrow space. The bone marrow is highly vascularised, and fluids and medications that are delivered into the bone marrow will quickly be absorbed into the systemic circulation.

**Indication:**

- To secure vascular access during circulatory collapse, when unable to secure peripheral venous access.

**Contraindications:**

- Local infection
- Fracture
- Bone deformity
- Osteogenesis imperfecta

**Equipments:**

- Intraosseous needle
- Mannequin with intraosseous access (Limb)
- Antiseptic solution
- Sterile drape
- Gauze pieces
- IV fluid
- IV infusion set.
- Sterile dressing
- Injection lignocaine 2%
- Syringes and hypodermic needle
- Gloves
- 3-way connector with extension.

**Case Scenario**

A 2-year-old boy was brought to the casualty with a history of loose stools and vomiting for 2 days duration, unable to tolerate oral fluids. On examination he was severely dehydrated and had a low volume pulse. So, emergency IV access was attempted which failed thrice. Next step to management of this child?

**Steps****Preparation:**

1. Explain the procedure to the child (if older) and the family without using technical jargon. Tell about the indication for cannulation.
2. Obtain informed consent, following procedure discussion, risks, and benefits. Consider the age and competence of the child for consent or assent to the procedure.
3. Observe universal precautions, wear gloves.

**Procedure:**

4. After placing the child supine, apply padding under the knee to flex the knee by 30 degrees, allowing the child's heel to rest comfortably.
5. Identify the puncture site, locate a consistent flat area of bone on the anteromedial surface of the proximal tibia, approximately 2 cm below the tibial tubercle, slightly medial to the tibial

tuberosity. (Other sites possible are distal tibia: 2 cm above the medial malleolus and the distal femur)

6. Under strict aseptic precautions, clean and drape the puncture site.
7. Inject local anaesthetic to anaesthetise the skin and periosteum.
8. Fix the guard on the IO needle at a desired depth (1-1.5 cm) to avoid over penetration depending on the shin and soft tissue thickness at the site.
9. Support and stabilize the leg with the non-dominant hand. Grasp the intraosseous needle in the palm of the dominant hand and direct it perpendicular to the bone away from the joint space. Twist and apply constant pressure until resistance is abruptly dropped.
10. Remove the stylet. Confirm correct needle placement by aspirating bone marrow into the syringe/ injecting fluid into the needle without extravasating.
11. In addition, proper placement of the needle is indicated if the needle remains upright without support and intravenous solution flows freely.
12. Observe for signs of extravasation.
13. Apply a sterile dressing and secure the needle and tubing in place.
14. Infuse the required amount of fluid and as and when the sign of shock improves and peripheral venous access is obtained, IO line should be removed, sterile dressing and pressure bandage applied.
15. A 3-way connector with extension is connected to the needle (to reduce the manipulation of the needle).
16. It should be discontinued as soon as venous access has been established (maximum of 24 hours duration)

#### Complications:

Iatrogenic fracture, epiphyseal plate injury, osteomyelitis, cellulitis, subcutaneous or subperiosteal infiltration, pressure necrosis of the skin, haematoma, fat embolism.

#### **Observation guide:**

- Identifies the puncture site with correct landmarks.
- Inserts the needle with correct screwing movements.
- Checks for extravasation of fluids.

#### **Assessment:**

The procedure is to be assessed by a faculty member using DOPS format and feedback provided.

#### Checklist:

- ✓ Introduction, explanation and obtaining consent.
- ✓ Following universal precautions, gloves
- ✓ Positioning and site identification.
- ✓ Aseptic precautions.

- ✓ Local anaesthetics.
- ✓ Fix the guard correctly at a desired depth of penetration.
- ✓ Correctly inserting the needle and infusing the fluids.
- ✓ Looking for extravasation.
- ✓ Briefing and concluding the procedure.
- ✓ Biomedical waste disposal.
- ✓ Proper documentation of the procedure.

**Suggested Reading:**

Books Recommended (latest edition)

- i. PG Textbook of Pediatrics, IAP P Gupta et al (Editors)
- ii. Clinical Methods in Pediatrics, P Gupta
- iii. PALS provider handbook 2021.

**NEONATAL RESUSCITATION**  
**(PED 6)**



## NEONATAL RESUSCITATION

### Competency: Phase 3

PE 20.3 Perform neonatal resuscitation in a mannikin

#### Objectives:

By completion of this module, the student will be able to .....

1. PE 20.3.1 - Perform all the steps of routine care on a mannikin
2. PE 20.3.2 - Demonstrate the initial steps of neonatal resuscitation in a mannikin in the correct sequence
3. PE 20.3.3 - Demonstrate the method of counting the heart rate of the neonate during resuscitation
4. PE 20.3.4 - Check the function of all parts of the self-inflating bag
5. PE 20.3.5 – Demonstrate the method of positive pressure ventilation (PPV) in a mannikin using appropriate size bag and mask
6. PE 20.3.6 – Check the signs of effective positive pressure ventilation
7. PE 20.3.7 – Initiate corrective steps in correct sequence for ineffective ventilation in simulated setting
8. PE 20.3.8 – Demonstrate the method of placement of orogastric tube during prolonged PPV in a mannikin
9. PE 20.3.9 – Demonstrate the “thumb technique” and “two finger technique” of providing chest compression in a mannikin
10. PE 20.3.10- Prepare correct dilution of adrenaline injection
11. PE 20.3.11 – Identify the correct size of Laryngoscope and endotracheal tube based on given birth weight/ gestation correctly

#### Background knowledge:

1. Foetal circulation
2. Physiological mechanism of transition from intrauterine to extrauterine life
3. PE 20.1 – Neonatal nomenclature; Normal term neonate and high-risk neonates
4. PE 20.2 – Explain the care of a normal new born
5. PE 20.4 – Assessment of a normal neonate
6. PE 20.7 – Discuss the aetiology, clinical features, and management of birth asphyxia
7. PE 27.9 – Discuss oxygen therapy in paediatric emergencies and modes of administration
8. 27.10 – Observe various methods of administering oxygen
9. NRP algorithm

In the foetus, the alveoli are filled with fluid and pulmonary vessels are vasoconstricted.

After birth, as the baby takes deep breaths and cries, the fluid in lungs is replaced with air

Air in the alveoli improves oxygenation causing the ductus arteriosus to constrict thereby increasing the pulmonary blood flow leading to further improvement in oxygenation

The most important and effective step in neonatal resuscitation is to ventilate the baby's lung  
85% term neonates do not require resuscitation at birth; 10% require initial steps; 5% require PPV; < 1% require chest compressions/medication

**Equipment:**

- Baby tray with two clean warm towels/sheets, mucous extractor, gloves, cord clamp, cotton swabs, needle (26 gauge) and syringe (1 ml), Inj. Vit K
- Clean cord cutting equipment (scissor/new blade)
- Shoulder roll
- Wall clock with seconds hand
- Functional self-inflating resuscitation bag (250 ml & 500 ml), infant mask in three sizes '1' (normal weight babies), '0' (small babies), '00' very small babies
- A functional radiant warmer
- Oxygen source
- Stethoscope
- Suction machine (Electric or foot operated with pressure between – 80 to 100 mm of Hg)
- Suction catheters 12 F and 10 F
- Orogastric tubes 8F
- Inj. Adrenaline 1mg vial
- Normal Saline
- Disposable syringes- 1ml, 2 ml, 10 ml
- Laryngoscope with straight blades ('00', '0' '1')
- Endotracheal tubes (2.5, 3, 3.5)
- Pulse oximeter
- Cardiac monitor

**Case scenarios:**

1. A 25-year-old primigravida with regular antenatal visits and uneventful antenatal period presents to labour room at 38 weeks gestation with labour pains. Per vaginal examination reveals that she is in active labour with favourable cervix. How would you prepare for the delivery of this baby?
2. A 30 -year-old 2<sup>nd</sup> gravida at 38 weeks with previous LSCS, is admitted to labour room with high blood pressure and decreased foetal movements. She is being prepared for emergency LSCS. How would you prepare to receive this baby?
3. This 26-year-old primigravida is in active labour. Artificial rupture of membranes showed meconium-stained liquor. The cardiotocography showed late deceleration and instrumental delivery is planned. How will you prepare to receive this baby?

4. This 35-year-old primigravida conceived after in vitro fertilisation is admitted to the labour room with bleeding per vaginum. USS examination revealed Grade 3 placenta praevia with a gestational age of 32 weeks. She is posted for emergency LSCS. What will you do to receive this baby?

**Steps:**

Preparatory session:

Video based interactive lecture on NRP followed by post test

Procedure:

1. Anticipation:

Antepartum risk factors

Maternal risk factors	Foetal risk factors
Maternal age (< 16/>32 years)	Preterm/Post term
Inadequate antenatal care	Previous foetal/ neonatal death
Significant antepartum haemorrhage	Intrauterine growth retardation
Maternal hypertension/preeclampsia/eclampsia	Significant malformations/ anomalies
Maternal medical problems (cardiac, pulmonary, renal, thyroid, anaemia)	Intrauterine infection
Maternal pyrexia, infection, chorioamnionitis	Reduced foetal movements
Poly/oligohydramnios	

Intrapartum risk factors

Maternal risk factors	Foetal risk factors
Meconium-stained amniotic fluid	Chorioamnionitis
Precipitate/ prolonged labour	Narcotic administration to mother within 4 hours of delivery
Breech or other non-vertex presentation	Maternal general anaesthesia /sedation
Forceps/ vacuum deliveries	
Cord prolapse	

2. Preparation:

(A) Describe the preparation of delivery room

- Close all doors and windows
- Maintain temperature in room between 26 to 28 degrees Celsius
- Switch on warmer 20 minutes before delivery and prewarm two towels

- Designate a newborn corner to perform resuscitation
- Ensure respectful maternity care – Privacy, confidentiality, provision of birth companion
- Inform the team (at least one person who is knowledgeable about NRP).

(B) Preparation of equipment

Thermoregulation:

- Baby tray with two clean warm towels/sheets
- A functional radiant warmer

Clearing the Airway

- Suction machine (Electric or foot operated with pressure between – 80 to 100 mm of Hg)
- Mucous extractor
- Suction catheters 12 F and 10 F

Monitoring

- Stethoscope
- Wall clock with seconds hand
- Pulse oximeter
- Cardiac monitor

Oxygenation

- Oxygen source

Ventilation

- Self-inflating bag (250 ml & 500 ml) that is functioning
- Infant mask in three sizes ‘1’ (normal weight babies), ‘0’ (small babbies), ‘00’ (very small babies)
- Shoulder roll    Orogastric tubes 5,6,7,8
- Laryngoscope with straight blades (‘00’, ‘0’ ‘1’)
- Endotracheal tubes (2.5, 3, 3.5)

(C) Infection control      Describe/demonstrate the infection prevention control measures

- Hand washing/ wearing gloves
- Clean hands
- Clean perineum
- Clean surface
- Clean/Sterile cord tie
- Clean/sterile scissor/blade
- Clean cord care

3. Actions at birth

- Note the time of birth
- Receive baby mannikin in dry and warm linen

- Place baby mannikin prone on mother's abdomen
- Turn head to one side
- Wipe secretions if visible
- Dry the baby and discard wet linen
- Is the baby crying or breathing; good tone; term gestation? If yes, provide **routine care**

4. Routine care

- Continue skin to skin care (Put baby on mother's chest between breasts)
- Ensure open airway
- Cover baby and mother together (Remember to cover baby's head)
- Clamp and cut cord between 1 to 3 minutes
- Initiate breast feeding
- Check breathing and colour

5. Initial steps (If not breathing/crying, poor tone, preterm)

- Clamp and cut cord immediately
- Places baby under radiant warmer
- Position baby with neck slightly extended by placing a shoulder roll
- Suction mouth then nose
- Stimulates baby (rubs back 2 to 3 times)
- Repositions baby – If crying – Observational care

6. If not crying/breathing after initial steps, provide Positive Pressure Ventilation (PPV); consider attaching pulse oximeter and cardiac monitor

- Selects appropriately sized mask
- Provider to stand at head end of baby and position baby's head in sniffing position (Fig 1)
- Position mask properly on baby to get an airtight seal by the EC clamp technique (Fig 2)
- Give 5 initial breaths to initiate bag and mask ventilation in room air
- If no chest rise after 5 initial positive pressure breaths, take **corrective steps**
  - Adjust the mask to ensure tight seal
  - Reposition the head to open the airway
  - Suction mouth then nose, to remove excessive secretions
  - Increase pressure by squeezing the bag to get a visible chest rise.
- If chest rise adequate, continue ventilation for 30 seconds at a rate of 40 to 60 breaths per minute (Breathe, 2, 3), if breathing well/crying – gradually discontinue PPV  
Baby goes for observational care

7. If crying after initial steps but laboured breathing or persistent cyanosis, attach pulse oximeter, oxygen if needed, consider continuous positive airway pressure (CPAP)
8. Actions to be taken if baby is not breathing well after ventilating for 30 seconds

- Continue bag and mask ventilation with added oxygen
- Call for help
- Count the heart rate for 6 secs and multiply by 10

(1) If HR > 100/minute, continue PPV, if spontaneous breathing – gradually discontinues PPV

(2) If HR 60 to 100/minute and baby not breathing, continue bag and mask ventilation with oxygen source at 5 to 10 L/minute; ensure adequate ventilation; can consider endotracheal tube (ETT) or laryngeal mask airway

(3) If HR < 60/ minute, provide chest compression with 100% oxygen (ventilation: compression ratio of 1:3)

Intubation and umbilical venous line as required

(4) If heart rate still < 60/minute, IV Epinephrine (0.01 ml of 1 in 10,000); can be repeated every 3 to 5 minutes

(5) If still HR < 60/ minute, consider hypovolemia and pneumothorax

#### Observational care with mother

- This is for babies breathing/crying after the initial steps or/and PPV for < 30 seconds
- Without separating from mother and skin to skin contact maintained
- Initiate breast feeding within 1 hour
- Monitor temperature, heart rate, breathing and colour every 15 minutes for first hour and every 30 minutes in next 1 hour

#### Post resuscitation care

- This is for babies with laboured breathing /persistent cyanosis and needing PPV beyond 30 seconds

Target Oxygen Saturation Table	
1 min	60%-65% <sup>o</sup>
2 min	65%-70%
3 min	70%-75%
4 min	75%-80% <sup>o</sup>
5 min	80%-85% <sup>o</sup>
10 min	85%-95% <sup>o</sup>
Initial oxygen concentration for PPV	
- 35 weeks' GA	21% oxygen
<35 weeks' GA	21%-30% oxygen

**Observation guide:**

Action	Yes/no
Assess risk factors and plan	
Ensures warmth in labour room, switches on radiant warmer	
Proper hand hygiene, wear gloves	
Prepares equipment	
Checks function of bag and mask	
Delivers baby on mother's abdomen and calls out time of birth	
If secretions present from nose and mouth – wipes it	
Dries the baby and removes the wet linen	
Assess spontaneous breathing, Tone, Gestation	
Indicates that baby can routine care	
Keeps baby on mother's abdomen in skin-to-skin contact and covers both	
Ties and cuts cord in 1-3 min and keeps baby between breasts of mother	
Advises and helps in initiating breastfeed	
In case baby not breathing, indicates that baby will require initial steps	
Cuts cord immediately and shifts to radiant warmer	
Positions baby in sniffing position with shoulder roll	
Suctions mouth, then nose	
Stimulates baby to breath (2-3 back rubs)	
Repositions baby- check for breathing	
If breathing present - observation care with mother	
If apnoeic - Start PPV	
Selects appropriate size mask	
Positions mask properly on baby (EC clamp technique)	
<ul style="list-style-type: none"> <li>▪ Begins PPV</li> <li>▪ Initial 5 breaths</li> <li>▪ Check for chest rise</li> </ul>	
Continue for 30 sec if chest rise present	
<b>If no chest rise</b> <ul style="list-style-type: none"> <li>▪ Reapplies mask</li> <li>▪ Repositions head</li> <li>▪ Clears secretions</li> <li>▪ Increases pressure</li> </ul>	
Continues effective PPV for 30 sec	

If spontaneous breathing/crying <ul style="list-style-type: none"> <li>▪ Gradually discontinue PPV</li> <li>▪ Observational care</li> </ul>	
No breathing after 30 sec of effective PPV <ul style="list-style-type: none"> <li>▪ Call for help</li> <li>▪ Connect O2 to bag and mask</li> <li>▪ Count HR for 6 sec</li> </ul>	
HR >100 <ul style="list-style-type: none"> <li>▪ Continue PPV</li> <li>▪ Reassess every 30 sec for spontaneous breathing</li> <li>▪ If breathing - post-resuscitation care</li> </ul>	
HR 60 to 100 – ensures adequate ventilation - consider ETT/LMA	
HR <60 <ul style="list-style-type: none"> <li>▪ Start chest compressions</li> <li>▪ Co-ordinate with ventilation (100% O2) in 3:1 ratio</li> </ul>	
If still HR<60, UVC - epinephrine 0.01ml/kg 1/10000	
HR continues <60, consider hypovolemia, pneumothorax	

## Assessment

### OSCE 1:

#### Perform bag and mask ventilation in a term apnoeic neonate

S No	Action	Marks
1	Hand Hygiene	1
2	Checks functioning of resuscitation bag	1
3	Selects appropriate size mask	1
4	Ensures that the 'sniffing' position is maintained	1
5	Positions mask properly on baby (EC clamp technique)	1
6	Begins PPV-Initial 5 breaths-check for chest rise	1
7	Continue for 30 sec and look for chest rise	1
	TOTAL	7

**OSCE 2:****What corrective action will you take if there is no chest rise while performing PPV**

S No	Action	Marks
1	Reapplies mask with good seal	1
2	Repositions head in sniffing position	1
3	Clears secretions from mouth followed by nose	1
4	Ventilation with increased pressure	1
5	Continues PPV looking for chest rise	1

**Suggested reading:**

- i. Textbook of neonatal resuscitation 8<sup>th</sup> Edition. American Heart Association. American Association of Paediatrics. 2020
- ii. Resuscitation and essential newborn care Resource manual. Navajaat Shishu Suraksha Karyakram 2020. Child health division. Ministry of Family Welfare. Government of India
- iii. Ghai Essential Pediatrics. 10<sup>th</sup> Edition. CBS Publishers & Distributers Pvt Ltd



**PEDIATRIC RESUSCITATION**  
**(PED 7)**



## PEDIATRIC RESUSCITATION

**Skill:** Pediatric basic life support

### Competency in phase III

PE 27.28 Provide BLS for child in mannikin.

PE 27.16 Assess airway and breathing. Demonstrate the method of positioning of an infant & child to open airway in a simulated environment

PE 27.18 Assess airway and breathing: perform assisted ventilation by Bag and mask in a simulated environment

PE 28.8 Discuss the types, clinical presentation, and management of foreign body aspiration in infants and children

### Objectives

By the completion of this module, the student will be able to:

1. Recognise an infant or child who needs CPR
2. Perform pulse check in a child and an infant
4. Demonstrate the method of positioning an infant or child to open the airway
5. Perform high quality CPR in an infant and child
6. Provide appropriate breaths in an unresponsive infant or child
7. Recognise an infant or child with choking
8. To relieve an infant or child victim of choking

### Background knowledge

1. The anatomy & physiology of ear, nose, throat, head, and neck (EN1.1)
2. Knowledge of types, clinical presentation, and management of FBAO in infants (PE28.8)
3. Knowledge about the equipment- self inflating bag, its parts, appropriate mas size selection and placement
4. Knowledge regarding difference in causes of sudden cardiac arrest in an infant or child from adults.(PE 27.2)
5. The differences between pediatric airway and adult airway.
  - It is more compliant
  - The larynx is anteriorly tilted and more cephalic in position compared to the adult.
  - It is conical rather than cylindrical
  - The epiglottis is long and pliable
6. The infant and child BLS algorithm
7. An infant is aged 1 month to 1 year, a child is aged one year up to puberty. Puberty is indicated by axillary hair, or the presence of breast development (in girls)

## Equipment

Manikins – child & infant

Self-inflating resuscitation silicone bag, size 500 and 750 ml

Circular, cushioned, silicone face mask, of sizes 1, 2, 3

Stop watch

Laptop

## Case scenarios

1. A 6-month old baby admitted with bronchopneumonia in ward on oxygen support is found unresponsive by the resident. How will you proceed?
2. A 5-year old child is seen outside your home after a road traffic accident. How will you proceed?
3. A 10-month old baby was playing with his sibling with a toy car, when mother suddenly noticed coughing and noisy breathing. How will you proceed?
4. While having lunch in a restaurant, a child who is sitting at a nearby table, suddenly coughs, is unable to talk and holds his throat with both hands. What will you do?

## Steps

Preparatory session – Small group session on BLS in an infant/child and choking infant

## Procedure

1. Ensure scene safety
2. Look for response by tapping the child's shoulders or flicking the soles in an infant
3. If unresponsive, shout for help
4. Activate emergency response system (ERS), send someone to get an AED
5. Assess breathing and pulse
  - a. Check if victim is breathing or not (chest rise and fall) or has abnormal breathing.
  - b. To perform a pulse check in a child, palpate the carotid or femoral pulse, feel for a pulse for at least 5 but not more than 10 seconds.
    - To locate the carotid pulse, locate the trachea with 2 fingers, slide the fingers into the groove between the trachea and the muscles at the side of the neck, on your side.
    - To locate the femoral pulse, place two fingers in the inner thigh at the mid-inguinal point, (the midpoint of the line drawn from the anterior superior iliac spine to the pubic symphysis).
    - In an infant, to locate the brachial pulse, place two or three fingers on the inside of upper arm, between the elbow and shoulder, and press gently to feel the pulse, for at least 5 and not more than 10 seconds.
6. If victim has normal breathing and a palpable pulse, monitor in recovery position.
7. If not breathing normally, but has a palpable pulse, provide rescue breaths every 3- 5 seconds (12 to 20 per minute). Continue rescue breaths and check pulse after every two minutes, and activate ERS.

8. If no breathing or only gasping, and no pulse, begin CPR, with 30 compressions and 2 breaths, if single rescuer. Use 15:2 when second rescuer arrives.

How to provide chest compression.

1. The provider should position himself on the right side of the manikin
2. Ensure that the manikin is supine on a firm flat surface
3. The site for chest compression is on the sternum, just below the nipple line
4. In the child, place the heel of the hand on the site of compression
5. A) In the infant, for a single rescuer, use the two-finger technique. Place two fingers vertically on the site of compression. B) For 2 rescuers, use the two-thumb, encircling technique. Encircle the chest with both hands, and place both thumbs, side-to side, on the site of compression.
6. Provide chest compressions of adequate rate (at least 100/ minute)
7. Provide chest compressions of adequate depth (one third the antero-posterior diameter of chest, 2" for child and 1.5" for an infant)
8. Allow complete chest recoil after each compression
9. Minimise interruptions during compressions

Opening the airway

1. Head tilt- chin lift.

Place one hand on the mannikin's forehead and tilt backwards. With the fingers of the other hand, lift the jaw to bring the chin forward. Avoid pressing deep into the soft tissue under the chin. Position the head in such a way that the external auditory meatus is in line with the shoulder.

2. Jaw thrust

This manoeuvre is performed in case of suspected head and neck injury. Both hands are placed, one on each side of the mannikin's head, resting the elbows on the surface. The fingers are placed below the angles of the jaw and the jaw is pushed forward.

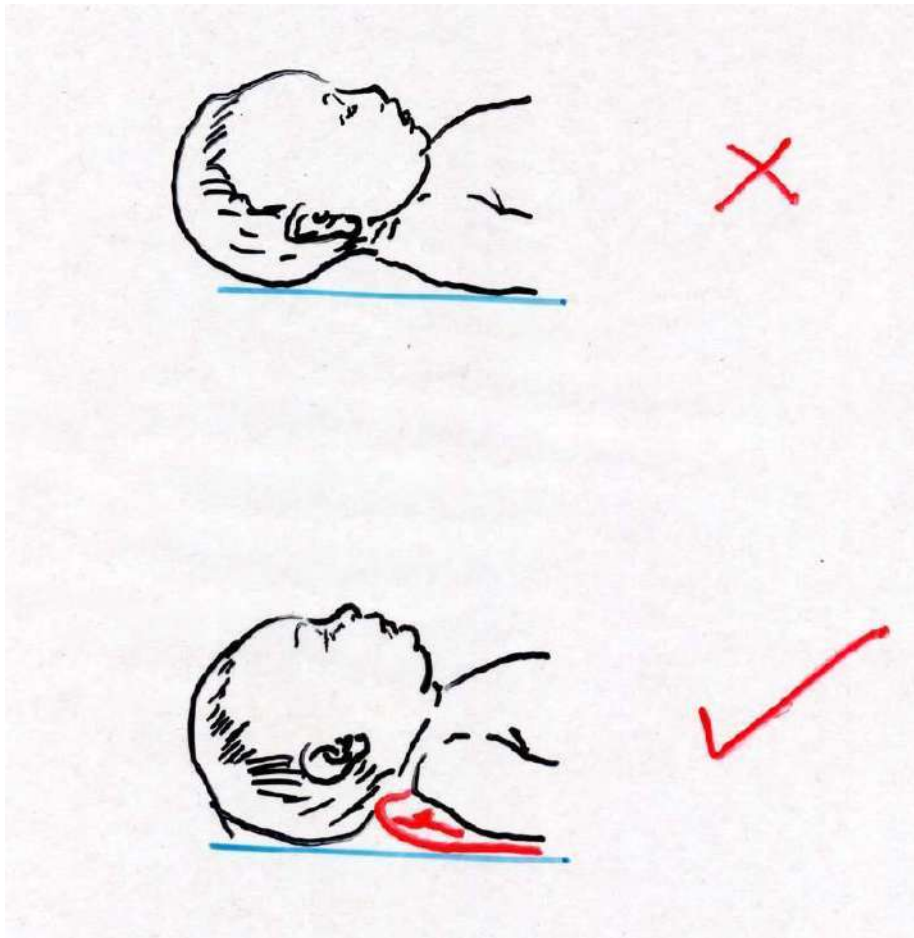


Figure 1. Wrong and correct position of the head and neck in an infant

#### How to provide rescue breaths

1. Deliver breaths with minimum interruptions to compression
2. Each breath should be delivered over 1 second.
3. The rate should be one breath every 3 to 5 seconds.
4. The ratio of compressions to breaths is 30:2 for single rescuer CPR and 15:2 for 2 –rescuer CPR.
5. Each breath should result in a visible chest rise.
6. In a child with a secured (advanced) airway the breath rate should be one every 2 to 3 seconds.

