Practical clinical skills workbook

Medical Education Unit

Faculty Of Medicine

University of Jaffna

Preface

The clinical skills involves history-taking, physical examination, clinical investigations, using diagnostic reasoning, procedural perfection, effective communication, team work and professionalism. While studying medicine, students will learn how to examine, communicate and perform certain procedures with patients to work as part of a medical team.

The student will have to demonstrate medical and technical ability to prepare themselves for a career path of medicine. There are many skills the students will have to know. For example, the student should be well versed in nutritional assessments, administering medications, drawing blood, urinalysis, changing dressings, removing sutures, IV infusions, and swabs. The only way to gain these skills is to obtain the necessary training with patient.

This student guide on skills will help the student to learn the needed clinical skills for the future.

Contributors:

Prof M G Sathiadas

Prof K Muhunthan

Dr V Sujanitha

Dr T Navaratinarajah

Dr S Gobishangar

Dr V Ambalavanar

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1.1. Blood/Body fluids Exposure

- If you have an exposure to blood from a needlestick or sharp injury or blood splash into eye, nose or mouth, act immediately.

For percutaneous injury

- Wash wound and skin thoroughly with soap and running water
- Allow free bleeding of wound
- Do not rub or squeeze the injured site
- Do not apply antiseptics

Splash to the mouth

- Spit out and rinse mouth several times with clean water

Splash to the eye

- Irrigate eyes with normal saline or running water
- If contact lenses are worn, wash the eyes both before and after removing the lenses

Remove contaminated clothes

Important steps…

1. Please report all incidents IMMEDIATELY to the IPC team and inform the supervisor (with patient's name whose blood was involved) who will arrange an assessment by the doctor caring for the patient.
2. An assessment form including results of blood tests MUST be completed by the doctor within 24 hours.
3. All incidents must be reported as soon as possible and an incident from completed.

1.2. Hand hygiene

Hand hygiene must be performed:

a) Immediately before and after every patient contact and any procedures;

b) After touching anything in the bed space area i.e. within the bed curtain area.

There are many products that we can use to perform good hand hygiene such as; liquid soap, antiseptic hand wash and alcohol hand rub

Liquid soap

- Will remove most micro-organisms but not all.

Antiseptic Hand wash

- Will remove most micro-organisms.
- Contains an antimicrobial agent which, with continual use, has a cumulative effect.
- Will remove organic matter from the hands.

Alcohol Hand Rub

- Quick and easy way to decontaminate socially clean hands, 99% effective in thirty second.
- Cannot be used if hands are visibly soiled.
- Do not use if you have dealt with organic matter,
  e.g:- body fluids.
- **Should NOT be used in the cases of *Clostridium difficile* associated diarrhoea or viral diarrhoea and vomiting - use water and antiseptic hand wash in these cases.**

1. Palm to Palm

2. Backs of hand

3. Between the fingers

4. Fingertips to opposing palms **5. Thumbs and wrists** **6. Backs of fingers**

Points to remember:

1. Nails should be kept short
2. Follow bare below the elbow guidelines

- No wrist watches, wrist jewelleries, rings etc.
- If you are wearing long sleeves roll them up before hand washing and at all times in clinical areas.

3. Tuck in ties/no tie or bow tie, remove ID badges and tie hair back. ().
4. Nail brushes should not be used for routine hand hygiene.
5. Hands must be wet before applying the recommended amount of soap and water and rinsed thoroughly before drying.
6. If hands are not rinsed or dried adequately there is a potential for skin damage to occur.
7. The use of gloves is not a substitute for hand hygiene.
8. Keep your hands healthy; cover any cuts with waterproof dressing.
9. Gloved hands should not be washed or clean with alcohol hand - rubs.

1.3. Respiratory hygiene/Cough etiquette

- Cover mouth and nose with a tissue when coughing or sneezing
- If tissues are not available, cover sneezes and coughs with inner side of the arm
- Use the nearest infectious waste bin to dispose of the tissue after use
- Perform hand hygiene after having contact with respiratory secretions and contaminated objects/materials

1.4. Wearing and removing PPE (Donning and doffing)

Sequence of donning and doffing PPE

- Follow the guided procedure for donning and doffing of PPE to prevent contamination of skin and clothing
- Hand hygiene should always be performed before and after using PPE
- Use designated containers for used disposable or reusable PPE

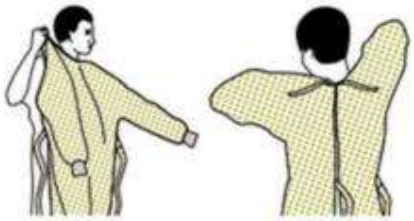
Sequence of donning PPE

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap arround the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator

3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit

4. GOVES

- Extend to cover wrist of isolation gown

USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

CDC

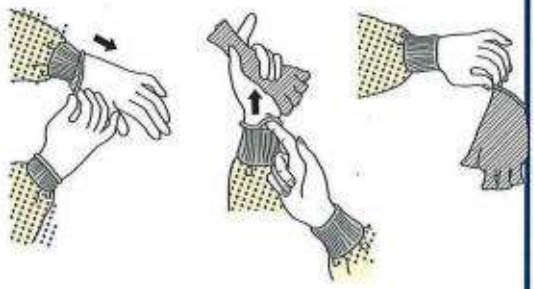
Sequence of doffing PPE

SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Except for respirator, remove PPE at doorway or in anteroom. Remove respirator after leaving patient room and closing door.

1. GLOVES

- Outside of gloves is contaminated!
- Grasp outside of glove with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist
- Peel glove off over first glovet
- Discard gloves in waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield is contaminated!
- To remove, handle by head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container

3. GOWN

- Gown front and sleeves are contaminated!
- Unfasten ties
- Pull away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard

4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- Grasp bottom, then top ties or elastics and remove
- Discard in waste container

PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

CDC

Barrier Nursing (Contact precautions):

- Look for barrier nursing signs;
- Do not take unnecessary things inside (leave notes outside)
- Perform hand hygiene before entering and when leaving;
- Wear disposable apron and gloves and dispose before leaving the room/designated area
- Speak to the nurse for advice.

1.5. SBAR

SBAR is an easy mechanism that you can use to frame conversations, especially critical ones, requiring a clinician's immediate attention. It enables you to clarify what information should be communicated between members of the team, and how. It has also help you to develop teamwork ok and Foster a culture of patient safety. Various trusts may use different acronyms. i.e. **RSVP** (**R**eason, **S**tory, **V**ital **S**igns, **P**lan) but the goal is the same as **SBAR.**

Situation	• Who am I/ where am I? • Who is the patient? • What is wrong?
Background	• Admission diagnosis • Relevant past medical history • Summary of treatment to date
Assessment	• Vital signs • MEWS/PEWS • GCS • I think the problem is..... • I have done....
Recommendations	• What I would like you to do • Is there anything that you would like me to do now?
Record the call	

1.6. MEWS Scoring Chart (For Adults)

Modified Early Warning Score

Areas with adapted MEWS, refer to local MEWS score guildelines

Score	3	2	1	0	1	2	3
Heart Rate	≤40	41-50	51-60	61-90	91-110	111-129	≥130
Resp Rate	≤6	7--8		9--14	15--20	21--29	≥30
Systolic BP	≤70	71-80	81-100	101-180		≥181	
AVPU/GCS	Unresp	Pain	**Voice**	Alert 15	**Confused** 14	9--13	≤8
Urine Output	≤10 ml/h	≤30ml/hr		≥30ml/hr	NPU For 6 hours	NPU For 12 hours	≥400ml/h or NPU for 12 hrs
	CATHETERISED				NOT CATHETERISED		
Temperature		<35		35-38		38.1-39	>39

1.7. PEWS Scoring (For Children)

0-3 months :

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	< 15	16-19	20-29	30-59	60-69	70-79	≥ 80
Respiratory Effort					Mild / Moderate		Severe
O_2 therapy (L)			≤ 2 L			> 2 L	
SpO_2	≤ 85	86-89	90-93	≥ 94			
Heart Rate (bpm)	< 80	80-89	90-109	110-149	150-179	180-189	≥ 190
Systolic BP(mmHG)	< 45	45-49	50-59	60-79	80-89	100-109	≥ 110
CRT			> 2 sec	≤ 2 sec			
AVPU				Alert	Voice		Pain/ Unresponsive

4-11 months :

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 15		16-29	30-49	50-59	60-69	≥ 70
Respiratory Effort					Mild / Moderate		Severe
O_2 therapy (L)			≤ 2 L			> 2 L	
SpO_2	≤ 85	86-89	90-93	≥ 94			
Heart Rate (bpm)	< 70		70-99	100-149	150-169	170-179	≥ 180
Systolic BP(mmHG)	< 60	60-69	70-79	80-89	100-109	110-109	≥ 120
CRT			> 2 sec	≤ 2 sec			
AVPU				Alert	Voice		Pain/ Unresponsive

1-4 years :

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 15		15-19	20-39	40-49	50-59	260
Respiratory Effort					Mild / Moderate		Severe
O_2 therapy (L)			≤ 2 L			> 2 L	
SpO_2	≤ 85	86-89	90-93	≥ 94			
Heart Rate (bpm)	< 60		60-79	80-129	130-149	150-169	≥ 170
Systolic BP(mmHG)	< 70	70-79	80-89	90-109	110-119	120-129	≥ 130
CRT			> 2 sec	≤ 2 sec			
AVPU				Alert	Voice		Pain/ Unresponsive

5-11 years :

Score	3	2	1	0	1	2	3
Respiratory Rate (bpm)	≤ 10		11-15	16-29	30-39	40-49	≥ 50
Respiratory Effort					Mild / Moderate		Severe
O_2 therapy (L)			≤ 2 L			> 2 L	
SpO_2	≤ 85	86-89	90-93	≥ 94			
Heart Rate (bpm)	< 50		50-69	70-109	110-129	130-149	≥ 150
Systolic BP(mmHG)	< 80		80-89	90-119	120-129	130-139	≥ 140
CRT			> 2 sec	≤ 2 sec			
AVPU				Alert	Voice		Pain/ Unresponsive

1.8. Glasgow Coma Scale – Adult

Score		
Eye Opening	**spontaneously** **to speech** **to pain** **non**	4 3 2 1
Verbal Response	**Orientated** **Confused** **Inappropriate** **Incomprehensible** **none**	5 4 3 2 1
Motor response	**Obeys commands** **Localises to pain** **Withdraws from pain** **Flexion to pain** **Extension to pain** **none**	6 5 4 3 2 1
Maximum Score		**15**

1.9. GCS children

PEDIATRIC GLASGOW COMA SCALE (PGCS)				
	> 1 Year		**< 1 Year**	**Score**
EYE OPENING	Spontaneously		Spontaneously	4
	To verbal command		To shout	3
	To pain		To pain	2
	No response		No response	1
MOTOR RESPONSE	Obeys		Spontaneous	6
	Localizes pain		Localizes pain	5
	Flexion-withdrawal		Flexion-withdrawal	4
	Flexion-abnormal (decorticate rigidity)		Flexion-abnormal (decorticate rigidity)	3
	Extension (decerebrate rigidity)		Extension (decerebrate rigidity)	2
	No response		No response	1
	> 5 Years	**2-5 Years**	**0-23 months**	
VERBAL RESPONSE	Oriented	Appropriate words/phrases	Smiles/coos appropriately	5
	Disoriented/confused	Inappropriate words	Cries and is consolable	4
	Inappropriate words	Persistent cries and screams	Persistent inappropriate crying and/or screaming	3
	Incomprehensible sounds	Grunts	Grunts, agitated, and restless	2
	No response	No response	No response	1
TOTAL PEDIATRIC GLASGOW COMA SCORE (3-15):				

Notes:-

2.1. Blood pressure

- Introduce self, gain consent and co-operation
- Perform hand hygiene, roll up sleeves, and remove watch
- Ask patient if they have had any tea, coffee, been smoking or exercised in the last half an hour
- Make sure that the patient is relaxed and if seated legs uncrossed
- Assess which arm would be the most suitable (i.e. presence of dialysis fistula, PICC line, and residual arm paraesthesia or lymph oedema
- Choose correct sized cuff and place it on correctly ensuring the cuff is placed 2-3 cm above the antecubital fossa
- Correct position of arm (antecubital fossa in line with heart, arm slightly flexed and well supported on table or pillow)
- Feel radial pulse. Inflate cuff and note when pulse can no longer be felt then release cuff. Place stethoscope over the brachial artery on the medial aspect of the antecubital fossa using diaphragm side. Inflate cuff to 20-30 mmHg above level noted previously and drop the dial/pressure gauge slowly no faster than 2-3 mmHg per second. Listen and record correctly Korotkoff sounds. The appearance of audible sounds is called the 1st Korotkoff sound and the pressure at which it appears on the sphygmomanometer is called the systolic pressure. Listen then for the disappearance of sounds. This is the 5th Korotkoff sound. The pressure at which they disappear on the sphygmomanometer is the diastolic pressure.
- Record blood pressure as the systolic value over the diastolic value to the nearest 2 mmHg.
- In case of children check the BP centile chart appropriate for the sex, age and height
- Record blood pressure on to the observation chart and report any abnormal results to the doctor/nurse in charge. Leave clinical area tidy and perform hand hygiene.

2.2. Pulse

- Introduce self, gain consent and co- operation. Perform hand hygiene, roll up sleeves, and remove watch.
- Locate Radial, Brachial, Carotid, Femoral, Popliteal, Posterior tibial and Dorsalis pedis.

Radial artery: Lies at the base of the proximal to the 'bracelet' of worst skin creases.

Brachial artery: lies in the antecubital fossa medical to the biceps tendon.

Carotid artery: lies in the neck next to the thyroid cartilage.

Femoral artery: flat in the groin below the inguinal ligament.

Popliteal artery: lies between the heads of the gastrocnemius. This is difficult to feel. Lay the patient on their back with their knee bent. Support the knee from behind with the fingers of both hands and at the same time lift the artery and press it against the tibia.

Posterior tibial artery felt right down behind the medical malleolus.

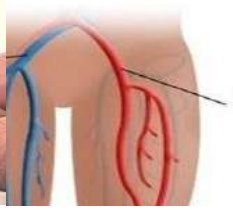
Dorsalis pedis artery felt between the heads of the first and second metatarsals.

- **Observe rate, rhythm and character of pulse. Record the Pulse on to the observation chart and report any abnormal results to the doctor/ nurse in charge.**

Radial

Brachial

Popliteal artery



Femoral

Carotid

Posterior tibial

Dorsalis pedis

2.3. **Respiratory Rate**

- Introduce self, gain consent and co- operation. Perform hand hygiene, roll up sleeves, and remove watch.
- Be aware that it assessing respiration and the patient is aware of this, their breathing may change. It possible record respiration whilst the patient is unaware.
- Palpate radial artery as if taking the pulse to prevent patient knowing respiratory rate is being assessed.
- Respiration should be observed for rate, depth and pattern of breathing.

Rate: the normal rate for an adult at rest is normally 14-18 breaths per minute. In children it varies with age.

Depth: The depth of respiration is the volume of air moving in and out with each respiration. The normal tidal volume for an adult is about 500ml and should be constant with each breath. A spirometer can be used to measure the precise amount.

Pattern: changes in the pattern of respiration are often found in disorders of the respiratory Centre. Some causes for a change in pattern are anxiety, ketoacidosis, extreme exertion, fear and midbrain lesions etc.

Count for one minute, observing rate, quality/ depth and pattern then record on the observation chart and report any abnormal results to the Doctor/nurse in charge.

Leave clinical area tidy and perform hand hygiene.

2.4. **Temperature**

Tympanic Temperature

i. Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove watch.

ii. Explain to patient that this type of temperature measurement uses the ear. Tympanic electronic thermometers are designed to detect heat radiated from the tympanic membrane and provide a digital reading. Use a new individual cover for each patient to prevent cross infection. Select an ear and gently insert the probe into the outer ear.

iii. Record the temperature on to the observation chart and report any abnormal results to the doctor/ nurse in charge

Temporal Artery Thermometry

- Temporal artery Thermometry (TAT) is a method of temperature assessment using infrared technology to detect the heat naturally emitting from the skin surface.
- This method uses the temporal artery for temperature measurement because of its easy accessibility, contains no mucous membranes and notably maintains relatively constant perfusion rate.

2.5. **Determining Patient Body Mass Index (BMI)**

Why is it important to determine a patients' body Mass Index?

- ❖ It is important to determine a patient's Body Mass Index (BMI) in order to assess their nutritional status and risk of malnutrition.

How do you determine a patient's Body Mass Index (BMI)?

- ❖ In order to determine patient BMI, you need to know their weight in kilograms & their height in metres.
- ❖ You can calculate a patients BMI in several ways:
- ❖ Use the following equation:

$$\frac{\text{Weight in kg}}{(\text{Height in metres X height in metres})}$$

- Interpret the BMI to determine the nutritional status
- In Paediatrics interpret the BMI on age/sex specific BMI charts that are available in all the paediatric wards.

3.1. 12 Lead ECG

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove watch.
- Pull around the curtains to ensure privacy and consider using a chaperone. Prepare patient for 12 lead ECG which includes: - exposure, clipping chest if hair present where contact points required and wash the area if the patient is sweaty and clammy (Chlorhexidine wipe can be used for quickness) Place the electrodes correctly on the limbs and thorax
- **Chest leads:**
  6 chest Leads produce 6 views in the horizontal plane V1, V2, V3, V4, V5, V6

- **Limb leads:** 4 limb electrodes:

  Red = right arm, Yellow = left arm, Green = left foot, Black = right foot, produce 6views in the vertical plane I, II, III, aVL. aVR, aVF

  Chest leads and corresponding sites of the heart.

  (See diagram page 32 and check colour codes with diagram page 33)

  V1 - fourth intercostal space at right sternal angle

  V2 - fourth intercostal space at left sternal angle

  V4 - Mid-clavicular line in the fifth intercostal space

  V3 - halfway between V2 and V4

  V6 - Mid-axillary line horizontal to V4

  V5 - Anterior axillary line nearly horizontal to v4

  - Anterior view
  - Lateral view

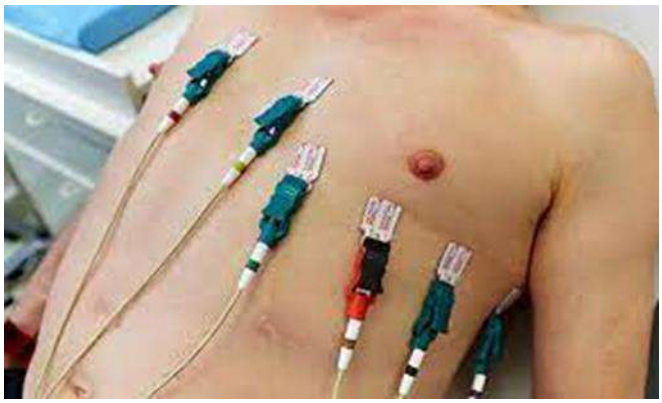
Limb leads and corresponding side of the heart

I, aVL - Lateral view

II, III, aVF-Inferior view

Once a 12 lead ECG has been obtained remove electrodes and cover the patient up. Document onto the ECG tracing the patients name, hospital number, time of 12 lead ECG and date of ECG. Document presence of chest pain or absence of chest pain. Leave clinical area and tidy and perform hand hygiene.

12 Lead ECG Diagrams



ECG Leads &

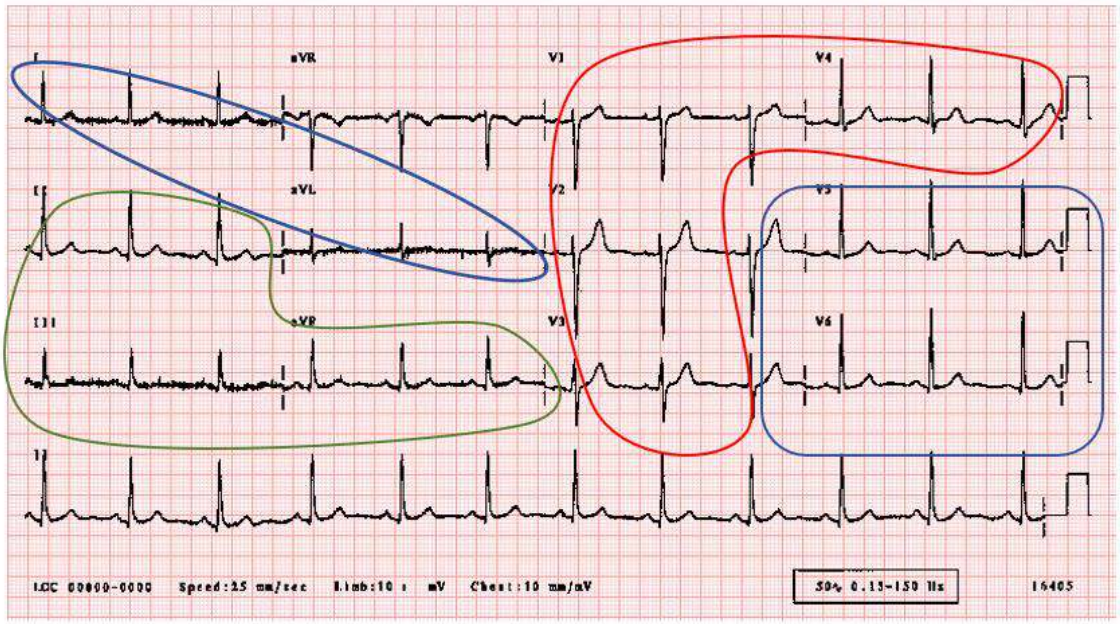
Corresponding Sites of the Heart

Anterior = Front

Lateral = Side

Inferior = Back

12 Lead ECG



How to read a Rhythm strip (using ALS method)

- Is there any electrical activity?
- What is the ventricular (QRS) rate?
- Is the QRS rhythm regular or irregular?
- Is the QRS complex width normal of prolonged?
- Is atrial activity present?
- Is atrial activity related to ventricular activity, and if so, how?

Notes:-

3.2. Cardiac Monitoring

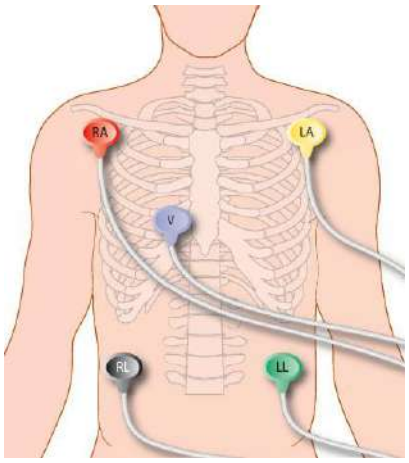
Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove watch.

- **Three lead**

  Please electrodes:

  - Red → Right shoulder
  - Yellow → Left shoulder
  - Green/Black → Below apex
- **Five lead**

Figure 4.4 Electrode Placement for standard 5 Lead ECG System Using Lead V_1

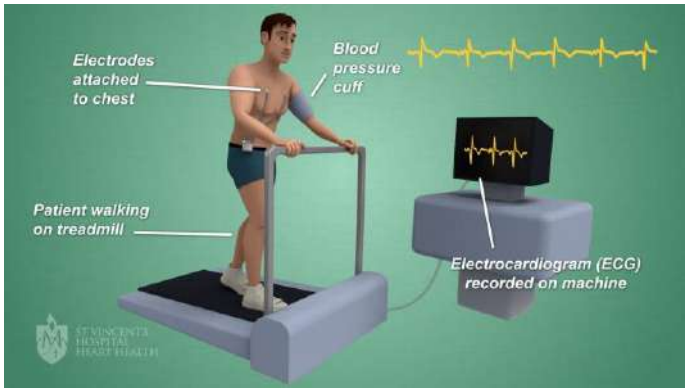


Place the electrodes over bone rather than muscle as this helps to reduce electrical interference. If necessary clip hair around the areas where the electrodes will be attached and clean the area with a chlorhexidine wipe to ensure good contact. Leave clinical area tidy and perform hand hygiene.

4.1. Exercise ECG

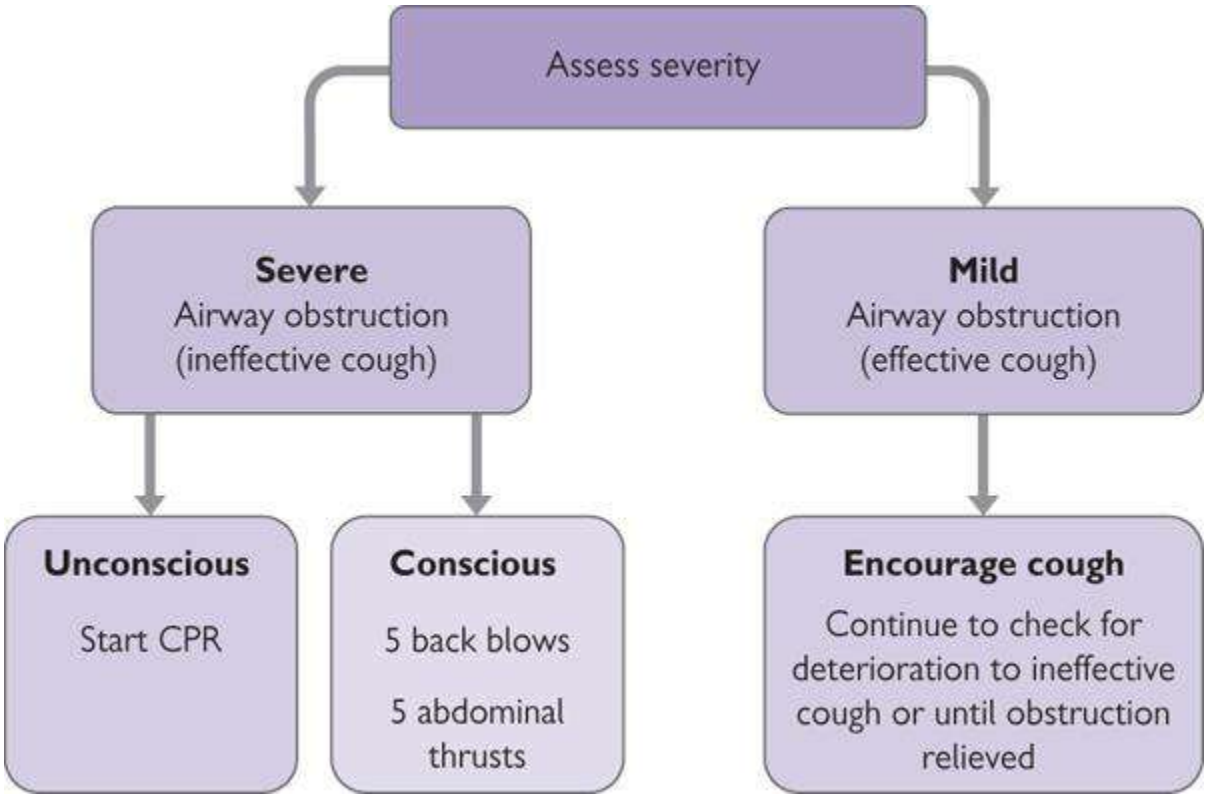
- Introduce self, gain consent and co-operation.
- Be aware patient is in control of test and the treadmill belt can be stopped at any time.
- Connect patient to 12 Lead ECG and fasten ECG cable around the patients waist.
- Connect patient to blood pressure measurement system and explain to patient that BP measurements are taken at 1-minute intervals throughout the test.
- Take resting ECG and blood pressure.
- Invite patient to stand on treadmill with hands lightly resting on its front bar (aware if the patient grips the bar too tightly during the exercise, or allows their arms to become tense, this may make the ECG unreadable or disguise exercise related ECG changes).
- Observe normal Bruce protocol exercise test and note the 7 stages of progressive exercise. Be aware an introductory stage can be added or an accelerated Bruce of protocol where necessary.

- **Be Aware when to stop a test**
    - Target heart rate reached
    - Progressive angina
    - SOB
    - General fatigue
    - Faintness, onset of couplets or triplets
    - Ventricular tachycardia
    - Rise in systolic BP to 230 mmHg
    - Drop in systolic BP greater than 20 mmHg or in diastolic greater than 10 mmHg
    - Drop-in heart rate greater than 20% of the starting rate, or in an individual where increasing workload is not matched by a corresponding rise in heart rate.



- **Be Aware of contraindications to exercise testing**
    - Severe aortic stenosis, acute myocarditis or pericarditis
    - High temperature or flu symptoms
    - Uncontrolled hypertension (SBP>200mmHg, DBP>110mmHg);MI within last 6 weeks
    - Recent unstable angina or pains in chest; ECG with LBBB; frequent fast atrial or ventricular arrhythmia's
    - Left ventricular failure or crescendo angina
    - Renal failure
    - Orthopaedic or neurological impairment
    - Dissecting aneurysm
    - Thyrotoxicosis
    - Third degree heart block

4.2. Treatment of Choking in Adults



Relief of choking (Adult conscious)

Be aware if blockage of the airway is only partial, encourage patient to clear it by coughing. If obstruction is complete carry out urgent intervention to prevent asphyxia. Patient is conscious and breathing, despite evidence of obstruction encourage them to continue coughing but do nothing else. If the obstruction is complete and the patient is conscious, remove any obvious debris or loose teeth from the mouth. Stand to the side and slightly behind them. Support chest with one hand lean the patient well forward so that when the obstructing object is dislodged it comes out of the mouth rather than goes further down the airway. Give up to 5 sharp blows between the scapulae with the heel of your other hand; aim each blow at relieving the obstruction, so all need not necessarily be given.

If this fails to clear the obstruction, try abdominal thrusts:

- Stand behind the patient; put both arms around the upper abdomen.
- Clench the fist and place it between the umbilicus and xiphisternum.
- Grasp it with your other hand; pull sharply inwards and upwards in order to produce a sudden expulsion of air, together with the foreign body, from the airway.

If still unsuccessful, alternate 5 back blows with 5 abdominal thrusts.

Relief of choking (Adult unconscious)

Be aware that if the patient becomes unconscious this may lead to respiratory arrest or cardiac arrest; carry out the following sequence of life support.

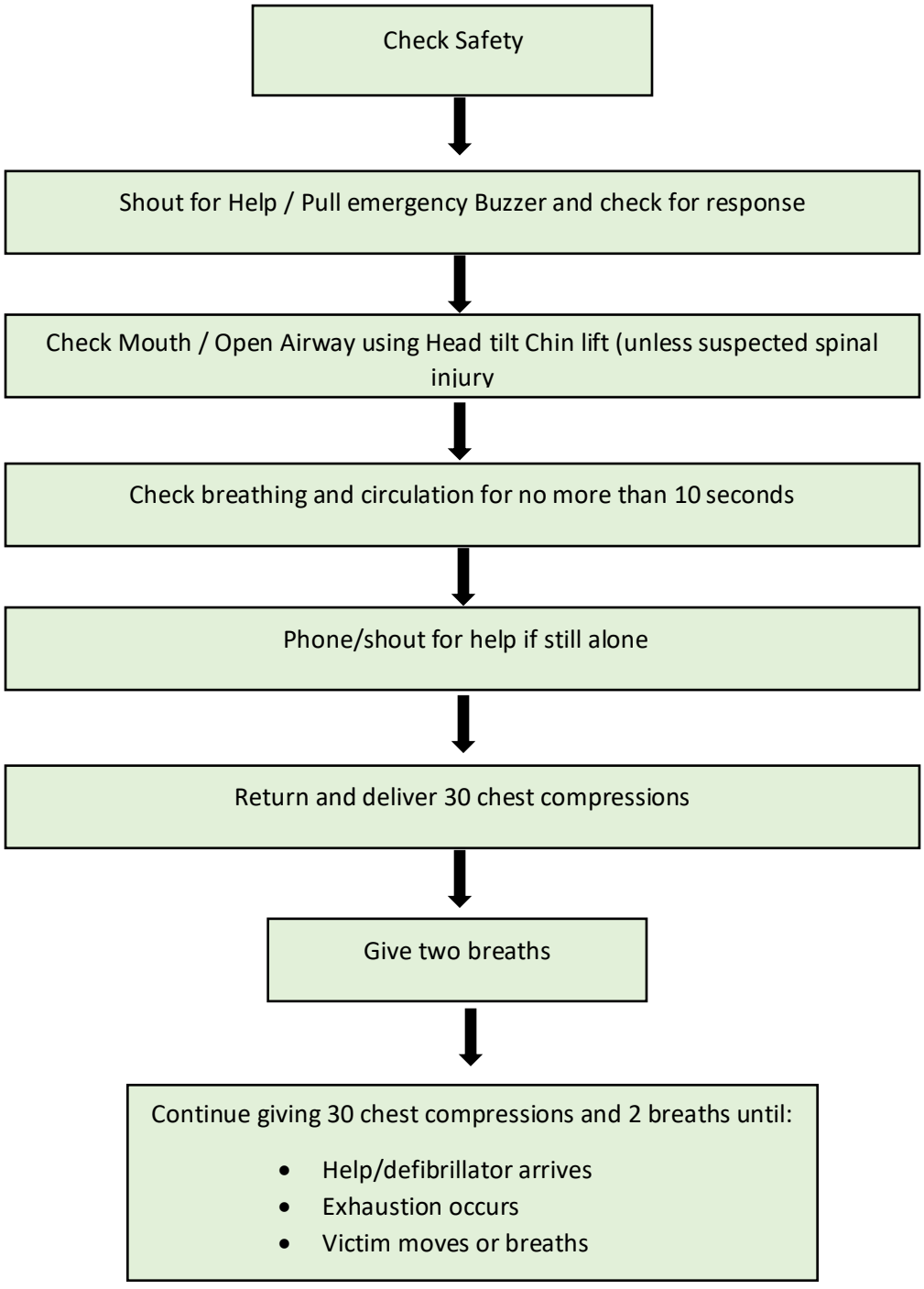
Call for help

1. Start chest comparisons immediately to relieve the obstruction.

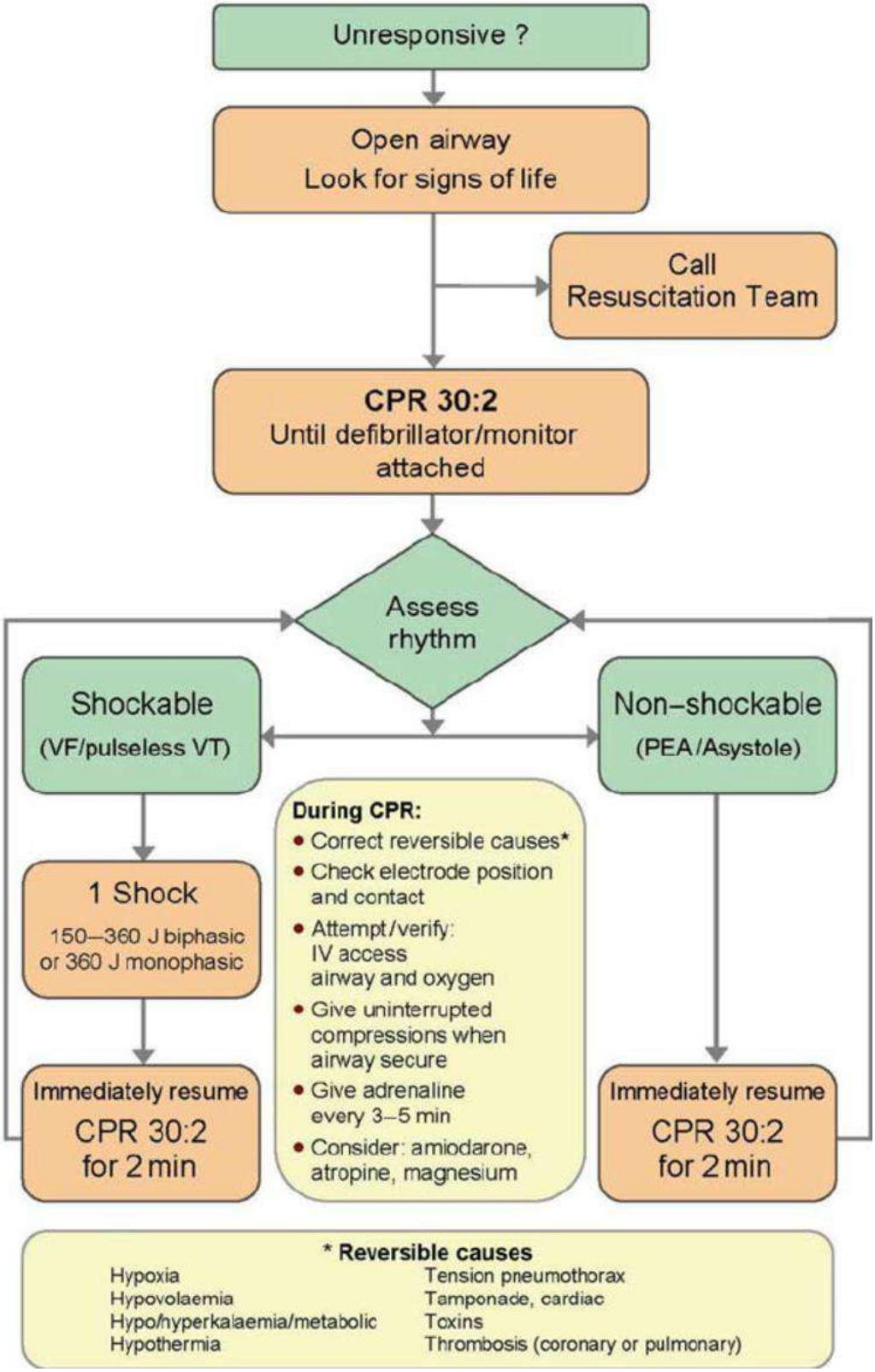
2. After 30 compressions, check the mouth for any obstruction, and then attempt further rescue breaths.