#### Use of bag and mask Refer Neonatal resuscitation module

Note that in a child, the mask is placed over the face using the bridge of the nose as a guide.

Use the E-C clamp technique to hold the mask in place. The C refers to the thumb and index finger holding the mask tight on the face, covering the mouth and nose; the E refers to three fingers placed on the tip of the chin, the ramus, and the angle of the mandible.

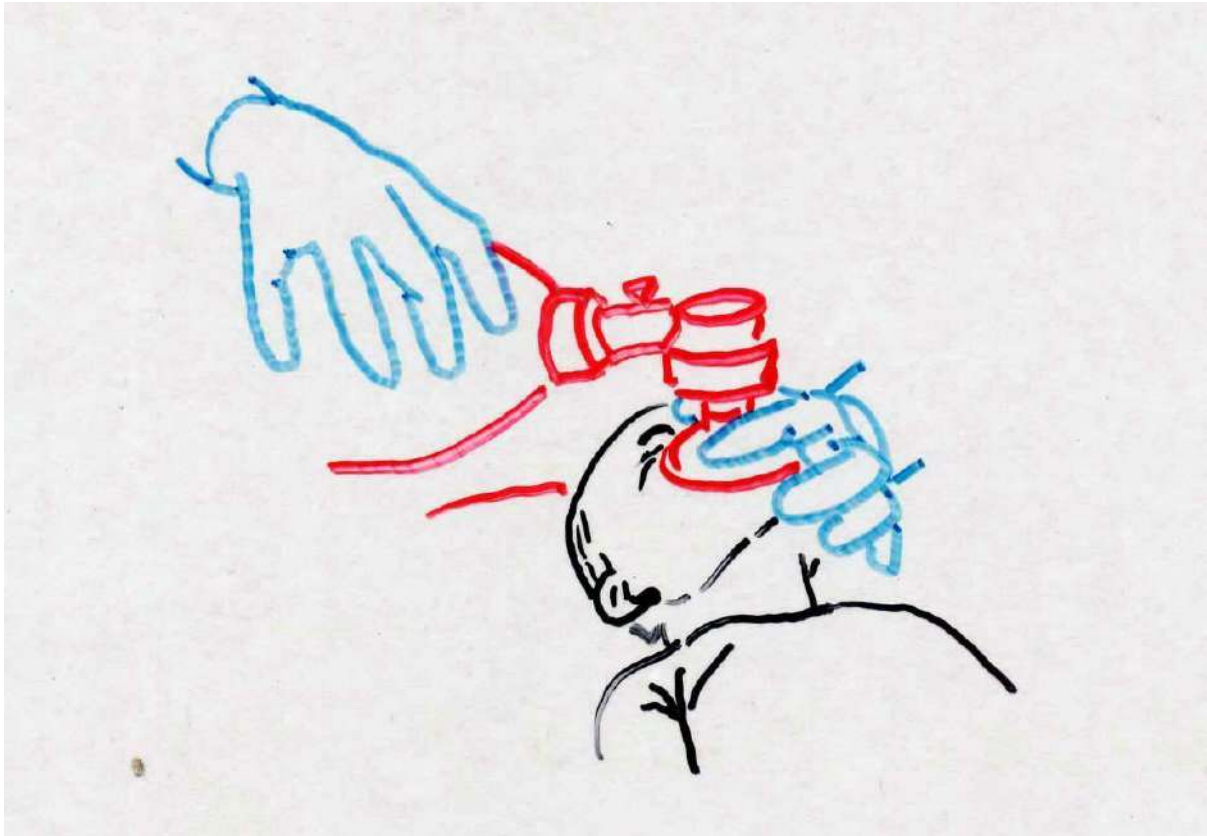


Figure 2. The E-C clamp technique of placing the mask on the face

### Relief of choking in an infant

Identifying choking in an infant:

If an infant is unable to cry/ cough or vocalise, or has cyanosis, severe airway obstruction is present. This is the indication to relieve choking.

### Procedure

1. Kneel or sit with the infant mannikin supported on the thigh with the head held slightly lower than the trunk.
2. Hold the infant face down with the head slightly lower than the chest, resting on the forearm. Support the infant's head and jaw with the hand. Avoid compressing the soft tissues of the infant's throat.
3. Provide 5 rapid forceful blows on the mannikin's back (between the scapulae) using the heel of the hand.
4. After delivering up to 5 back blows, switch the mannikin to the opposite arm, face up and head downwards.
5. Provide 5 quick chest thrusts over the lower half of the sternum.
7. Repeat the sequence of 5 back blows and chest thrusts until the object is expelled or the infant becomes unresponsive. The rate of back blows and chest thrusts is one per second.

8. If the infant becomes unresponsive, begin CPR with compressions. After 30 compressions, open the airway and look for a foreign body. If the foreign body is seen, it may be removed. Do not perform blind finger sweeps. Continue CPR.

9. Activate emergency response system after 2 minutes of CPR if not done already.

#### Relief of choking in a child- the Heimlich manoeuvre

##### Identifying choking in a child

A child develops acute respiratory difficulty, with inability to speak or breathe or cough, makes a high-pitched sound, has cyanosis, makes the universal choking sign.



Figure 3. The Heimlich manoeuvre

#### Procedure.

1. Hold the child manikin from behind
2. Place the fist of one hand over the abdomen, between the xiphisternum and umbilicus
3. Grasp the fist with the other hand and deliver upward thrusts.

The objective is to create an artificial cough and expel the foreign body. The thrusts should be delivered till either the object is expelled or the victim loses consciousness.

4. If the child becomes unresponsive, begin CPR with compressions. After 30 compressions, open the airway and look for a foreign body. If the foreign body is seen, it may be removed. Do not perform blind finger sweeps. Continue CPR.
5. Activate emergency response system after 2 minutes of CPR, if not done already.

### Observation guide

Skill assessed	Yes	No
Establishes scene safety		
Checks for response		
Calls for help, activates the ERS		
Checks for breathing.		
Checks for pulse ( for at least 5 seconds, and not more than 10 seconds)		
Gives high quality CPR <ol style="list-style-type: none"> <li>1. Chest compression hand placement</li> <li>2. Adequate rate at least 100 to 120 per minute</li> <li>3. Compression at least 1/3 the AP diameter of the chest</li> <li>4. Allows complete chest recoil</li> <li>5. Minimizes interruptions</li> </ol>		
Opens airway effectively <ol style="list-style-type: none"> <li>1. Head tilt</li> <li>2. Chin lift</li> </ol>		
Breaths <ol style="list-style-type: none"> <li>1. Visible chest rise</li> <li>2. Duration one second</li> <li>3. Rate of one breath every 3 to 5 seconds</li> </ol>		
Compression-ventilation ratio <ul style="list-style-type: none"> <li>● 30:2 if single rescuer</li> <li>● 15:2 if 2 rescuers.</li> </ul>		

### Debriefing (as per the guideline)

Summarises the performance and gives a corrective feed back

**Assessment**

## Observation guide for relieving choking in an infant

Skills assessed	Yes	No
Positioning the manikin <ol style="list-style-type: none"> <li>1. Holds the manikin on the thigh, supported by forearm</li> <li>2. Head end lower than chest</li> <li>3. Head and jaw supported by hand</li> <li>4. Avoids pressure on the soft tissue of the neck</li> </ol>		
Delivers 5 backslaps <ol style="list-style-type: none"> <li>1. On the interscapular region, on the midline</li> <li>2. Forceful and rapid</li> <li>3. With the heel of the hand</li> </ol>		
Shifts the manikin onto the opposite arm, face upwards, forearm resting on the thigh, head end downwards		
Provides 5 Chest thrusts		
Repeats the cycles		
In the scenario of unresponsiveness, stops back blows and gives CPR, without pulse check		
Looks for foreign body in the open mouth		
Does not perform a blind sweep		

**Observation guide for relief of choking in a child**

Skills assessed	Yes	No
1. Holds the manikin from behind		
2. Places the fist over the abdomen between the xiphisternum and umbilicus		
3. Grasps the fist with other hand		
4. Delivers upward thrusts		
5. In the scenario of the victim becoming unresponsive, starts CPR without pulse check		

### Assessment

1. Perform chest compression by the two thumb technique in an infant mannikin.

Item	Mark	X	Y	Z
1. Ensures that the mannikin is on a firm surface	1			
2. Encircles the chest with both hands	1			
3. Places both thumbs side by side just below the nipple line on the sternum	1			
4. Compresses to a depth of 1/3 <sup>rd</sup> of the AP diameter or 1.5"	1			
5. Compresses at a rate of 100-120 per minute	1			
6. Ensures complete chest recoil	1			
TOTAL	5			

2. Position the child manikin so that the airway is open

Item	Mark	X	Y	Z
1. Places hand on forehead and tilts the head backwards	1			
2. Uses fingers of other hand to lift the chin	1			
3. Avoids pressing on soft tissue under the chin	1			
4. The external auditory meatus is in line with the shoulder	1			
TOTAL	4			

3. Perform the Heimlich manoeuvre on a child manikin

Item	Mark	X	Y	Z
1. Holds the manikin from behind	1			
2. Places the fist over the abdomen between the xiphisternum and umbilicus	1			
3. Grasps the fist with other hand	1			
4. Delivers upward thrusts	1			
5. In the scenario of the victim becoming unresponsive, starts CPR without pulse check	1			
TOTAL	4			

### Suggested Reading

- i. Ghai Essential Pediatrics 10<sup>th</sup> edition CBS Publishers & distributors Pvt Ltd
- ii. Nelson Textbook of Pediatrics. 21<sup>st</sup> Ed. Elsevier
- iii. BLS for healthcare providers. American Heart Association. 2020



**VACCINATION IN PEDIATRICS**  
**(PED 8)**



## VACCINATION IN PEDIATRICS

**Skill** Administration of childhood vaccines

**Competency**-phase 2, phase iii -part 1 & 2

PE19.6 Assess patients for fitness for immunization and prescribe an age- appropriate immunization schedule.

PE19.7 Educate and counsel a patient for immunization.

PE19.13 Demonstrate the correct administration of different vaccines in a mannequin.

### Objectives

At the end of the session, the student should be able to

- counsel a parent regarding immunisation
- assess patients for fitness for immunization and prescribe an age-appropriate immunization schedule.
- demonstrate the correct administration of different vaccines in a mannequin.

### Background Knowledge

- The components of the Universal Immunization Program and the National Immunization Program, including current National and sub national immunisation days.
- The epidemiology of Vaccine preventable diseases.
- Vaccine description about classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications, and contraindications.
- Cold chain and the methods of safe storage and handling of vaccines.
- Immunization in special situations – HIV positive children, immunodeficiency, pre-term, organ transplants, those who received blood and blood products, splenectomised children, adolescents, travellers.
- Methods of documentation in an immunization record
- Methods of administration of UIP vaccines.
- Infection control measures, appropriate handling of the sharps, and methods of hospital waste disposal
- Knowledge of the term implied consent in Immunization services.
- The medicolegal implications of the components of safe vaccine practice – Patient education/ counselling, adverse events following immunization, safe injection practices and documentation.
- Other available vaccines and their indications including Hepatitis A, Varicella, Typhoid, JE, MMR,HPV.

(PE19.1 to 19.16, M18.7, CM14.2)

**Preparation:**

Relevant areas of the above competencies should be addressed as SGD/Lectures.

Demonstration in immunisation clinic /primary health centre.

**Equipment**

Mannequin with injection site access/Task trainers/Hybrid simulation

Hand wash facilities

Placebo vaccines, diluents

Table, seat for patient & vaccinator, Bench for waiting area

Injection Tray, conditioned ice packs

Gloves

22-26 G needles, AD syringes

Ampoule breaker

Gauze pieces

cotton swabs

Gloves

EMLA patch

Vaccination (MCP) card

AEFI kit with O 2 source

Weighing machine

BP apparatus, Pulse oximeter

The safe needle and waste disposal unit & Hub cutter

Cold chain equipments (vaccine carrier, ice pack)

Paracetamol syrup, tablets

Documentation Tools: - Pens, paper, or electronic devices for recording the procedure and vital information.

**Case scenario**

1. A 45-day old baby is brought for vaccination to the nearby health centre. How will you assess the baby and what vaccines will be provided to this baby?

(The chart showing the recent National Immunisation schedule as being practised in Kerala and the method of administration of different vaccines to be provided beforehand.)

**Steps****1. Patient Assessment:**

- Assess the patient's age & eligibility, medical history, allergies, and any contraindications for the procedure. Check MCP card for due vaccines and last vaccine date.
- Contra-indications are Severe anaphylaxis, SCID and immunosuppression for live vaccines. Precautions include acute severe illness and recent vaccination < minimum interval or recent administration of blood products/antibodies for live vaccines.

- Explain the procedure and regarding the vaccine-diseases prevented and its effects and possible adverse events to the parents addressing any questions or concerns.
2. Consent- For vaccination, the consent is implied- a verbal consent after explaining the vaccine - possible side-effects usually suffice.
  3. Hand Hygiene:
    - Wash your hands thoroughly with soap and water for 2 minutes using WHO 6 step technique or use alcohol based antiseptic hand sanitizer to maintain proper hand hygiene.
    - Gloves need not be worn unless the person has open lesions in hands.
  4. Select the Site

EMLA patch can be used for local pain relief prior to the procedure.
  5. Positioning:

Place the patient in a comfortable position in mothers lap for babies.
  6. Prepare the Site:
    - Choose an Appropriate Site for Injection as per the above table for the corresponding vaccine.  
intramuscular: Infants-vastus lateralis (anterolateral thigh at junction of middle and lower 1/3)  
Children-vastus lateralis and deltoid      Subcutaneous: deltoid      Intradermal: deltoid
    - Cleanse the selected site with a saline swab using a circular motion, starting from the centre, and moving outward. Do not use alcohol to clean the skin before giving vaccinations
    - Allow the site to air dry or use a sterile gauze pad to dry it, maintaining aseptic technique.
  7. Prepare the vaccine to be administered
    - Orally administered vaccines are usually given first followed by less painful vaccines.
    - Needles should be single use, disposable. Syringes should be Auto-disabled (AD) syringes.
    - A separate needle and syringe should be used for each injection.
    - Vaccines should be checked for expiry date and potency by vaccine vial monitor (VVM) prior to administration.
    - Different vaccines should not be mixed in the same syringe unless approved by the manufacturer.
    - If multidose vials are used, septum should be swabbed with alcohol prior to puncture and needle should not be left behind.
    - Prefilling of syringes is not advisable.
    - Vaccines that need to be mixed with diluent before use are BCG, MR and JE vaccines.
    - Reconstitute only with the diluent provided by the manufacturer for that batch of vaccine, immediately before use.
    - Write the date and time of reconstitution on the label of the vial immediately following reconstitution.
    - Use the reconstituted vials only for a single session

### 8. Technique of administration:

- Ensure that the child is seated in a comfortable position. Babies are usually vaccinated in their mother's lap. Baby is then restrained by the caregiver or assistant to stabilise the site of administration.
- Comfort measures such as distraction, topical/oral analgesia, breastfeeding, ingestion of sweet liquids, cooling of injection sites can help infants or children cope with injection pain. EMLA cream may be applied 30 minutes prior.
- Rotavirus vaccine and OPV are the oral vaccines in the national immunization schedule.
  1. Position: Use the cuddle position on the caregiver's lap with the head supported and tilted slightly back. Vaccinator stands to one side .
  2. Administration: Open the infant's mouth by gently squeezing the cheeks between your thumb and index finger using gentle pressure.  
For rotavirus vaccine, 0.5 ml and for OPV, two drops of vaccine are allowed to fall from the dropper onto the tongue. Do not let the dropper touch the lips.
  3. Disposal: Discard the used oral vaccine vial into the red bag

### IM Needle Insertion:

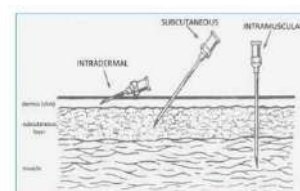
- The provider holds the syringe with their dominant hand and uses their non-dominant hand to stretch the skin slightly at the injection site to create a taut surface.
- The needle is inserted quickly and at a 90-degree angle into the muscle.
- Preterm and neonates, 22-25 G needle, 5/8 inch is used with skin stretched between thumb and forefinger and in infants, 22-25 G needle, 1 inch with bunching the skin, subcutaneous tissue, and vastus lateralis muscle to prevent striking the bone.
- Older children 22-25 G, 5/8-inch needles are to be used for Deltoid im injections and 22-25 G, 1 inch needles for anterolateral thigh injections.
- Adolescents – 1-1.5-inch needles can be used.

### Subcutaneous injection:

- To administer an SC injection, a 25-gauge, 5/8 in. needle is used. Always confirm that the size of the needle is appropriate for the patient before use. Subcutaneous injections are given at a 45-degree angle after pinching up a fold of skin and subcutaneous tissue lifted above the muscle plane.

### Intradermal injection:

The 26/27 G, 0.5-inch needle is inserted at an angle of 10-15 degrees after stretching the skin using thumb and index finger with the needle seen below the skin. Once in the dermal plane, inject the vaccine. The correct administration is seen by a 5 mm elevated wheal at the site.



#### 9. Removal of Needle:

After the medication is injected, the provider removes the needle a few seconds after administration of the vaccine to prevent backflow into the needle track and applies gentle pressure to the injection site with a dry cotton ball or gauze pad.

The injection site should not be rubbed vigorously.

The crying infant can be soothed by swaddling, breastfeeding etc.

If multiple vaccines are administered at a single visit, either administer at different sites or at 2-3 cm between two injections so that any local reactions can be differentiated.

#### 10. Disposal:

- The used needle and syringe are placed into a sharps disposal container for safe disposal. The needles should not be recapped in view of possible needle stick injury. Dispose contaminated materials properly.

#### 11. Post-Injection Care:

- Patient is instructed to move the limb gently to disperse the medication within the muscle.
- The healthcare provider monitors patients for any immediate adverse reactions for a minimum 30 minutes.
- Acetaminophen can be used for painful injections (DPT)

#### 12. Documentation:

- The details of the vaccine including the name, brand, batch no, dosage, date, and location are documented in patient medical records/MCP card.

13. Patient Education: Educate the patient on the importance of keeping the site clean and dry. - Provide instructions on what to report, such as signs of infection or discomfort. -

#### 14. Follow-Up:

Parents are advised on symptoms to watch for and to report if any.

Inform the parents on the next due vaccine and to keep the immunisation card safe.

#### **Observation Guide:**

The possible errors are during execution of

1. Hand washing
2. Confirmation patient identity, exclusion of contra-indications
3. Explanation of the procedure
4. Re-check of vaccine expiry date ,VVM
5. Technique of injection, site preparation and administration
6. Documentation
7. Observation for possible AEFI.

**Assessment checklist**

No	Action	Yes	No
1	Confirm patient identity, asks for contra-indications -checks MCP card		
2	Explains on vaccine- AEFI, verbal consent		
3	Hand washing		
4	Vaccine preparation- Selects appropriate needle and vaccine vial-VVM, expiry date, batch no, visible damage. Reconstitute lyophilized vaccines as per recommendations in aseptic technique Invert vial, insert needle and withdraw adequate dose and returns the vaccine vial to the cold chain point/ oral vaccines- attach dropper to the vaccine vial in an aseptic technique		
5	Reconfirms -Notes for 4 Rs- Right patient, Right vaccine, Right Dose, Right Route		
6	Positioning the patient & site preparation		
7	Pain relief measures		
8	Needle insertion as per technique advised/ Oral vaccines are administered at 45° angle with the baby in cuddle position and the dropper not touching the lips -recap with stopper and keep on ice pack after use		
9	Post injection care & biomedical waste disposal		
10	Documentation		

Separate skill assessment checklists are available in the Skills module for intramuscular and subcutaneous injections.

**Suggested learning:**

- i. Purple book - IAP guide book on immunisation, 2022.
- ii. Essential pediatrics- O P Ghai, 10<sup>TH</sup> Edition, CBS, 2023
- iii. Immunization handbook for medical officers, MOHFW
- iv. MOHFW-operational guidelines- introduction of RVV in UIP
- v. Immunization handbook for health workers, MOHFW- GOI

# ORTHOPAEDICS



**COMPRESSION BANDAGE  
(ORT 1)**



## COMPRESSION BANDAGE

### Competency in Phase 2

**OR 13.2(iv)** Participate as a member in team for Resuscitation of Polytrauma victim by applying Compression bandage

**Skill:** To apply compression bandage

### Objectives:

By the completion of this module, the phase 2 student should be able to

- Apply compression bandage in a mannequin with surgical cotton and bandage on the right knee stepwise in lying down position accurately.
- Suggested Teaching Learning Method: DOAP sessions

### Background Knowledge –

- AN18.6 Describe knee joint injuries with its applied anatomy
- IM7.13 Perform a systematic examination of all joints, muscle and skin that will establish the diagnosis and severity of disease
- FM3.3 Mechanical injuries and wounds: Define, describe, and classify different types of mechanical injuries, abrasion, bruise, laceration, stab wound, incised wound, chop wound, defense wound, self-inflicted/fabricated wounds and their medico-legal aspects.

### Equipment:

- Low fidelity mannequin (Right lower limb)
- Table for keeping the mannequin
- Surgical cotton rolls
- Surgical bandage
- Paper plaster
- Sanitizer
- Facility for hand washing
- Observation guide checklist
- OSCE checklist

### Case Scenario(s)

A doctor will be called in for applying compression bandage in two possible scenarios 1. Polytrauma 2. Isolated limb trauma. Compression bandage is given to reduce bleeding in emergency situations and to give pain relief. When applying compression bandage for patients with external bleeding, skill module for wound management must be followed before applying the bandage.

Scenario 1: A 30-year-old female computer engineer working in Bangalore met with a road traffic accident (head on collision with a truck) while she was driving her car from Bangalore

to Thrissur. She lost consciousness and sustained multiple injuries to chest, abdomen, and pelvis. She also has a swelling on right knee. She was immediately brought to your hospital by police and you are called in as part of emergency department team to apply a compression bandage to her right knee.

Scenario 2: A 20-year-old male footballer sustained a cut injury to his right knee while he was playing. He was brought to the emergency department immediately. You are called in to apply a compression bandage to his right knee.

### Steps –

#### Preparation

- Get written informed Consent
- Cross checking the requirements
- Clean the limb with chlorhexidine if there is a wound

#### Procedure

- Step 1 Introduce oneself
- Step 2 Assess the neurovascular status and document
- Step 3 Explain the procedure to the patient
- Step 4 Patient positioned supine, expose the area
- Step 5 Get the assistant to hold the limb in neutral to 20 degree flexion
- Step 6 Wound care (if needed)
- Step 7 Put two layers of cotton roll applied from mid-calf to mid-thigh
- Step 8 Repeat step 6 with 50% overlap and adhesive tape applied.
- Step 9 Surgical bandage applied over the cotton roll with 50% overlap.
- Step 10 Assess the tightness by insinuating a finger proximally and distally.
- Step 11 Place the limb back on the table
- Step 12 Ask for any new symptoms that developed distal to the bandage
- Step 13 Check for distal neurovascular deficits before and after
- Step 14 Thank / Reassure the patient

### Observation Guide

- Was Consent taken?
- Has the student Introduced him/her self?
- Initial neurovascular status documentation
- Roller bandage-Is it held with the roll facing upwards?
- Is the extent of the bandage correct?
- Is wrapping and overlapping technique appropriate?
- Was the tightness of the bandage (snug or too tight) checked?
- Is the distal neurovascular deficit checked after the procedure?
- Has the student thanked / reassured the patient after the procedure?

**Assessment**

## OSCE checklist

(4-Fail, 5-pass, 6-good pass, 7-Above average, 8-excellent)

Communication skill	Marks				
	4	5	6	7	8
Self-Introduction					
Explain the procedure					
Thank / Reassure the patient after the procedure					
<b>Psychomotor skill</b>					
Patient positioned supine, proper exposure					
Get the assistant to hold the limb neutral to 20 degree and gently over a pillow behind the knee joint					
Wound care (if needed)					
Application of cotton roll - two layers					
Application of surgical bandage					
Assess the tightness of the bandage					
Place the limb back on the table					
Ask for any new symptoms developed distal to the bandage					
Check for distal neurovascular deficits					
Help the patient to re-dress					
Plan definitive treatment					

Repeat actions recommended: 2

A grade of 4 warrants remedial measure

**Suggested Reading**

- i. Traction and orthopaedic appliances, J D M Stewart and J P Hallett, 2nd edition, Publisher Churchill Livingstone, 1st October 1983



**BASIC PLASTER APPLICATION**  
**(ORT 2)**



## BASIC PLASTER APPLICATION

### Competency in Phase-III:

**OR 13.1** Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins /simulated patients in the following: I. Above elbow plaster ii) Below knee plaster iii) Above knee plaster

### Skill: Applying above elbow plaster

**Objectives:** By the completion of this module, the student will be able to

- Apply an above elbow slab in a mannequin in sitting position accurately.
- Suggested Teaching Learning Method: DOAP sessions

### Background Knowledge –

OR1.4 - Describe and discuss the principles of management of soft tissue injuries

OR2.4 - Describe and discuss the mechanism of injury, clinical features, investigations, and principles of management of fracture of shaft of humerus and intercondylar fracture humerus with emphasis on neurovascular deficit

OR2.5 - Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury

IM7.13 - Perform a systematic examination of all joints, muscle and skin that will establish the diagnosis and severity of disease

PM1.3 - Define and describe the methods to identify and prevent disability

PM5.2- Describe the principles of early mobilization, evaluation of the residual limb, contralateral limb, and the influence of co-morbidities

Equipment knowledge - Should know about plaster of Paris

### Equipment:

- Low fidelity Mannequin - upper limb
- Table to keep mannequin
- Two assistants to hold the limb
- Basin and stand to keep water
- Trolley to keep plaster materials and other utilities
- Cast padding
- Plaster of Paris splint 10cm, 15cm
- Gauze bandage 10cm, 15cm
- Cotton bandage 10cm, 15cm
- Scissors

### Case Scenario(s)

The indication of an above elbow slab ranges from fracture of the forearm, elbow, distal part of the humerus to soft tissue injuries around forearm, elbow, and distal arm regions.

1) A 40 year old male with a history of fall at the workplace developed pain over his right elbow and his range of movement of elbow was painful. He was brought into the emergency department and after detailed evaluation he was diagnosed to have a fracture around his elbow. You are advised to apply an above elbow slab as part of the management of the injury

2) A 7 year old girl with history of fall on outstretched hand and brought to casualty with pain and swelling of the right forearm. She sustained a green stick fracture of the right forearm radius. You are advised to put an above elbow slab for this patient.

### Steps –

#### Preparation

- Get written informed Consent
- Cross checking the requirements
- Ensure adequate pain relief has been provided before starting the procedure
- Seat the patient comfortably on a stool
- Place the affected limb on the table, in a functional position, with 90° flexion of the elbow.

#### Things to keep in mind

- Splinting of affected region is done by applying POP one joint above and one joint below
- The distal palmar crease should remain free
- Protection of the lateral and medial epicondyle
- Protection of the olecranon
- While the splint is setting the limb should be positioned halfway between supination and pronation

#### Procedure

Step 1 - Introducing yourself

Step 2 - Explain the procedure to the patient and about the common occurrence of exothermic reaction manifesting as heat to the patient which occur during POP application which is normal

Step 3 – Check for neurovascular deficit

Step 4 - Get two assistants to hold the limb

Step 5 – Select appropriate POP size UL – 10 cm; LL -15 cm.

Step 6 - Prepare the POP slab, the length of the slab should be determined by taking measurement from knuckle (MCP joint level) to the midarm. Use adequate amount of POP to get at least 10-12 layers.

Step 7 – Soak the POP and mould



Apply the padding; make a hole for the thumb(1)

Step 8 -



Wrap the forearm using the half overlapping technique

Step 9 -



Protect the bony prominences

Step 10 -



Take the prepared splint and dip in water

Step 11 -



Position the splint from the level of MCP joints till the midarm

Step 12 -Wrap the splint using Gauze bandage same as padding technique, use a figure of eight technique at the elbow to avoid overstuffing and constriction at the level of elbow

Step 13 -Mould the splint and support the arm in prescribed position until the POP is set

Step 14 -After procedure explain to the patient regarding the importance of moving all fingers and POP care. Keep the limb elevated.

Step 15 -Check for distal neuro vascular deficits

Step 16 – Apply cuff and collar sling / arm pouch

Step 17 -Thank / Reassure the patient after procedure

### Observation Guide

Was written informed consent taken?

Has the student Introduced him/her self?

Has recorded the initial neurovascular status?

Roller bandage-Is it held with the roll facing upwards?

Is the extent of the bandage correct?

Is wrapping and overlapping technique appropriate?

Was the tightness of the bandage (snug or too tight) checked?

Is distal neurovascular deficit checked after the procedure?

Has the student thanked the patient after the procedure?

### Assessment

OSCE checklist

(4-Fail, 5-pass, 6-good pass, 7-Above average, 8-excellent)

Communication skill	Marks				
	4	5	6	7	8
Self-Introduction					
Explain the procedure and about exothermic reaction					
Explaining importance of moving fingers					
Thanking the patient					
<b>Psychomotor skill</b>					
Have all the steps been followed					

Taking measurement and preparation of POP					
Padding of the limb with proper technique					
Adequate padding of the bony prominence					
Application of splint position and extent					
Adequate moulding of the splint					
Waiting until the splint is set					
Checking for neurovascular deficit					

Repeat actions recommended: 2

A grade of 4 warrants remedial measure



**Skill: Applying below knee plaster**

**Objectives:** By the completion of this module, the student will be able to

- Apply a below knee slab in a mannequin in supine/prone position
- Suggested Teaching Learning Method: DOAP sessions

**Background Knowledge – Cognitive, Equipment**

OR1.4 - Describe and discuss the principles of management of soft tissue injuries

OR2.13 - Describe and discuss the aetiopathogenesis, clinical features, Investigation, and principles of management of:

- (a) Fracture both bones leg
- (b) Calcaneus
- (c) Small bones of foot

OR2.14 - Describe and discuss the aetiopathogenesis, clinical features, Investigation, and principles of management of ankle fractures

IM7.13 - Perform a systematic examination of all joints, muscle and skin that will establish the diagnosis and severity of disease

PM1.3 - Define and describe the methods to identify and prevent disability

PM5.2- Describe the principles of early mobilization, evaluation of the residual limb, contralateral limb, and the influence of co-morbidities

**Equipment:**

- Low fidelity Mannequin - lower limb
- Table to keep mannequin
- Two assistants to hold the limb
- Basin and stand to keep water
- Trolley to keep plaster materials and other utilities
- Cast padding
- Plaster of Paris splint 15cm
- Gauze bandage
- Cotton bandage
- Scissors

### Case Scenario(s)

The indication of a below knee slab ranges from fracture around the ankle, calcaneus, tarsals, metatarsals to soft tissue injuries around foot and ankle.

1) A 40 year old male patient had a fall at the workplace and he developed pain over his right ankle, and is unable to walk following the injury. He was brought into the emergency department and after detailed evaluation he was diagnosed to have a fracture around the ankle. You are advised to apply a below knee slab as part of the management of the injury

2) A 7 year old girl with a history of fall was brought to casualty with pain and swelling of the right foot. She has tenderness over her midfoot and unable to weight bear. You are advised to put a below knee slab for this patient.

### Steps –

#### Preparation

- Get written informed consent
- Cross checking the requirements
- Ensure adequate pain relief has been provided before starting the procedure
- Keep the patient prone on table (supine position if the patient is unstable or general condition is bad)
- Place the affected limb on a support and ankle at 90° flexion

#### Things to keep in mind

- Splinting of affected region is done by applying POP one joint above and one joint below
- Ensure the fibula head remains free a minimum of 2cm to avoid pressure on the peroneal nerve
- Protection of the lateral and medial malleolus
- Free flexion of the knee and toes

#### Procedure

Step 1 - Introducing yourself

Step 2 - Explain the procedure to the patient and about the common occurrence of exothermic reaction is experienced as heat to the patient, which occur during POP application

Step 3 – Check for any neurovascular deficit

Step 4 - Get two assistants to hold the limb

Step 5 - Prepare the POP slab, the length of the slab (approx. 15 cm) should be determined by taking measurement from metatarsal head to 2cm below fibular head, over the flexor aspect. Use adequate amount of POP to get at least 12-14 layers.

Step 6- Soak the POP by dipping in water holding both ends until the bubbling stops. Take the POP out and remove excess water by squeezing between palms with gentle pressure.

Step 7 -



Apply the cotton padding from distal to proximal using half overlapping technique along with extra padding over lateral and medial malleolus (bony prominences). Ensure that the heel is fully covered.

Step 8 -



Take the prepared POP and dip in water

Step 9 -



Apply the L shaped splint starting at the foot

Step 10 - Wrap the splint using Gauze bandage using half overlapping technique

Step 11 - Mould the splint and support the leg until the POP starts setting

Step 12 - Check for distal neuro vascular deficit (palpate the dorsalis pedis by making a small window in the cotton padding)

Step 13 - After procedure explain to the patient regarding the importance of moving all toes and POP care.

**Observation Guide**

Was written informed consent taken?

Has the student Introduced him/her self?

Is the student standing on the appropriate side?

Roller bandage-Is it held with the roll facing upwards?

Is the extent of the bandage correct? / number of layers

Is wrapping and overlapping technique appropriate?

Was the tightness of the bandage (snug or too tight) checked?

Is distal neurovascular deficit checked before and after?

Has the student thanked / reassured the patient after the procedure?

**Assessment:** OSCE checklist

(4-Fail, 5-pass, 6-good pass, 7-Above average, 8-excellent)

Communication skill	Marks				
	4	5	6	7	8
Self-Introduction					
Explain the procedure and about exothermic reaction					
Explain importance of moving the toes					
Thank / reassure the patient					
<b>Psychomotor skill</b>					
Have all the steps been followed					
Takes measurement and preparation of POP					
Padding of the limb with proper technique					
Adequate padding of the bony prominence					

Application of splint					
Adequate moulding of the splint					
Waiting until the splint is set					
Checking neurovascular deficit					

Repeat actions recommended: 2

A grade of 4 warrants remedial measure



**Skill: Applying Above Knee Plaster****Objectives:**

- Apply an above knee slab in a mannequin with necessary equipments on the lower limb in supine position
- Suggested Teaching Learning Method: DOAP sessions

**Background Knowledge – Cognitive, Equipment**

OR1.4 - Describe and discuss the principles of management of soft tissue injuries

OR2.13 - Describe and discuss the aetiopathogenesis, clinical features, Investigation, and principles of management of: (a) Fracture both bones leg (b) Calcaneus (c) Small bones of foot

OR2.11 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations, and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome

IM7.13 - Perform a systematic examination of all joints, muscle and skin that will establish the diagnosis and severity of disease

PM1.3 - Define and describe the methods to identify and prevent disability

PM5.2- Describe the principles of early mobilization, evaluation of the residual limb, contralateral limb, and the influence of co-morbidities

**Equipment:**

- Low fidelity Mannequin - lower limb
- Table to keep mannequin
- Two assistants to hold the limb
- Basin and stand to keep water
- Trolley to keep plaster materials and other utilities
- Cast padding
- Plaster of Paris splint 15cm
- Gauze bandage
- Cotton bandage
- Scissors
- Surgical tape or bandage clips

**Case Scenario(s)**

The indication of a above knee slab ranges from fracture around the knee, leg, distal femur to soft tissue injuries around distal thigh, knee, and leg.

1)A 76 year old male with a history of fall at home and developed pain over his right knee, he is unable to walk following the injury. He was brought into the emergency department and after detailed evaluation he was diagnosed to have fracture proximal end of tibia. You are advised to apply a above knee slab as part of the management of the injury

2) A 7 year old girl with history of fall, she was brought to casualty with pain and swelling of the right leg. She has tenderness over her middle third leg and unable to weight bear, after evaluation she was diagnosed to have fracture middle third tibia. You are advised to put a above knee slab for this patient.

### Steps –

#### Preparation

- Get written informed consent
- Cross checking the requirements
- Ensure adequate pain relief has been provided before starting the procedure
- Keep the patient supine on table
- Place the affected limb on a support at proximal thigh and ankle at neutral position and knee at 0-20 degree flexion

#### Things to keep in mind

- Splinting of affected region is done by applying POP one joint above and one joint below
- Ensure adequate padding over fibula head and femoral condyles
- Protection of the lateral and medial malleolus with padding
- Free movements of the toes should be possible.

#### Procedure

Step 1 - Introducing yourself

Step 2 - Explain the procedure to the patient and about the common occurrence of exothermic reaction which occur during POP application

Step 3 - Get two assistants to hold the limb

Step 4 - Prepare the POP slab, the length of the slab should be determined by taking measurement from metatarsal head on the flexor aspect of ankle to 4inch distal to the groin. Use adequate amount of POP to get at least 14-16 layers.

Step 5- one and a half inch POP should cut so that it can be used for final adhesion.

Step 6 -



Apply the padding from distal to proximal using half overlapping technique along with extra padding at femoral condyles, lateral and medial malleolus

Step 7 - Take the prepared POP and dip in water till all air bubbles escape. Squeeze out excess water.

Step 8 - Apply the splint from foot to thigh, ask assistant to support the limb from opposite side and splint together before wrapping the splint

Step 9 - Wrap the splint using Gauze bandage same as padding technique

Step 10 - Mould the splint and support the limb until the POP is set

Step 11 - After procedure explain to the patient regarding the importance of moving all toes and POP care.

Step 12 - Check for distal neuro vascular deficits (open a small window, feel the dorsalis pedis and ask to move the toes.)

### **Observation Guide**

Was Consent taken?

Has the student Introduced him/her self?

Is the student standing on the appropriate side?

Roller bandage-Is it held with the roll facing upwards?

Is the extent of the bandage correct?

Is wrapping and overlapping technique appropriate?

Was the tightness of the bandage (snug or too tight) checked?

How distal neurovascular deficit is checked?

Has the student thanked / reassured the patient after the procedure?

**Assessment:** OSCE checklist

(4-Fail, 5-pass, 6-good pass, 7-Above average, 8-excellent)

Communication skill	Marks				
	4	5	6	7	8
Self-Introduction					
Explain the procedure and about exothermic reaction					
Explain importance of moving fingers					
Thank / reassure the patient					
<b>Psychomotor skill</b>					
Have all the steps been followed					
Taking measurement and preparation of POP					
Padding of the limb with proper technique					
Adequate padding of the bony prominence					
Application of splint					
Adequate moulding of the splint					
Waiting until the splint is set					
Checking neurovascular deficit (before and after)					

Repeat actions recommended: 2

A grade of 4 warrants remedial measure

**Suggested Reading**

- i. Dresing K, Trafton P. Casts, Splints, and Support Bandages: Nonoperative Treatment and Perioperative Protection. Thieme; 2014. 1721 p.

**STRAPPING OF SHOULDER AND CLAVICLE  
(ORT 3)**



## **STRAPPING OF SHOULDER AND CLAVICLE**

### **Competency in Phase-III:**

**OR 13.1** Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins /simulated patients in the following:

vi. Strapping for shoulder and clavicle trauma

### **OR 13.1 (vi.) Strapping for shoulder and clavicle trauma**

**Skill:** Strapping for shoulder and clavicle trauma

**Time: 30 minutes**

**Student number 3**

**Objectives:** By the completion of this module, the student will be able to

- Apply chest arm strapping in a mannequin/simulated patient with necessary equipment on the upper limb in sitting position accurately.
- Suggested Teaching Learning Method: DOAP sessions

**Background Knowledge** – Cognitive, Equipment

OR 2.1 - Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle

OR 2.2 - Describe and discuss the mechanism of Injury, clinical features, investigations, and plan management of fractures of proximal humerus

### **Equipment:**

Mannequin or volunteer

Elasto plaster

Pads and gauzes

Shaving stick

### **Case Scenario(s)**

A 67/F with history of fall on right arm. Xray shows a proximal humerus fracture. Demonstrate how a chest arm strapping can be given

### **Steps –**

#### Preparation

Consent taking

Cross checking requirements

Analgesics

Cuff and collar sling

## Procedure

### Steps

- Self-introduction
- Explain the procedure
- Check for neurovascular deficit
- Expose the affected side
- Check the need for analgesia
- Assistant to hold patient steady on the stool
- Prepare the chest, shoulder, and upper limb
- Keep a pad in the axilla
- Place a gauze to protect the nipple
- Hold the upper limb close to the trunk with elbow flexed and holding the opposite shoulder and arm adducted
- Elastoplastic measured from the mid sternal area to interscapular area and cut
- Elastoplastic applied
- Cuff and collar sling or arm support applied
- Look for neurovascular deficits after the procedure.

## **Observation Guide**

- Was written informed consent taken?
- Has verified the need for analgesia
- Has the student Introduced him/her self?
- Is the student standing on the affected side?
- Is the extent of the strapping correct?
- Has adequate padding of nipple and axilla been provided?
- Was the tightness of the strapping (snug or too tight) checked?
- Is distal neurovascular deficit checked?
- Has the student thanked / reassured the patient after the procedure?

**Assessment:** OSCE checklist

(4-Fail, 5-pass, 6-good pass, 7-Above average, 8-excellent)

Communication skill	Marks				
	4	5	6	7	8
Verified co					
Self-Introduction					
Explain the procedure					
<b>Psychomotor skill</b>					
Have all the steps been followed					
Assistant to hold the patient					
Preparation of the parts					
Padding the axilla and nipple					
Application of elastopaster					
Application cuff and collar sling					
Checking of neurovascular deficit before and after					
Thanking / Reassuring the patient					
Cover back the patient					

**Repeat actions recommended: 2****A grade of 4 warrants remedial measure****Suggested Reading**

- i. Traction and orthopaedic appliances, J D M Stewart and J P Hallett, 2nd edition, Publisher Churchill Livingstone, 1st October 1983



**THOMAS SPLINT APPLICATION**  
**(ORT 4)**



## THOMAS SPLINT APPLICATION

### Competency in Phase-III:

OR13.1(iv): Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins /simulated patients in the following:

iv. Thomas splint

**Skill:** Applying Thomas splint

**Objectives:** By the completion of this module, the student will be able to

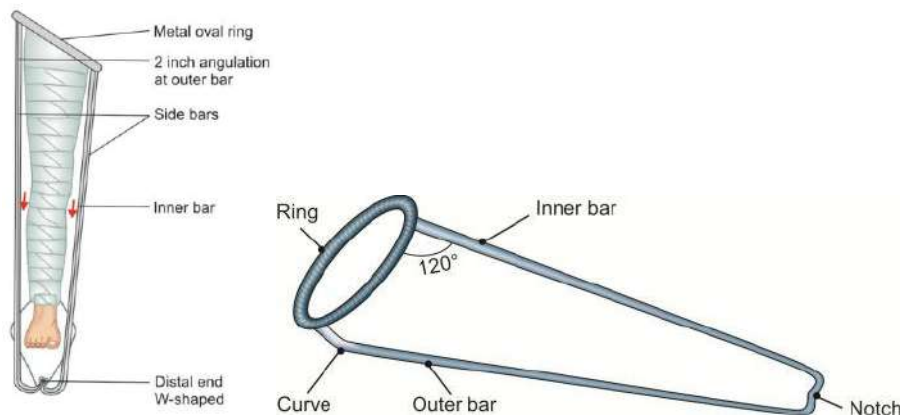
- Apply Thomas splint in a mannequin with necessary equipments on the lower limb in supine position accurately
- Suggested Teaching Learning Method: DOAP sessions

### Background knowledge

OR2.10 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations, and principles of management of fractures of proximal femur

OR2.12 - Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication

Equipment knowledge - students should know parts of Thomas splint and have knowledge about skin traction.



### Equipment required

- Thomas splint of various sizes
- Mannequin (Lower limb)
- Two assistants for the procedure
- Soft roll
- Measuring tape
- Pads
- Roller bandage
- Skin traction set

Scissors

### Case scenario

Scenario 1: A 30 year old female computer engineer working in Bangalore met with a road traffic accident (head on collision with a truck) while she was driving her car from Bangalore to Thrissur. She lost consciousness and sustained multiple injuries to chest, abdomen, and lower limb. She also has a deformity of right thigh. She was immediately brought to your hospital by police and you are called in as part of the emergency department team to apply a Thomas splint before shifting her for evaluation.

### Steps

#### Preparation

1. Get written informed consent
2. Cross checking requirements
3. Ensure adequate pain relief has been provided
4. Measurement for Thomas splint - Take thigh diameter at the level of maximum girth of the normal limb and add 15 cm to accommodate for the swelling. This gives the measurement for the ring circumference. Then take measurement from groin to heel then add 6" will give inner bar length.
5. Padding the private parts

#### Procedure

1. Self-introduction
2. Explaining the procedure
3. Select the appropriate Thomas splint
4. Prepare the Thomas splint with the soft roll
5. Discuss the need for analgesia
6. Assistant to hold the limb
7. Apply the skin traction
8. Insert the Thomas splint with the longer rod outwards. The inner part of the ring should touch the ischial tuberosity and the outer part the iliac crest.
9. Pull the strings of the traction set to the end of the Thomas splint and tie at the notch.
10. Apply the roller bandage on limb and the Thomas splint
11. Ask for any new symptoms
12. Look for neurovascular deficit before and after
13. Cover the patient
14. Thank / Reassure the patient

### Steps of skin traction

1. Apply soft padding over bony prominences especially fibular head, medial and lateral malleoli, heel.
2. Use adhesive plaster to stick together both paddings. Skin traction kit over medial and lateral aspect.
3. From distal to proximal, apply bandage in adequate length by overlapping technique.
4. Enough length of skin traction strings should be there to tie a weight for hanging the traction.

### Observation Guide

Was written informed consent taken?

Has the student Introduced him/her self?

Is the student standing on the right side?

Has analgesia been ensured?

Roller bandage-Is it held with the roll facing upwards?

Is wrapping and overlapping technique appropriate?

Was the tightness of the bandage (snug or too tight) checked?

Is the distal neurovascular deficit checked before and after?

Has the student thanked / reassured the patient after the procedure?

**Assessment**

OSCE checklist

(4-Fail, 5-pass, 6-good pass, 7-Above average, 8-excellent)

Communication skill	Marks				
	4	5	6	7	8
Self-Introduction					
Explain the procedure					
Thanking after procedure					
<b>Psychomotor skill</b>					
Have all the steps been followed					
Preparation and measurement of Thomas splint					
Assistant to hold the limb					
Preparation of the limb					
Application of the skin traction					
Application of the Thomas splint					
Application of the roller bandage					
Checking neurovascular deficit					
Covering the patient					

**Repeat actions recommended: 2 A grade of 4 warrants remedial measure****Suggested Reading**

- i. Traction and orthopaedic appliances, J D M Stewart and J P Hallett, 2nd edition, Publisher Churchill Livingstone, 1st October 1983

# **COMMUNICATION SKILLS**



**BREAKING BAD NEWS**  
**(COM 1)**



## BREAKING BAD NEWS

(AETCOM MODULE 3.1, 4.1)

Bad news is any information that changes a person's view of the future in a negative way. Breaking bad news is a difficult skill to master. It requires patience and refined empathetic communication skills. It is important for learners to practice this skill in a controlled environment. This gives them time to build and refine the required skill set on the basis of supportive feedback.

**Competency Level:** Competency 23 ( SH) PY 3 and 4

**Objectives :** Communicate bad news to the patient/ relatives in a respectful, patient, non -threatening and empathetic manner in a simulated environment.

**Background Knowledge:**

- communication process
  - communication process model
  - Therapeutic communication skill
  - barriers of effective communication
  - steps in counselling
- Knowledge of vernacular language & socio-cultural background of the family.
  - Knowledge about the current condition of the patient
  - Knowledge about disease , its natural course, aggravating factors, treatment options, side effects, complications & prognosis.
  - Knowledge about the 5 stages of grief ( Kubler- Ross Grief cycle)

**Equipments:**

- Cubicles : 2-4 nos.
- Tables : 1 per cubicle
- Chairs- 4 per cubicle
- Box of tissues
- Listening room, Video recording (desirable)
- Standardized patient

**Scenario 1:**

2-year-old Lakshmi was brought with fever for 2 weeks, leg pain and pallor. She is diagnosed with Acute Leukemia. Her mother is waiting outside your OPD to know the details. How will you reveal the diagnosis to the mother?

**Scenario 2:**

Mr. Ramu is a 55-year-old man. An uncontrolled diabetic and chronic smoker, he presented with an infected ulcer of right lower limb. The limb is swollen and warm. The patient is febrile and delirious. He requires an emergency above knee amputation of the right lower limb. Convey this information to his wife in the best possible manner.

**Setting:**

- Ideally the bad news should be delivered by a senior person on the patient's treatment team
- Choose a quiet & private room/cubicle
- Ensure tables and adequate number of comfortable chairs.
- Avoid distractions ( ringing phone/co-worker/another patient or relative)

**Steps:**

- Instruct the duty staff to avoid any intrusions/ interruptions during the session.
- Confirm the patient's identity and invite the patient/ relative for counselling.
- Offer a seat
- Introduce yourself to the patient/relative and your role<sup>\$</sup>
- Follow SURETY model of non-verbal communication
  - Sit at an angle, Uncross legs and arms, **Relax**, maintain good **Eye** contact, **Touch** (where appropriate, should not be intrusive), **Your** intuition
- Establish rapport (name, educational status, occupation, socio-economic status)
- Describe what information you are planning to give- Diagnosis/ lab results/treatment plan/prognosis
- Enquire what the patient/ relative knows about the patient's condition
- Explain the condition and its implications in plain language
- Respect the feelings and respond with empathy- explore & identify the emotion(anger/sadness), let the person know that you understand the emotion was appropriate (validate), respond empathetically
- Offer tissue in case the patient/ relative is crying, comfort by holding hands, pat on the back as culturally appropriate #
- Respect personal space
- Identify the patient's/ relatives' main concern
- Discuss prognosis and treatment options ( give realistic hope)
- Summarise the discussion in a clear and concise manner
- Check patient/relatives' understanding level and clear doubts
- Ask if there is anything else they would like to discuss
- End with a plan
- Offer assistance where feasible\*
- Document what has been discussed with signatures of the doctor and patient/ relative (specify relation to patient)

\$ May use culturally appropriate phrases like “ I am sorry, I have some bad news for you” , “ Things are not going in the direction we had hoped”

\*Assistance offered may be in the form of psychological counselling/directing to NGO or support groups/ information about social security schemes

**Special Situations:**

- 1) Inconsolable patient/relative: Stop the session and offer emotional and psychological support. Reschedule the session for later.
- 2) Agitated or aggressive patient/ relative:
  - Never argue with an angry mob
  - Suspend the session, call for assistance
  - Try to de-escalate the situation :
    - Avoid accusatory responses
    - Don't try to tell people you know how they feel
    - Do not lose your temper and do not try to rationalise-
    - Ask for their perspective , allow them to vent their feelings and get clarifications.
  - If necessary, remove yourself from the scene
- 3) Referral/ Second opinion:
  - Be open and respectful
  - Offer suggestions if requested for

## Assessment:

Figure 1.11	Kalamazoo Essential Elements Communication Checklist							
Date: _____ Setting: _____ Learner: _____ Observer: _____					Done well	Needs improvement	Not done	Not applicable
<b>Build a Relationship</b>								
Greets and shows interest in patient as a person					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uses words that show care and concern throughout the interview					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uses tone, pace, eye contact, and posture that show care and concern					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Open the Discussion</b>								
Allows patient to complete opening statement without interruption					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asks "Is there anything else?" to elicit full set of concerns					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explains and/or negotiates an agenda for the visit					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Gather Information</b>								
Begins with patient's story using open-ended questions ("Tell me about ...")					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarifies details as necessary with more specific or "yes/no" questions					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Summarizes and gives patient opportunity to correct or add information					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transitions effectively to additional questions					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Understand the Patient's Perspective</b>								
Asks about life events, circumstances, other people that might affect health					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elicits patient's beliefs, concerns, and expectations about illness and treatment					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Responds explicitly to patient statements about ideas, feelings, and values					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Share Information</b>								
Assesses patient's understanding of problem and desire for more information					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explains using words that are easy for patient to understand					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Checks for mutual understanding of diagnostic and/or treatment plans					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asks whether patient has any questions					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure  
1.11**Kalamazoo Essential Elements Communication Checklist (cont.)**

	Done well	Needs improvement	Not done	Not applicable
<b>Reach Agreement (if new/changed plan)</b>				
Includes patient in choices and decisions to the extent s/he desires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asks about patient's ability to follow diagnostic and/or treatment plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifies additional resources as appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Provide Closure</b>				
Asks whether the patient has questions, concerns, or other issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Summarizes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarifies follow-up or contact arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acknowledges patient and closes interview	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Comments:**


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Source: © Bayer-Fetzer Group on Physician-Patient Communication in Medical Education, May 2001. Reference: The Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education. *Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement*. *Academic Medicine* 2001; 76:390-393. Used with permission.