3. Continue to give cycles of 30 compression followed by attempts at rescue breaths.

4.3. Adult Cardiac Arrest for Qualified Staff



4.4. Adult advanced life support



Adult advanced life support Notes:

During CPR

1. Correct reversible causes
2. Check electrode position and contact
3. Attempt/ verify
4. IV access
5. Airway and oxygen

- Give uninterrupted compression when airway secure
- Give adrenaline every 3 to 5 minutes
- Consider: amiodarone, magnesium

Reversible causes (4H and 4T)

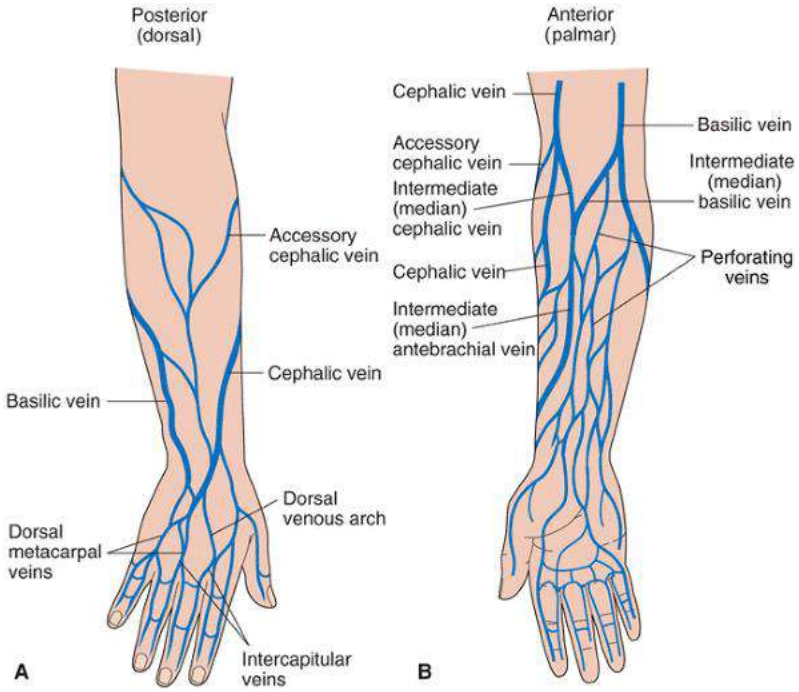
Hypoxia	Tension pneumothorax
Hypovolemia	Tamponade, cardiac
Hypo/hyperkalemia/metabolic	Toxins
Hypothermia	Thrombosis (coronary or pulmonary)

4.5. Venepuncture

- Introduce self, gain consent and co-operation
- Perform hand hygiene roll up clean and remove watch
- Assemble equipment and Identify patient verbally
- Check identification on request form and against patient's ID.
- Ensure patient is comfortable and assess venous access on both arms. Be aware of any risk factors and reasons why this could be problematic.
- Apply tourniquet.
- Palpate veins to distinguish structures. Check direction, size, health, and depth. Clean area with chlorhexidine wipe and wait 30 seconds until the area is dry.
- Use collection system correctly.
    - One hand supports the needle as entering patient, (do not swap hands during the procedure) the other hand anchors the vein (if you do not anchor the vein enough when entering the skin it will move and you will fail to hit the vessel)
    - The hand that anchored the Vein can now release the tension to the skin to swap the blood bottles required for sampling onto the systems needle, do not push the needles further.
    - Fill each tube ensuring the recommended amount has been filledRemove last cube when it is full.
    - Release tourniquet
    - Apply gauze to insertion site and remove needle.
    - Immediately place the needle into sharps bin.
    - Continue applying gauze but if possible, Assess to see if the patient is suitable/capable to apply pressure over the venipuncture site and if ok ask the patient to apply pressure until the bleeding has stopped (2-3 minutes)
    - Leave clinical area tidy and perform hand hygiene.

4.6. IV Cannulation

- Introduce self, gain consent and co-operation.
- Perform hand hygiene, roll up sleeves, remove watch and put on gloves (non sterile). Identify patient verbally.
- Prepare tray for cannulation to include cannula, chlorhexidine wipe, dressing, plaster, flush (saline not water), 5/10ml syringe, tourniquet, sharps bin and gauze.
- Prepare flush 0.9% Sodium Chloride using 10ml syringe and label syringe with contents. Prepare needle free connection system by flushing through 0.9% Sodium Chloride using aseptic non touch technique (ANTT) guidelines.
- Re-confirm patient identity if left patient's side to prepare equipment.
- Position arm, check and select suitable vein. Rest arm into pillow.
- Place tourniquet on arm, clean skin with chlorhexidine wipe and wait 30 seconds or until the area is dry.
- Hold cannula correctly. Pass the cannula into the vein at an angle of 15-25 degrees and observe for flash back. (if you do not anchor the vein enough when entering the skin it will move and you will fail to hit the vessel) Gently withdraw the needle back until you can see the needle (bevel) within the plastic tube. Slide the whole cannula into the vein **maintaining** traction to the skin.
- Release tourniquet.
- Remove the needle and Immediately place the needle into a sharps bin. Secure and flush
- Leave clinical area tidy, perform hand hygiene and fill in cannula care plan.



4.7. Blood Glucose – Finger Prick

Explain the procedure to the patient, wash hands and wear gloves (non sterile) when taking and handling patient samples. Remove the meter from the nursing station and check the glucometer for cleanliness.

Confirm patient identity and obtain verbal consent

to confirm that you have positively identified your patient.

Insert Strip: Place a test strip into the strip port at the head of the meter.

If sample is to be obtained from capillary puncture, wash and thoroughly dry your patients puncture site. Chlorhexidine wipes can be used but the site must be dried after use.Using a lancing device prick the outer edge of a clean, dry finger tip, avoiding the thumb and first finger. Gently milk the finger until a drop of blood is formed, take care not to squeeze the finger.

Apply Sample: With the meter above the puncture site bring the tip of the test strip down towards the droplet to allow sufficient blood to be aspirated Vertically into the strip.

Testing Sample: The meter will beep to indicate successful aspiration and countdown automatically until a result is generated after 6 seconds.

Patient Result: Results will be displayed on screen.

On completion of analyses the meter must be docked for transmission and battery charging. Record the result on the relevant documentation. Dispose of the strip, Lancing Device (and capillary adaptor where applicable) into a sharps container.

Unexpected high or low results must be checked before reporting to the appropriate doctor and send a sample to the laboratory for confirmation.

Leave clinical area tidy and perform hand hygiene.

4.8. Assessment of fluid Requirements - Adults

Fluid balance over 24hours is roughly:

Input (ml)	**Output (ml)**
Drink =1500	Urine =1500
In food =1000	Insensible loss= 800
	Stool= 200
Total =2500	Total= 2500

If Fluid cannot be given orally they are normally given intravenously. Alternatives are via a central line or subcutaneously. There are three main principles to consider:

1. To maintain normal daily requirement.
2. To replace other losses i.e from drains.
3. Consideration of individual needs related to their medical condition.

A common regimen often used to maintain normal fluid requirement = 2-3 litres/24h which allows for loss from faecal, urinary and insensible loss. This is often prescribed as 2 litres of 5% dextrose and one litre 0.9% saline in 24hours.20-30mmol of potassium is often added per litre of fluid. This regimen **will** vary as other consideration are taken into account such as heart failure, renal failure, liver failure and age.

4.9. Set up IV Fluids -Clear Fluids only

Introduce Self, gain consent and co-operation.

Preparation

- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile)
- Check the name, type, additives, strength and volume of intravenous fluid against prescription chart
- Check the expiry date of the fluid and check that the packaging is intact
- Connect prescribed fluid to administration set ensuring as you do this there remains a no touch technique, and prime to expel all air
- Draw up a sodium chloride 0.9% flush using a drawing up /blue needle (Dispose of sharps into sharps bin)

Delivery to the patient

- Introduce self, gain consent and co-operation
- Check the patient identity against prescription chart patient wrist label and verbally
- Check the prescription chart for any known allergies and also ask the patient
- Clean the port of the needle free extension chlorhexidine swab. Allow to air dry.
- Flush 0.9% sodium chloride into the needle free extension to confirm patency
- Connect IV safely and correctly to the needle free extension using a no touch technique
- Start the infusion with assistance to set drip rate/pump.

eg:- Prescription =1000ml over 8 hours

1000 ml ÷8 (number of hours) **=125ml/hour**

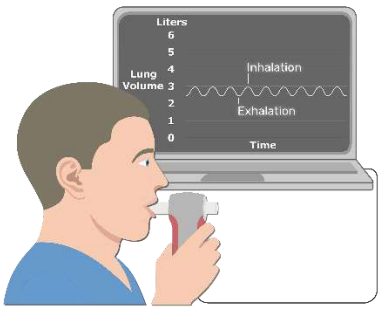
125ml/hour ÷60 (minutes/hour) **=2.08 ml/minute**

2.08ml/min x 20 (*note below**) =42 drops/min**

In this example 1ml = 20 drops of water. This may vary from line to line and the administration set packaging should be checked for details. Do all in a fluent and professional manner and leave patient comfortable. Sign prescription chart and document in the medical notes if necessary. Ensure patient is on a fluid chart and input and output monitored closely. Leave clinical area clean and tidy, wash hands.

4.10. Performing Spirometry

- Prepare machine for measurement and ensure necessary consumables available, including bronchodilator rescue medication.
- Introduce self. Check patient identify. Confirm with patient no contraindications to testing.
- Explain Procedure and check patient understanding.
- Perform manoeuvre in seated position wearing nose clips. Perform minimum of three slow/relaxed vital capacity manoeuvre to determine lung volume. Perform forced manoeuvre.
- Recognise poor effort if appropriate, i.e. cough, delayed start, reduced effort, early termination of expiration. Repeat manoeuvre, minimum of three efforts.
- Test completed when variability between all FEV_1, FVC and PEF from best three manoeuvres 5% or less.
- Perform Interpretation, recognising obstructive, restrictive and mixed patterns.
- Recognise need for additional testing and/or perform reversibility assessment if obstruction suggested.
- Inform patient of procedure for reporting results or need for further investigations.
- Dispose of all consumables appropriately, sterilise equipment where necessary. Perform hand hygiene.



4.11. Performing Peak Flow (Mini Peak)

- Introduce self, gain consent and co-operation.
- Perform hand hygiene, roll up sleeves and remove Watch.
- Ask patient to stand if possible, or if not, to sit as upright as possible.
- Set peak flow meter to zero.
- Connect disposable mouthpiece.
- Ensure patient's fingers do not obstruct the slide of the mini peak flow meter.
- Instruct patient to inhale deeply, place their lips around the meter and holding the meter horizontally exhale forcefully.
- Note the reading.
- Repeat twice more unless patient is unable to do so.
- Record the highest of the three measurements or if the patient is only able to do one reading due to extreme coughing, wheezing etc. document that only one reading was recorded.
- Leave clinical area tidy and perform hand hygiene.

4.12. Oxygen Guidelines

Administer Oxygen Safely – Too much and too little can be harmful

Prescribe the required amount in the BHT

Target Saturation Policy

95-98% in most patients 85-92% in patients with COPD/chronic lung diseases

High flow nasal cannula

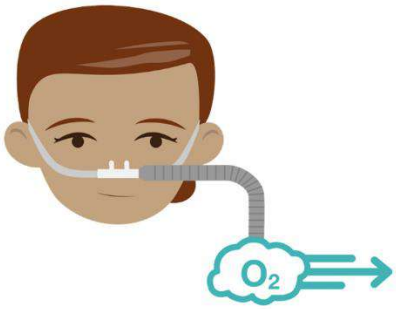
Nasal cannula

Venturi masks

Reservoir mask

Monitor the saturation and record in BHT

Titrate the Oxygen based on the saturation



HFNC

- Large bore nasal cannula
- Reduces room air entrapment
- Set flow rate
- Less pressure produced
- Supports patients with hypoxia

NIV

- Mask interface
- Reduces room air entrapment
- Set pressures
- Greater ventilatory support
- Supports patients with hypoxia

4.13. Use of a Nebuliser

- Introduce self, gain consent and co-operation. Perform hand hygiene roll up sleeves and remove watch.
- Check the patient identity against the prescription and verbally with the patient. Name, Hospital number, Date of birth Check the nebuliser solution with the prescription- Name of drug, dose, route and expiry
- **If you have never given this drug before you must check that the prescription is correct by using the BNF**
- Check the due time for the required drug and that it has not already been given. Place solution correctly into the nebuliser ensuring it is secured together properly.
- Ensure face mask is securely attached to the nebuliser.
- Assist patient to put on the mask by placing the retaining straps over the ears and back of the head. Be aware the solution may take up to 1O minutes to vaporize.
- Post nebuliser, ensure the mask is left clean and dry for future use. Leave clinical area tidy and perform hand hygiene.

Notes:

All patients with a chronic respiratory condition who require nebuliser therapy receive their nebulization through compressed air. If supplementary oxygen is needed during this therapy, oxygen can be administered via nasal specs. Only patients suffering an acute asthmatic attack should receive nebulised drugs delivered via oxygen, which should be set at a minimum flow rate of 6 litres/min, to deliver the nebulised drug effectively.

4.14. Use of Inhaled Medicine

- Ask the patient to sit up straight or stand up and lift their chin to open the airways.
- Remove the cap from the mouthpiece and shake the inhaler vigorously.
- Explain: if you haven't used the inhaler for a week or more, or it is the first time you have used the inhaler, spray it into the air first to check that it works.
- Ask the patient to take a few deep breaths and then breathe out gently, explaining that they must immediately place the mouthpiece into their mouth and put their teeth around it (not in front of it and do not bite it), and then seal their lips around the mouthpiece, holding it between their lips.
- Ask the patient to start to breathe in slowly and deeply through the mouthpiece. As they breathe in they need to simultaneously press down on the inhaler canister to release the medicine. One press releases one puff of medicine.
- Continue to encourage the patient to breathe in deeply to ensure the medicine gets into the lungs.
- Then ask the patient to hold their breath for 1O seconds or as long as they comfortably can, before breathing out slowly.
- lf the patient needs to take another puff, wait for 30 seconds, shake the inhaler again then repeat steps 4 to 7.
- Replace the cap on the mouthpiece.

Use of spacer in Adults

1. Shake the inhaler and take off the cap.
2. Fix the mouth piece of the inhaler into the end of spacer.
3. Ask the patient to sit upright and take a deep breath and breathe out.
4. Ask the patient to hold the spacer horizontally and put the mouthpiece of the spacer into the mouth above the tongue. Ask the patient to close the mouth tightly around the mouthpiece.
5. Ask the patient to press the top of the inhaler to release the medicine.
6. Ask the patient to breath in and out of the spacer for one minute or 10 times.
7. If patient requires more than one puff repeat the steps 1-6 after 1 minute.

4.15. Nasogastric tube Insertion

Aware of contraindications to nasogastric tube insertion i.e.

•Severe facial trauma (cribriform plate disruption)
•Anatomical alterations due to surgery such as flap repair
•Coagulation problems etc

- Introduce self, gain consent and co-operation.
- Perform hand hygiene, roll up sleeves, remove watch put on gloves (non sterile) and apron.
- Check for a swallow assessment/ check NBM status. Prepare the equipment-on-the trolley.
- Assist patient to sit in a semi-upright position in the bed or chair supporting the patient's head with pillows, slightly tilted forward. Unconscious patients should be supine, chin in line with the sternum to reduce the risk of tracheal intubation.
- Estimate the length of feeding tube to be inserted by measuring it against the patient's nose, around their ear and then to the xiphisternum noting the marking on the tube.
- Lubricate nasogastric tube and then pass the tube gently into the nostril backwards and inwards along the floor of the nose to the nasopharynx.
- When the tube is inserted to 20cm, ask/assist the patient to tilt their head forward, putting their chin on their chest and ask them to swallow, swallowing opens the glottis, enabling the tube to pass into the oesophagus. If needed the patient can take sips of water to help the tube pass, keep water to a minimum of 1-2 sips otherwise it will create a gastric pH>5.
- Do not be alarmed if the patient begins to cough and/or retch as this is a natural response.
- Continue to pass the tube up to the premeasured length, stop if resistance felt.
- Ideal system is to aspirate with a 20ml syringe. Place a few drops of aspirate on pH strip. Allow the colour to develop. Read after 10 seconds and within one minute. A reading of 1-5.5 indicates gastric placement. If no aspirate, DO NOT FEED.
- In local setup inflate air through a 10 cc syringe and auscultate over the epigastric area to listen to the turbulent noise.
- Secure the tube to the nostril and fix the tube to cheek using plaster.
- Be aware each time you go to place fluid down the tube you must always repeat the aspiration test which must show acidity before use.

Notes:

Q: How would you pass an N/G tube if the patient was nil by mouth?
Instead of water ask the patient to swallow air.

Reasons to use air

- Strict fluid balance
- To prevent the pH being affected by the water
- NBM patient

Poor swallow: encourage the patient to try and swallow and feel for a swallow when passing the tube.

4.16. Use of an Ophthalmoscope

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove wrist watch.
- Explain purpose of examination giving clear instructions to the patient. Example: “I am going to look into your eyes with this instrument. Please keep your head still and look over my shoulder. Find a point at all times; blink if you have to. I will have to come up close to you – tell me if you need me to stop”.
- Prepare equipment and room while ensuring patient comfort.
- Look at the patient and inspect for any obvious eye abnormalities such as squints.
- Hold ophthalmoscope correctly. Start on zero, largest light, white light. Use correct eye (left to left, right to right) unless there is a good reason why you cannot do this.
- Assess red reflex of each eye ensuring the red reflex is present in the pupillary space. (If poor- Cataract? Retinal detachment?).
- Find and focus on disc. Move yourself slightly temporal to the patient’s line of vision (about 15 degrees).
- The ophthalmoscope will then aim slightly nasally and find the disc (colour, cupping, contours).
- Observe all four quadrants of each eye in turn. Follow the vessels distally as they move away from the disc to the periphery. Veins are darker and wider than arteries.
- Look for the colour, tortuosity, caliber and associated haemorrhage and hard exudates.
- Find the macula. The fovea lies about 1-2 disc diameters temporal to the optic disc; if you are uncertain ask the patient to look directly into the light and you will be looking at the fovea. The patient cannot be expected to do this for long. (Centre: look for macula degeneration and exudates in diabetic retinopathy.)
- Leave clinical area tidy and perform hand hygiene.
- Document any finding and observe any abnormalities.