**Observation Guide:**

Sl.No	Skill	Y/N
1	Introduce oneself and explain role	
2	Enquire what the patient / relative already knows	
3	Thoughts are organised and coherent	
4	Jargon free conversation	
5	Patient/ relative allowed to speak without interruptions	
6	Maintains eye contact	
7	Attentive posture	
8	Active listening ( including mirroring)	
9	Allows pauses/silence	
10	Deal with emotions as they occur	
11	Asks if the patient/relative has something more to discuss	
12	Ends with a plan	
13	Summarises points	
14	Clarifies doubts	
15	Documents decisions	
	Total	

**Debriefing:**

Self-critique, critique by the audience and gives appropriate corrections.

**Suggested Reading:**

- i. National Ethical Guidelines for Biomedical and Health Research involving Human Participants (ICMR)
- ii. Tyrrell P, Harberger S, Schoo C, et al. Kubler-Ross Stages of Dying and Subsequent Models of Grief. [Updated 2023 Feb 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan
- iii. Baile WF, Buckman R, Lenzi R, Glober G, Beale EA, Kudelka AP. SPIKES-A six-step protocol for delivering bad news: application to the patient with cancer. *Oncologist*. 2000;5(4):302-11. Doi: 10.1634/theoncologist.5-4-302. PMID: 10964998
- iv. Ramasamy, Ramesh & Murugaiyan, Sathish & Shalini, Rachel & Vengadapathy, Kuzhandai & Gopal, Niranjan. (2014). Communication skills for medical students and #8211; An overview. *Journal of Contemporary Medical Education*. 2. 134. 10.5455/jcme.20140321110500.
- v. Duffy, F & Gordon, Geoffrey & Whelan, Gerald & Cole-Kelly, Kathy & Frankel, Richard & Buffone, Natalie & Lofton, Stephanie & Wallace, MaryAnne & Goode, Leslie & Langdon, Lynn. (2004). Assessing Competence in Communication and Interpersonal Skills: The Kalamazoo II Report. *Academic medicine : journal of the Association of American Medical Colleges*. 79. 495-507. 10.1097/00001888-200406000-00002.
- vi. Stickley T. From SOLER to SURETY for effective non-verbal communication. *Nurse Education in Practice*. 2011 Nov;11(6):395-398. DOI: 10.1016/j.nepr.2011.03.021. PMID: 21489877.
  - o Geeta MG, Krishnakumar P. Breaking Bad News – Perceptions of Pediatric Residents. *Indian Pediatr*. 2017 Aug 15;54(8):685-686.



**INFORMED CONSENT**  
**(COM 2)**



# INFORMED CONSENT

(AETCOM MODULE 3.3)

Informed consent is a continuous process involving three main components – providing relevant information, ensuring competence of the individual, ensuring the information is easily comprehended by the patient/relative and assuring voluntariness of participation. Voluntary written informed consent should be obtained in an informed consent document (ICD). In the case of a patient who is not capable of giving voluntary informed consent (children, unconscious, differently abled and inebriated) the consent of **LAR** (legally authorised representative) must be obtained. The LAR may be a parent, grandparent, caregiver who has the legal authority to grant consent on behalf of another

## Requisites:

- The patient/ relative must have the capacity to understand the need for an accurate diagnosis / treatment, how the procedure is done, how it helps in the diagnosis and management of the disease and be able to make an informed decision on whether or not to do the procedure
- It is necessary to maintain privacy and confidentiality.
- The person giving consent has attained the age of majority (18 years) and should be of sound mind

## Scenario:

6-year-old Manu was brought with fever, headache, vomiting and neck pain. Examination reveals neck stiffness. How will you get an informed consent from the mother for lumbar puncture?

**Competency Level:** Competency 33 (SH) Phase III Part 2

## Objective :

By the completion of this module the student will be able to satisfactorily obtain informed consent from the parent/relative for an invasive procedure

## Background Knowledge:

- Knowledge of vernacular language & socio-cultural background of the family.
- Knowledge about disease , its natural course (if not correctly diagnosed & appropriately treated), aggravating factors, treatment options, side effects, complications & prognosis.
- Knowledge about the procedure, its indications, contraindications, special precautions and complication
- Knowledge of the medications used and their side effects
- Consequences of not undergoing the procedure

**Setting :**

- Choose a quiet & private room/cubicle
- Ensure tables and adequate number of comfortable chairs.
- Avoid distractions ( ringing phone/co-worker/another patient or relative)

**Equipment:**

- Cubicles : 2-4 nos.
- Tables : 1 per cubicle
- Chairs- 4 per cubicle
- Listening room, Video recording (desirable)
- Forms for obtaining Informed consent
- Pens/ink pad
- Register for documentation
- Standardized patient

**Steps:**

- Instruct the duty staff to avoid any intrusions/ interruptions during the session.
- Confirm the patient ID and invite the patient/ relative for counselling.
- Offer a seat
- Introduce yourself and your team members to the patient/relative and explain their roles
- Establish rapport (name, educational status, occupation, socio-economic status)
- Enquire what the patient/ relative knows about the patient's condition
- Explain the planned procedure/ treatment for the patient and the probable complications
- Explain the need for sedation/ anaesthesia ( wherever required) and the risks associated
- Inform regarding diagnostic/ therapeutic alternatives and cost of procedure
- Inform that additional or multi-stage procedure might be necessary to attain the desired treatment outcome and it would require a separate informed consent
- Inform regarding post procedure management of the patient
- Identify the patient's/ relatives' main concern
- The patient/ relative are asked to restate in their own words what was told to them.
- Summarise and clear doubts
- Ask if there is anything else they would like to discuss
- Document the informed consent in the patient's local language (preferably by the patient or relative himself/herself)
- In case of illiterate patient/ relative or if they do not understand the local language, a translator should be arranged for explaining the details.

- The Informed consent document should contain the following- Date, time, name of the patient, ID number, body of the consent, name & signature/thumb impression of the patient or relative, name & signature of the person who is counselling, name & signature of unrelated witnesses.
- Patient/Relatives' refusal of consent should be documented

### Special Situations:

- Children: In addition to parental consent, verbal (7-12 years) assent or simplified written (>12 – 18 years) assent should be taken
- Mentally disabled, destitute, prisoner- consent obtained from Legally Authorized Representative (LAR)
- Waiver of consent:
  - Emergency life - saving situations (Deferred consent to be taken as soon as the patient is capable/ LAR available)
  - Patient's waiver of consent
  - Resuscitation
- Consent should be taken for clinical photographs/videos and re-consent before publication

### Assessment:

Sl.No	Skill	Y/N
1	Confirm patient ID and establish rapport	
2	Introduce oneself and explain roles of team members	
3	Explain what is to be discussed	
4	Are the thoughts organised and coherent	
5	Is the conversation jargon free	
6	Maintains eye contact, Attentive posture and Active listening ( including mirroring)	
7	Relevance of the procedure for an accurate diagnosis / treatment and steps involved	
8	Information regarding post procedure management	
9	Fresh consent for additional procedures if needed	
10	Asks if the patient/relative has something more to discuss	
11	Summarises points	

12	Informed consent with date, place, time, content, signature of patient/relative, doctor and 2 unrelated witnesses to be documented	
13	To document refusal of consent, where required	
	Total	

**Debriefing:**

Self-critique, critique by the audience and give appropriate corrections.

**Suggested Reading:**

- i. Hall DE, Prochazka AV, Fink AS. Informed consent for clinical treatment. CMAJ. 2012 Mar 20;184(5):533-40. doi: 10.1503/cmaj.112120. Epub 2012 Mar 5. PMID: 22392947; PMCID: PMC3307558.
- ii. National Ethical Guidelines for Biomedical and Health Research involving Human Participants (ICMR)
- iii. Duffy, F & Gordon, Geoffrey & Whelan, Gerald & Cole-Kelly, Kathy & Frankel, Richard & Buffone, Natalie & Lofton, Stephanie & Wallace, MaryAnne & Goode, Leslie & Langdon, Lynn. (2004). Assessing Competence in Communication and Interpersonal Skills: The Kalamazoo II Report. Academic medicine : journal of the Association of American Medical Colleges. 79. 495-507. 10.1097/00001888-200406000-00002.
- iv. Integrated Addendum To Ich E6(R1):Guideline For Good Clinical Practice E6(R2)
- v. AETCOM Module: Medical Council of India. 2018

**MEDICAL ERRORS**  
**(COM 3)**



# MEDICAL ERRORS

(AETCOM MODULE 3.2)

## Introduction:

“To Err is Human”. Medical error is defined as an unintended but preventable adverse effect of care, whether or not it is evident or harmful to the patient.<sup>1</sup> Medical errors may relate to errors in medication, surgical procedures, diagnosis, failure of equipment, infection, blood transfusion or misinterpretation of orders. Common causes of medical errors include incomplete patient information, unavailable drug information, miscommunication and lack of appropriate labeling.

**Competency Level:** AETCOM Competency 45 (SH)

- Time: 1 Phase III Part 2

## Objective:

Discuss the implications of medical errors and the appropriate procedure and response to be followed in such cases

### Scenario 1:

10-month-old Mittu is getting Inj. Cefotaxime for urinary tract infection. Two-year-old Millu is receiving Inj. Vancomycin for pneumonia. The duty nurse inadvertently gives Mittu Inj. Vancomycin and she develops Redman reaction. Mittu’s mother has realized that her daughter has received the wrong medicine and informs her husband. You are the duty doctor; how will you address this situation?

### Scenario 2:

Meenakshi 75 years, with no known co-morbidities, was admitted for management of fever. She was prescribed Tab. Paracetamol 500mg 1 TDS. It was found that instead of Tab Paracetamol 500mg, she had inadvertently received Tab Metformin 500mg. The patient is clinically stable. How will you communicate this to the relatives?

## Background Knowledge:

The learner should be able to enumerate the cardinal principles of bioethics, doctor-patient communication, quality of care and team-based care delivery.

## Equipments:

- Cubicles - 2-4 numbers
- Tables - 1 per cubicle
- Chairs - 4 per cubicle
- Listening room, Video recording (desirable)
- Standardized patient

## Setting:

- Collection and analysis of the relevant medical records.
- Prepare what to say to the patient/family.
- Anticipate the patient/family reaction.

- Arrange a quiet and private area.
- Ensure tables and adequate number of comfortable chairs.
- Avoid distractions (ringing phones, co-worker, another patient/ relative) – give clear instructions to the nursing/security staff.

**Steps:**

- Confirm the patient ID.
- Introduce yourself and your role in the patient care team.
- Invite the patient/ relative to sit down.
- Follow SURETY model of non-verbal communication.<sup>2</sup>
  - Sit at an angle, Uncross legs and arms, Relax, maintain good Eye contact, Touch (where appropriate, should not be intrusive), Your intuition
- Enquire how much the patient/ relative knows about the condition/ disease.
- Assess their perception of the situation and their concerns.
- State that a medical error has occurred and explain it in simple language (avoid jargon)
- Explain the course of events and the clinical implications to the patient.
- Provide time for patient/ relative to process the information and express their feelings.
- Do not try to make excuses or assign blame.
- Acknowledge their concerns.
- Give more information about the medical error when they are ready.
- Demonstrate empathy – maintaining eye contact, body posture and facial expression.
- Remain calm in the face of confrontation.
- Assure that the situation is being taken seriously.
- Provide option for second opinion / referral.
- Provide them with details if they want to make a formal complaint.
- Document the discussion and the agreed upon plan for further management, with signatures of the doctor and patient/relative (specify relation to patient).
- Summarize the discussion and ask if they have any more questions.

**Assessment:**

Sl. No.	Skill	Y/N
1.	Confirms patient identity	
2.	Introduces oneself and explains role	
3.	Establishes rapport	
4.	Is the explanation organized and coherent	
5.	Explains in simple language	
6.	Maintains eye contact	
7.	Attentive posture	
8.	Provides time for the patient/ relative to speak uninterrupted	
9.	Remains calm	
10.	Assures that the situation is being taken seriously and measures to prevent recurrences have been taken	
11.	Do not apportion blame to colleagues	
12.	Summarizes discussion	
13.	Documents decisions	
14.	Ask if they have any more questions	
	Total	

**Debriefing**

Self-critique, critique by audience and give appropriate corrections.

**Suggested Reading and References:**

- i. Internet Citation: Glossary. Content last reviewed November 2020. Agency for Healthcare Research and Quality, Rockville,MD. <https://www.ahrq.gov/questions/resources/glossary.html>
- ii. Stickley T. From SOLER to SURETY for effective non-verbal communication. Nurse Education in Practice. 2011 Nov;11(6):395-398. DOI: 10.1016/j.nepr.2011.03.021. PMID: 21489877.
- iii. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. Acad Med. 2001 Apr;76(4):390-3. doi: 10.1097/00001888-200104000 - 00021. PMID: 11299158.

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- iv. Tough Talk: Helping Doctors Approach Difficult Conversations.  
<https://depts.washington.edu/toolbox/>
  - v. Baile W.B. The Complete Guide to Communication Skills in Clinical Practice©.  
<https://www.mdanderson.org/documents/education-training/icare/pocketguide-texttabscombined-oct2014final.pdf>
  - vi. AETCOM Module: Medical Council of India. 2018.



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## MODULE 1: BASIC LIFE SUPPORT (BLS)

*(For Public & Healthcare Providers)*

### 1. Module Title

**Basic Life Support (BLS) Training Program**

### 2. Target Learners

- General public
- Medical & paramedical students
- Nurses
- Doctors
- First responders

### 3. Duration of Module

- **Total Duration:** 4 hours

#### Session Breakdown:

- Theory: 60 minutes
  - Demonstration: 45 minutes
  - Hands-on practice: 120 minutes
  - Assessment: 15 minutes
- 

### 4. Learning Objectives

#### Knowledge

- Understand chain of survival
- Recognize cardiac arrest
- Know indications of CPR & AED use

#### Skills

- Perform high-quality CPR
- Use AED correctly
- Provide rescue breaths

#### Attitude

- Ensure patient safety
  - Act promptly in emergencies
  - Communicate effectively
-

---

## 5. Prerequisite Knowledge / Skills

- None (for public)
  - Basic medical awareness (for healthcare providers)
- 

## 6. Required Materials / Equipment

Item	Quantity
Adult CPR Mannequin	1 per 4 learners
Infant Mannequin	1 per group of 8
AED Trainer	1 per group of 8
Pocket masks	As required
Gloves	Adequate
Alcohol swabs	Adequate
Projector/AV aids	1

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## 7. Teaching Methodology

- Interactive lecture
  - Demonstration
  - Video-based learning
  - Hands-on training
  - Simulation scenarios
- 

## 8. Step-by-Step Procedure

1. Ensure scene safety
  2. Check responsiveness
  3. Call for help / activate EMS
  4. Check breathing & pulse
  5. Start CPR (30:2)
  6. Use AED ASAP
  7. Continue cycles until ROSC
- 

## 9. Safety Precautions

- Avoid excessive ventilation
  - Maintain correct compression depth (5–6 cm)
  - Ensure AED safety (no contact during shock)
- 

## 10. Common Errors / Pitfalls

---

<b>Error</b>	<b>Prevention</b>
Shallow compressions	Emphasize depth
Delayed CPR	Early recognition training
Incorrect hand position	Demonstration + correction

---

### 11. Assessment Method

- OSCE-based skill testing
  - Checklist evaluation
  - Real-time performance assessment
- 

### 12. Feedback Method

- Immediate verbal feedback
  - Checklist-based structured feedback
  - Peer feedback
- 

### 13. References

- AHA BLS Guidelines
  - ERC Guidelines
  - WHO Emergency Care Guidelines
- 

### 14. Faculty / Resource Persons

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<b>Name</b>	<b>Department</b>	<b>Role</b>
Dr AKHIL S L	Emergency Medicine	Instructor

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### 15. Documentation

- Attendance
- Skill checklist
- Certificate

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## **MODULE 2: BASIC RESUSCITATION COURSE**

*(For Doctors & Staff Nurses)*

### **1. Module Title**

**Basic Resuscitation Course (BRC)**

### **2. Target Learners**

- Doctors (MBBS/PG)
  - Staff Nurses
  - Emergency Technicians
- 

### **3. Duration of Module**

- **Total Duration:** 6 hours

#### **Session Breakdown:**

- Theory: 120 minutes
  - Demonstration: 90 minutes
  - Hands-on: 210 minutes
  - Assessment: 60 minutes
- 

### **4. Learning Objectives**

#### **Knowledge**

- Airway management basics
- Recognition of shock
- Basic ECG rhythms

#### **Skills**

- Bag-mask ventilation
- Airway adjunct insertion
- Basic defibrillation

#### **Attitude**

- Teamwork
  - Crisis resource management
  - Patient-centered care
-

## 5. Prerequisite Knowledge

- Basic BLS certification preferred

## 6. Required Materials

Item	Quantity
CPR Mannequins	1 Per group of 4
Bag-valve mask	Per station
Airway Set	1
Defibrillator trainer	1/group
Oxygen setup	1
Monitors	1

## 7. Teaching Methodology

- Case-based discussion
- Skill stations
- Simulation-based learning
- Small group rotation

## 8. Step-by-Step Procedure

- Primary survey (ABCDE)
- Airway management
- Oxygenation & ventilation
- Recognition of arrest rhythms
- Defibrillation
- Post-resuscitation basics

## 9. Safety Precautions

- Avoid hyperventilation
- Ensure proper oxygen use
- Electrical safety during defibrillation

## 10. Common Errors

Error	Prevention
Poor airway positioning	Teach head tilt/chin lift

---

<b>Error</b>	<b>Prevention</b>
Delay in defibrillation	Emphasize early shock
Inadequate ventilation	Practice BVM

---

### 11. Assessment

- OSCE stations
  - Simulation scenario assessment
  - MCQ
- 

### 12. Feedback

- Structured debriefing
  - Video-assisted feedback
- 

### 13. References

- AHA ACLS/BLS 2025 guidelines
  - ERC Guidelines
- 

### 14. Faculty

---

<b>Name</b>	<b>Department</b>	<b>Role</b>
Dr Akhil S L	EMERGENCY MEDICINE	INSTRUCTOR

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### 15. Documentation

- Attendance
- Skill logs
- Certification

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## **MODULE 3: SIMULATION-BASED TRAINING MODULE ON CARDIAC ARREST (FIRST RESPONDER) USING SIMMAN 3G**

### 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (All specialties)
  - Nursing Staff
  - Paramedics / First Responders
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Recognize cardiac arrest promptly and initiate life-saving measures
- Deliver high-quality BLS as a first responder until advanced care arrives

#### Knowledge

- Define cardiac arrest and chain of survival
- Identify signs: unresponsiveness, absent/abnormal breathing, no pulse (if trained)
- Understand BLS sequence (C-A-B)
- Know indications for AED use

#### Skills

- Scene safety and rapid assessment
- Activate emergency response system
- Perform high-quality chest compressions (rate 100–120/min, depth 5–6 cm, full recoil)
- Provide effective ventilations (30:2) with BVM/mouth-to-mask
- Operate AED: attach pads, follow prompts, deliver shock safely
- Minimize interruptions in compressions

#### Attitude

- Act immediately and confidently
  - Communicate clearly with team/bystanders
  - Maintain patient dignity and safety
-

---

## 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic Life Support (recommended)
  - Basic airway skills (optional)
- 

## 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
CPR board	1
AED / Defibrillator (trainer)	1
Bag-Valve-Mask (BVM)	1
Pocket mask / face shield	1
Oxygen supply (optional)	1
Suction apparatus	1
Stopwatch / metronome	1
Monitoring equipment (optional)	1 set
Audio-visual aids (PPT/video)	1

---

## 7. TEACHING METHODOLOGY

- Short interactive lecture
  - Faculty demonstration of BLS + AED
  - Video demonstration (AHA BLS)
  - Simulation-based scenarios
  - Hands-on practice with feedback devices
- 

## 8. STEP-BY-STEP PROCEDURE (FIRST RESPONDER BLS)

1. Ensure **scene safety**
2. Check **responsiveness** (tap and shout)
3. Call for help / activate emergency response system
4. Check **breathing** (and pulse if trained)  $\leq 10$  seconds
5. If not breathing/only gasping → **start CPR**
6. **Chest compressions:**
  - Rate: 100–120/min
  - Depth: 5–6 cm

- Allow full recoil
- Minimize interruptions
- 7. **Airway:** head tilt–chin lift (jaw thrust if trauma suspected)
- 8. **Breathing:** 30 compressions : 2 breaths (each breath over 1 sec, visible chest rise)
- 9. **Attach AED ASAP:**
  - Turn on, attach pads
  - Follow voice prompts
  - Clear patient and deliver shock if advised
- 10. Resume CPR immediately after shock / no-shock advice
- 11. Continue cycles (2 minutes) and reassess
- 12. Hand over to advanced team with concise report

## 9. SAFETY PRECAUTIONS

- Ensure scene safety (electricity, traffic, fluids)
- Avoid excessive ventilation
- Ensure no contact during shock delivery
- Use barrier devices for breaths

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delay in starting CPR	Immediate recognition and action
Shallow/slow compressions	Use metronome and feedback devices
Frequent interruptions	Keep pauses <10 sec
Incorrect hand placement	Midline, lower half of sternum
Poor AED use	Practice pad placement and prompts

## 11. ASSESSMENT METHOD

- OSCE checklist (BLS + AED)
- Direct observation during simulation
- Timed scenario performance

## 12. FEEDBACK METHOD

- Immediate debriefing

- Structured feedback (what went well / improve)
  - Video review (if available)
- 
- 

### 13. REFERENCES

- AHA BLS Guidelines (latest)
  - ERC BLS Guidelines
- 
- 

### 14. FACULTY / RESOURCE PERSONS

Name    Department    Role

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---

### 15. DOCUMENTATION

- Attendance sheet
  - Skill competency checklist
  - Certification of completion
- 
- 

### SIMULATION SCENARIO (OPTIONAL)

**Case:** 55-year-old male collapses in waiting area, unresponsive, gasping

**Expected Actions:**

- Assess and call for help
  - Start high-quality CPR
  - Use AED promptly
  - Continue cycles with minimal interruptions
- 
-

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## MODULE 4: ADVANCED RESUSCITATION COURSE

*(For Doctors & Staff Nurses)*

### 1. Module Title

Advanced Resuscitation Course (ARC)

---

### 2. Target Learners

- Post Graduates
  - ICU Doctors
  - Critical care staffs
- 

### 3. Duration of Module

- **Total Duration:** 12 hours

#### Session Breakdown:

- Theory: 240 minutes
  - Demonstration: 180 minutes
  - Hands-on: 420 minutes
  - Assessment: 120 minutes
- 

### 4. Learning Objectives

#### Knowledge

- Initial Assessment of patient including trauma
- Advanced cardiac life support
- Advanced Trauma life support
- Reversible causes (Hs & Ts)
- Post-ROSC care

#### Skills

- Initial Assessment of sick patient
- Advanced airway (ET intubation)
- Defibrillation & cardioversion
- Drug administration during arrest
- Team Dynamics

#### Attitude

- Leadership in resuscitation
- Team communication

- Ethical decision-making
- 

## 5. Prerequisite

- BLS & Basic Resuscitation Course
- 

## 6. Required Materials

Item	Quantity
High-fidelity simulators	1
Airway set	1
Defibrillator	1/station
Emergency drugs	Mock setup
Spine board	1

---

## 7. Teaching Methodology

- High-fidelity simulation
  - Scenario-based training
  - Team-based drills
  - Debriefing sessions
- 

## 8. Step-by-Step Procedure

- Advanced airway
  - Rhythm-based ACLS algorithms
  - Drug administration
  - Post-ROSC care
- 

## 9. Safety Precautions

- Drug dose accuracy
  - Airway safety
  - Electrical safety
- 

## 10. Common Errors

---

<b>Error</b>	<b>Prevention</b>
Incorrect drug dosing	Use algorithms
Poor team coordination	Assign roles
Delay in airway	Structured approach

---

### 11. Assessment

- Mega code simulation
  - OSCE stations
  - Leadership evaluation
- 

### 12. Feedback

- Structured debriefing (GAS model)
  - Video review
- 

### 13. References

- AHA ACLS Guidelines
  - ERC Advanced Life Support
  - ATLS 11<sup>TH</sup> GUIDELINES
- 

### 14. Faculty

<b>Name</b>	<b>Department</b>	<b>Role</b>
Dr AKHIL S L	Emergency Medicine	Instructor

---

### 15. Documentation

- Attendance
- Competency checklist
- Certification

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## MODULE 5 : ADVANCED TRAUMA MANAGEMENT

*(Based on American College of Surgeons ATLS Guidelines)*

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### 1. Module Title

**Advanced Trauma Management (ATLS-Based Training Module)**

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### 2. Target Learners

- MBBS Doctors / Interns
  - Emergency Medicine Residents
  - Staff Nurses (Emergency / ICU)
  - Trauma Team Members
- 

### 3. Duration of Module

- **Total Duration:** 6 hours

#### Session Breakdown:

- Theory: 120 minutes
  - Demonstration: 90 minutes
  - Hands-on practice: 180 minutes
  - Assessment: 30 minutes
- 

### 4. Learning Objectives

#### Knowledge

- Understand principles of trauma resuscitation
  - Explain **primary and secondary survey**
  - Identify life-threatening injuries using ATLS approach
  - Understand shock classification and management
- 

#### Skills

- Perform **primary survey (ABCDE approach)**
- Airway management with cervical spine protection
- Chest decompression and haemorrhage control
- Perform trauma-focused procedures (e.g., needle thoracostomy)
- Initiate fluid resuscitation and blood transfusion

---

## Attitude

- Prioritize life-saving interventions
  - Maintain team communication
  - Ensure patient safety and rapid decision-making
- 

## 5. Prerequisite Knowledge / Skills

- Basic Life Support (BLS)
  - Basic Resuscitation knowledge
  - Basic airway skills
- 

## 6. Required Materials / Equipment

Item	Quantity
Trauma mannequin	1 per group
Airway equipment (BVM, ET tubes)	Sets
Cervical collars	Multiple
Chest tube set	1
Needle decompression kit	1
IV cannulation sets	Adequate
Fluids / Blood (simulation)	Required
FAST ultrasound (optional)	1
Monitoring equipment	1
Projector / AV aids	1

---

## 7. Teaching Methodology

- Interactive ATLS-based lectures
  - Skill demonstrations
  - Video-based trauma scenarios
  - Hands-on skill stations
  - Simulation-based team training
  - Case-based discussions
- 

## 8. Step-by-Step Procedure

### A. Primary Survey (xABCDE Approach)

**x – Exsanguination (Catastrophic Hemorrhage Control FIRST)**

---

**A – Airway with C-Spine Protection**

- Assess airway patency
  - Apply cervical collar
  - Perform airway maneuvers
  - Consider intubation
- 

**B – Breathing**

- Inspect, palpate, auscultate
  - Identify life-threatening conditions:
    - Tension pneumothorax
    - Open pneumothorax
    - Massive hemothorax
  - Immediate interventions
- 

**C – Circulation**

- Control external bleeding
  - Assess pulse, BP
  - Establish IV access
  - Initiate fluid / blood resuscitation
- 

**D – Disability**

- GCS assessment
  - Pupillary response
  - Identify neurological deficits
- 

**E – Exposure**

- Fully expose patient
  - Prevent hypothermia
- 

**B. Adjuncts to Primary Survey**

- Monitoring (ECG, SpO<sub>2</sub>, BP)
  - FAST (Focused Assessment with Sonography in Trauma)
  - ABG / Labs
- 

**C. Secondary Survey**

- Head-to-toe examination
  - AMPLE history
    - Allergies
    - Medications
    - Past history
    - Last meal
    - Events
- 

#### **D. Definitive Management**

- Decide: Operative vs ICU vs referral
  - Ongoing resuscitation
  - Documentation
- 

#### **9. Safety Precautions**

- Maintain cervical spine immobilization
  - Prevent hypothermia
  - Avoid fluid overload
  - Use aseptic precautions
  - Ensure team communication
- 

#### **10. Common Errors / Pitfalls**

<b>Error</b>	<b>Prevention</b>
Skipping primary survey	Strict xABCDE sequence
Missing life-threatening injuries	Repeated reassessment
Poor haemorrhage control	Early control measures
Delayed airway management	Early decision-making
Inadequate team coordination	Assign roles clearly

---

#### **11. Assessment Method**

- OSCE stations (ABCDE approach)
  - Simulation-based trauma scenario
  - Checklist-based evaluation
  - Rapid trauma viva
- 

#### **12. Feedback Method**

- Immediate verbal feedback

- Structured debriefing (simulation-based)
  - Checklist-based feedback
  - Reflective discussion
- 

### 13. References

- American College of Surgeons ATLS Student Manual 11<sup>th</sup> Edition
  - WHO Trauma Care Guidelines
  - National Trauma Protocols
- 

### 14. Faculty / Resource Persons

<b>Name</b>	<b>Department</b>	<b>Role</b>
Dr Akhil S L	Emergency Medicine	Course Director

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### 15. Documentation

- Attendance sheet
- Trauma skill checklist
- OSCE evaluation forms
- Certification of completion

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## **MODULE 6 : SIMULATION-BASED TRAINING MODULE ON DIFFICULT AIRWAY MANAGEMENT USING SIMMAN 3G**

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### 1. MODULE TITLE

Simulation-Based Training on Difficult Airway Management using SimMan 3G

---

### 2. TARGET LEARNERS

- Postgraduate Residents (Anesthesia, Emergency Medicine, Critical Care)
  - MBBS Interns (advanced exposure)
  - ICU / OT Nursing Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Anticipate and manage difficult airway safely
- Prevent hypoxia and airway-related complications

#### Knowledge

- Predict difficult airway (LEMON, MOANS, RODS)
- Understand ASA Difficult Airway Algorithm
- Know indications for awake vs asleep intubation
- Understand rescue airway techniques

#### Skills

- Perform airway assessment (Mallampati, thyromental distance)
- Use bag-mask ventilation effectively
- Perform laryngoscopy (DL/VL)
- Use adjuncts (bougie, stylet, supraglottic airway)
- Perform emergency cricothyrotomy (conceptual/simulation)
- Execute failed airway algorithm

### Attitude

- Anticipation and preparation
- Call for help early
- Maintain oxygenation priority (“oxygen first”)

### 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic airway management
- BLS/ACLS knowledge
- Familiarity with airway devices

### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Laryngoscopes (DL & Video)	1 set
Endotracheal tubes	Multiple sizes
Bougie / stylet	1 each
Supraglottic airway devices (LMA/i-gel)	1 set
Bag-Valve-Mask	1
Oxygen supply	1
Suction apparatus	1
Cricothyrotomy kit	1
Monitoring (SpO <sub>2</sub> , ECG, BP)	1 set
Drugs (sedatives, paralytics)	As required
Audio-visual aids	1

### 7. TEACHING METHODOLOGY

- Interactive lecture
- Airway device demonstration
- Video-based learning
- Simulation scenarios (anticipated & unanticipated difficult airway)
- Hands-on skill stations

### 8. STEP-BY-STEP PROCEDURE (DIFFICULT AIRWAY)

13. Perform **airway assessment** (LEMON)

14. Prepare airway plan:

- Plan A: Intubation

- Plan B: Supraglottic airway
  - Plan C: Mask ventilation
  - Plan D: Emergency surgical airway
15. Preoxygenate (100% O<sub>2</sub>, 3–5 min)
  16. Optimize position (sniffing / ramped)
  17. Attempt intubation (DL/VL)
  18. Use adjuncts (bougie, stylet) if needed
  19. If failed:
    - Reoxygenate
    - Switch to Plan B (SGA)
  20. If cannot intubate, cannot ventilate (CICV):
    - Perform emergency **cricothyrotomy**
  21. Confirm tube placement (ETCO<sub>2</sub>, chest rise)
  22. Secure airway and ventilate

## 9. SAFETY PRECAUTIONS

- Avoid prolonged attempts (>30 sec)
- Maintain oxygenation throughout
- Use capnography to confirm placement
- Be prepared for surgical airway

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Poor airway assessment	Use structured tools (LEMON)
Multiple failed attempts	Limit attempts, switch plan early
Inadequate preoxygenation	Ensure proper technique
Delay in calling help	Early escalation
Hesitation for cricothyrotomy	Follow algorithm strictly

## 11. ASSESSMENT METHOD

- OSCE checklist
- Skill station evaluation
- Scenario-based performance

---

## 12. FEEDBACK METHOD

- Structured debriefing
  - Faculty feedback
  - Video-assisted review
- 
- 

## 13. REFERENCES

- ASA Difficult Airway Guidelines
  - DAS Guidelines
- 
- 

## 14. FACULTY / RESOURCE PERSONS

<u>Name</u>	<u>Department</u>	<u>Role</u>
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## 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** 45-year-old obese patient with limited mouth opening presents for emergency surgery

**Expected Actions:**

- Assess difficult airway
  - Prepare backup plans
  - Attempt intubation with adjuncts
  - Use SGA if failed
  - Perform cricothyrotomy if CICV
- 
- 

**End of Module**

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## MODULE 7. SIMULATION-BASED TRAINING MODULE ON POST-ROSC CARE USING SIMMAN 3G

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### 1. MODULE TITLE

Simulation-Based Training on Post-Return of Spontaneous Circulation (Post-ROSC) Care using SimMan 3G

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### 2. TARGET LEARNERS

- Postgraduate Residents (Anesthesia, Emergency Medicine, Critical Care)
  - MBBS Interns (advanced exposure)
  - ICU Nurses / Emergency Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Provide structured post-resuscitation care
- Prevent secondary brain injury and multi-organ dysfunction

#### Knowledge

- Understand post-cardiac arrest syndrome
- Know targets for oxygenation, ventilation, and hemodynamics
- Understand targeted temperature management (TTM)
- Recognize causes of arrest and need for definitive care (PCI, etc.)

#### Skills

- Stabilize airway and ensure adequate ventilation
- Maintain oxygen saturation (SpO<sub>2</sub> 94–98%)
- Maintain BP (MAP  $\geq$ 65 mmHg)
- Initiate vasopressors if required
- Interpret ABG and correct abnormalities
- Initiate TTM (32–36°C)
- Perform neurological assessment (GCS, pupils)

### Attitude

- Systematic and protocol-driven care
- Team coordination
- Continuous reassessment

### 5. PREREQUISITE KNOWLEDGE / SKILLS

- ACLS knowledge
- Airway management
- Basic ICU care principles

### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Ventilator / BVM	1
Oxygen supply	1
Monitoring (ECG, BP, SpO <sub>2</sub> , EtCO <sub>2</sub> )	1 set
IV/IO access setup	Adequate
Infusion pumps	1–2
Vasopressors (Noradrenaline, Dopamine)	As required
Sedatives/analgesics	As required
Cooling equipment (ice packs/TTM device)	1
ABG access	1
Audio-visual aids	1

### 7. TEACHING METHODOLOGY

- Interactive lecture
- Case-based discussion
- Simulation-based ICU scenario
- Team-based management drills
- Debriefing

### 8. STEP-BY-STEP PROCEDURE (POST-ROSC CARE)

23. Confirm **ROSC** (pulse, BP, EtCO<sub>2</sub> rise)

#### 24. **Airway & Breathing:**

- Secure airway (ET tube if required)
- Maintain SpO<sub>2</sub> 94–98%

- Avoid hyperoxia
- Target PaCO<sub>2</sub> 35–45 mmHg

**25. Circulation:**

- Maintain MAP  $\geq$ 65 mmHg
- Give IV fluids
- Start vasopressors (Noradrenaline preferred)

**26. 12-lead ECG** and identify cause (STEMI → PCI)

**27. Neurological care:**

- Assess GCS, pupils
- Prevent seizures

**28. Targeted Temperature Management (TTM):**

- Maintain 32–36°C for 24 hrs (if indicated)

**29. Glucose control** (avoid hypo/hyperglycemia)

**30. Electrolyte correction**

**31. Ventilation and sedation optimization**

**32. Identify and treat underlying cause** (4 Hs & 4 Ts)

**33. Continuous monitoring and ICU transfer**

**9. SAFETY PRECAUTIONS**

- Avoid hyperoxia and hypocapnia
- Prevent hypotension
- Monitor for arrhythmias
- Careful sedation and paralysis use

**10. COMMON ERRORS / PITFALLS**

Error	Prevention
Hyperoxia	Titrate oxygen to SpO <sub>2</sub> target
Hypotension post-ROSC	Early fluids and vasopressors
Delay in ECG/PCI	Early cardiac evaluation
Poor neuroprotection	Use TTM and avoid fever
Ignoring underlying cause	Systematic evaluation

**11. ASSESSMENT METHOD**

- OSCE checklist
- Case-based evaluation

- Simulation performance
- 

#### 12. FEEDBACK METHOD

- Structured debriefing
  - Faculty feedback
  - CRM evaluation
- 

#### 13. REFERENCES

- AHA Post-Cardiac Arrest Care Guidelines
  - ERC Guidelines
- 

#### 14. FACULTY / RESOURCE PERSONS

Name    Department    Role

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#### 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 

#### SIMULATION SCENARIO (OPTIONAL)

**Case:** Patient achieves ROSC after VF arrest, now hypotensive and comatose

**Expected Actions:**

- Stabilize airway and breathing
  - Maintain BP with fluids/vasopressors
  - Start TTM
  - Identify cause (ECG, labs)
-

## 1. MODULE TITLE

Simulation-Based Training on Management of Acute Coronary Syndrome (ACS) using SimMan 3G

---

## 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (Emergency Medicine, Medicine, Anesthesia, Critical Care)
  - Nursing Staff
- 

## 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

## 4. LEARNING OBJECTIVES

### 1. **Rapid Clinical Assessment**

Perform a focused primary and secondary assessment on a patient presenting with chest pain, including the acquisition and interpretation of a 12-lead ECG within 10 minutes of "patient" contact to identify ST-segment elevation or depression.

### 2. **Pharmacological Management**

Demonstrate the correct administration and dosing of the "MONA" protocol (Morphine, Oxygen, Nitroglycerin, and Aspirin) or current local ACS guidelines, accounting for contraindications such as hypotension or right ventricular infarction.

### 3. **Crisis Resource Management (CRM)**

Assign specific roles (team leader, airway manager, compressor, and scribe) within the first 2 minutes of a deteriorating cardiac rhythm to ensure organized communication and task distribution during the simulation.

### 4. **Advanced Airway Decision-Making**

Correctly identify clinical indicators for advanced airway intervention (e.g., respiratory failure secondary to cardiogenic pulmonary edema) and successfully execute an intubation or ventilation strategy while maintaining hemodynamic stability.

### 5. **Definitive Disposition Planning**

Formulate and communicate a definitive care plan within the simulation timeframe, including the coordination of transfer to a cardiac catheterization lab or the initiation of fibrinolytic therapy based on the simulated facility's capabilities.

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## 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic Life Support / ACLS
  - ECG basics
- 

## 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1

Item	Quantity
ECG machine	1
Oxygen supply	1
IV cannulas & fluids	Adequate
Drugs (Aspirin, Clopidogrel, Heparin, Nitrates, Morphine)	As required
Defibrillator	1
Monitoring (ECG, BP, SpO <sub>2</sub> )	1 set
Infusion pumps	1
Audio-visual aids	1

---

## 7. TEACHING METHODOLOGY

- Interactive lecture and ECG interpretation session
- Simulation-based chest pain scenario
- Debriefing

---

## 8. STEP-BY-STEP PROCEDURE (ACS MANAGEMENT)

1. Recognize chest pain suggestive of ACS
2. Call for help and activate ACS protocol
3. Assess **ABC** and attach monitors
4. Obtain **12-lead ECG within 10 minutes**
5. Give **Aspirin (300 mg, chewable)**
6. Give **P2Y12 inhibitor** (Clopidogrel/Ticagrelor)
7. Start **Anticoagulation** (Heparin)
8. Give **Nitrates** (if no contraindication)
9. Oxygen only if SpO<sub>2</sub> <90%
10. Pain relief (Morphine if required)
11. Classify:
  - STEMI → urgent reperfusion (PCI preferred)
  - NSTEMI/UA → risk stratification
12. Arrange **primary PCI** (gold standard) OR thrombolysis if PCI unavailable
13. Continuous monitoring for arrhythmias

---

## 9. SAFETY PRECAUTIONS

- Avoid nitrates in hypotension or RV infarct
  - Monitor for arrhythmias
  - Careful drug dosing
  - Avoid unnecessary oxygen
-

---

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delay in ECG	Do within 10 min
Delayed aspirin	Give immediately
Overuse of oxygen	Only if hypoxic
Missing STEMI	Careful ECG interpretation
Delay in reperfusion	Activate PCI early

---

## 11. ASSESSMENT METHOD

- OSCE checklist
- ECG interpretation
- Scenario-based evaluation

---

## 12. FEEDBACK METHOD

- Structured debriefing
- Faculty feedback

---

## 13. REFERENCES

- AHA/ACC ACS Guidelines
- ESC Guidelines

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## 14. FACULTY / RESOURCE PERSONS

Name	Department	Role
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## 15. DOCUMENTATION

- Attendance sheet
- Competency checklist
- Certification

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## SIMULATION SCENARIO (OPTIONAL)

**Case:** 58-year-old male with chest pain, sweating, ECG shows ST elevation

**Expected Actions:**

- Recognize ACS (STEMI)
  - Give aspirin and antiplatelets
  - Perform ECG
  - Arrange PCI urgently
- 

**MODULE 9: SIMULATION-BASED TRAINING MODULE ON ANAPHYLACTIC SHOCK  
USING SIMMAN 3G**

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1. MODULE TITLE

Simulation-Based Training on Management of Anaphylactic Shock using SimMan 3G

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## 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (Anesthesia, Emergency Medicine, Critical Care)
  - Nursing Staff
- 

## 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

## 4. LEARNING OBJECTIVES

### General Objectives

- Recognize anaphylaxis early and treat immediately
- Prevent progression to life-threatening shock

### Knowledge

- Define anaphylaxis (acute, life-threatening hypersensitivity reaction)
- Identify triggers (drugs, food, latex, insect stings)
- Understand pathophysiology (vasodilation, bronchospasm, edema)
- Know first-line treatment (adrenaline)

### Skills

- Rapid ABC assessment
- Recognize signs: hypotension, bronchospasm, urticaria, angioedema
- Administer **IM Adrenaline promptly**
- Provide oxygen and airway support
- Establish IV access and give fluids
- Administer adjunct drugs (antihistamines, steroids)

### Attitude

- Act immediately (no delay in adrenaline)
  - Maintain calm and structured approach
  - Communicate effectively with team
-

---

## 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic Life Support
  - Basic airway management
- 

## 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Oxygen supply	1
Airway equipment (BVM, ET tube)	1 set
IV cannulas & fluids	Adequate
Adrenaline (1:1000 IM, 1:10,000 IV)	Adequate
Antihistamines (Chlorpheniramine)	As required
Steroids (Hydrocortisone)	As required
Nebulization setup (Salbutamol)	1
Monitoring (ECG, BP, SpO <sub>2</sub> )	1 set
Infusion pumps	1
Audio-visual aids	1

---

## 7. TEACHING METHODOLOGY

- Interactive lecture
  - Demonstration
  - Simulation scenario
  - Hands-on practice
  - Team-based drills
- 

## 8. STEP-BY-STEP PROCEDURE (ANAPHYLACTIC SHOCK)

34. Recognize anaphylaxis (rapid onset, airway/breathing/circulation involvement)
35. Call for help
36. **Stop trigger exposure** (drug infusion, allergen)
37. **Administer IM Adrenaline immediately:**
  - 0.5 mg IM (1:1000) in anterolateral thigh
  - Repeat every 5 minutes if needed
38. Position patient (supine, legs elevated)
39. **Airway & Breathing:**
  - Give high-flow oxygen
  - Prepare for intubation if airway compromise

**40. Circulation:**

- Establish IV access
- Give rapid IV fluids (crystalloids)

**41. Adjuncts:**

- Antihistamines
- Steroids
- Nebulized bronchodilators

**42. If refractory shock:**

- IV adrenaline infusion

**43. Continuous monitoring and reassessment****9. SAFETY PRECAUTIONS**

- Do not delay adrenaline administration
- Correct dose and route (IM first line)
- Monitor for arrhythmias
- Prepare for airway compromise

**10. COMMON ERRORS / PITFALLS**

Error	Prevention
Delay in adrenaline	Give immediately
Wrong route (IV instead of IM initially)	Follow protocol
Under-dosing adrenaline	Use correct dose
Ignoring airway compromise	Early airway management
Over-reliance on antihistamines	Adrenaline is first-line

**11. ASSESSMENT METHOD**

- OSCE checklist
- Scenario-based evaluation

**12. FEEDBACK METHOD**

- Structured debriefing
- Faculty feedback

**13. REFERENCES**

- World Allergy Organization Guidelines
- AHA Emergency Guidelines

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#### 14. FACULTY / RESOURCE PERSONS

Name	Department	Role
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#### 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 
- 

#### SIMULATION SCENARIO (OPTIONAL)

**Case:** 35-year-old patient develops sudden hypotension, rash, and wheeze after antibiotic administration

**Expected Actions:**

- Recognize anaphylaxis
  - Give IM adrenaline immediately
  - Provide oxygen and fluids
  - Administer adjuncts
  - Monitor and reassess
- 
- 

### **MODULE 10: SIMULATION-BASED TRAINING MODULE ON MANAGEMENT OF CRASHING SEPTIC PATIENT USING SIMMAN 3G**

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#### 1. MODULE TITLE

Simulation-Based Training on Management of a Crashing Septic Patient (Septic Shock) using SimMan 3G

---

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## 2. TARGET LEARNERS

- Postgraduate Residents (Anesthesia, Emergency Medicine, Critical Care)
  - MBBS Interns (advanced exposure)
  - ICU Nurses / Emergency Staff
- 

## 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

## 4. LEARNING OBJECTIVES

### General Objectives

- Early recognition and aggressive management of septic shock
- Prevent multi-organ dysfunction and mortality

### Knowledge

- Define sepsis and septic shock (Sepsis-3)
- Understand pathophysiology (vasodilation, capillary leak, myocardial depression)
- Know Surviving Sepsis Campaign “1-hour bundle”
- Understand lactate as a marker of perfusion

### Skills

- Rapid ABC assessment
- Early oxygen and airway management
- Establish IV/IO access (2 large-bore)
- Fluid resuscitation (30 ml/kg crystalloids)
- Start early broad-spectrum antibiotics
- Initiate vasopressors (Noradrenaline first line)
- Measure and interpret lactate
- Insert urinary catheter and monitor urine output

### Attitude

- Time-sensitive decision-making (“golden hour”)
  - Team leadership and communication
  - Protocol-driven management
-

---

## 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic Life Support / ACLS knowledge
  - Airway management skills
  - Basic ICU principles
- 

## 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Oxygen supply / Ventilator	1
Airway equipment (BVM, ET tube)	1 set
IV/IO access setup	Adequate
Crystalloids (NS/RL)	Adequate
Vasopressors (Noradrenaline, Vasopressin)	As required
Broad-spectrum antibiotics	As required
Lactate measurement / ABG	1
Foley catheter	1
Monitoring (ECG, BP, SpO <sub>2</sub> )	1 set
Infusion pumps	1–2
Audio-visual aids	1

---

## 7. TEACHING METHODOLOGY

- Interactive lecture
  - Case-based discussion
  - Simulation-based septic shock scenario
  - Team-based resuscitation drills
  - Debriefing
- 

## 8. STEP-BY-STEP PROCEDURE (CRASHING SEPTIC PATIENT)

44. Recognize sepsis (infection + hypotension / altered mentation / tachypnea)

45. Call for help and activate sepsis protocol

46. **Airway & Breathing:**

- Give high-flow oxygen
- Intubate if indicated

47. **Circulation:**

- Establish 2 large-bore IV lines
- Start **fluid bolus (30 ml/kg crystalloids)**

48. Send labs:

- Blood cultures (before antibiotics)
- Lactate, ABG, CBC

49. Start **broad-spectrum antibiotics within 1 hour**

50. Reassess perfusion (BP, lactate, urine output)

51. If hypotension persists → start **Noradrenaline** (target MAP  $\geq 65$  mmHg)

52. Consider additional vasopressors (vasopressin) if needed

53. Insert Foley catheter → monitor urine output ( $>0.5$  ml/kg/hr)

54. Identify and control **source of infection** (drain abscess, remove catheter)

55. Consider adjuncts:

- Steroids (if refractory shock)
- Mechanical ventilation

13. Continuous monitoring and ICU transfer

## 9. SAFETY PRECAUTIONS

- Avoid fluid overload (frequent reassessment)
- Early vasopressor use in persistent hypotension
- Timely antibiotic administration
- Strict asepsis for lines and procedures

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delay in antibiotics	Give within 1 hour
Inadequate fluids	Use 30 ml/kg guideline
Late vasopressor start	Start early if MAP $<65$
Ignoring lactate	Serial monitoring
Poor source control	Early identification and action

## 11. ASSESSMENT METHOD

- OSCE checklist
- Case-based evaluation
- Simulation performance

---

## 12. FEEDBACK METHOD

- Structured debriefing
  - Faculty feedback
  - CRM evaluation
- 
- 

## 13. REFERENCES

- Surviving Sepsis Campaign Guidelines
  - SSC 1-Hour Bundle
- 
- 

## 14. FACULTY / RESOURCE PERSONS

<u>Name</u>	<u>Department</u>	<u>Role</u>
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## 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** 65-year-old patient with pneumonia presents with hypotension (BP 80/50), tachycardia, altered sensorium

**Expected Actions:**

- Recognize septic shock
  - Start oxygen and IV fluids
  - Send cultures and start antibiotics
  - Initiate vasopressors
  - Monitor and reassess
- 
- 

**End of Module**

---

## **MODULE 11: SIMULATION-BASED TRAINING MODULE ON MANAGEMENT OF ARDS USING SIMMAN 3G**

---

### 1. MODULE TITLE

Simulation-Based Training on Management of Acute Respiratory Distress Syndrome (ARDS) using SimMan 3G

---

### 2. TARGET LEARNERS

- Postgraduate Residents (Anesthesia, Emergency Medicine, Critical Care)
  - MBBS Interns (advanced exposure)
  - ICU Nurses / Emergency Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Recognize ARDS early and initiate lung-protective ventilation
- Prevent ventilator-induced lung injury (VILI)

#### Knowledge

- Define ARDS (Berlin definition: timing, imaging, origin, oxygenation)
- Understand pathophysiology (diffuse alveolar damage, shunt, decreased compliance)
- Know severity classification (PaO<sub>2</sub>/FiO<sub>2</sub> ratio)
- Understand principles of lung-protective ventilation