4.17. Examination of the Nose

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove wrist watch, inspection for deformities.
- Airflow each nostril separately in and out. Rhinos copy with autoscore (large tip).
- Take a swab of any discharge.
- Test sense of smell.
- Leave clinical area tidy and perform hand hygiene.
- Document any findings

4.18. Examination of Oral Cavity and Oropharynx

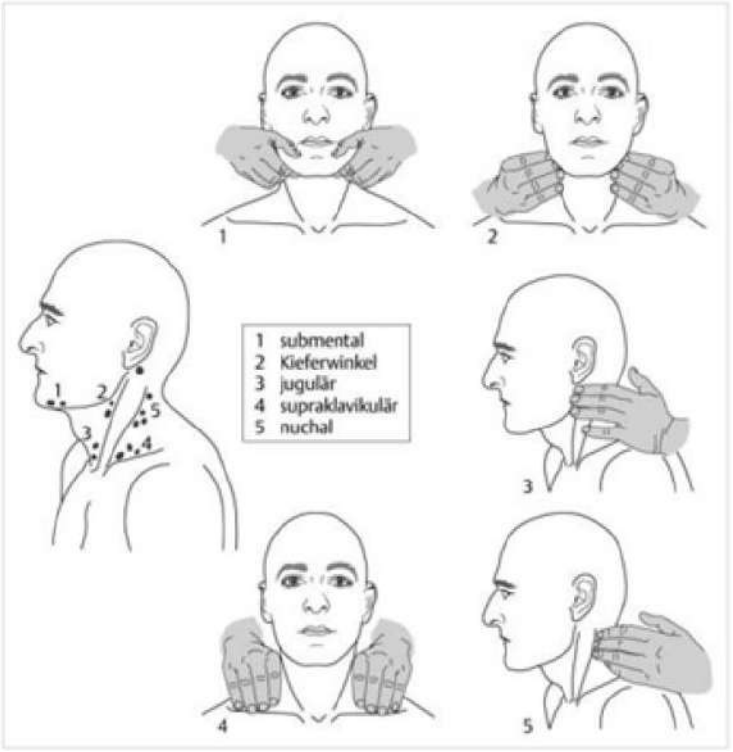
- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove wrist watch.
- Inspection of lips, teeth, gums, tongue (both surfaces).
- Tonsils, uvula, posterior pharyngeal wall.
- Sensation and power in lips (Vb and VIII).
- Sensation and power in tongue (Vc and IX +XII).
- Sensation and power in palate (Vb and X).
- Salivary orifices and ducts and glands.
- Leave clinical area tidy and perform hand hygiene.
- Document findings

4.19. Examination of the Ear

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove wristwatch.
- Inspect the pinna and the surrounding area for abnormalities.
- View the postauricular region for swelling.
- Hold Auroscope correctly.
- Look at the canal, by retracting the pinna and pushing backwards to obtain best view.
- Observe for wax, debris, mucous or pus (might need to be removed to see the tympanic membrane).
- Observe the membrane and comment on findings and any abnormalities.
- Document any findings.
- Test hearing with whisper, conversation voice, shout, use tuning fork correctly for Rinne & Weber.
- Leave clinical area tidy and perform hand hygiene.
- Document findings.

4.20. Examination of the Neck

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove wrist watch.
- Inspection for lumps, skin changes, pulsation, visible changes on swallowing or tongue protrusion.
- Palpation in general.
- Sequence of palpation for known groups of nodes.
- Lumps, specific feature identification (site, size, shape, consistency, margins). Attachment to adjacent structures.
- Bruits or translumination.
- Leave clinical area tidy and perform hand hygiene.
- Document finding.



4.21. Routine Urinalysis

- Introduce self, gain consent and co-operation.
- Provide; toilet facilities, hand washing facilities, and a clean container to pass urine in.
- Perform hand hygiene, roll up sleeves, remove watch, put on gloves (non sterile) and apron, collect urine sample.
- Check the reagent strip to ensure they are dry, facing down in the packet/ not contaminated and expiry within date.
- Dip reagent strip into urine so that all the readings are covered by urine.
- Tap stick on specimen pot to remove excess and start timing.
- Hold the stick horizontally and read values without touching container.

- Dispose of stick and specimen pot in yellow bag.
- Dispose of urine in the sluice.
- Leave clinical area tidy and perform hand hygiene.
- Record results and report abnormal result to the doctor/ nurse in charge.

4.22. Routine Urinalysis- Pregnancy Test

<u>Note</u>: Any woman arriving into A&E who is of child bearing age is seen as pregnant until proven otherwise.

Pregnancy test works by detecting a hormone called Human Chorionic Gonadotropin (hCG) in urine. This hormone appears in a pregnant woman's urine, approximately 20 days after her last menstrual period. The levels then rise rapidly/ reaching a peak in the next 60-80 days. Ideally early morning urine is the most likely to contain enough amounts of this hormone for a pregnancy test to register it. Always check the instructionsas pregnancy tests vary between manufacturers.

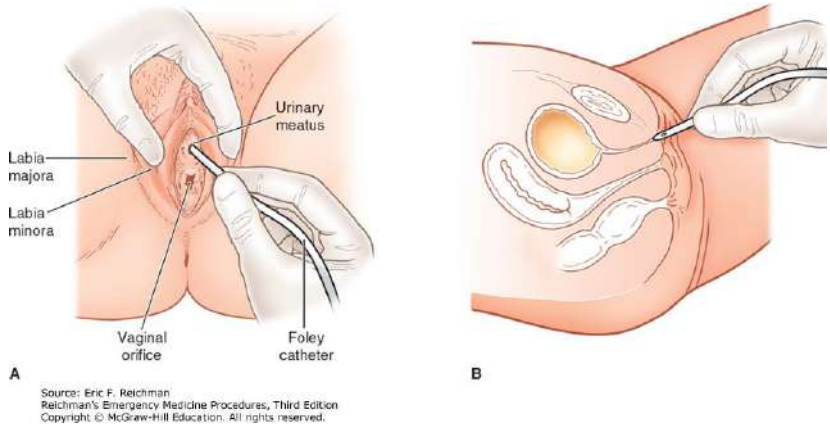
- Introduce self, gain consent and co-operation.
- Demonstrate interest and respect and attend to patient's physical comfort.
- Provide: toilet facilities, hand washing facilities, and a clean container to pass urine in.
- Ensure sleeves are rolled up, remove watch, wash hands and wear gloves (non sterile).
- Dip pregnancy test stick into the urine ensuring guidelines are followed (many will ask you **not** to dip the stick further than a specified point).
- Once you have dipped the pregnancy stick leave to one side to allow the stick to work. A typical stick will state: Two Lines = pregnant / One line = not pregnant.
- Leave clinical area tidy and perform hand hygiene.
- Record any results into the medical notes and discuss your findings with the patient.

4.23. Collection of Midstream Specimen of Urine for culture

- Introduce self, obtain consent and co-operation.
- Follow bare bellow the elbow guidelines (roll up sleeves and remove wrist watch, rings etc.
- Perform hand hygiene
- Ensure privacy.
- Provide the patient with a sterile container, soap, water and a towel to wash around the genital area
- Explain the correct way of collection.
- Ask to commence and complete urinating into a urinal, bedpan or toilet bowl and collect the middle part of the stream into the sterile specimen pot provided.
- Ensure hand washing facilities.
- Wear gloves (non sterile) and apron, collect sample from patient and transport as soon as possible.
- If delay in transport, keep the specimen at 4°C (for less than 24 hours). If transport takes more than two hours, transport in ice.
- Leave the clinical area tidy and perform hand hygiene.

4.24. Female Urinary Catheterisation

- Introduce self, gain consent and co- operation. Ensure privacy. **Consider a chaperone**. Perform hand hygiene, roll up sleeves, remove wrist watch, put on apron.
- Assist the patient to adopt a supine position. (Bladder scanning must be performed if patient present with urinary retention prior to catheterisation)
- Collect correct equipment and using aseptic non touch technique (ANTT), prepare the catheterisation pack and the additional equipment.
- Check expiry date on catheter.
- Perform hand hygiene again and put on sterile gloves.
- Place sterile dressing towel between the patient's legs and thighs.
- Using your non-dominant hand, retract the labia minora to expose the urethra meatus.
- Clean the perineal area with 0.9% sodium chloride, using a new swab for each stroke. Draw from the front towards the anus.
- Insert local anaesthetic gel (lidocaine) into the urethral orifice and gently squeeze the gel into the urethra, wait 2-3 minutes.
- Remove first pair of the sterile gloves once you have finished cleaning the area, use alcohol hand gel/wash hands and replace with new sterile gloves.
- Place catheter already connected to catheter bag and sterile container between patient's legs. (Note: to do this remove catheter from the clear plastic casing and connect onto the catheter bag then transfer across to the patient.) (Research has shown the catheter and catheter bag should be joined prior to insertion as this reduces infection.)
- Advance the catheter until urine flows then push it a further 5cm to ensure it is in the bladder.
- Inflate the balloon with the correct amount of water.
- Help to clean the patient up and ask if they are comfortable. Maintain principles of asepsis throughout.
- Document details of the procedure in the notes and inform other members of staff of this procedure and any follow up that may be required.
- Leave clinical area tidy and perform hand hygiene.



Bladder Scanning -

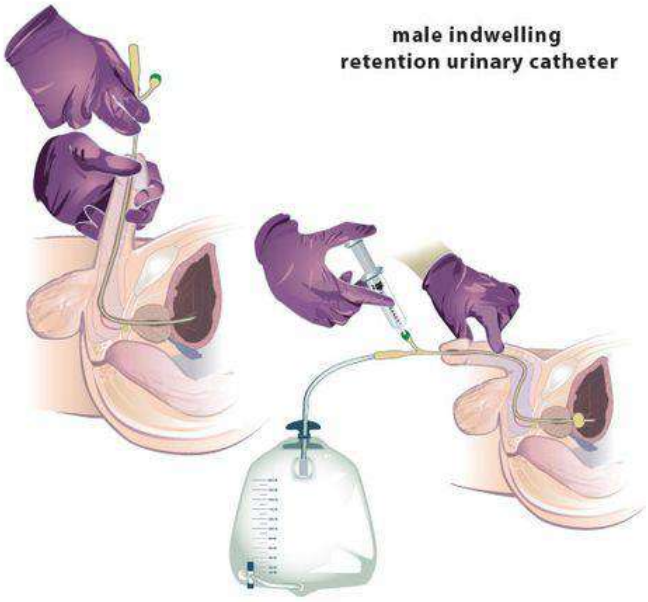
Criteria: The reason for doing a scan is to be sure that the bladder is fullof urine (high residual urine) or has significant volume following trial without catheter. Urinary retention causes distension of the bladder (and usually pain).

Indications for bladder scanning:

- Patient has supra-pubic pain and / or supra-pubic distension.
- If the patient has not passed urine for 4 hours after surgery.
- If there is no output from a catheter after 2 hours.
- Consider retention in people who have not passed urine for more than 4 hours, particularly in patients with spinal cord problems who may have painless retention.

4.25. Male Urinary Catheterisation

- Introduce self, gain consent and co-operation.
- Ensure patient privacy. (Bladder scanning must be performed if patient presents with urinary retention prior to catheterisation.)
- Perform hand hygiene, roll up sleeves, remove wrist watch, put on apron.
- Collect correct equipment and using aseptic non touch technique (ANTT) prepare the catheterisation pack and the additional equipment.
- Check expiry date on catheter.
- Help the patient to get into the supine position. Put an absorbent pad underneath the patient's buttocks.
- Perform hand hygiene again then put on sterile gloves. Arrange towels so that only the penis is visible.
- Pick up the penis using gauze. Clean the penis and perineum using a new swab for each wipe, wipe away from the meatus, retracting the foreskin if necessary.
- Explain to the patient what is being done as you go along. Insert local anaesthetic gel (lidocaine) into the urethral orifice and gently squeeze the gel into the urethra and wait 2-3 minutes.
- Remove first pair of the sterile gloves once you have finished cleaning the area, use alcohol hand gel/wash hands and replace with new sterile gloves.
- Place catheter already connected to catheter bag and sterile container between patient's legs. (Note: to do this remove catheter from the clear plastic casing and connect onto the catheter bag then transfer across to the patient) Negotiate narrowing at the prostate bend by lifting up the penis towards the pubis while keeping it slightly stretched. Advance the catheter until urine flows, then push it a further 5cm to ensure it is in the bladder. Inflate the balloon to catheter requirements using water then gently pull the catheter back until resistance is felt at the base of the bladder. Reposition the foreskin.
- Help to clean the patient up and ask if they are comfortable.
- Take urine sample if necessary.
- Inform other members of staff of this procedure and any follow up that may be required, document details of procedures in notes.
- Leave clinical area tidy and perform hand hygiene.



4.26. Removal of Catheters

- Introduce self, gain consent and co-operation.
- Perform hand hygiene, roll up sleeves, remove wrist put on apron.
- Collect correct equipment and ensure privacy. Place a disposable pad under the buttocks and a between the patient's thighs.
- Check the catheter specifications on care plan to see what the maximum volume of water required was to hold catheter in place.
- Withdraw this amount ensuring fully deflated.
- Ask the patient to breath in and out.
- As the patient exhales, gently but firmly withdraw the catheter into the receiver. (For male patients support penis at an angle of 45^{o}.)
- Leave clinical area tidy and perform hand hygiene.
- Document time of the catheter removal and subsequently when the patient passes urine.

4.27. Swabs for culture

4.27.1. Wound Swab:

- Take swab after cleaning the wound with sterile saline to prevent contamination of specimen with therapeutic materials used in previous dressing and to remove surface exudate.
- In the case of a dry wound the swab should be moistened with sterile water or saline or transport medium. This will enhance uptake of any organisms present.
- Swab the whole wound, if practical, using a zig-zag movement while simultaneously rotating the swab. If possible, send a sample of pus/drainage fluid in a sterile container.
- Transport the specimen as soon as possible (ideally within 2 hours)
- If there is a delay, keep at room temperature
- If transport medium is used, it can be kept at room temperature for up to 24 hours

Please note: Drainage fluid should be sent rather than empty drain tips.

The swab should be inserted directly into the container which should contain transport medium to avoid contaminating the outside of the container. Medium will preserve the organisms until the specimen can be examined.

4.27.2. Throat Swab:

- Explain the procedure to the patient
- Ask the patient to sit comfortably and ensure adequate lighting.
- Ask the patient to extend the neck and open the mouth
- Use of a tongue depressor may be helpful.
- Quickly, but gently swab with the sterile swab the tonsils, soft palate, uvula and posterior pharyngeal wall or any area with a lesion or visible exudates.
- Avoid touching any other area of the mouth or tongue to prevent contamination by other organisms.
- Send the swab immediately to the lab

4.27.3. Nasal Swabs:

Screening for MRSA/*Staphylococcus aureus*

- Use sterile cotton swab
- Moisten the swab beforehand with sterile normal saline to prevent discomfort to the patient. (The healthy nose is virtually dry and a dry swab may cause discomfort).
- Swab both nostrils with a single swab in a circular motion

Nasal swab for viral diagnosis

- Insert flexible, fine-shafted swab into the post-nasal space.
- Rotate swab and let swab rest in place for several seconds to absorb secretions.
- Use separate swabs for each nostril.
- Place both swabs in the bottle of viral transport medium (VTM).

4.28. Sputum collection

Collect before starting antibiotic

Expectorated sputum

Ask the patient to

- gargle throat and rinse mouth with water (without antiseptics)
- take a few deep breaths
- collect at least 1ml of sputum by deep coughing into a sterile, screw capped, wide mouth, leak proof container

Induced sputum

- Ask the patient to rinse mouth with water after brushing gums and tongue.
- With the aid of a nebulizer, let the patient inhale approximately 25ml of sterile normal saline. (Steam inhalation also can be used for this purpose).
- Collect sputum in to a sterile container

The specimen should be transported immediately

Store specimens at room temperature until transport

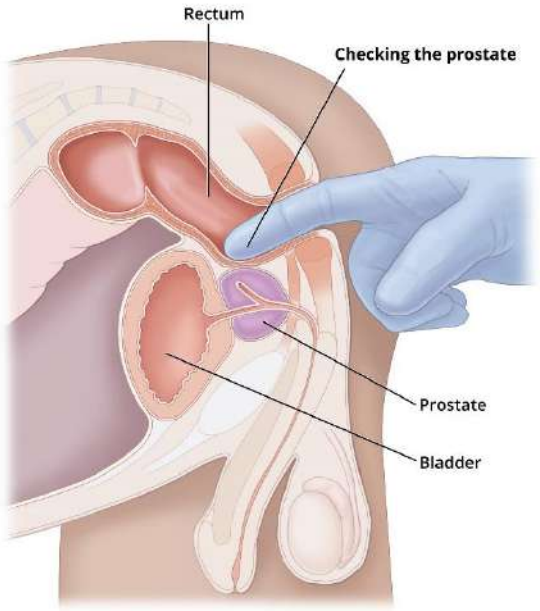
Basic triple packaging system

- Primary container (specimen container) should be leak-proof and properly labelled.
- Secondary container – durable, leak-proof container (Eg: Ziplock bag)
- Place absorbent material between the primary and the secondary containers.
- Place secondary container in a sealable polythene bag containing ice, if necessary.
- Outer package (tertiary container) should be a rigid container with waterproof cap (sealable plastic jar)
- Biohazard sign and brief description of samples should be pasted on it

4.29. Rectal Examination

- Introduce self, gain consent and co-operation.
- For patients this is an examination that they may dread, time needs to be taken to fully explain the reasons for the examination and to answer any question they may have.
- Prepare equipment (gloves- non sterile), KY jelly, and tissues.
- Give clear instructions to which items of clothes will need to be removed i.e. “You will need to undress from the waist down including underwear”.
- Provide the patient with a gown or towel. Allow the patient to undress in privacy and tell them when you will return.
- Help patient to lie on their left side with their buttocks close to the edge of the examination table. Ask the patient to bring their knees up towards their stomach. This position allows a good view of the perianal and sacrococcygeal areas.
- Other positions such as the lithotomy position are sometimes used and may help you to palpate a tumor which is high up in the rectum. It also permits a bimanual examination. Occasionally clinicians may carry out the examination by asking the patient to stand with hips flexed and the upper body resting across the examining table or in the 'knee-elbow position'.
- Roll up sleeves, remove watch, wash hands, put on gloves and apply KY jelly to your index finger. Ask patient to try to relax and you then part the buttocks.
- Inspect the sacrococcygeal and perianal areas for inflammation, rashes, skin tags, warts, herpes, hemorrhoids, anal fissure etc.
- Warn the patient you are about to perform the examination and explain to them that they may feel as if they are going to op their bowels, reassure them they will not do so.
- Ask the patient to strain down, you can then inspect the anus looking for any lesions.
- With your lubricated index finger place the pulp of the finger (not the tip) flat on the anus and wait a few seconds as the patient may tense. Ask the patient to continue to strain down and as the sphincter relaxes, gently insert your finger in a direction towards the umbilicus.
- If severe pain occurs while attempting this manoeuvre abandon further examination and look again for any lesions such as an anal fissure which may have caused pain.
- Also consider patient anxiety. If you are able to proceed without causing undue discomfort note the anal tone which should close snugly around your finger. If you have any doubt ask the patient to squeeze on your finger or to cough (coughing will induce a brisk contraction of the external anal sphincter).
- If the patient has a cauda equine syndrome, an anal prolapse or is suffering from other neuromuscular causes of anal incontinence almost no contraction will be felt.
- Carry out full examination of the rectum. Rotate your fingers around to palpate the posterior wall, lateral walls and anteriorly. Try to palpate as much of the rectal surface as possible. The hollow of the sacrum and coccyx can be felt posteriorly. Laterally, on either side, it is usually possible to feel the side walls of the pelvis.