#### Skills

- Perform rapid respiratory assessment
- Initiate mechanical ventilation with ARDS strategy
- Calculate PBW
- Set low tidal volume (4–6 ml/kg IBW)
- Apply appropriate PEEP, use PEEP/FiO<sub>2</sub> table
- Monitor plateau pressure (<30 cm H<sub>2</sub>O)
- Adjust FiO<sub>2</sub> to target SpO<sub>2</sub> 88–95%
- Recognize need for prone positioning

#### Attitude

- Protocol-driven ventilation strategy

- Continuous reassessment
- Team coordination

---

## 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic ventilator knowledge
  - Airway management skills
  - ABG interpretation
- 

## 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Mechanical ventilator	1
Oxygen supply	1
Airway equipment (ET tube, BVM)	1 set
Monitoring (ECG, SpO <sub>2</sub> , EtCO <sub>2</sub> )	1 set
ABG access	1
Sedation drugs	As required
Neuromuscular blockers	As required
Proning aids	1 set
Infusion pumps	1–2
Audio-visual aids	1

---

## 7. TEACHING METHODOLOGY

- Interactive lecture
  - Case-based discussion
  - Ventilator demonstration
  - Simulation-based ICU scenario
  - Hands-on ventilator settings practice
- 

## 8. STEP-BY-STEP PROCEDURE (ARDS MANAGEMENT)

1. Recognize ARDS (hypoxia + bilateral infiltrates)
2. Secure airway and start mechanical ventilation

3. Initiate **lung-protective ventilation**:
  - Calculate PBW
  - Tidal volume: 4–6 ml/kg IBW
  - Plateau pressure <30 cm H<sub>2</sub>O
4. Adjust **FiO<sub>2</sub> and PEEP** to maintain SpO<sub>2</sub> 88–95%, use chart
5. Monitor ABG and PaO<sub>2</sub>/FiO<sub>2</sub> ratio
6. Use **higher PEEP strategy** if moderate-severe ARDS
7. Consider **prone positioning** (≥16 hours/day)
8. Provide adequate **sedation and analgesia**
9. Consider **neuromuscular blockade** in severe ARDS
10. Conservative fluid management
11. Identify and treat underlying cause (sepsis, pneumonia)
12. Consider rescue therapies and different modes of ventilation
  - ECMO (if refractory hypoxemia)

## 9. SAFETY PRECAUTIONS

- Avoid high tidal volumes
- Monitor plateau pressure
- Prevent barotrauma and volutrauma
- Careful sedation monitoring

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
High tidal volume ventilation	Strict low TV strategy
Ignoring plateau pressure	Regular monitoring
Delayed proning	Early use in severe ARDS
Fluid overload	Conservative strategy
Ignoring underlying cause	Treat etiology early

## 11. ASSESSMENT METHOD

- OSCE checklist
- ABG interpretation
- Ventilator setting assessment

---

## 12. FEEDBACK METHOD

- Structured debriefing
  - Faculty feedback
  - Ventilator performance review
- 

## 13. REFERENCES

- ARDSNet Protocol
  - Berlin Definition of ARDS
  - Surviving Sepsis Guidelines
- 

## 14. FACULTY / RESOURCE PERSONS

Name	Department	Role
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## 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** 50-year-old patient with pneumonia develops severe hypoxia despite oxygen therapy

**Expected Actions:**

- Recognize ARDS
  - Start lung-protective ventilation
  - Adjust PEEP and FiO<sub>2</sub>
  - Consider proning
  - Monitor ABG and response
-

---

## **MODULE 12 : BASIC VENTILATION & NIV MANAGEMENT**

***(For Doctors & Staff Nurses)***

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### 1. Module Title

**Basic Ventilation & NIV Management**

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### 2. Target Learners

- MBBS Doctors / Junior Residents
  - Staff Nurses (ICU / Emergency)
  - Emergency Technicians
- 

### 3. Duration of Module

- **Total Duration:** 5 hours

#### Session Breakdown:

- Theory: 90 minutes
  - Demonstration: 60 minutes
  - Hands-on practice: 150 minutes
  - Assessment: 60 minutes
- 

### 4. Learning Objectives

#### Knowledge

- Understand principles of oxygenation and ventilation
  - Describe indications & contraindications of NIV
  - Explain basic ventilator modes and settings
  - Understand ventilator waveforms and scalars
  - Explain **DOPS algorithm for ventilator emergencies**
- 

#### Skills

- Initiate NIV (CPAP / BiPAP)
  - Set basic ventilator parameters
  - Monitor ventilated patients
  - Interpret ventilator waveforms
  - Apply **DOPS approach in acute deterioration**
-

## Attitude

- Maintain patient safety and vigilance
  - Respond rapidly to ventilator alarms
  - Communicate effectively in emergencies
- 

## 5. Prerequisite Knowledge / Skills

- Basic Life Support (BLS)
  - Basic airway management
  - Vital signs monitoring
- 

## 6. Required Materials / Equipment

<b>Item</b>	<b>Quantity</b>
NIV machine (CPAP/BiPAP)	1 per station
Mechanical ventilator	1
Airway mannequins	1 per group
Oxygen source	Required
NIV masks (various sizes)	Adequate
Ventilator circuits	Adequate
Multiparameter monitor	1
ABG reports (simulation)	Optional
Projector / AV aids	1

---

## 7. Teaching Methodology

- Interactive lectures
  - Live ventilator demonstration
  - Video-based waveform teaching
  - Hands-on ventilator setup
  - Case-based discussions
  - Simulation-based training (DOPS scenarios)
- 

## 8. Step-by-Step Procedure

### A. Initiation of NIV

1. Assess indication (COPD, pulmonary edema)

2. Select appropriate interface
  3. Start CPAP / BiPAP
  4. Set initial parameters (IPAP, EPAP, FiO<sub>2</sub>)
  5. Monitor patient response
- 

## B. Basic Ventilator Setup

1. Choose mode (Volume / Pressure)
  2. Set tidal volume (6–8 ml/kg)
  3. Set respiratory rate
  4. Adjust FiO<sub>2</sub>
  5. Set PEEP
  6. Check alarms and limits
- 

## C. Monitoring Ventilated Patient

- Clinical assessment (RR, effort, consciousness)
  - SpO<sub>2</sub> and ABG
  - Hemodynamics
  - Ventilator parameters
  - Alarm monitoring
- 

## D. Ventilator Waveforms & Scalars

- Pressure-time scalar
- Flow-time scalar
- Volume-time scalar

### Identify:

- Air trapping
  - Leak
  - Asynchrony
- 

## E. Ventilator Emergency Management (DOPS Algorithm) ★

**Indication:** Sudden deterioration in ventilated patient

### *Step 1: Immediate Action*

- Disconnect ventilator
- Start manual ventilation (Bag-Valve-Mask)

### *Step 2: Apply DOPS*

#### **D – Disconnection / Displacement**

- Circuit disconnection

- ETT displacement  
Check connections, tube marking, chest rise

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### O – Obstruction

- Secretions / mucus plug
- Kinked tube / biting  
Suction, check tubing, reposition

---

### P – Pneumothorax

- Sudden desaturation
- Increased airway pressure
- Hypotension  
Clinical exam → Immediate decompression if suspected

---

### S – Disease Worsening

- ARDS progression
- Pulmonary edema
- Sepsis-related deterioration  
👉 Escalate ventilatory support / ICU management

---

*Step 3: Correct cause → Reconnect ventilator → Reassess*

---

### 9. Safety Precautions

- Avoid high tidal volumes (prevent barotrauma)
- Monitor closely during NIV (aspiration risk)
- Ensure proper mask fit
- Maintain infection control
- Continuous monitoring of alarms

---

### 10. Common Errors / Pitfalls

Error	Prevention
Delayed response to desaturation	Apply DOPS immediately
Ignoring ventilator alarms	Mandatory alarm training
Poor NIV mask fitting	Proper sizing & adjustment
Misinterpretation of waveforms	Structured teaching
Failure to disconnect and bag	Always start with manual ventilation

### 11. Assessment Method

- **DOPS-based scenario assessment** (core component)
  - OSCE stations (NIV setup, ventilator settings)
  - Checklist-based evaluation
  - Case-based viva
- 

### 12. Feedback Method

- Immediate verbal feedback
  - Structured feedback using DOPS performance
  - Simulation debriefing
  - Reflective learning
- 

### 13. References

- The ICU Book – Paul Marino
  - ERS/ATS NIV Guidelines
  - AARC (American Association for Respiratory Care) Guidelines
- 

### 14. Faculty / Resource Persons

**Name**

Dr Akhil S L      EMERGENCY MEDICINE      INSTRUCTOR

### 15. Documentation

- Attendance sheet
- Skill competency checklist
- **DOPS performance checklist**
- Certification of completion

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## **MODULE 13: SIMULATION-BASED TRAINING MODULE ON POLYTRAUMA PRIMARY SURVEY (ATLS) USING SIMMAN 3G**

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### 1. MODULE TITLE

Simulation-Based Training on Polytrauma Primary Survey (ATLS Approach) using SimMan 3G

---

### 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (Emergency Medicine, Surgery, Anesthesia, Orthopedics)
  - ICU / Emergency Nursing Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Perform rapid, systematic assessment of polytrauma patient
- Identify and manage life-threatening conditions immediately

#### Knowledge

- Understand ATLS principles (Primary Survey: ABCDE)
- Recognize life-threatening injuries in each step
- Understand adjuncts (eFAST, X-ray, monitoring)

#### Skills

- Perform structured **Primary Survey (ABCDE)**
- Airway management with cervical spine protection
- Identify and manage tension pneumothorax, hemorrhage, shock
- Initiate resuscitation (fluids/blood)
- Perform eFAST (conceptual/simulation)

#### Attitude

- Prioritize life-threatening conditions
- Team leadership and communication

- Reassess continuously

#### 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic Life Support / ACLS
- Basic airway management
- Basic trauma care principles

#### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Cervical collar	1
Airway equipment (BVM, ET tube)	1 set
Oxygen supply	1
IV/IO access setup	Adequate
Fluids / Blood products (simulated)	As required
Chest tube set	1
Needle decompression kit	1
Ultrasound (for eFAST)	1
Monitoring (ECG, BP, SpO <sub>2</sub> )	1 set
Trauma kit	1
Audio-visual aids	1

#### 7. TEACHING METHODOLOGY

- Interactive lecture (ATLS)
- Demonstration of primary survey
- Simulation-based trauma scenario
- Team-based drills
- Hands-on skill stations (airway, chest decompression)

#### 8. STEP-BY-STEP PROCEDURE (PRIMARY SURVEY – ABCDE)

##### A – Airway with Cervical Spine Protection

- Check airway patency
- Look for obstruction (blood, vomit)
- Immobilize cervical spine (collar/manual in-line stabilization)
- Secure airway if needed (ET tube)

**B – Breathing**

- Inspect, palpate, auscultate chest
- Identify life-threatening conditions:
  - Tension pneumothorax
  - Open pneumothorax
  - Flail chest
- Provide oxygen
- Perform needle decompression/chest tube if required

**C – Circulation with Hemorrhage Control**

- Check pulse, BP, capillary refill
- Control external bleeding (pressure, tourniquet)
- Establish 2 large-bore IV lines
- Start fluids/blood transfusion
- Perform eFAST for internal bleeding

**D – Disability (Neurological)**

- Assess GCS
- Check pupils
- Check blood glucose

**E – Exposure & Environment**

- Fully expose patient
- Prevent hypothermia (warm fluids, blankets)

**Adjuncts**

- eFAST
- X-rays (CXR, pelvis)
- Blood investigations

**Reassessment**

- Continuous reassessment after each intervention

**9. SAFETY PRECAUTIONS**

- Maintain cervical spine immobilization
- Avoid hypothermia
- Use aseptic technique for procedures
- Rapid but careful assessment

**10. COMMON ERRORS / PITFALLS**

Error	Prevention
Skipping ABCDE order	Follow structured ATLS approach
Missing airway compromise	Early airway assessment
Delayed hemorrhage control	Immediate bleeding control

Error	Prevention
Ignoring reassessment	Repeat ABCDE frequently
Poor team coordination	Assign clear roles

---

#### 11. ASSESSMENT METHOD

- OSCE checklist (ABCDE)
- Scenario-based evaluation
- Skill station performance

---

#### 12. FEEDBACK METHOD

- Structured debriefing
- Faculty feedback
- CRM (teamwork) assessment

---

#### 13. REFERENCES

- ATLS Guidelines (American College of Surgeons)
- WHO Trauma Care Guidelines

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#### 14. FACULTY / RESOURCE PERSONS

Name	Department	Role

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#### 15. DOCUMENTATION

- Attendance sheet
- Competency checklist
- Certification

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#### SIMULATION SCENARIO (OPTIONAL)

**Case:** 28-year-old male RTA victim, unconscious, hypotensive, chest injury

**Expected Actions:**

- Perform ABCDE survey
- Secure airway with C-spine protection
- Identify tension pneumothorax → decompress
- Control bleeding and start fluids
- Perform eFAST

---

## **MODULE 14: SIMULATION-BASED TRAINING MODULE ON REFRACTORY VENTRICULAR FIBRILLATION (VF) USING SIMMAN 3G**

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### 1. MODULE TITLE

Simulation-Based Training on Management of Refractory Ventricular Fibrillation using SimMan 3G

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### 2. TARGET LEARNERS

- Postgraduate Residents (Anesthesia, Emergency Medicine, Critical Care)
  - MBBS Interns (advanced exposure)
  - ICU Nurses / Emergency Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Manage refractory VF using advanced resuscitation strategies
- Optimize defibrillation, drugs, and reversible cause management

#### Knowledge

- Define refractory VF (VF persisting after  $\geq 3$  shocks)
- Review ACLS shockable rhythm algorithm
- Understand antiarrhythmics (Amiodarone, Lidocaine)
- Understand role of dual sequential defibrillation (DSD) and vector change
- Identify reversible causes (4 Hs & 4 Ts)

#### Skills

- Deliver high-quality CPR with minimal interruptions
- Perform timely defibrillation (escalating energy)
- Administer drugs appropriately:
  - Adrenaline every 3–5 min
  - Amiodarone 300 mg IV bolus (followed by 150 mg)
- Apply advanced techniques:
  - Pad repositioning (anteroposterior)

- Consider DSD (if available/protocol-based)
- Airway management and ventilation control

#### Attitude

- Maintain structured ACLS approach under stress
- Effective leadership and closed-loop communication
- Avoid premature termination of resuscitation

### 5. PREREQUISITE KNOWLEDGE / SKILLS

- ACLS certification or equivalent knowledge
- Airway management skills
- Familiarity with defibrillator use

### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Defibrillator (biphasic)	1–2
CPR board	1
Airway equipment (BVM, ET tube, laryngoscope)	1 set
Oxygen supply	1
IV/IO access setup	Adequate
Emergency drugs (Adrenaline, Amiodarone, Lidocaine, MgSO <sub>4</sub> )	As required
Suction apparatus	1
Monitoring (ECG, SpO <sub>2</sub> , EtCO <sub>2</sub> if available)	1 set
Audio-visual aids	1

### 7. TEACHING METHODOLOGY

- Interactive lecture (ACLS updates)
- Faculty demonstration
- High-fidelity simulation
- Team-based resuscitation drills
- Debriefing with performance metrics

### 8. STEP-BY-STEP PROCEDURE (REFRACTORY VF)

56. Confirm **VF/pulseless VT** on monitor

57. Start **high-quality CPR** immediately
58. Deliver **Shock 1** (200J biphasic or as per device)
59. Resume CPR for 2 minutes
60. **Shock 2** → resume CPR
61. Give **Adrenaline 1 mg IV** (repeat every 3–5 min)
62. **Shock 3** → resume CPR
63. Give **Amiodarone 300 mg IV bolus**
64. Continue cycles:
  - CPR (2 min cycles)
  - Rhythm check
  - Shock if VF persists
65. If **refractory VF persists**:
  - Change pad position (anteroposterior)
  - Ensure good pad contact
  - Increase energy to maximum
  - Consider **Dual Sequential Defibrillation (DSD)** (if trained/setup available)
11. Consider **Lidocaine** if amiodarone unavailable/ineffective
12. Identify and treat **reversible causes (4 Hs & 4 Ts)**
13. Secure airway and monitor **EtCO<sub>2</sub>**
14. Continue until ROSC or termination criteria met

## 9. SAFETY PRECAUTIONS

- Ensure no contact during shock delivery
- Proper pad placement and skin contact
- Avoid excessive interruptions in CPR
- Monitor for drug dosing errors

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delay in defibrillation	Early rhythm recognition and shock
Poor CPR quality	Use feedback devices
Incorrect drug timing	Follow ACLS algorithm strictly
Failure to escalate strategy	Consider vector change/DSD early
Ignoring reversible causes	Use systematic checklist

---

## 11. ASSESSMENT METHOD

- Advanced OSCE checklist
  - Team performance assessment
  - Time-to-shock and CPR quality metrics
- 
- 

## 12. FEEDBACK METHOD

- Structured debriefing (plus-delta)
  - Video-assisted review
  - CRM (Crisis Resource Management) feedback
- 
- 

## 13. REFERENCES

- AHA ACLS Guidelines (latest)
  - ERC Advanced Life Support Guidelines
- 
- 

## 14. FACULTY / RESOURCE PERSONS

<u>Name</u>	<u>Department</u>	<u>Role</u>
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## 15. DOCUMENTATION

- Attendance sheet
  - Advanced skill checklist
  - Certification
- 
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** 60-year-old male in ICU develops sudden VF; persists despite 3 shocks

**Progression:**

- VF → VF → VF (refractory)
- ROSC only after advanced strategies (pad change/DSD)

**Expected Actions:**

- Follow ACLS protocol
  - Administer adrenaline and amiodarone
  - Optimize defibrillation strategy
  - Identify reversible causes
- 
-

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## **MODULE 15: SIMULATION-BASED TRAINING MODULE ON MANAGEMENT OF ECLAMPSIA USING SIMMAN 3G**

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### 1. MODULE TITLE

Simulation-Based Training on Management of Eclampsia using SimMan 3G

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### 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (Obstetrics, Anesthesia, Emergency Medicine)
  - Nursing Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Recognize and manage eclampsia promptly
- Ensure maternal stabilization and prevent complications

#### Knowledge

- Describe pathophysiology of preeclampsia and eclampsia
- Identify warning signs (headache, visual disturbances, epigastric pain)
- Explain magnesium sulfate regimen (loading + maintenance)
- Understand antihypertensive management
- Recognize complications (HELLP, pulmonary edema, aspiration)

#### Skills

- Perform ABC assessment in a seizing patient
- Administer magnesium sulfate correctly
- Manage airway during seizures (lateral positioning, suctioning)
- Control severe hypertension (labetalol/hydralazine)
- Monitor reflexes, respiratory rate, urine output

### Attitude

- Demonstrate rapid decision-making
- Maintain teamwork and communication
- Ensure patient safety and dignity

### 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic obstetric knowledge
- Basic life support (BLS)
- IV cannulation skills
- Basic understanding of hypertensive disorders in pregnancy

### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
IV cannulas & fluids	Adequate
Magnesium sulfate	Adequate
Calcium gluconate (antidote)	1–2 ampoules
Antihypertensives (Labetalol/Hydralazine)	As required
Oxygen supply	1 setup
Suction apparatus	1
Airway equipment (OPA, BVM, ET tube)	1 set
Foley catheter	1
Monitoring equipment (BP cuff, pulse oximeter)	1 set
Audio-visual aids (PPT/video)	1

### 7. TEACHING METHODOLOGY

- Short interactive lecture
- Faculty demonstration
- Video-based learning
- Simulation-based scenario training
- Small group discussion
- Hands-on practice

### 8. STEP-BY-STEP PROCEDURE

66. Recognize seizure activity (Eclampsia)

67. Call for help and activate emergency response
68. Position patient in **left lateral position**
69. Ensure airway patency and suction secretions
70. Provide oxygen (6–8 L/min)
71. Secure IV access
72. Administer **Magnesium Sulfate**:
  - Loading dose: 4 g IV over 5–10 minutes
  - Maintenance: 1–2 g/hour infusion
73. Control severe hypertension:
  - Labetalol / Hydralazine
74. Monitor:
  - Respiratory rate (>12/min)
  - Deep tendon reflexes
  - Urine output (>30 ml/hr)
75. Watch for magnesium toxicity
76. Keep **Calcium Gluconate** ready (antidote)
77. Plan for definitive management (delivery)

## 9. SAFETY PRECAUTIONS

- Ensure airway protection during seizures
- Avoid aspiration (lateral positioning)
- Strict monitoring for magnesium toxicity
- Accurate drug dosing
- Continuous vital monitoring

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delayed magnesium sulfate administration	Early recognition and protocol adherence
Incorrect MgSO <sub>4</sub> dose	Use standard dosing charts
Ignoring airway protection	Immediate lateral positioning and suction
Failure to monitor toxicity	Regular RR, reflex, urine checks
Delay in BP control	Prompt antihypertensive use

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## 11. ASSESSMENT METHOD

- OSCE-based checklist
  - Direct observation during simulation
  - Scenario-based evaluation
- 
- 

## 12. FEEDBACK METHOD

- Immediate debriefing session
  - Structured feedback from faculty
  - Peer discussion
- 
- 

## 13. REFERENCES

- WHO Guidelines for Management of Eclampsia
  - Williams Obstetrics
  - NICE Guidelines on Hypertensive Disorders of Pregnancy
- 
- 

## 14. FACULTY / RESOURCE PERSONS

Name    Department    Role

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## 15. DOCUMENTATION

- Attendance sheet
  - Skill competency checklist
  - Certification of completion
- 
- 

## SIMULATION SCENARIO (OPTIONAL ADD-ON)

**Case:** 24-year-old primigravida at 36 weeks presents with seizures, BP 170/110 mmHg

**Expected Actions:**

- Recognize eclampsia
- Initiate MgSO<sub>4</sub>
- Control BP
- Stabilize airway and breathing
- Prepare for delivery

---

**MODULE 16: SIMULATION-BASED TRAINING MODULE ON MANAGEMENT OF  
MATERNAL COLLAPSE USING SIMMAN 3G**

---

1. MODULE TITLE

Simulation-Based Training on Management of Maternal Collapse using SimMan 3G

---

2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (Obstetrics, Anesthesia, Emergency Medicine)
  - Nursing Staff
- 

3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

4. LEARNING OBJECTIVES

General Objectives

- Recognize and manage maternal collapse rapidly
- Perform effective resuscitation in pregnant patients

Knowledge

- Define maternal collapse and causes (4 Hs & 4 Ts + obstetric causes)
- Understand physiological changes in pregnancy affecting resuscitation
- Know modifications in CPR during pregnancy
- Recognize causes: hemorrhage, embolism, eclampsia, sepsis, cardiac events

Skills

- Perform ABC assessment in maternal collapse
- Initiate high-quality CPR with left uterine displacement
- Secure airway and provide ventilation
- Manage reversible causes (4 Hs & 4 Ts)
- Perform perimortem cesarean section (PMCS) conceptually (within 4–5 min)

Attitude

- Demonstrate leadership in crisis

- Effective team communication
- Maintain calm, structured approach

---

## 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic Life Support (BLS) and ACLS
- Basic obstetric knowledge
- Airway management skills

---

## 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
CPR board	1
Defibrillator	1
Airway equipment (OPA, BVM, ET tube)	1 set
Oxygen supply	1
IV cannulas & fluids	Adequate
Emergency drugs (Adrenaline, MgSO <sub>4</sub> , etc.)	As required
Suction apparatus	1
Obstetric kit (for PMCS simulation)	1
Monitoring equipment	1 set
Audio-visual aids	1

---

## 7. TEACHING METHODOLOGY

- Interactive lecture
- Demonstration by faculty
- Simulation-based training
- Team-based drills
- Hands-on CPR practice

---

## 8. STEP-BY-STEP PROCEDURE

78. Recognize maternal collapse (unresponsiveness, absent pulse)
79. Call for help and activate code blue
80. Start **high-quality CPR immediately**
81. Apply **left uterine displacement (LUD)**
82. Secure airway and give 100% oxygen

83. Attach monitor/defibrillator

84. Follow **ACLS protocol**:

- Check rhythm
- Shock if indicated
- Adrenaline every 3–5 min

85. Identify and treat reversible causes:

- 4 Hs (Hypoxia, Hypovolemia, Hypo/Hyperkalemia, Hypothermia)
- 4 Ts (Tamponade, Tension pneumothorax, Toxins, Thromboembolism)

86. Consider obstetric causes:

- Hemorrhage
- Amniotic fluid embolism
- Eclampsia

87. If no ROSC within **4 minutes**, prepare for **Perimortem Cesarean Section (PMCS)**

88. Continue resuscitation and reassess continuously

## 9. SAFETY PRECAUTIONS

- Ensure correct hand position during CPR
- Avoid aortocaval compression (use LUD)
- Ensure proper defibrillator use
- Maintain airway protection

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delay in starting CPR	Immediate recognition and action
Not performing LUD	Always displace uterus in late pregnancy
Poor quality CPR	Regular training and feedback
Delay in PMCS	Strict 4–5 minute rule awareness
Ignoring reversible causes	Use systematic 4H & 4T approach

## 11. ASSESSMENT METHOD

- OSCE checklist
- Direct observation
- Simulation scenario performance

---

## 12. FEEDBACK METHOD

- Structured debriefing
  - Immediate feedback
  - Video-assisted review (if available)
- 
- 

## 13. REFERENCES

- AHA Guidelines for CPR in Pregnancy
  - WHO Maternal Emergency Guidelines
  - RCOG Green-top Guidelines
- 
- 

## 14. FACULTY / RESOURCE PERSONS

<u>Name</u>	<u>Department</u>	<u>Role</u>
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## 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** 30-year-old pregnant woman at 32 weeks collapses in ward, unresponsive, no pulse

**Expected Actions:**

- Start CPR with LUD
- Follow ACLS protocol
- Identify cause
- Prepare for PMCS if no ROSC

---

## **MODULE 17: SIMULATION-BASED TRAINING MODULE ON MANAGEMENT OF POSTPARTUM HAEMORRHAGE (PPH) USING SIMMAN 3G**

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### 1. MODULE TITLE

Simulation-Based Training on Management of Postpartum Haemorrhage using SimMan 3G