- In men one should feel anteriorly for the rectovesical pouch, seminal vesicles and the prostate. Normally the seminal vesicles and rectovesical pouch are not palpable. The prostate: Normally felt as a rubbery, firm swelling about the size of a walnut (2.5cm in length). Note the shape, size consistency, palpate ,each lateral lobe which should be sooth and regular. The median sulcus can be felt between the two lateral lobes. If any nodules are evident note the size and if the prostate feels hard attempt to assess the extent of enlargement whether the lateral edge is distinct and whether there is any extension into the seminal vesicles.
- Remove finger and note the presence of faecal material looking at colour, consistency and smell. Also look for the existence of any blood or mucus. Note the amount and colour.
- Clean the anus with tissue and tell the patient the examination is now complete.
- Allow the patient to get dressed and explain that you will speak to them about the examination once they are dressed.
- Dispose of equipment, wash hands and thank the patient.
- Leave clinical area clean and tidy, wash hands.



4.30. Arterial Blood Gas Sampling

Normal Blood Values

Gas analysis can be measured in the following units

- mm of mercury (mmHg) or Kilopascals (kPa)

Note: - 1 kilopascal = 7.5 mmHg

Normal Values

PaO2: > 10 kPa (75mmHg) when breathing air

FiO2: 0.21 (on air)

pH: 7.35-7.45

PaCO2: 4.7-6.0 kPa (35-45 mmHg)

HCO3: 22-26 mmol/l

Base excess: -2 to +2

When interpreting blood gases – check the following

- Oxygen status – this determines arterial oxygenation
- Ventilatory status – determined by PaCO2
- Gas exchange – combination of PaO2, PaCO2
- Acid base status – evaluation of pH, PaCO2, HCO3

Procedure:

- Introduce self, explain procedure and gain consent.
- Ensure the patient is comfortable and privacy is maintained.
- Assemble the equipment necessary for performing an ABG.
- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile). Check patient identity against request form.
- Examine limbs, select and support chosen site.
- **Sites:**
    - Radial artery - Lies at the base of the thumb proximal to the 'bracelet' of wrist skin creases.
    - Femoral artery – Locate the A.S.I crest and the Pubic tubercle.The femoral artery would be mid- point between these two points.
    - Perform Allen's test if indicated/ check distal pulses.

- **Allen's test:**
    - Ask the patient to make a fist to force the blood from the hand.
    - Apply pressure to compress the ulnar and radial arteries, elevate hand.
    - Ask the patient to relax their hand (the palms and fingers will appear blanched / white)
    - Remove pressure from the ulnar artery only. The hand should become flushed within 10 seconds indicating adequate ulnar perfusion.
    - If the test shows poor ulnar perfusion of the hand, then the radial artery in that limb must not be used for sampling.
- Remove blood gas syringe from packet ensuring that the needle is firmly attached to the syringe.
- Palpate artery for maximum pulse. Encourage the patient to hyper expand the wrist ensuring that you are providing support by a pillow etc.
- Clean site with a chlorhexidine swab thoroughly and allow to air dry.
- Hold syringe at 45 degrees (pointing in the opposite direction of arterial flow).
- Puncture the skin and enter artery. Allow the syringe to **auto fill** with blood.
- Then using one hand cover the needle with as you withdraw the needle ensuring you apply pressure to the puncture site.
- Five minutes if no clotting issues/Ten minutes if clotting issues known.
- Remove needle from syringe and discard into sharps bin. Expel air from syringe and apply cap. Gently mix the sample. Label syringe and take for analysis with request from and agitate gently.
- Ensure patient is comfortable.
- Leave clinical area clean and tidy, wash hand.
- Do all in a professional manner.

4.31. Collection of Blood for Culture

- Blood cultures ideally are done **before** antibiotic therapy is started as the antibiotic may inhibit the growth of the organism in the laboratory.
- Identify the patient verbally and using ID bracelet, check identification on request form and against patient ID bracelet.
- Explain the procedure to the patient. Obtain consent and co-operation.
- Assemble the appropriate equipment:
- Blood culture set (Aerobic and Anaerobic bottles, adaptor, Vacutainer butterfly needle and label), Gloves (non sterile and sterile), Gauze, sharp bin (within arms reach) and Chlorhexidine swab X 2 (or Povidone iodine & 70% alcohol)
- Aseptic precautions should be taken
- Wash hands with soap and water prior to starting the procedure
- Select a different venepuncture site for each blood culture
- Do not draw blood from a vein into which an intravenous solution is being infused
- Select the vein to be used for venepuncture
- Clean the selected site with 2% chlorhexidine in 70% alcohol in a concentric manner from the center to outwards and allow at least 2 minutes to act
- If chlorhexidine is contraindicated, clean with 10% povidone iodine alcoholic solution (if not available, 70% alcohol followed by aqueous 10% povidone iodine solution can be used)
- Wipe the top of the blood culture bottle with 70% ethyl alcohol after removing the cap covering the lid. Allow to dry completely usually for 30 to 60 seconds
- Wash hands with soap and water and wear sterile gloves before collecting blood
- Use a disposable sterile needle and syringe and draw the blood in the volumes as indicated above taking aseptic precautions. Use a new sterile needle if the first attempt is not successful
- Take precautions for the prevention of sharps injuries. Apply safety device to protect the phlebotomist from needle exposure if available
- Inoculate into the blood culture bottles directly and carefully. Inoculate first the aerobic bottle and then the anaerobic bottle with no more than the recommended blood volumes indicated above
- Dispose needles and syringes directly into a sharp bin
- Thoroughly mix bottles to avoid clotting
- Residual iodine should be removed with surgical spirit and a small dressing should be applied over the puncture site
- Label the bottles with the patient identification details, date, time and site of collection.
- Specimen should be sent to laboratory immediately with accompanying properly filled Microbiology request form giving patient identification details, clinical details and date, time and site of collection
- Do not refrigerate. If immediate transport is not possible, blood cultures can be stored at room temperature in the ward

4.32. Management of spills

Management of blood and body fluid spill

- Attend to the spillage immediately
- Do not allow people to walk through the spillage
- Gather all the equipment, disinfectants and waste receptacles/waste bags that are required to correctly and safely manage the spill (should be available in the spill kit)
- Wear appropriate PPE in the spill kit
- Safe practices and procedures must be followed to prevent exposure incidents during the management of spillage
- Cover area of the spill with an absorbent material (disposable paper towels/cloth /newspaper) and allow to absorb
- Pour freshly prepared 1% hypochlorite solution on the absorbent material
- Allow at least 10 minutes contact time
- Remove broken glass pieces using a forceps and discard into a sharps bin
- Remove absorbent material and dispose into a yellow bag
- Wipe the area with a detergent solution and allow to dry
- Remove PPE and place disposable PPE immediately in the yellow bag
- Tie the yellow bag
- If you are wearing heavy duty gloves, wash it while wearing with running water. Remove heavy duty gloves and disinfect them in 1% hypochlorite
- Wash hands with soap and running water
- Make sure of cleaning and disinfection of reusable items such as mops, bucket immediately after the spill is managed
- Record and report spillage

4.33. Lumbar Puncture

- Introduce self, gain consent and co-operation.
- Before a lumbar puncture can be undertaken, an obstructive cause of raised intracranial pressure must be excluded and a brain scan is generally advisable and is mandatory with a history suggestive of raised intracranial pressure, focal neurological signs, decreased conscious level, papilloedema, immunocompromise or seizures.
    - Any bleeding tendency or infection on the back may also be a contraindication to LP.
    - If the patient asks for a relative to be present while the lumbar puncture is being performed it is normally advisable to say no with the explanation that there is a strong risk of relatives fainting during the procedure. If the relative insists on being present after this advice ensure you sit them down ASAP!

    - **Prepare equipment to include these sterile items:**

Dressing pack x 1	5ml syringe x 1
Blue needle x 2	Manometer x 1
Orange needle x 1	Gauze
Lumbar puncture needle x 2	Gloves
Green needle x 1	ChloroPrep2%

Non sterile items required:

Universal container x 3/ as required
Glucose tube x 1
Sharps bin
Lidocaine 1%

- This equipment list may vary from practitioner to practitioner.
- Ask the patient if they are on any medication and if they have allergies to lidocaine and plaster.
- Advise that they may possibly experience a lumbar puncture headache. This is distinct to lumbar puncture and is relieved when they lie down and rebounds when they sit up.
- Ask the patient to rise up their shoulder blades and undo / bring down their trousers / skirt enough so that you can see the anatomical landmarks.
- Assist the patient into the correct position:
- The patient needs to be lying on a firm couch with knees and chin as nearly approximated as possible.

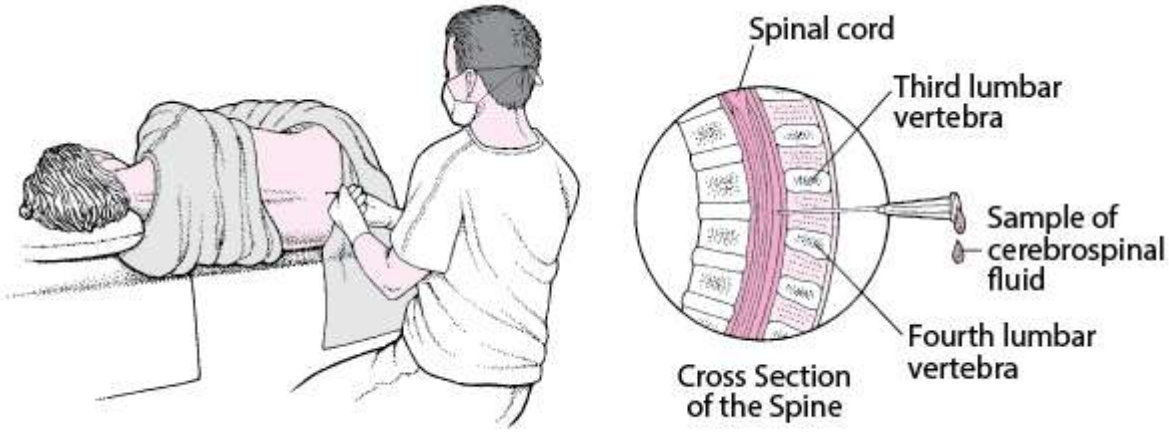
- The patients back should be right at the edge of the couch and it is important that its transverse axis is vertical.
- Ensure ankles are together and knees are together and place a pillow between the patient's legs.
- It is important that time is spent preparing your patient into this position as the commonest cause of failure to obtain CSF is an incorrectly performed puncture, and this is usually due to the patient not being in the correct position.
- Ensure the height of the couch/bed is at a level where your sight line is at the entry point of ¾ lumbar region.
- Roll up sleeves, remove watch, wash hands and put on gloves (sterile).
- Clean the area using Chlorhexidine and povidone iodine 2% solution using a circular motion spiraling out for 2 minutes. Drape the pelvis s above and below the lumbar region.
- Mark out the 3rd and 4th lumbar spines. (The 4th lumbar spine usually lies on the plane of the iliac crests)
- Draw up your lidocaine 1% using a blue needle and check drug name, dose, route and expiry, warn the patient you are about to administer the lidocaine then administer using the orange needle first followed by a deeper penetration using the blue then even deeper using the green. Placing each sharp into the harps bin as you proceed.
- While you wait for the lidocaine to take effect prepare your manometer by connecting it and become familiar with the three-way tap.
- Prepare your lumbar puncture needle and palpate the landmarks again building up your confidence on position.
- Push the needle through the skin in the midline or just to one side of it and press it steadily forward and slightly toward the head. As the needle enters the spinal cavity, the stylet is withdrawn, if CFS is present place stylet into the sharps bin and connect the manometer so that the pressure of the fluid can be measured.
- Once this is recorded collect CSF into universal containers and glucose tube.

Note: If blood is present and amount in the first and subsequent tubes are different this indicates that the blood is due to trauma during the puncture. Normal CSF is clear and colourless and looks like water.

- Ensure patient lies flat on their back for ½ hour post procedure. At this point you can allow relatives to sit with the patient.
- Maintain aseptic technique throughout procedure.
- Leave clinical area clean and tidy, wash hands.

Note:

An LP headache is due to low pressure in the cerebrospinal fluid that surrounds the brain. Because of reduced pressure the brain sags slightly and this pulls on the membranes that cover and hold the brain in place (meninges). Ask patient to drink plenty and remain flat.



4.34. Visual Acuity

- Introduce self, gain consent and co-operation.
- Place a Snellen letter chart 6 m in front of the patient.
- Ask patient to cover one eye so that each eye is tested separately.
- Inform patient to continue to wear their spectacles if worn.
- Know the number adjacent to each line of print on the chart is the denominator and the distance from the eye to print is the numerator in the acuity equation.
- Establish that the largest print on the top line is usually '60'and the smallest print on the bottom line is usually '5'.
- Establish that a patient with normal acuity can read down to line 6 and is said to have 6/6 vision.
- If the patient cannot read the top line i.e. acuity is worse than 6/60 repeat the test at 3m (Ability to read the top line is now described as 3/60 vision).

Note:

The bigger the fraction the better the vision I.e. 6/6 is good normal vision and 6/60 is poor reduced vision. Repeat the test if necessary for additional information by asking the patient to look at the chart through a pinhole. Be aware this improves vision in patients with a refractive or corneal abnormality but worsens vision in those with macular problems.

4.35. Control of Haemorrhage (External)

- Introduce self, gain consent and co-operation while assessing the situation.
- **Safe approach:** Protect self (goggles, apron, gloves-non sterile).
- Call help **ASAP**
- Prepare equipment. Remove or cut clothing to expose the wound.
- Observe for foreign bodies such as glass that could put you at risk.
- Apply direct pressure over the wound using a sterile dressing or clean pad ONLY if no sharp objects present.
- Raise and support limb above the heart.
- Add further dressing if necessary.
- Monitor vital signs for signs of shock.
- Leave clinical area tidy and perform hand hygiene.

The ABCD assessment approach

Airway:	Are they talking / Do you hear sound/ Oxygen
Breathing:	Rate / Effort / Sound / Saturations / Oxygen / Colour / ABG's
Circulation:	Get cannula in / Fluid status / Cause / Blood pressure / Pulse / Cardiac monitor / 12 lead ECG / Capillary refill time / Urine output
Disability:	AVPU / Glucose / Pupil reaction
Exposure:	Check for swelling / drains / blood then go back to A

4.36. Blood Transfusion

Collecting the Blood Sample

Extra considerations to normal blood collection:

1. Use the bottle labelled and with EDTA 4.5ml
2. Use the blood transfusion forms to request blood and ensure that this is filled out correctly.
3. Hand write this bottle clearly documenting surname, forename, date of birth, sex, hospital number, date, signature, after filling the tube and next to the patients bed
4. Ensure you have a prescription written requesting blood or a blood product.
5. Ensure that you use a safe method of collection and always remember your safety checks for patient identity. This applies to all blood testing.

Collecting the Blood or Blood Product from the Blood Bank

1. Take your valid prescription with you
2. Using the patient's surname search name and find the laboratory form and ward form and place these next to your prescription form. Check full patient details on all three.
3. Look at the laboratory form and look at the part labelled space. This number is where the blood is kept in the fridge.
4. To check that you have the right blood product for this patient check these details below on:- the prescription, lab and ward forms, blood product bag and labels.
5. patient details: name, date of birth, hospital number, sex
6. Blood details: unit number, product, expiry, blood group

Please note:

- Blood products must not be removed from the blood bank more than 15 minutes before they are required.
- Blood and blood products must not be stored on the wards. Under no circumstances may blood or blood products be stored in the ward refrigerator.
- Only one unit of blood in respect of one patient may be removed at one time.
- Only personnel trained in this procedure can collect blood or blood products.

Connecting Blood to a Patient

- Introduce self, gain consent and co-operation.
- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile).
- Take a base line set of observations to include: Blood pressure, pulse, temperature, respiration.
- Document your readings onto the observational chart clearly marking that these are base line ‘pre blood'.
- Check the patient identity against the prescription chart, ward copy, blood bag labels, patient wrist band and verbally.

- You must check the dentils of the blood in the same way as when you collected the blood from the blood bank.
- Connect blood product to administration set ensuring as you do this that this remains a no touch technique. Prime to expel all air. Draw up a sodium chloride 0.9% flush using needle. (Dispose of sharps into sharps bin.) Before opening vial always clean it with a chlorhexidine swab and allow to air dry. Clean the port of the needle free extension with a chlorhexidine swab. Allow to air dry. Flush 0.9% sodium chloride into the needle free extension before connecting the blood to confirm patency.
- Connect blood safely and correctly to the needle free extension. Monitor patient closely and record observations throughout procedure:

    1. Base line

    2. After 15 minutes

    3. Hourly until the End of transfusion and another hour after completion

BLOOD TRANSFUSION REACTION

- Stop transfusion
- Check vital signs
- Examine patient
- Check patients ID Bracelet against:
    - Blood unit
    - Report form
    - Prescription form
- Replace blood with IVI 0.9% sodium chloride.
- Send blood back to laboratory.
- Ask for the following investigations to be carried out:
    - Full blood count (haemolysis)
    - Blood cultures
    - U & E (Renal failure)
    - Coagulation
    - Group & screen / antibody screen
    - Re-checks against original G & S
- Seek advice of lab or registrar.
- Ask for regular observations - Blood Pressure, Pulse, Temperature and Respiration.
- Do all in a fluent and professional manner.

4.37. Massive transfusion

Massive blood loss in adults

>40% loss of total blood volume
4 litres in 24 hours 2 litres in 3 hours >150ml/minute

Get senior help
Contact senior member of the clinical team
Contact nurse in charge
Contact blood transfusion services
Initiate massive blood loss protocol

Assess ABC

Obtain IV access
2 large bore cannulas
Get grouping and cross match
Send blood for FBC, coagulation profile, biochemistry and ABG
Send blood after every 5 units of blood given

Resuscitate
IV fluids – crystalloids or colloids
Give oxygen

Give blood
Give 4 units and aim for HB of 8g/dl
Give group O if immediate need is seen

Prevent coagulopathy
Anticipate platelet and FFP after every 4 units
Correct hypothermia
Correct hypocalcaemia
Contact haematologist
Consider giving tranexamic acid

Get help to stop bleeding
Contact surgeon, gastroenterologist, obstetrician as appropriate

4.38. Diagnose Death

- Take a brief history from the nurse to discover the background to the death.
- Check notes and confirm patient identity using the medical notes against the patient's ID.
- Inspect (L) and (R) eye for 30 seconds each and note fixed and dilated pupils.
- Check for carotid pulse on right and left side (one minute each side) and note no palpable pulse felt.
- Auscultate the anterior chest and comment on the lack of heart sounds. (aortic, pulmonic, tricuspid and mitral areas, one minute).
- Auscultate over the lungs and comment on the absence of breath sounds. (anterior and lateral chest, one minute).
- Note the assessment should take no less than 5 minutes to perform.
- Once the examination has been completed remember to continue to protect the patient's dignity by re-covering the patient with the sheet.
- Write the above facts in the case notes, with date, time and signature.
- Do all of the above in a fluent and professional manner.

5.1. IM Injection

Some intramuscular injection are formulated as a 'depot' to release their drug over a prolonged time period, commonly week and sometimes longer. Although this ensures compliance with a regimen e.g:- psychotropic drugs used in schizophrenia, problems arise if the patient experiences adverse effects. Thus care should be taken in the initial stages of treatment.

Ventrogluteal Injection

- Position patient on their side and bend their knee on the chosen side for injection. This helps to locate the greater trochanter.
- Place the heel of your left hand on the patients' right leg or vice versa.
- Locate and place your index finger on the anterior superior iliac crest. Your thumb should be pointing towards the front of the leg.
- Keeping your index finger on the iliac crest spread your middle finger to form a 'V'- the injection site is the middle of the 'V', which should be level with the knuckles of your index and middle fingers.
- Remember to remove your fingers before you inject to avoid needle stick injury.

If you have small hands and find that with the ball of your hand on the greater trochanter your index finger does not reach the iliac crest, then slide your hand up the leg until it does.

Deltoid

Use with caution. If the patient is elderly or thin you don't want to accidentally hit bone. Correct needle selection is important when using this site. (provides quick uptake of drug but can only accept small volumes 0.5-2ml).

Vastus lateralis and rectus femoris:

These muscles are injection sites that are free of major nerves and blood vessels. The sites are located on the anterior and lateral aspects of the thigh. Divide the area into thirds between the grater trochanter of the femur and the lateral femoral condyle. The injection should be given into the middle third. (These sites are known to cause considerable discomfort.)

Method:

- Roll up sleeves, remove watch, wash hands and put on gloves.
- Check the drug name, dose, route against prescription chart and check the expiry date of the drug.
- Introduce self, gain consent and co-operation.

- Check the patient identity against the prescription chart, patient wrist label and verbally.
- Check the prescription for any known allergies and ask the patient. Stretch the skin (Z track technique) by pulling it laterally, then administer the injection at an angle of **90º to the skin** up to the hub of the needle.
- Withdraw the plunger slightly to check the needle has not inadvertently entered a blood vessel.
- Administer the solution slowly until the syringe is empty.
- After the needle is withdrawn, release the skin.
- This Z Track technique helps prevent medication from leaking and should be used when the medication to be administered is highly irritating to the subcutaneous tissue.
- Needles are placed into sharps bin immediately.
- Press firmly on the site of the injection until bleeding stops.
- Do not rub the site. Do all in a fluent and professional manner.
- Have clinical area clean and tidy, wash hands.
- Sign prescription chart and document in the medical notes if necessary.

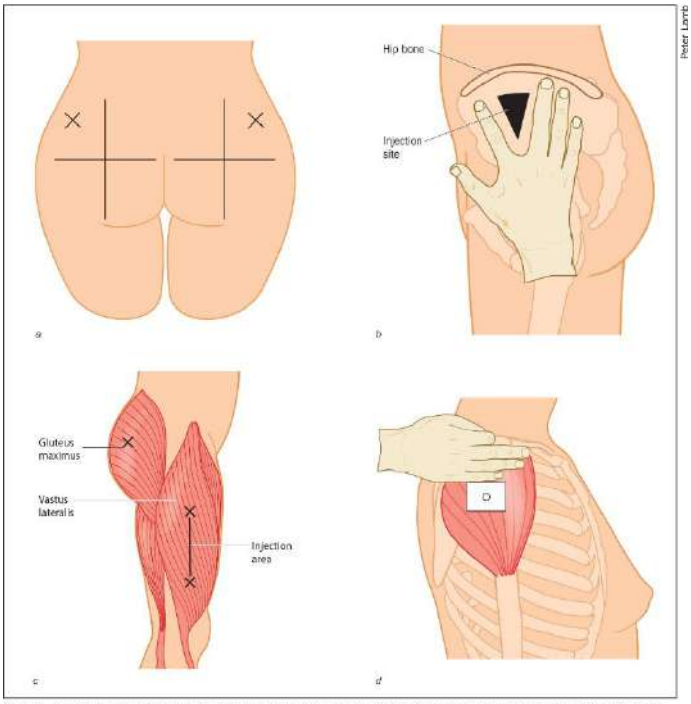
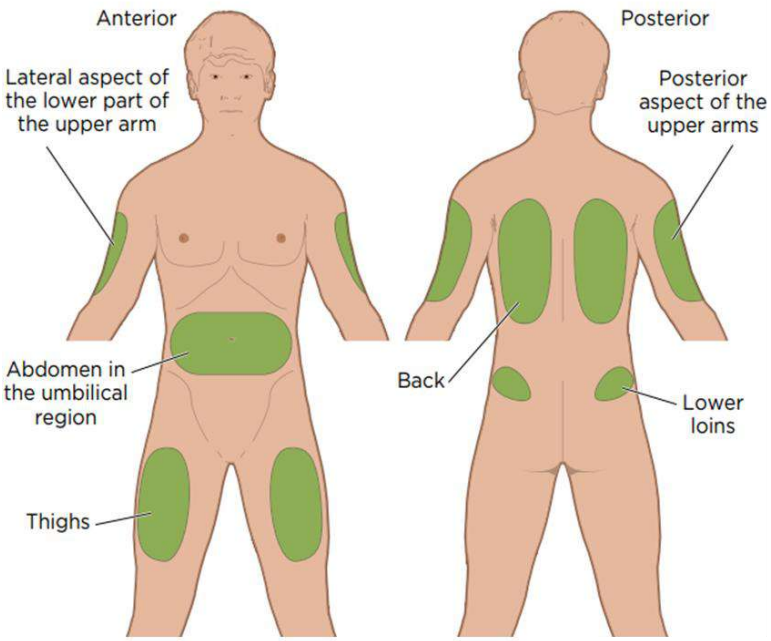


Figure 1. Intramuscular injection sites: dorsogluteal site (a), ventrogluteal site (b), vastus lateralis site (c) and deltoid site (d)

5.2. Subcutaneous Injection

Subcutaneous injections are delivered into the tissue between the skin (epidermis) and the muscle. These sites include upper arm, thigh, abdomen and back. The onset of the drug is usually within half an hour although the release of a drug can be modified as in the case of longer acting insulins. Where a sustained plasma level of a drug is desirable, continuous s/cut infusion using a syringe driver may be possible for certain drugs – useful when giving opiate analgesic in the control of pain or for administrating insulin to selected patients with diabetes.

- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile).
- Check the name, type, strength, route and expiry date of the drug against prescription chart.
- Draw up solution using a drawing up needle/ blue needle tapping the barrel of the syringe to expel any air.
- To administer replace drawing up needle with new needle. (Dispose of sharps into sharps bin.)



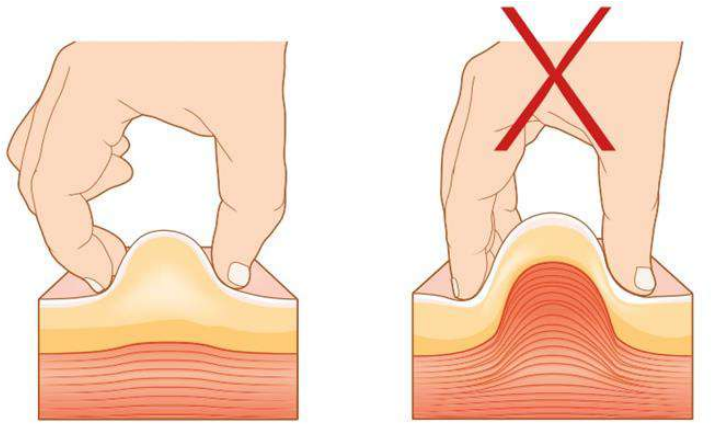
Source: Nursing Times [online] September 2018 / Vol 114 Issue 9

Insulin can be delivered using vials, where you have to draw up the drug manually, or using "insulin pens". – Most insulin preparations are now given via the pen route, where the drug is pre-loaded and you have to set it to the required prescription before administration.

For safety you must draw up vials and pens, check and deliver at the patient's bedside.

Delivery to the patient

- Introduce self, gain consent and co-operation.
- Check the patient identity against the prescription chart, patient wrist label and verbally.
- Check the prescription for any known allergies verbally check with the patient.
- Select site of administration with patient's assistance.
- Rotate the injection sites to different parts of the body to limit the formation of fatty tissue.
- Pinch the skin and insert the needle into the subcutaneous tissue at an angle of 45°.



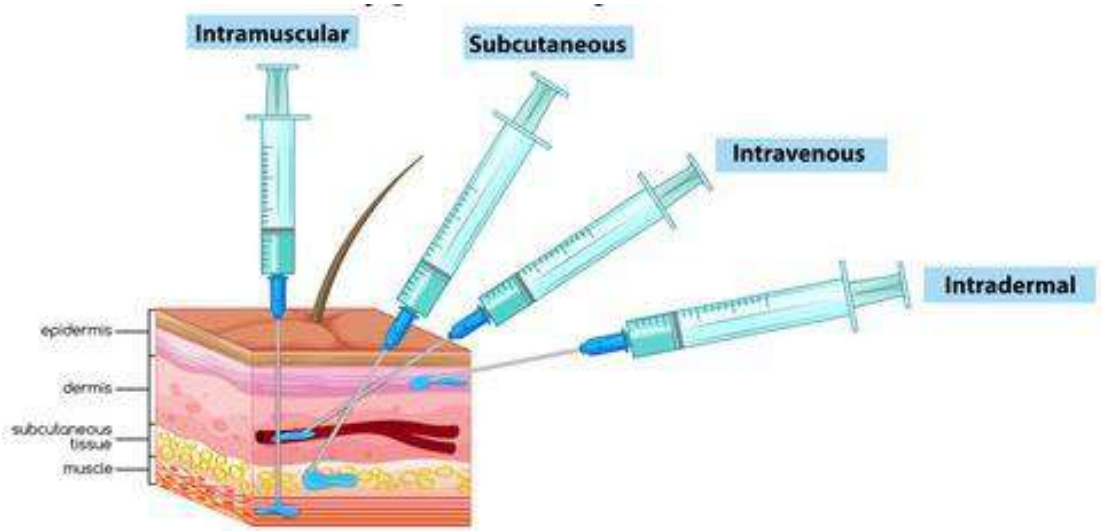
Source: Nursing Times [online] September 2018 / Vol 114 Issue 9

Note: For subcutaneous injection, it is unnecessary to use chlorhexidine swab to clean the skin. Nor do you have to pull back the syringe to see whether a blood vessel has been punctured as this is very unlikely. Injection the solution slowly. Remove needle from patient and put into sharps bin immediately. Wipe away any blood from the site using a tissue. Do all in a fluent and professional manner. Sign prescription chart and document in the medical notes if necessary. Leave clinical area clean and tidy, wash hands.

5.3. Intradermal Injection

- The is used for sensitivity testing in allergic or immune mediated conditions e.g. the mantoux test before BCG immunization.
- The drug is delivered within the layers of the skin just below the epidermis commonly on the inner surface of the forearm.
- Few drugs are given this way but some vaccines may be, and BCG must be given via this route.
- In these circumstances the upper arm is the preferred site.

Types of Injections



5.4. Intravenous medications

Intravenous drugs come in a variety of presentations, the most common being rubber capped vials or single dose glass ampoules.

Preparing the medicines

- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile).
- Check that both the drug and diluent packaging are intact.
- Check drug, dose, route, expiry of drugs against the prescription and BNF guidelines.
- Remove protection cap from the drug vial and clean the rubber cap with a chlorhexidne swab and allow to air dry.
- **Prepare the drug for administration.** If diluent required (check pharmacy pages or manufacturing guidelines to confirm solution and how to reconstruct the drug if in powder form).

Example:

Flucloxacillin 500mg IV = Dissolve 250 to 500mg in 5-10 mls of water for injection or 1 g in 15-20mls of water for injection. Administer by slow intravenous injection over 3-4 minutes. Check the diluent name, dose, route and expiry, then draw up the diluent and inject into the drug vial. Allow the drug to reconstitute ensuring no particles remain and that it has taken on the characteristics outlined by the manufactures instructions.

Insert a syringe and withdraw the required amount of the drug, tilting the vial if necessary. Dispose of needle immediately into a sharps bin. Label the syringe stating the contents and place back into outer packaging. Expel any air.

Prepare the Flush for administration

- Check the name, dose, route and expiry, and start to draw up the sodium chloride 0.9% flush using a drawing up needle.
- Dispose of needle immediately into a sharps bin.
- Label the syringe stating the contents and place back into outer packaging.
- Expel any air.

Delivery to the patient

- Introduce self, gain consent and co-operation.
- Check the patient's identity against the prescription chart, patient wrist label and verbally.
- Check the prescription for any know allergies and check verbally with the patient.
- Roll up sleeves, remove watch, wash hands and put on gloves.

- Ensure patient is in a chair or bed; adopt a comfortable posture in a position that allows easy access to the cannula and face the patient so that any adverse reaction may be observed.
- Check cannula site to ensure patency, look for signs of discharge, swelling, redness and discomfort and check current documentation on cannula care form. Including checking for the date inserted (must be less than 72 hours).
- Clean the port of the needle free extension with a chlorhexidine swab. Allow to air dry.
- Flush 0.9% sodium chloride into the needle free extension before administering the drug to confirm patency.(2.5- 5mls each flush)
- Slowly administer the drug according to manufacturer's instructions, local policy and the prescription.
- Administer the remaining flush (2.-5 mls) into the needle free extension or, if more than one drug being administered, flush between each one to prevent drugs mixing.
- Do all in a fluent and professional manner and leave patient comfortable.
- Sign prescription chart and document in the medical notes if necessary.
- Leave clinical area clean and tidy, wash hands.

5.5. Administer Nasal Drops/ Spray

Adults

- Introduce yourself and obtain consent.
- Verify the medication with the prescription.
- Check the expiry date.
- Check for allergy.
- Wash and dry the hands.
- Ask the patient to sit upright (to adminsiter nasal drop, tilt the head back).
- Insert the tip of the nasal spray/ dropper into one nostril.
- Close the other nostril with a finger.
- Press the canister/ dropper to deliver the medication.
- Keep the head tilted back for a few minutes and then repeat the procedure for the other nostril.

Nasal drops - Children

- Introduce yourself and obtain the consent from the mother.
- Verify the medication with the prescription.
- Check for allergy.
- Check the expiry date.
- Wash and dry the hands.
- Ask the mother to hold the baby in supine position.
- Instill the nasal drop/s (as prescribed) into one nostril.
- Wait for few minutes and then repeat the procedure to the other nostril.
- After administration of nasal drop have the baby in lying position for few minutes.

Adult nose drops

Child nose drops

5.6. Administer Eye Drops

- Introduce self, gain consent and co-operation.
- Check the medication against the prescription: drug, dose, route and expiry, nothing which eye is to have the drops/ ointment instilled and follow correct patient identification procedures.
- Wash and dry hands thoroughly.
- Instruct the patient to tilt their head backwards and to look up if able.
- Ensure good light source.
- Using forefinger, gently pull the lower lid downwards to form a small pocket for the drops / ointment.
- Hold a tissue beneath the eye.
- Hold the dispenser about 2-3 cm from the patient's eye.
- Squeeze one drop into the eye and ask the patient to blink, repeat this until prescribed number of drops administered.
- For eye ointment, squeeze a small amount forming a line and apply inside the lid margin from the inner to outer aspects of the eye ensuring tube does not touch the eye.
- After instillation ask the patient to close their eyes to disperse the drops.
- Using a tissue wipe away any excess medication which may have run down the patient's cheek.
- Leave clinical area clean and tidy, wash hands.

5.7. Skin sensitivity test for penicillin

- Introduce yourself.
- Inform the patient the purpose of the test and obtain consent.
- Keep the emergency tray and equipment for resuscitation ready and next to the patient (in case of systemic allergic reaction).
- Wash and dry the hands.
- Dilute penicillin G with normal saline to a concentration of 10,000 units/ml.
- Clean skin of ventral surface of the forearm with alcohol swab.
- Wear the sterile gloves and inject 0.02 to 0.05 ml of diluted penicillin G at the angle of 5°- 15°, raising an intradermal bleb of approximately 3mm in diameter.
- Draw a circle around the bleb with a pen.
- Wait for 20 minutes.
- Read the response after 20minutes and interpret as follows;
    - Wheal no larger than the original wheal size – negative skin test
    - Wheal ≥3mm – POSITIVE skin test
- If the test is positive, the patient should NOT receive penicillin.

6.1. Scrubbing in Theater

Threatre Etiquette (How to Survive in Theatre)

Ensure that you are correctly dressed,

- You are wearing a clean set of scrubs.
- Threatre footwear, clogs or wellies (if you are borrowing shoes, a spare pair of socks is advisable)
- ID badge
- No jewellery, with the exception of a plain wedding band
- Correct colour theatre hat with hair completely tucked inside, (if you have long hair it is advisable to tie it back before putting a hat on)
- Face mask on (depending on type of surgery) if sterile packs are open, in theatre,

Do not leave any valuables in changing room, unless secured in a locker. Check that is safe to enter the theatre, warning signs should be displayed if x-rays or laser is being used, usually a yellow triangle. Do not walk through anaesthetic room during induction of anaesthetic, it is generally best to enter the theatre via the scrub room door.

Introduce yourself, to the threatre staff

- lf you are just observing find out the best place to stand, for best view, of what is happening
- Find out what you can touch / not touch
- Ask for help if not sure what to do
- lf you are asked to 'scrub in' for the first time, ask one of the theatre staff to assist you, they will show you what to do.

IF AT ANY TIME, DURING YOUR VISIT TO THEATRE, YOU FEEL FAINT OR UNWELL, TELL THE THEATRE STAFF.