---

### 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (Obstetrics, Anesthesia, Emergency Medicine)
  - Nursing Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Hands-On Practice: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Early recognition and management of PPH
- Prevent maternal morbidity and mortality

#### Knowledge

- Define PPH (>500 ml vaginal, >1000 ml cesarean)
- Understand causes (4 Ts: Tone, Trauma, Tissue, Thrombin)
- Know stepwise management protocol
- Understand massive transfusion principles

#### Skills

- Rapid ABC assessment
- Perform uterine massage
- Administer uterotonics correctly
- Establish IV access and fluid resuscitation
- Initiate blood transfusion
- Identify cause and escalate management

### Attitude

- Prompt response and teamwork
- Clear communication
- Patient safety focus

### 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic obstetric knowledge
- IV access skills
- Basic life support

### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Delivery kit	1
IV cannulas & fluids	Adequate
Uterotonics (Oxytocin, Misoprostol, Carboprost)	As required
Tranexamic acid	1–2 ampoules
Blood products (simulated)	As required
Foley catheter	1
Monitoring equipment	1 set
Surgical instruments (for advanced steps)	1 set
Audio-visual aids	1

### 7. TEACHING METHODOLOGY

- Interactive lecture
- Faculty demonstration
- Simulation-based scenario
- Hands-on practice
- Team-based drills

### 8. STEP-BY-STEP PROCEDURE (PPH MANAGEMENT)

89. Recognize excessive bleeding
90. Call for help and activate PPH protocol
91. Assess **ABC**
92. Perform **uterine massage**

93. Establish **2 large-bore IV lines**
94. Start **IV fluids (crystalloids)**
95. Administer **uterotonics**:
  - Oxytocin (first line)
  - Misoprostol / Carboprost
96. Give **Tranexamic acid (1 g IV)**
97. Identify cause (4 Ts):
  - Tone → uterine atony
  - Trauma → tears
  - Tissue → retained placenta
  - Thrombin → coagulopathy
98. Initiate **blood transfusion / MTP**
99. Insert Foley catheter (monitor urine output)
100. Escalate:
  - Balloon tamponade
  - Surgical management if needed

## 9. SAFETY PRECAUTIONS

- Strict asepsis
- Accurate drug dosing
- Continuous monitoring
- Early escalation

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Delay in recognition	Vigilant monitoring
Inadequate uterine massage	Proper technique
Delayed uterotonics	Early administration
Failure to identify cause	Use 4T approach
Delay in transfusion	Activate MTP early

## 11. ASSESSMENT METHOD

- OSCE checklist
- Direct observation
- Simulation performance

---

## 12. FEEDBACK METHOD

- Structured debriefing
  - Faculty feedback
  - Peer discussion
- 
- 

## 13. REFERENCES

- WHO PPH Guidelines
  - Williams Obstetrics
- 
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## 14. FACULTY / RESOURCE PERSONS

<u>Name</u>	<u>Department</u>	<u>Role</u>
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## 15. DOCUMENTATION

- Attendance sheet
  - Competency checklist
  - Certification
- 
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** 25-year-old woman post vaginal delivery develops heavy bleeding, BP falling

**Expected Actions:**

- Recognize PPH
  - Start uterine massage
  - Administer uterotonics + TXA
  - Initiate fluids and blood transfusion
  - Escalate appropriately
- 
-

---

## MODULE 18: Neonatal Resuscitation Program (NRP) Module

---

### 2. Target Learners

- Postgraduates (Pediatrics, Neonatology)
  - Pediatric practitioners
  - Obstetricians and delivery room staff
  - Nursing staff involved in neonatal care
  - Trainees in Neonatology and Pediatric Intensive Care
- 

### 3. Duration of Module

- Total Duration: 7 hours / 8 sessions

#### Session Breakdown:

- Theory: 120 minutes
  - Demonstration: 120 minutes
  - Hands-on Practice: 120 minutes
  - Assessment: 30 minutes
- 

### 4. Learning Objectives

At the end of the session, the learner should be able to:

#### Knowledge

- Explain principles of neonatal transition at birth
- Describe NRP algorithm and sequence of resuscitation
- Identify risk factors requiring resuscitation
- Understand thermoregulation, ventilation, and oxygen therapy
- Recognize complications and their management

#### Skills

- Perform initial steps of newborn care (warming, positioning, stimulation)
- Provide effective positive pressure ventilation (PPV)
- Perform chest compressions and coordinate with ventilation
- Perform endotracheal intubation (if indicated)
- Administer emergency medications (e.g., epinephrine)

#### Attitude

- Demonstrate teamwork and leadership in delivery room
- Maintain asepsis and patient safety
- Communicate effectively with parents and healthcare team

#### 5. Prerequisite Knowledge / Skills

- Basic understanding of fetal and neonatal physiology
- Knowledge of normal newborn vital parameters
- Familiarity with aseptic precautions
- Basic Life Support (BLS) knowledge

---

#### 6. Required Materials / Equipment

##### Equipment List

- Radiant warmer
- Neonatal resuscitation tray
- Bag and mask (neonatal size)
- 

##### Consumables

- Sterile gloves
- Suction catheters
- Endotracheal tubes

- Umbilical venous catheter (UVC) kit
- Emergency drugs (epinephrine)

#### Simulation Models / Mannequins

- Neonatal resuscitation mannequins
- Intubation trainers
- UVC training models

#### AV Aids

- NRP algorithm charts
- Instructional videos
- PowerPoint slides

#### Example Table

Item	Quantity
Ambu bag	
Appropriate sized masks	
Suction catheters	
Neonatal resuscitation mannequins	
Sterile gloves	
Endotracheal tubes	
Umbilical venous catheter (UVC) kit	
Emergency drugs (epinephrine)	
Radiant warmer	
Oxygen source with blender	
Pulse oximeter (neonatal probe)	

#### 7. Teaching Methodology

- Interactive lectures
  - Demonstration by trained instructors
  - Video-based learning
  - Hands-on skill stations
  - Simulation-based resuscitation scenarios
  - Small group discussions
-

## 8. Step-by-Step Procedure

Example : Basic Neonatal Resuscitation

### A. Initial Assessment at Birth

1. Term gestation?
2. Good muscle tone?
3. Breathing/crying?

→ If “YES” → Routine care

→ If “NO” → Begin resuscitation

### B. Initial Steps (Within First 30 Seconds)

1. Provide warmth (radiant warmer)
2. Position airway (sniffing position)
3. Clear secretions (if needed)
4. Dry and stimulate

### C. Evaluate Respiration and Heart Rate

- If apnea/gasping or HR <100/min → Start PPV

### D. Positive Pressure Ventilation (PPV)

1. Ensure proper mask seal
2. Ventilate at 40–60 breaths/min

### E. Ventilation Corrective Steps (MR SOPA)

- Mask adjustment
- Reposition airway

- Suction mouth and nose
- Open mouth
- Pressure increase
- Alternative airway (ET tube/LMA)

#### F. Chest Compressions : If HR <60/min after effective PPV

- Start compressions (3:1 ratio)
- 90 compressions + 30 breaths/min
- Use 100% oxygen

#### G. Medications

- If HR <60/min despite ventilation and compressions
- Administer epinephrine via IV/UVC
- Consider volume expansion if hypovolemia

#### H. Post-Resuscitation Care

1. Maintain temperature
2. Monitor oxygen saturation
3. Maintain glucose levels
4. Transfer to NICU
5. Ongoing monitoring

---

#### 9. Safety Precautions

- Prevent hypothermia (critical in neonates)
  - Avoid excessive oxygen (use blended oxygen)
  - Ensure correct ventilation pressures
  - Maintain aseptic technique
  - Confirm correct drug dosing
-

---

## 10. Common Errors / Pitfalls

<b>Error</b>	<b>Prevention</b>
Lack of Preparedness	Improve awareness and training
Incorrect landmark identification	Proper anatomical review
Incorrect technique/dosing	Proper observation and skill learning
Improper communication	Simulated learning

---

## 11. Assessment Method

- Direct observation of skills
- OSCE / OSATS stations
- Simulation-based assessment
- Checklist-based evaluation

---

## 12. Feedback Method

- Immediate verbal feedback
- Structured debriefing after simulation
- Checklist-based feedback
- Reflective learning

---

## 13. References

- American Heart Association Neonatal Resuscitation Guidelines
- Indian Academy of Pediatrics NRP Guidelines
- Neonatal Resuscitation Textbook (latest edition)
- WHO Essential Newborn Care Guidelines

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**14. Faculty / Resource Persons**

Name	Department	Role

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**15. Documentation**

- Attendance sheet
- Skill competency checklist
- Certification of completion

## **MODULE 19 : PEDIATRIC ADVANCED LIFE SUPPORT (PALS) MODULE**

### **2. Target Learners**

- Postgraduates (Pediatrics, Emergency Medicine)
- Pediatric practitioners
- Trainees in Pediatric Intensive Care
- Emergency Medicine trainees
- Pediatric anesthesia and surgery trainees

### **3. Duration of Module**

- Total Duration: 16 hours / 12 sessions
- Session breakdown:
  - Theory: 180 minutes
  - Demonstration: 240 minutes
  - Hands-on practice: 240 minutes
  - Assessment: 60 minutes

### **4. Learning Objectives**

At the end of the session, the learner should be able to:

#### Knowledge

- Explain PALS algorithms (cardiac arrest, bradycardia, tachycardia).
- Describe pediatric cardiac arrest rhythms and management.
- Understand pharmacology of resuscitation drugs.
- Recognize causes of pediatric deterioration (respiratory failure, shock).

#### Skills

- Perform high-quality CPR in children and infants.
- Manage airway (BMV, advanced airway).
- Interpret cardiac rhythms.
- Deliver defibrillation and synchronized cardioversion.
- Administer emergency drugs correctly.

#### Attitude

- Demonstrate effective team leadership and communication.

- Ensure patient safety and adherence to protocols.
- Maintain composure in high-stress resuscitation scenarios.

### **5. Prerequisite Knowledge / Skills**

- Basic Life Support (BLS) certification
- Basic ECG interpretation
- Knowledge of pediatric vital signs
- Familiarity with emergency drugs and dosing

### **6. Required Materials / Equipment**

#### Equipment List

- Pediatric crash cart
- Defibrillator with pediatric paddles
- Cardiac monitor/ECG
- Airway equipment (ET tubes, laryngoscope, BVM)
- Suction apparatus

#### Consumables

- IV/IO access supplies
- Emergency drugs (adrenaline, amiodarone, atropine, adenosine)
- Oxygen supplies

#### Simulation Models / Mannequins

- Pediatric advanced life support mannequins
- Defibrillator trainers
- ECG simulation monitors

#### AV Aids

- PALS algorithm charts
- Videos (AHA-based demonstrations)
- Slides and case scenarios

Example Table 7. Teaching Methodology

- Interactive lectures (algorithms & concepts)
- Faculty demonstration of resuscitation
- Video-based learning (AHA scenarios)
- Simulation-based training (mega codes)
- Hands-on skill stations
- Small group case discussions

Example table:

Item	Quantity
Pediatric airway kits (ET tubes, laryngoscope), oxygen delivery devices Bag-valve-mask	
Defibrillator with pediatric paddles	
Sterile gloves Syringes, needles IV fluids Drugs (adrenaline, dextrose, anticonvulsants)	
IV/IO training arms IV/IO access kits	
Pediatric Mannequin / simulator	

## 7. Teaching Methodology

- Interactive lectures (algorithms & concepts)
- Faculty demonstration of resuscitation, Role plays
- Video-based learning (AHA scenarios)
- Simulation-based training (mega codes)
- Hands-on skill stations
- Small group case discussions

## 8. Step-by-Step Procedure

### A. Pediatric Cardiac Arrest Algorithm

1. Ensure safety and check responsiveness
2. Activate emergency response system
3. Start high-quality CPR immediately
  - Rate: 100–120/min
  - Depth: 1/3 AP diameter
4. Attach monitor/defibrillator
5. Identify rhythm (shockable vs non-shockable)

### B. Shockable Rhythm (VF / Pulseless VT)

1. Deliver shock (2 J/kg → 4 J/kg → ≥4 J/kg)
2. Resume CPR immediately (2 min cycles)
3. Administer epinephrine every 3–5 min
4. Consider amiodarone for refractory VF/VT
5. Treat reversible causes (Hs & Ts)

### C. Non-Shockable Rhythm (Asystole / PEA)

1. Continue CPR
2. Administer epinephrine ASAP
3. Identify and treat reversible causes
4. Reassess rhythm every 2 minutes

### D. Bradycardia with Pulse

1. Maintain airway and oxygenation
2. If HR <60/min with poor perfusion:
  - Start CPR
3. Administer epinephrine
4. Consider atropine (if vagal/AV block)
5. Consider pacing

### E. Tachycardia (With Pulse)

#### Stable

- Monitor, obtain ECG
- Vagal maneuvers
- Adenosine (if SVT)

Unstable

- Immediate synchronized cardioversion

#### F. Post-Resuscitation Care

1. Optimize oxygenation and ventilation
2. Maintain blood pressure
3. Control temperature
4. Monitor glucose and electrolytes
5. Transfer to ICU

### 9. Safety Precautions

- Ensure correct energy dosing during defibrillation
- Avoid interruptions in CPR
- Confirm drug doses (weight-based)
- Use proper-sized equipment
- Ensure electrical safety during shock delivery

### 10. Common Errors / Pitfalls

Error	Prevention
Incorrect landmark identification	Proper anatomical review
Incorrect technique/dosing	Proper observation and skill learning
Delayed resuscitative measures	Proper assessment and skill learning
Premature diagnostic closure	Algorithmic approach
Poor communication skills	Simulated learning
Breach of asepsis	Strict sterile protocol

### 11. Assessment Method

- OSCE / OSATS stations
- Mega code simulation assessment

- Checklist-based skill evaluation
- Written MCQ test

## 12. Feedback Method

- Immediate debriefing after simulations
- Structured feedback using checklists
- Video-assisted feedback (if available)
- Self-reflection

## 13. References

- American Heart Association PALS Guidelines (latest update 2025)
- PALS Provider Manual
- Standard Pediatric Critical Care textbooks
- WHO emergency care guidelines

## 14. Faculty / Resource Persons

Name	Department	Role

## 15. Documentation

- Attendance sheet
- Skill competency checklist
- Certification of completion

## **MODULE 20: PEDIATRIC ADVANCED LIFE SUPPORT (PALS) MODULE**

### **2. Target Learners**

- Pediatric Nurses, Nursing trainees

### **3. Duration of Module**

- Total Duration: 8 hours / 8 sessions
- Session breakdown:
  - Theory: 180 minutes
  - Demonstration: 120 minutes
  - Hands-on practice: 120 minutes
  - Assessment: 45 minutes

### **4. Learning Objectives**

At the end of the session, the learner should be able to:

#### Knowledge

- Explain PALS algorithms (cardiac arrest, bradycardia, tachycardia).
- Describe pediatric cardiac arrest rhythms and management.
- Understand pharmacology of resuscitation drugs, iv fluids .
- Recognize causes of pediatric deterioration (respiratory failure, shock).

#### Skills

- Perform high-quality CPR in children and infants.
- Manage airway (BMV, advanced airway).
- Interpret cardiac rhythms. Deliver defibrillation and synchronized cardioversion.
- Preparation of Crash cart, Preparing IV fluids, drug mixing and delivery.
- Administer emergency drugs correctly.

#### Attitude

- Demonstrate effective team leadership and communication.
- Ensure patient safety and adherence to protocols.
- Maintain composure in high-stress resuscitation scenarios.

### **5. Prerequisite Knowledge / Skills**

- Basic Life Support (BLS) certification
- Basic ECG interpretation
- Knowledge of pediatric vital signs
- Familiarity with emergency drugs and dosing

## 6. Required Materials / Equipment

### Equipment List

- Pediatric crash cart
- Defibrillator with pediatric paddles
- Cardiac monitor/ECG
- Airway equipment (ET tubes, laryngoscope, BVM)
- Suction apparatus

### Consumables

- IV/IO access supplies
- Emergency drugs (adrenaline, amiodarone, atropine, adenosine)
- Oxygen supplies

### Simulation Models / Mannequins

- Pediatric advanced life support mannequins
- Defibrillator trainers
- ECG simulation monitors

### AV Aids

- PALS algorithm charts
- Videos (AHA-based demonstrations)
- Slides and case scenarios

### Example Table 7. Teaching Methodology

- Interactive lectures (algorithms & concepts)
- Faculty demonstration of resuscitation

- Video-based learning (AHA scenarios)
- Simulation-based training (mega codes)
- Hands-on skill stations
- Small group case discussions

Example table:

Item	Quantity
Pediatric airway kits (ET tubes, laryngoscope), oxygen delivery devices Bag-valve-mask	
Defibrillator with pediatric paddles	
Sterile gloves Syringes, needles IV fluids Drugs (adrenaline, dextrose, anticonvulsants)	
IV/IO training arms IV/IO access kits	
Pediatric Mannequin / simulator	
Crash cart	

## 7. Teaching Methodology

- Interactive lectures (algorithms & concepts)
- Faculty demonstration of resuscitation, Role plays
- Video-based learning (AHA scenarios)
- Simulation-based training (mega codes)
- Hands-on skill stations
- Small group case discussions

## 8. Step-by-Step Procedure

### A. Pediatric Cardiac Arrest Algorithm

1. Ensure safety and check responsiveness
2. Activate emergency response system
3. Start high-quality CPR immediately
  - Rate: 100–120/min
  - Depth: 1/3 AP diameter
4. Attach monitor/defibrillator
5. Identify rhythm (shockable vs non-shockable)

### B. Shockable Rhythm (VF / Pulseless VT)

1. Deliver shock (2 J/kg → 4 J/kg →  $\geq 4$  J/kg)
2. Resume CPR immediately (2 min cycles)
3. Administer epinephrine every 3–5 min
4. Consider amiodarone for refractory VF/VT
5. Treat reversible causes (Hs & Ts)

#### C. Non-Shockable Rhythm (Asystole / PEA)

1. Continue CPR
2. Administer epinephrine ASAP
3. Identify and treat reversible causes
4. Reassess rhythm every 2 minutes

#### D. Bradycardia with Pulse

1. Maintain airway and oxygenation
2. If HR <60/min with poor perfusion:
  - Start CPR
3. Administer epinephrine
4. Consider atropine (if vagal/AV block)
5. Consider pacing

#### E. Tachycardia (With Pulse)

##### Stable

- Monitor, obtain ECG
- Vagal maneuvers
- Adenosine (if SVT)

##### Unstable

- Immediate synchronized cardioversion

## F. Post-Resuscitation Care

1. Optimize oxygenation and ventilation
2. Maintain blood pressure
3. Control temperature
4. Monitor glucose and electrolytes
5. Transfer to ICU

## 9. Safety Precautions

- Ensure correct energy dosing during defibrillation
- Avoid interruptions in CPR
- Confirm drug doses (weight-based)
- Use proper-sized equipment
- Ensure electrical safety during shock delivery

## 10. Common Errors / Pitfalls

Error	Prevention
Incorrect landmark identification	Proper anatomical review
Incorrect technique/dosing	Proper observation and skill learning
Delayed resuscitative measures	Proper assessment and skill learning
Premature diagnostic closure	Algorithmic approach
Poor communication skills	Simulated learning
Breach of asepsis	Strict sterile protocol

## 11. Assessment Method

- OSCE / OSATS stations
- Mega code simulation assessment
- Checklist-based skill evaluation
- Written MCQ test

**12. Feedback Method**

- Immediate debriefing after simulations
- Structured feedback using checklists
- Video-assisted feedback (if available)
- Self-reflection

**13. References**

- American Heart Association PALS Guidelines (latest update 2025)
- PALS Provider Manual
- Standard Pediatric Critical Care textbooks
- WHO emergency care guidelines

**14. Faculty / Resource Persons**

Name	Department	Role

**15. Documentation**

- Attendance sheet
- Skill competency checklist
- Certification of completion

## **MODULE 21 : PEDIATRIC EMERGENCY MODULE**

### **2. Target Learners**

- Postgraduates (MD/DNB Pediatrics, Emergency Medicine)
- Practitioners
- Trainees in Pediatrics
- Pediatric Surgery trainees
- Intensive Care trainees

### **3. Duration of Module**

- Total Duration: 8 hours / 8 sessions
- Session breakdown:
  - Theory: 180 minutes
  - Demonstration: 120 minutes
  - Hands-on Practice: 120 minutes
  - Assessment: 30 minutes

### **4. Learning Objectives**

At the end of the session, the learner should be able to:

#### Knowledge

- Describe indications and contraindications of common pediatric emergency procedures (airway management, IV/IO access, CPR, shock management).
- Explain relevant pediatric anatomy and physiological differences.
- Describe management of Pediatric trauma, poisoning, bite and stings. Recognize complications and their management.

#### Skills

- Perform pediatric basic and advanced life support (BLS & PALS).
- Secure airway (bag-mask ventilation, intubation basics).
- Establish vascular access (IV/IO).
- Manage shock and seizures.

#### Attitude

- Demonstrate patient safety and infection control practices.
- Communicate effectively with caregivers and team members.
- Maintain professionalism in high-stress situations.

## 5. Prerequisite Knowledge / Skills

- Basic understanding of pediatric anatomy and physiology
- Knowledge of vital signs in children
- Basic Life Support (BLS) certification preferred
- Familiarity with aseptic techniques

## 6. Required Materials / Equipment

### Equipment List

- Pediatric airway kits (ET tubes, laryngoscope), oxygen delivery devices
- Bag-valve-mask (BVM)
- Defibrillator with pediatric paddles
- IV/IO access kits

### Consumables

- Sterile gloves
- Syringes, needles
- IV fluids
- Drugs (adrenaline, dextrose, anticonvulsants)

### Simulation Models / Mannequins

- Pediatric resuscitation mannequins
- IV/IO training arms

### AV Aids

- PowerPoint slides
- Procedural videos
- Simulation software

Example table:

Item	Quantity
Pediatric airway kits (ET tubes, laryngoscope), oxygen delivery devices	
Bag-valve-mask	

Defibrillator with pediatric paddles	
Sterile gloves Syringes, needles IV fluids Drugs (adrenaline, dextrose, anticonvulsants)	
IV/IO training arms IV/IO access kits	
Pediatric Mannequin / simulator	

## 7. Teaching Methodology

- Short interactive lecture
- Demonstration by faculty
- Video demonstration
- Hands-on practice
- Small group discussion
- Simulation-based training(shock, cardiac arrest, seizures)

## 8. Step-by-Step Procedure

### A. Pediatric Basic Life Support (BLS)

1. Ensure scene safety
2. Check responsiveness
3. Call for help
4. Assess breathing and pulse ( $\leq 10$  seconds)
5. Start chest compressions (30:2 ratio single rescuer)
6. Provide effective ventilation
7. Attach AED/defibrillator
8. Continue cycles and reassess

### B. Airway Management (Bag-Mask Ventilation)

1. Position airway (sniffing position)
2. Select appropriate mask size
3. Seal mask properly
4. Deliver breaths (observe chest rise)
5. Avoid over-ventilation

**C. IV/IO Access**

1. Identify site
2. Maintain asepsis
3. Insert cannula / IO needle
4. Confirm placement
5. Secure and start fluids

**D. Management of Shock**

1. Recognize signs (tachycardia, delayed CRT)
2. Secure airway and oxygen
3. Establish IV/IO access
4. Administer fluid bolus (20 ml/kg)
5. Reassess and repeat if needed

**9. Safety Precautions**

- Strict aseptic precautions
- Correct drug dosing (weight-based)
- Use appropriately sized equipment
- Continuous monitoring of vitals
- Avoid fluid overload
- Safe disposal of sharps

**10. Common Errors / Pitfalls**

<b>Error</b>	<b>Prevention</b>
Incorrect landmark identification	Proper anatomical review
Incorrect technique/dosing	Proper observation and skill learning
Delayed resuscitative measures	Proper assessment and skill learning
Premature diagnostic closure	Algorithmic approach
Poor communication skills	Simulated learning
Breach of asepsis	Strict sterile protocol

### 11. Assessment Method

- Direct observation of procedural skills
  - OSCE / OSATS stations
  - Checklist-based evaluation
  - Simulation performance assessment

### 12. Feedback Method

- Immediate verbal feedback
- Structured checklist-based feedback
- Peer feedback
- Self-reflection by learner

### 13. References

- Standard textbooks (Nelson Textbook of Pediatrics, Pediatric Emergency Medicine)
  - National guidelines (IAP, Government protocols)
  - WHO Emergency Triage Assessment and Treatment (ETAT) guidelines
  - Pediatric Advanced Life Support (PALS) guidelines

### 14. Faculty / Resource Persons

Name	Department	Role

### 15. Documentation

- Attendance sheet
- Skill competency checklist
- Certification of completion

MODULE 6 : BASIC DISASTER LIFE SUPPORT (BDLS)

*(For Doctors, Nurses & First Responders)*

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**MODULE 22:**  
**BASIC DISASTER LIFE SUPPORT (BDLS) WITH SIMULATION & MOCK DRILL**

---

## 2. Target Learners

- Doctors (MBBS / Interns / PGs)
  - Staff Nurses
  - Emergency Technicians
  - First Responders
  - Hospital Disaster Response Teams
- 

## 3. Duration of Module

- **Total Duration:** 6 hours

### Session Breakdown:

- Theory: 120 minutes
  - Demonstration: 60 minutes
  - Hands-on practice: 120 minutes
  - Mock Drill (Simulation): 90 minutes
  - Assessment & Debriefing: 30 minutes
- 

## 4. Learning Objectives

### Knowledge

- Define disaster and its types
  - Understand disaster management cycle
  - Explain triage principles
  - Understand Incident Command System (ICS)
  - Recognize roles in hospital disaster response
- 

### Skills

- Perform **mass casualty triage (START system)**
  - Apply basic life support in disaster setting
  - Use personal protective equipment (PPE)
  - Communicate within disaster team
  - Participate effectively in mock drill
- 