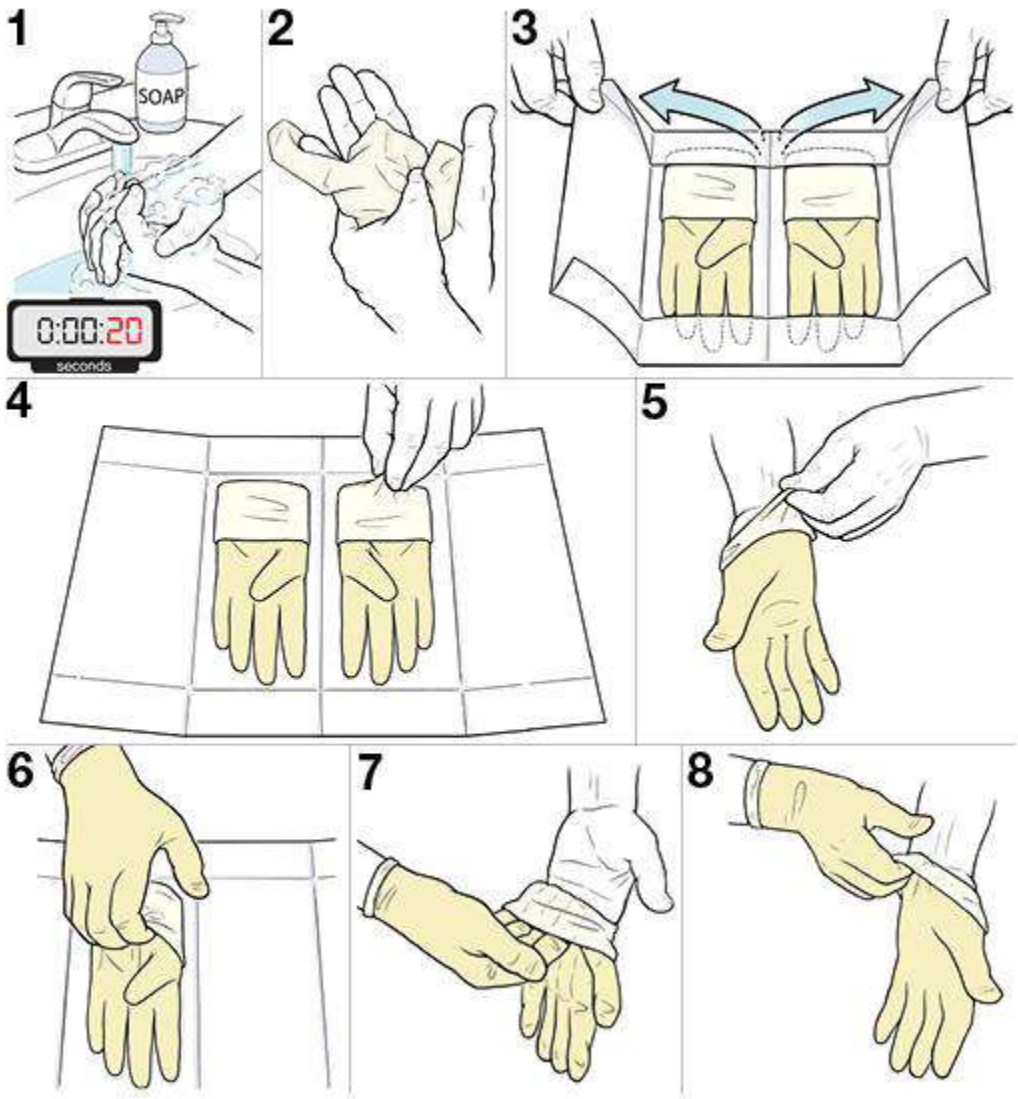
When you leave the theatre,

- Tell the staff you are going
- On leaving the department, always change out of your scrubs
- lf you have a name badge/ ID badge make sure that it is not left on your scrubs - you will probably lose it forever!

Do remember not everyone will enjoy being in theatre, however it can be a great place to learn, and to really understand the rationale behind post operative care and your patient's recovery.

6.2. Aseptic Technique Gloves

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves, and remove watch, put on apron.
- Clean the trolley. Gather the equipment, check the sterility and expiry date place on the bottom shelf. Take trolley to the bed area.
- Perform hand hygiene.
- Remove the dressing pack from its outer packaging placing it on the trolley taking care to maintain sterility. Ease open pack to reveal contents.
- Remove bag and place to one side.
- Using fingertips only and touching the edges of the paper only, open the pack flat. Touch the edge only, move gloves to the edge of sterile field. Open equipment in a sterile manner.
- Perform hand hygiene.
- Open gloves pack (use either the corner of the sterile area or open gloves away from the sterile field BUT you must ensure the area you place the gloves onto is clean) and put on correctly.
- Now you can touch sterile field.
- For cleaning wounds/body parts use a gauze swab once only then throw away. Maintain aseptic area throughout procedure. Discard equipment safely post procedure.
- Leave clinical area tidy and perform hand hygiene.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6.3. **Basic Suturing Technique**

- Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves, and remove watch.
- Take a clear history of the incident i.e how long since incident and what happened?
- Arrange and check equipment before starting, (Check lidocaine for drug name, dose, route and expiry.)
- Check for drug/latex/dressing allergies and patients tetanus status.
- Ensure patient is comfortable in an appropriate position.
- Perform hand hygiene and apply (sterile) gloves conically.
- Examine the wound for: evidence of infection, neurovascular state, and tendon function, depth of wound, length, site and contamination.
- Use lidocaine 1% (LA) to anaesthetise wound edges
- Warm LA causes less discomfort on injection
- Ensure that the LA is not injected intravenously by pulling back the syringe plunger before injecting the LA and looking for blood being pulled into the syringe.
- Ensure all areas in need of suturing are anaesthetized
- Leave enough time for the LA to work and check with the patient that they cannot feel anything before starting the procedure. Onset is between 5 and 30 minutes depending on the type of LA used
- Dispose of sharp into a sharps bin

Place needle correctly into needle holder: approximately 1/3 of the length of the needle from the thread. This allows good control of the needle. Support the wound edge using tooth forceps. Pass the needle individually through each side of the wound ensuring the needle enters the skin at right angles and pull through an appropriate length of thread. Cut the knot leaving a trail to an appropriate length. Maintain good aseptic technique throughout. Dispose of sharps safely. Leave clinical area tidy and perform hand hygiene.

Lidocaine;

The most common local anesthetic used in A&E is Lidocaine which is manufactured in 0.5, 1% and 2% strengths. (1% =I gram in 100mls of solution) The maximum safe dose of lidocaine is 3mgs per kilogram, i.e.21mls of 1% for a person weighing 70kgs.

DO NOT use lidocaine-adrenaline combination to anaeathetise digits (finger or toe), pinna, nose and penis.

<u>Suitable suture gauges for anatomical site*:</u>

- 3/0; 4/0 - Lower limb and torso
- 5/0; 6/0 - Face
- Up to 1O/O - Microsurgery (nerve repairs)

Other ways of closing a wound;

Metal staples

Adhesive tape (steric strips)

Histoacryl glue

Remember;

- Antibiotics may need to be used if contaminated, longer than 6 hours since wound occurred, bites, diabetic etc.
- Tetanus status of patient - Patients who have had a total of five doses of tetanus vaccine at the appropriate intervals are considered to have lifelong immunity against tetanus.
- Dressing the wound afterwards - What function does the dressing need to fulfil: to limit movement or simple occlusion.
- Any follow up - such as removal of sutures.

Removal of Sutures

- Review notes to determine number of sutures. Introduce self, gain consent and co-operation.
- Perform hand hygiene, roll up sleeves, remove watch and wear apron. Prepare and arrange equipment before starting and put on gloves (sterile).
- Use aseptic technique.
- Inspect wound for evidence of healing, inflammation or infection, prior to removal of sutures.
- Note the position of the suture to determine where to cut the suture. Using forceps lift up the suture by the knot. Using the other hand now hold the stitch cutter flat against the skin; slide it under the suture to cut it. (You do this to prevent surface suture being dragged through the wound)
- Remove one or two sutures, reassess if safe to proceed and remove alternative sutures before removing all of them. Dispose of sharps safely.
- Leave clinical area tidy and perform hand hygiene.
- Note within the medical notes number of sutures removed.

6.4. Assessment of Wounds

Introduce self, gain consent and co-operation. Perform hand hygiene, roll up sleeves and remove watch.

Assess:

- Mechanism of injury
- Site of injury
- Time of injury
- Place of injury

Ask patient for any allergies and check tetanus status.

Ask patient about:

- Previous injuries
- Current medication e.g. anticoagulants
- Implants e.g. anthroplasties and heart valves

Examine:

- Site, extent and character of wound
- Evidence of contamination, non-viable tissue or foreign bodies
- Involvement of deep structures
- Distal neuro-vascular and tendon function.

- Be able to discuss appropriate investigations.
- Be able to propose treatment plan.
- Give advice to patient concerning aftercare and follow up.
- Leave clinical area tidy and perform hand hygiene.
- Document findings in the medical notes.

6.5. Cleaning and Dressing a Simple Wound

- Introduce self, gain consent and co-operation.
- Perform hand hygiene, roll up sleeves, remove wrist watch, put on apron. Prepare equipment required.
- Ensure patient is comfortable and expose the injured area.
- Perform hand hygiene and wear gloves (sterile).
- Use aseptic/clean technique. Use local anaesthesia if required. Using sterile normal saline gently squirt the solution into the wound.
- Work from clean area towards dirty are to avoid contaminating the clean area.
- If debris involved, use sterile forceps to pick out the pieces.

Assess the wound for suitable closure:

- Steri-strips
- Suturing

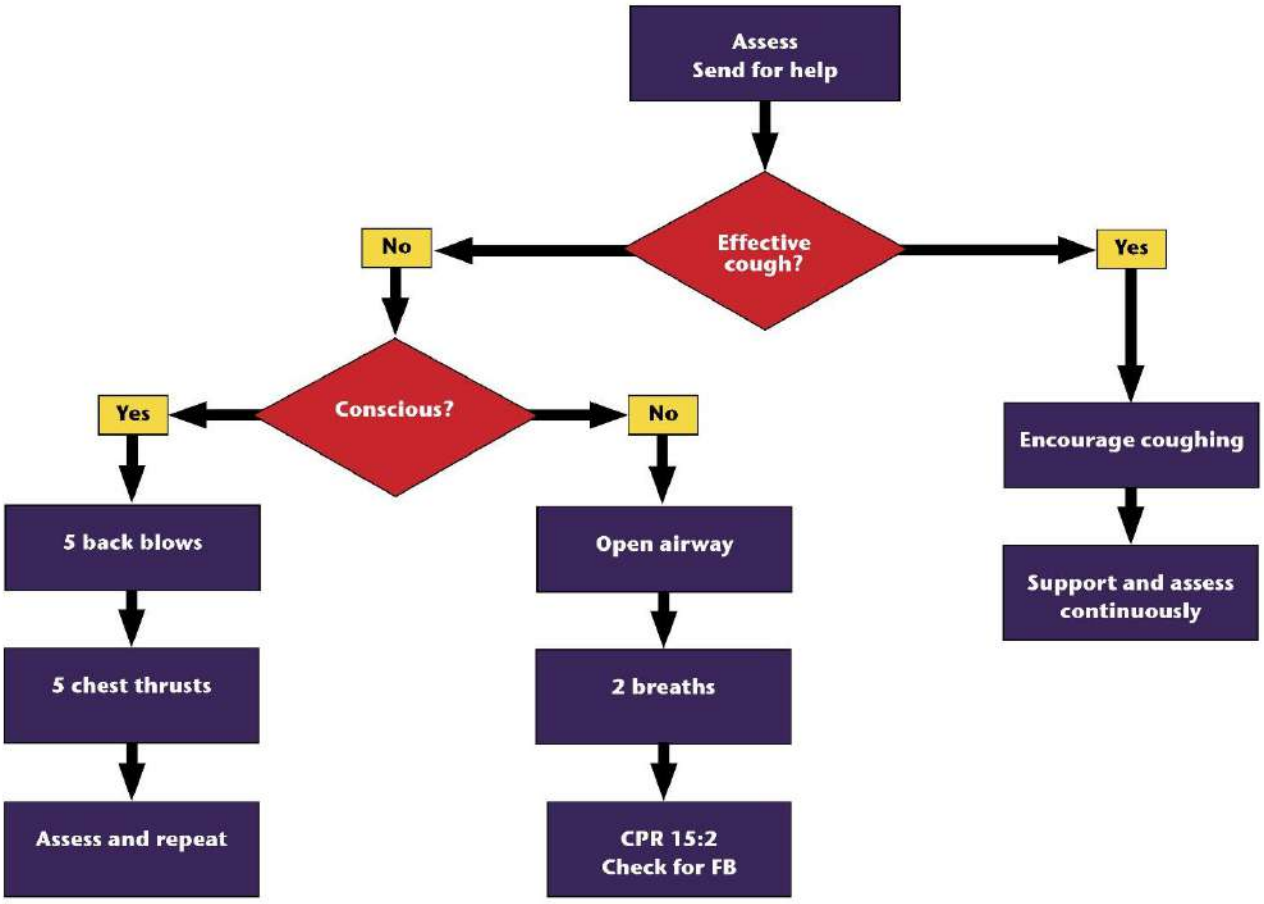
Assess the wound for suitable dressing:

- Non adherent absorbent dressing
- Pressure dressing
- Specialist dressings i.e. burns

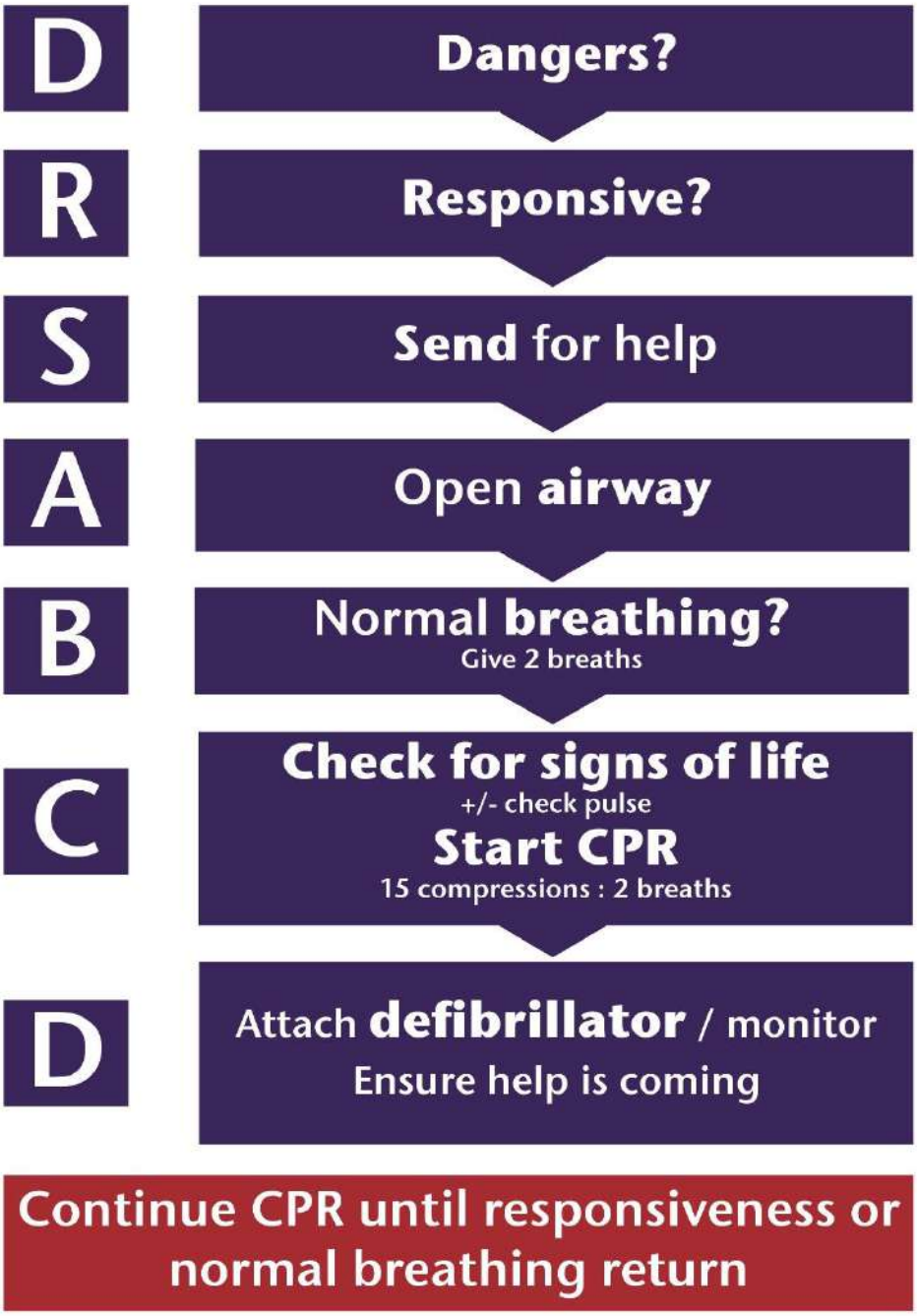
Give advice to patient concerning aftercare and follow up.

Leave clinical area tidy and perform hand hygiene.