### Attitude

- Maintain calm under pressure
- Work in coordinated team structure

- Prioritize resource allocation
- Ensure safety of self and others

---

## 5. Prerequisite Knowledge / Skills

- Basic Life Support (BLS)
- Basic understanding of emergency care

---

## 6. Required Materials / Equipment

Item	Quantity
Triage tags (color-coded)	Multiple
PPE kits	Adequate
CPR mannequins	1 per group
Stretchers / wheelchairs	As available
Mock patient labels	Multiple
Disaster scenario props	Required
Communication devices (walkie-talkie)	Optional
AV aids	1

---

## 7. Teaching Methodology

- Interactive lectures
- Case-based discussions
- Demonstration of triage
- Hands-on triage practice
- Simulation-based training
- Full-scale mock drill

---

## 8. Step-by-Step Procedure

### A. Disaster Approach (SCENE SAFETY FIRST)

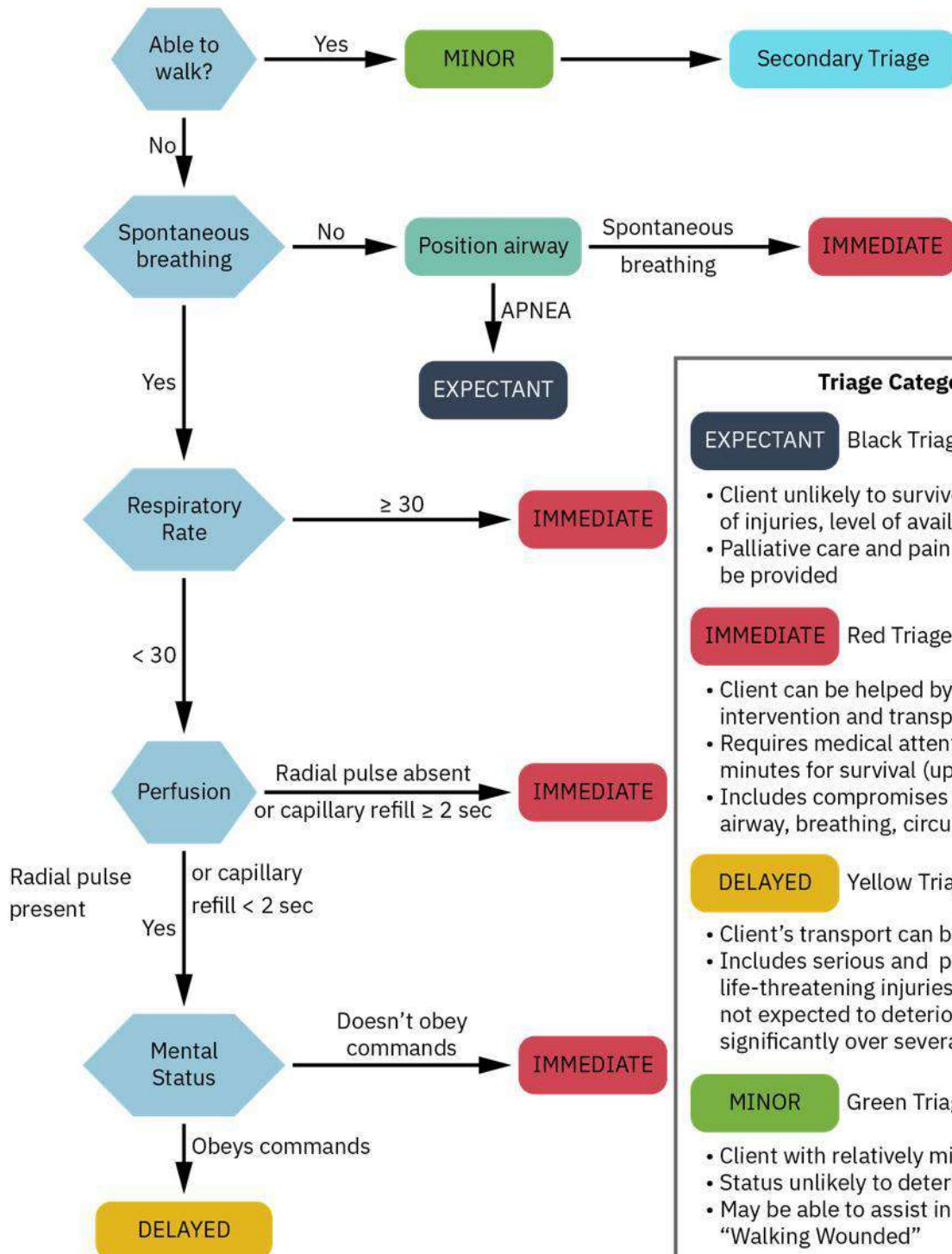
1. Ensure scene safety
  2. Activate disaster response system
  3. Establish command structure
  4. Resource mobilization
-

## B. Incident Command System (ICS)

- Incident Commander
  - Medical Officer
  - Triage Officer
  - Treatment Team
  - Transport Officer
-

C. Triage (START System)

**Start Adult Triage**



**Triage Categories**

**EXPECTANT** Black Triage Tag Color

- Client unlikely to survive given severity of injuries, level of available care, or both
- Palliative care and pain relief should be provided

**IMMEDIATE** Red Triage Tag Color

- Client can be helped by immediate intervention and transport
- Requires medical attention within minutes for survival (up to 60)
- Includes compromises to client's airway, breathing, circulation

**DELAYED** Yellow Triage Tag Color

- Client's transport can be delayed
- Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

**MINOR** Green Triage Tag Color

- Client with relatively minor injuries
- Status unlikely to deteriorate over days
- May be able to assist in own care: "Walking Wounded"

---

### 5 Categories:

- Immediate
- Delayed
- Minor
- Dead

### Steps:

1. Can patient walk? → GREEN
  2. Breathing?
  3. RR > 30 → RED
  4. Capillary refill > 2 sec → RED
  5. Mental status altered → RED
- 

### D. Basic Life Support in Disaster

- Rapid ABC assessment
  - Hemorrhage control
  - Airway positioning
  - CPR (when feasible)
- 

### E. PPE & Safety

- Donning & doffing PPE
  - Hazard identification (chemical, biological)
  - Personal safety priority
- 

### F. Communication & Coordination

- Clear role assignment
  - Closed-loop communication
  - Documentation
- 

### G. MOCK DRILL (CORE COMPONENT)

#### Scenario Example:

- Road Traffic Accident with **multiple casualties (10–15 victims)**
-

**Structure:****Phase 1: Pre-Brief (10 min)**

- Assign roles
- Explain objectives

**Phase 2: Drill Execution (60 min)****Participants perform:**

- Scene assessment
- Triage (START)
- Initial management
- Patient transport decisions

**Phase 3: Debriefing (20 min)**

- What went well
- Errors
- Team coordination
- Learning points

**9. Safety Precautions**

- Ensure safe simulation environment
- Avoid overcrowding
- Use PPE appropriately
- Prevent real injuries during drill

**10. Common Errors / Pitfalls**

<b>Error</b>	<b>Prevention</b>
Over-triaging	Strict START adherence
Poor communication	Closed-loop communication
Role confusion	Clear ICS assignment
Ignoring safety	Emphasize PPE
Delayed triage	Rapid initial sorting

---

### 11. Assessment Method

- Direct observation during drill
  - Triage accuracy assessment
  - OSCE (triage + BLS)
  - Checklist-based evaluation
- 

### 12. Feedback Method

- Structured debriefing (MOST IMPORTANT)
  - Immediate verbal feedback
  - Group reflection
  - Facilitator-led discussion
- 

### 13. References

- WHO Disaster Management Guidelines
  - NDMA (India) Guidelines
  - Basic Disaster Life Support (BDLS) Manual
  - Hospital Disaster Preparedness Protocols
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### 14. Faculty / Resource Persons

<b>Name</b>	<b>Department</b>	<b>Role</b>
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Dr Akhil S L	Emergency Medicine	Course Director
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### 15. Documentation

- Attendance sheet
- Triage assessment checklist
- Drill performance report
- Certification

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## **MODULE 23: SIMULATION-BASED TRAINING ON BREAKING BAD NEWS AFTER DEATH (COMMUNICATION SKILLS) USING SIMMAN 3G**

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### 2. TARGET LEARNERS

- MBBS Interns
  - Postgraduate Residents (All specialties)
  - Nursing Staff
- 

### 3. DURATION OF MODULE

**Total Duration:** 3 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration: 30 Minutes
  - Role-play / Simulation: 90 Minutes
  - Assessment: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Deliver news of death with empathy, clarity, and professionalism
- Support family members during acute grief reaction

#### Knowledge

- Understand principles of breaking bad news (SPIKES protocol)
- Recognize emotional responses (shock, denial, anger, guilt)
- Know legal and documentation aspects after death

#### Skills

- Prepare environment (privacy, seating, no interruptions)
- Use **SPIKES framework**:
  - **S** – Setting up the interview
  - **P** – Perception of relatives
  - **I** – Invitation to share information
  - **K** – Knowledge delivery (clear, simple language)
  - **E** – Empathy and emotional support
  - **S** – Strategy and summary
- Communicate death clearly (avoid vague terms)
- Respond to emotions (silence, validation, empathy)
- Answer questions honestly

#### Attitude

- Compassion and respect

- Cultural sensitivity
- Professional composure

#### 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic communication skills
- Understanding of hospital protocols after death

#### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin (scenario context)	1
Standardized patient/actor (family member role)	1–2
Private room setup	1
Chairs and table	1 set
Tissues / water	As required
Audio-visual recording (optional)	1

#### 7. TEACHING METHODOLOGY

- Interactive lecture (communication skills)
- Demonstration by faculty
- Role-play with simulated relatives
- Video-assisted learning
- Debriefing with reflection

#### 8. STEP-BY-STEP PROCEDURE (BREAKING BAD NEWS)

101.       **Preparation:**
  - Confirm patient details and facts of death
  - Choose quiet, private setting
  - Sit at eye level
102.       **Introduction:**
  - Introduce yourself and team
  - Identify family members
103.       **Assess perception:**
  - Ask what they understand so far
104.       **Warning shot:**
  - “I’m afraid I have some very serious news...”
105.       **Deliver news clearly:**

- “Despite all efforts, he/she has died.”
- Avoid euphemisms
- 106. **Pause and allow reaction**
- 107. **Respond with empathy:**
  - Acknowledge emotions (“I’m so sorry for your loss.”)
- 108. **Answer questions honestly**
- 109. **Provide next steps:**
  - Viewing, documentation, post-mortem if applicable
- 110. **Offer support services** (counseling, social worker)

## 9. SAFETY PRECAUTIONS

- Avoid delivering news in public areas
- Ensure clear, unambiguous communication
- Be aware of strong emotional reactions
- Maintain professional boundaries

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Using vague language	Use clear words like “died”
Rushing the conversation	Allow silence and time
Lack of empathy	Use empathetic statements
Giving excessive technical details	Keep it simple
Avoiding questions	Answer honestly

## 11. ASSESSMENT METHOD

- OSCE (communication station)
- Role-play evaluation checklist
- Feedback from standardized patient

## 12. FEEDBACK METHOD

- Structured debriefing
- Video-assisted review
- Reflective discussion

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### 13. REFERENCES

- SPIKES Protocol (Baile et al.)
  - Medical Communication Skills Guidelines
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### 14. FACULTY / RESOURCE PERSONS

Name    Department    Role

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### 15. DOCUMENTATION

- Attendance sheet
  - Communication skills checklist
  - Certification
- 
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### SIMULATION SCENARIO (OPTIONAL)

**Case:** 65-year-old patient dies after cardiac arrest; family waiting outside ICU

**Expected Actions:**

- Prepare environment
- Deliver news clearly and empathetically
- Handle emotional reactions
- Provide next steps and support

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## **MODULE 24: SIMULATION-BASED FACULTY DEVELOPMENT MODULE ON DEBRIEFING THE DEBRIEFER USING SIMMAN 3G**

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### 1. MODULE TITLE

Faculty Development: Debriefing the Debriefer (DtD) in Simulation-Based Education using SimMan 3G

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### 2. TARGET LEARNERS

- Simulation Faculty / Instructors
  - Postgraduate Residents (as future educators)
  - Nursing Educators / Clinical Tutors
- 

### 3. DURATION OF MODULE

**Total Duration:** 3–4 Hours / 1 Session

- Theory: 30 Minutes
  - Demonstration (Model Debrief): 30 Minutes
  - Practice Debrief + DtD: 120 Minutes
  - Assessment & Reflection: 30 Minutes
- 

### 4. LEARNING OBJECTIVES

#### General Objectives

- Develop structured, learner-centered debriefing skills
- Critically appraise and improve debriefing performance

#### Knowledge

- Principles of simulation-based learning (experiential learning cycle)
- Debriefing frameworks:
  - GAS (Gather–Analyze–Summarize)
  - Plus–Delta
  - Advocacy–Inquiry (A–I)
- Psychological safety and its importance
- Concept of **Debriefing the Debriefer (DtD)**

#### Skills

- Conduct structured debriefing using a framework
- Use **advocacy–inquiry** to explore performance gaps
- Maintain psychological safety
- Provide constructive feedback to peers (DtD)

- Self-reflection and improvement planning

#### Attitude

- Non-judgmental approach
- Reflective practice mindset
- Openness to feedback

### 5. PREREQUISITE KNOWLEDGE / SKILLS

- Basic understanding of simulation sessions
- Clinical knowledge of scenarios used

### 6. REQUIRED MATERIALS / EQUIPMENT

Item	Quantity
SimMan 3G mannequin	1
Simulation scenario setup	1
Audio-video recording system	1
Debriefing room setup	1
Projector / screen	1
Debriefing assessment tools (DASH/OSAD forms)	Adequate
Whiteboard/flip chart	1

### 7. TEACHING METHODOLOGY

- Interactive lecture
- Demonstration of effective debriefing
- Simulation scenario execution
- Participant-led debriefing
- **Debriefing the Debriefers (DtD)** sessions
- Video-assisted reflection

### 8. STEP-BY-STEP PROCEDURE (DEBRIEFING THE DEBRIEFER)

#### Phase 1: Simulation Scenario

111. Conduct clinical scenario (e.g., cardiac arrest, sepsis)
112. Assign one participant as **debriefers**

#### Phase 2: Primary Debrief

3. Debriefers conduct session using structured framework:
  - Reaction phase
  - Analysis phase

- Summary phase

### Phase 3: Debriefing the Debriefer (DtD)

4. Facilitator initiates DtD session
5. Use structured feedback model:
  - What went well?
  - What could be improved?
6. Apply **Advocacy–Inquiry**:
  - “I noticed you moved quickly to teaching points; I’m curious what your thinking was?”
7. Discuss:
  - Structure
  - Questioning style
  - Handling emotions
  - Engagement of learners
8. Encourage **self-reflection** by debriefer
9. Provide specific, actionable feedback

### Phase 4: Reflection & Reinforcement

10. Summarize key learning points
11. Set goals for improvement

## 9. SAFETY PRECAUTIONS

- Maintain **psychological safety** at all times
- Avoid judgmental or harsh criticism
- Focus on behaviors, not individuals
- Ensure confidentiality of performance

## 10. COMMON ERRORS / PITFALLS

Error	Prevention
Judgmental feedback	Use advocacy–inquiry
Overloading with feedback	Focus on 2–3 key points
Ignoring learner emotions	Address reaction phase
Poor structure	Follow GAS/Plus–Delta
Dominating discussion	Encourage learner participation

## 11. ASSESSMENT METHOD

- DASH (Debriefing Assessment for Simulation in Healthcare)

- OSAD (Objective Structured Assessment of Debriefing)
  - Peer and faculty evaluation
- 
- 

## 12. FEEDBACK METHOD

- Structured DtD session
  - Video-assisted feedback
  - Self-reflection notes
- 
- 

## 13. REFERENCES

- Center for Medical Simulation (CMS) Debriefing Resources
  - DASH Tool
  - Rudolph et al. (Advocacy–Inquiry)
- 
- 

## 14. FACULTY / RESOURCE PERSONS

<u>Name</u>	<u>Department</u>	<u>Role</u>
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## 15. DOCUMENTATION

- Attendance sheet
  - Debriefing assessment forms (DASH/OSAD)
  - Certification
- 
- 

## SIMULATION SCENARIO (OPTIONAL)

**Case:** Cardiac arrest scenario followed by participant-led debriefing

### **Expected Actions:**

- Conduct structured debrief
- Engage learners
- Participate in DtD session
- Reflect and improve

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## **MODULE 25: FIRST AID TRAINING**

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### **2. Target Learners**

- Healthcare workers
  - School teachers and community volunteers, Asha workers, JPHN, JHI
  - General public and first responders
- 

### **3. Duration of Module**

- Total Duration: 7 hours

Session breakdown:

- Theory: 120 minutes
  - Demonstration: 120 minutes
  - Hands-on Practice: 120 minutes
  - Assessment: 30 minutes
- 

### **4. Learning Objectives**

At the end of the session, the learner should be able to:

Knowledge

- Describe indications and contraindications of common first aid measures
- Explain basic anatomy relevant to emergencies and possible complications
- Immediate Management of Burns, Drowning, Electrocution, Lightning, Dog bite, Snake bite
- First aid for fractures, Wound care

Skills

- Perform essential first aid procedures (CPR, bleeding control, choking management) using standard steps

Attitude

- Demonstrate patient safety and aseptic precautions
  - Communicate effectively and provide reassurance to victims
- 

### **5. Prerequisite Knowledge / Skills**

- Basic understanding of health and hygiene
- Awareness of emergency situations
- No prior medical training required (for general participants)

### **6. Required Materials / Equipment**

Equipment List

- First aid kits
- CPR masks / pocket masks
- Automated External Defibrillator (AED) trainer
- Splints and bandages

#### Consumables

- Sterile gloves
- Gauze, cotton, adhesive bandages
- Antiseptic solutions

#### Simulation Models / Mannequins

- Adult and child CPR mannequins

#### AV Aids

- Training videos
- PowerPoint slides

Example table:

Item	Quantity
CPR masks / pocket masks	
Automated External Defibrillator (AED) trainer	
Adult and child CPR mannequins	
Splints and bandages	

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## 7. Teaching Methodology

- Short interactive lecture
  - Demonstration by faculty
  - Video demonstration
  - Hands-on practice
  - Small group discussion
  - Simulation-based training
- 

## 8. Step-by-Step Procedure

Example: Basic First Aid & CPR

1. Ensure scene safety

2. Check responsiveness
3. Call for help / activate emergency services
4. Open airway (head tilt–chin lift)
5. Check breathing
6. Start chest compressions (100–120/min, 30:2 ratio)
7. Provide rescue breaths
8. Control bleeding using direct pressure
9. Manage choking using abdominal thrusts
10. Continue care until help arrives

### 9. Safety Precautions

- Ensure scene safety before approaching the victim
- Use personal protective equipment (gloves, masks)
- Follow universal precautions
- Avoid direct contact with bodily fluids
- Use correct technique to prevent injury

### 10. Common Errors / Pitfalls

Error	Prevention
Incorrect landmark identification	Proper anatomical review
Incorrect technique	Proper observation and skill learning
Breach of asepsis	Strict sterile protocol

### 11. Assessment Method : Direct observation of procedural skills

- OSCE / OSATS stations
- Checklist-based evaluation
- Simulation performance assessment

### 12. Feedback Method

- Immediate verbal feedback
- Structured checklist-based feedback
- Peer feedback

- 
- Self-reflection by learner
- 

### 13. References

- World Health Organization First Aid Guidelines
- Indian Red Cross Society First Aid Manual
- American Heart Association CPR & First Aid Guidelines
- Standard first aid and emergency care textbooks

### 14. Faculty / Resource Persons

Name	Department	Role

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### 15. Documentation

- Attendance sheet
- Skill competency checklist
- Certification of completion

## **MODULE 26: LAPAROSCOPIC SUTURING TRAINING**

### **1. Module Title**

Laparoscopic Suturing Training Module

### **2. Target Learners**

Postgraduate medical students (General Surgery / Obstetrics & Gynecology / Surgical Specialties)

### **3. Duration of Module**

- **Total Duration:** 3 hours / 2 sessions
- **Session breakdown:**
  - o Theory: 30 minutes
  - o Demonstration: 30 minutes
  - o Hands-on practice: 90 minutes
  - o Assessment: 30 minutes

### **4. Learning Objectives**

At the end of the session, the learner should be able to:

#### **Knowledge**

- Describe indications and contraindications of laparoscopic suturing
- Explain principles of intracorporeal and extracorporeal knotting
- Identify relevant anatomy and potential complications

#### **Skills**

- Perform intracorporeal suturing using standard techniques
- Demonstrate extracorporeal knot tying
- Handle laparoscopic instruments with precision and coordination

#### **Attitude**

- Demonstrate patient safety and adherence to aseptic protocols
- Maintain ergonomic posture and teamwork
- Communicate effectively within the surgical team

### **5. Prerequisite Knowledge / Skills**

- Basic knowledge of laparoscopic instruments and setup
- Understanding of sterile techniques
- Basic open surgical suturing and knotting skills
- Familiarity with abdominal anatomy

## 6. Required Materials / Equipment

- Laparoscopic trainer box / simulator
- Laparoscopic needle holder (2)
- Laparoscopic graspers
- Sutures (e.g., Vicryl 2-0, silk 2-0)
- Foam / synthetic tissue models
- Trocars (optional for simulation)
- gloves
- AV aids (videos, slides)

**Table:**

Item	Quantity
gloves	As required
Needle holder	2
Maryland	1
Knot Pusher	1
Sutures	Multiple
Trainer box	1
Practice models	2

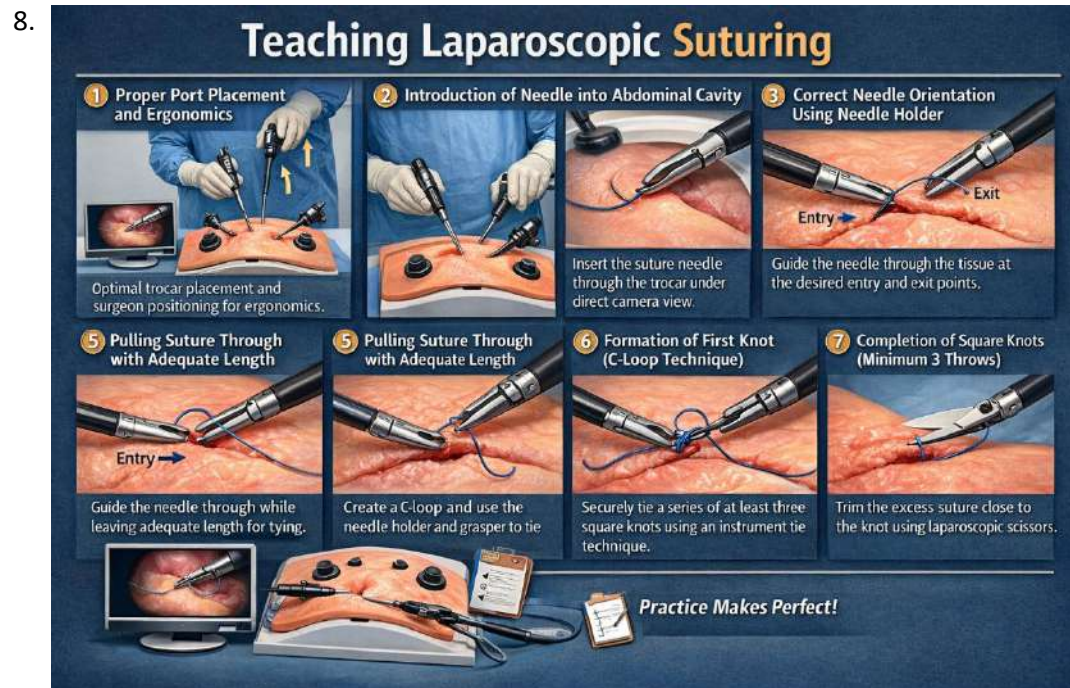
## 7. Teaching Methodology

- Short interactive lecture
- Demonstration by faculty
- Video demonstration of techniques
- Hands-on practice in simulation lab
- Small group teaching (3–5 learners per station)
- Supervised skill repetition with feedback

## 8. Step-by-Step Procedure

### Intracorporeal Suturing:

1. Proper port placement and ergonomics
2. Introduction of needle into abdominal cavity
3. Correct needle orientation using needle holder
4. Bite placement through tissue (entry and exit points)
5. Pulling suture through with adequate length
6. Formation of first knot (C-loop technique)
7. Completion of square knots (minimum 3 throws)



#### Extracorporeal Knotting:

1. Passage of suture through tissue
2. External knot formation
3. Sliding knot using knot pusher
4. Securing knot with additional throws

#### 9. Safety Precautions

- Maintain strict aseptic precautions
- Avoid excessive tissue handling and tension
- Ensure proper instrument handling to prevent injury
- Monitor ergonomics to reduce fatigue and errors
- Confirm secure knotting to prevent slippage

#### 10. Common Errors / Pitfalls

Error	Prevention
Incorrect needle orientation	Practice proper loading technique
Poor depth perception	Simulation-based training
Loose or insecure knots	Adequate knot practice
Tissue tearing	Gentle handling and correct bite size
Instrument collision	Proper port placement and coordination

### **11. Assessment Method**

- Direct observation by faculty

### **12. Feedback Method**

- Immediate verbal feedback during practice

### **13. References**

- Fundamentals of Laparoscopic Surgery (FLS) Manual – Core curriculum for laparoscopic skills training
- Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) guidelines and training modules

### **14. Documentation**

- Attendance register
- Skill competency checklist
- Logbook entry for each trainee
- Certification of completion

A well-structured skill-based training module serves as a vital bridge between theoretical knowledge and real-world practice, ensuring that learners develop competence, confidence, and critical decision-making abilities. By integrating hands-on training, simulation, and continuous assessment, such modules foster experiential learning and promote adherence to best practices and safety standards. This booklet aims to provide a comprehensive, practical framework that can be adapted across diverse training settings, ultimately enhancing professional performance and improving outcomes. Continuous updating and reflective learning remain essential to keep pace with evolving standards and innovations, making skill-based training not just a one-time effort, but an ongoing journey toward excellence.

## Contact Us

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