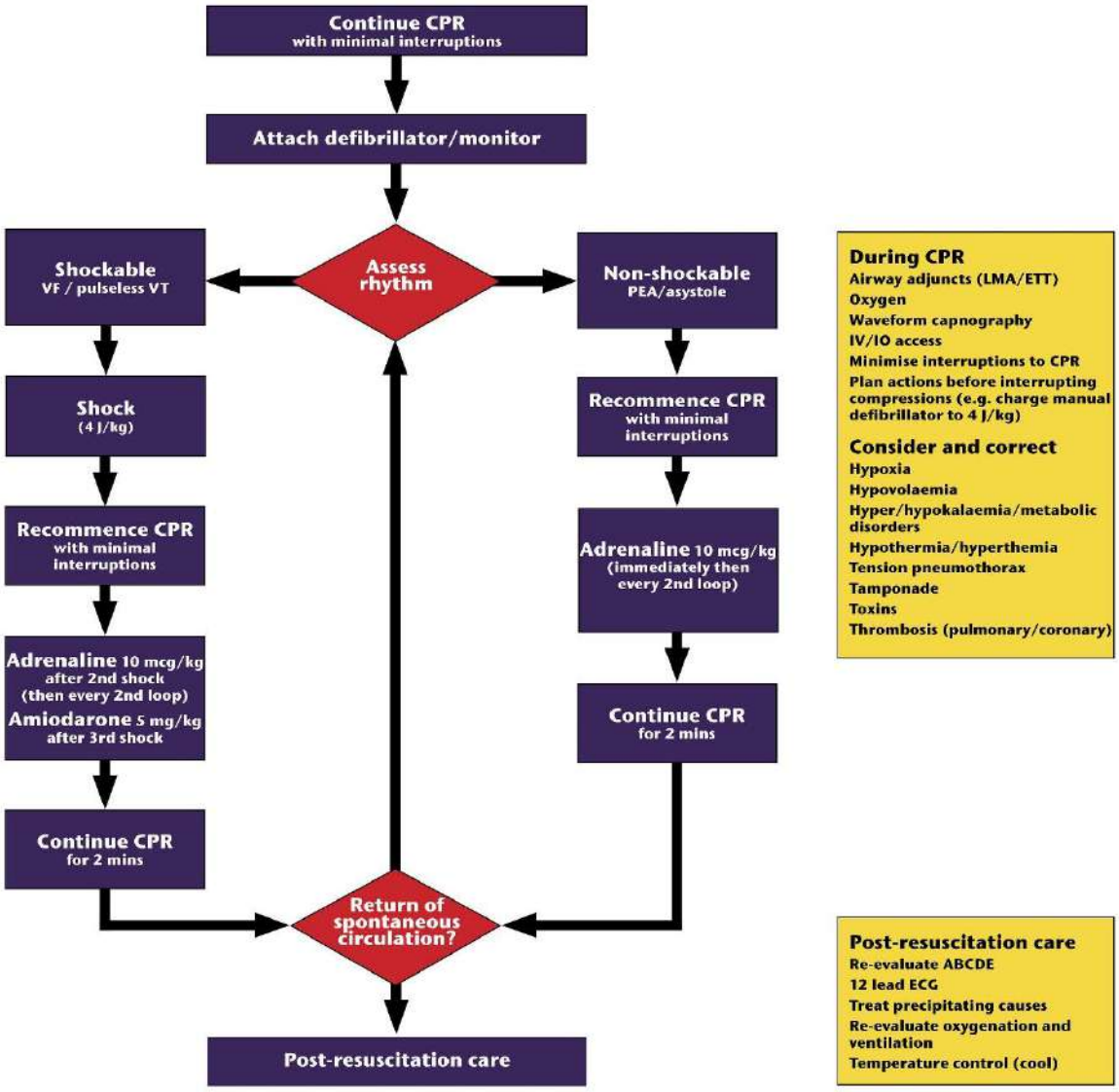
7.1. Paediatric Choking



7.2. Basic Life Support -Child



7.3. Advanced Paediatric Life Support



7.4. **Venepuncture in Children** - **Supervised practice only**

- Introduce self, gain consent and co-operation from parent and child. Perform hand hygiene, roll up sleeves, remove watch.
- Advise parent of the procedure that you are about to undertaker and why the procedure is needed. Offer then the option of staying for the procedure if they wish and slow them how they can support their infant/ child where practical and appropriate. Answer any questions parent may have and take child away from the bed area to perform this procedure.
- Consider pain relief measures (sucrose for neonates and Infants, EMLA, Ametop or Ethyl Chloride spray). Check for skin reactions to EMLA and Ametop.
- Provide privacy and minimise noise where possible.
- Collect equipment and prepare equipment. Identify the correct infant/ Child for the sample and ensure that the documentation (request forms etc.) is ready.
- If the sample to be collected is for tissue typing, karyotype of HIV, the patient's permission should be sought first.
- In the case of an infant/toddler utilize developmental care alerting techniques to rouse gently before the procedure e.g use a softly pitched voice to prevent startling.
- Ensure that the infant / child is in a suitable position for the sampling to take place.
- Select suitable vine and decide whether help is required. Time spent in assessment promotes success.
- In an order child above 10/11 years you may be able to use adult venepuncture.
- In neonate /infant where necessary you will need :
    1. Person to take the blood.
    2. An assignment to act as tourniquet to secure the limb and to make the vein fill.

7.5. Paediatric fluid assessment

Look at condition Eyes Tears Mouth and tongue Thirst	Well, alert Normal Present Moist Drinks normal	Restless, irritable Sunken Absent Dry Drinks eagerly	Lethargic, uncon. Very sunken Absent Very dry Drinks poorly
Feel skin pinch	Goes back quickly	Goes back slowly	Very slowly
Decide	<5%	5-10%	>10%
Treat	Plan A	Plan B	Plan C

Fluid Volume calculation in children:

Body Weight	Fluid requirement per day	Fluid requirement per hour
First 10kg	**100 mL/kg**	**4 mL/kg**
Second 10kg	**50 mL/kg**	**2 mL/kg**
Subsequent kg	**20 mL/kg**	**1 mL/kg**

7.6. Paediatric Urine Specimen Collection – Clean Catch Urine

- Introduce self, obtain consent and co-operation from the parent and child
- Explain the procedure (Explain that the procedure will not hurt and answer any questions parent or child may have)
- Gain confidence of the child and parent before approaching the child.
- Roll up sleeves, remove watch etc., perform hand hygiene and wear gloves
- Ensure privacy.
- Following breast/ bottle feeding, baby should be kept without a nappy
- Ask the parent if he/she would wash the genital area or they would prefer practitioner to do this.
- Wipe down each side of the perineum separately and then wipe the center using separate balls of cotton wool.
- Dry area completely using separate balls of cotton wool.
- Provide a sterile container and ask the parent to collect urine straight from the stream into the container.
- Label the container and record the date time and amount of urine collected in the medical notes.
- Leave the clinical area tidy and perform hand hygiene.

7.7. Examination of New Born Infant

- Introduce self, gain consent and co-operation from parent.
- Perform hand hygiene, roll up sleeves, remove watch.
- Explain procedure: attempt to gain parent confidence before approaching child.
- Explain that the procedure will not hurt but the baby will cry when undressed and answer any questions parent may have.
- Ask if the parents have noticed any abnormalities or have any concerns they wish to discuss.
- Assess overall appearance.
- Note general tone, sleepiness and reusability.
- Observe general condition, proportions and maturity.
- Look carefully for evidence of jaundice (natural light).
- Are there any birthmarks, rashes, or other skin abnormalities?
- Listen to baby's cry and note its sound.
- Weigh the baby and plot this reading on its growth chart.
- Perform a systematic 'head to toe' examination.
- Consider auscultating the heart / chest before undressing the infant.

Head:

- Shape, presence of fontanelles and whether normal, sunken or bulging. Measure and record head circumference on growth chart.
- Handle the infant's head sensitively
- Measure the occipitofrontal circumference
- Take three separate measurements.
- Take the largest of the three measurements and record.
- Assess facial appearance and eye position. Look for any asymmetry or abnormality of facial form.

Eyes:

- Normal shape and appearance?
- Check for red reflex using the ophthalmoscope
- Look for obvious cataracts.

Ears:

- Shape and size.
- Are normal level or "low set".
- Check patency of external auditory meatus.

Mouth:

- Colour of mucous membrane, observe the palate.
- Check suckling reflex by inserting a clean little finger gently inside baby's month.

- Look for evidence of traction birth injury (eg. Erb's palsy) by checking neck, shoulder and clavicles.

Arms and hands:

- Are they of normal shape and moving normally?
- Count fingers and observe their shape - is there any evidence of clinodactyly (incurving of fingers)
- Check palmar creases - are they multiple or single? A single Palmar crease may be normal but can be a sign of Down syndrome.

Peripheral pulses:

- Check brachial, radial and femoral pulses for rate, rhythm and volume.
- A hyperdynamic pulse may suggest persistent ductus arteriosus.
- A week pulse may occur with congenital cardiac anomaly (impairing cardiac output and in conjunction with other Singh from the examination).
- Check for radio - femoral delay (aortic coarctation).

Heart:

- Check cardiac position by palpation and feel for any thrill or heave.
- Listen to the heart sounds and for any additional sounds and murmurs.
- Check the 4 limb saturations while observing the wave form in the monitor

Lungs:

- Watch respiratory pattern, rate and deep for a few seconds.
- Look for any evidence of intercostal recession.
- Listen for stridor.

Abdomen:

- Look at abdominal girth and shape.
- Carefully check the umbilical stump for infection or surrounding hernia.
- Palpate gently for organs, masses or hernia.
- It is common to be able to feel the liver and or spleen in healthy newborns.
- Check the external genitalia carefully.
- Palpate for testicles in boys.
- Inspect the anus (has meconium been passed?)

Back:

- Look carefully at skin over back and at spinal curvature/ symmetry.
- Is there any evidence of spina bifida occulta or pilonidal sinus hidden by flesh creases or dimples?
- Palpate the spine gently.

Legs:

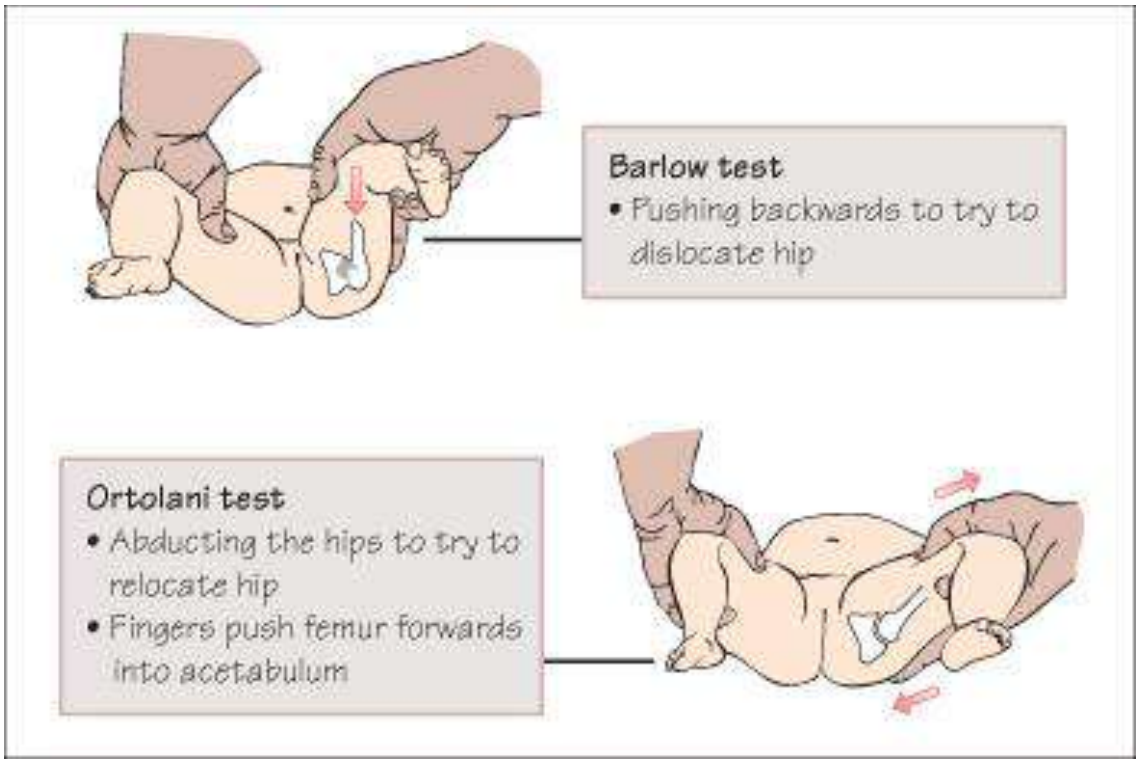
- Watch movement at each joint.
- Check for any evidence of talipes equinovarus.
- Count toes and check shape

CNS:

- Observe tone, behaviour, movement and posture.
- Elicit newborn reflexes only if there is cause for concern.

Hips:

- Specifically test for congenital dislocation of the hip using combination of Barlow and Ortolani manoeuvres.
- Expose infant's pelvis and legs. Stabilise pelvis with one hand and undertake examination of contralateral hip. Place thumb in groin crease and middle finger over greater trochanter, tucking leg into the cup of hands so that the leg is flexed.
- Ortolani manoeuvre - gently adduct leg feeling for forward relocation of femoral head into the acetabulum ('feels like a clunk').
- Barlow manoeuvre - gently adduct leg and push the thigh posteriorly in the axis of the femur, feeling for a 'clunk' as the femoral head dislocated posteriorly.
- Repeat the Ortolani manoeuvre



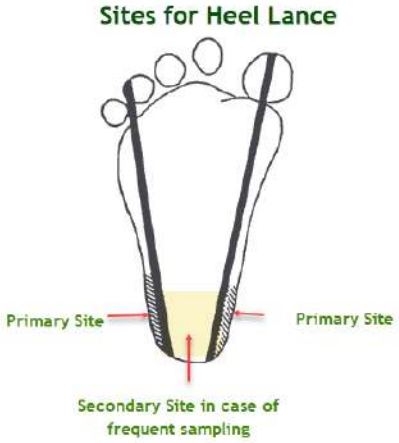
- Further examinations should be performed as necessary accounting to any abnormalities that are detected, or suspicions of undetected illness in the baby.
- Dress the infant once more and return to the parents.
- Always document the findings of the examination in the postnatal care and personal child health record.
- Leave clinical area tidy and perform hand hygiene.

NOTE:

Post discharge a neonatal 6 week check is advisable

7.8. Capillary Blood Sampling - Supervised practice only

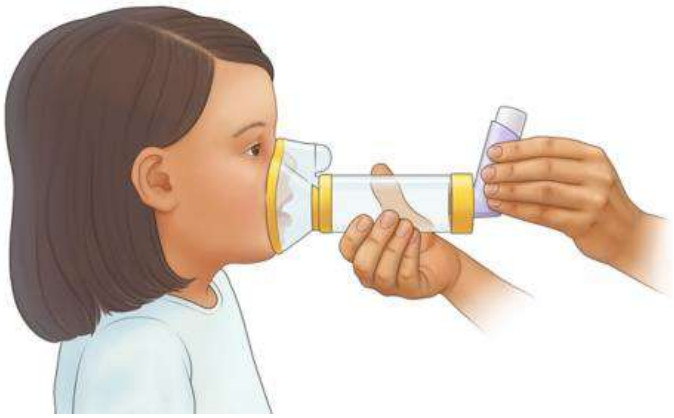
- A blood sample obtained from a heel puncture is a useful and simple way of collecting blood samples.
- It can be used to monitor: Blood glucose levels, drug levels, blood gases, full blood count, urea and electrolytes, new born bloodspot screening test.
- However problems can occur such as increased pain, local trauma, damage to nerves, blood vessels and bone, excessive blood loss and infection.
- Equipment required: Gloves, gauze, capillary tube and / or blood bottles, special neonatal blood sampling needle, sharps bin, request form.
- Introduce self, gain consent and co-operation from parent and confirms identification.
- Advice parents of the procedure that you are about to undertake and why the procedure is needed. Offer them the option of staying for the procedure if they wish and show them how they can support their infant/child where practical and appropriate.
- Perform hand hygiene, roll up sleeves, remove watch and answer any questions parent may have.
- Ensure adequate analgesia has been administered and wipe area with Vaseline to ensure blood forms a drop rather than running down the foot (do not use Vaseline for glucose tests).
- To obtain the sample: Ensure the baby is lying in a safe and secure position, hold the baby's heel with your non-dominant hand with your index and middle finger holding the ankle, use your other fingers to steady the baby's leg, partly encircle the baby's heel with your thumb and clean the area using warm water and gauze and allow to dry. (Alcohol has been associate with chemical burns in premature Infants).
- Gently compress the heel and hold the skin under tension. Puncture the skin in a steady and intentional manner. Relax tension and wipe away initial blood flow with gauze.
- Whist maintaining grip hold the heel so that the blood is allowed to hang. Gently but firmly compress the baby's heel to form a large droplet of blood (do not squeeze). Hold the capillary tube or blood bottle to the blood droplet and touch.
- Momentarily release pressure to collect subsequent blood then reapply pressure, allowing the blood to flow. Continue until sufficient blood has been taken in the case notes.
- Ensure that sample is labelled appropriately prior to processing.
- Following the procedure ensure that comfort and support measures are in place.
- Leave clinical area tidy and perform hand hygiene.


Sites for Heel Lance
Primary Site
Primary Site
Secondary Site in case of frequent sampling

7.9. Use of Aerochambers/spacers for inhaled drug administration

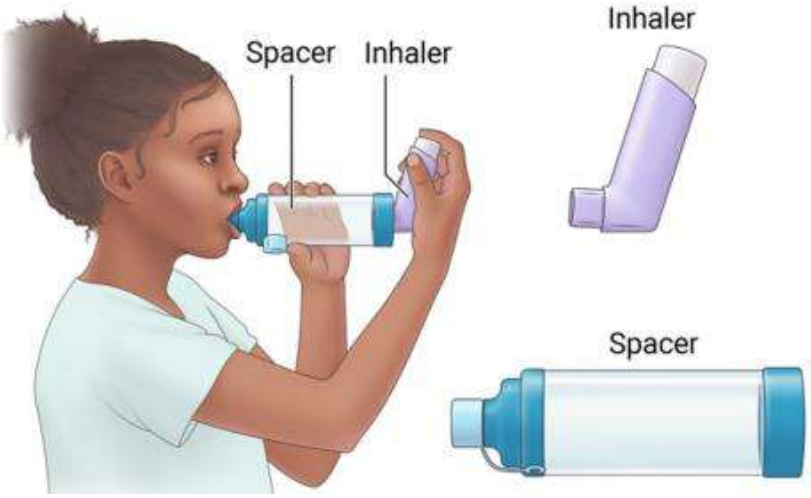
How to use the Aerochamber Plus with infant or child mask in infants, toddlers and children

- Shake inhaler and insert in back of Aerochamber.
- Place mask over the child's nose and mouth.
- If the child is OK with the mask on their face let them breathe in and out slowly- tidal breathing. Once breathing pattern is well established, depress inhaler and leave it in the Aerochamber as child continues to breathe in and out slowly five times.
- Count out loud (1, 2, 3, 4 and 5) at the same time as the child is breathing. If the child is unhappy with the mask over their face do not wait until the breathing pattern is established. Instead, depress inhaler leaving it in the Aerochamber as child breathes in and out five times.
- At the same time count out loud (1, 2, 3, 4 and 5).
- Remove the Aerochamber from child's face.
- For a second dose wait a few seconds and repeat the above steps.



How to use the Aerochamber plus standard devicein children

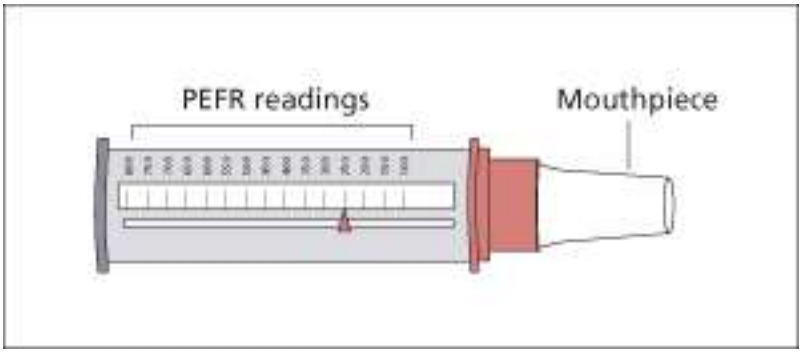
- Remove cap of spacer.
- Shake inhaler and insert in back of Aerochamber.
- Place mouthpiece in mouth.
- Encourage child to breathe in and out slowly and gently – tidal breathing.
- If you hear a whistling sound the child is breathing in too quickly.
- Once breathing pattern is well established, depress inhaler and leave canister in same position as child continues to breathe in and out slowly (tidal breathing) five more times.
- It may be worth counting out loud with the child's tidal breathing so they know when to finish. Remove the Aerochamber from child's mouth.
- For a second dose wait a few seconds and repeat steps 2-6.



7.10. Peak expiratory flow rate (PEFR)

- PEFR is the most common lung function test used in asthmatics.
- PEFR measures the maximum rate at which air can be expelled from the lungs.
- PEFR is measured in litres per minute (l/min).
- PEFR can be measured using a small hand held peak flow meter (Fig 1).
- PEFR can be reliably performed in children from about the age of five years.
- PEFR is related to height in children (Fig).

Peak Flow Meter

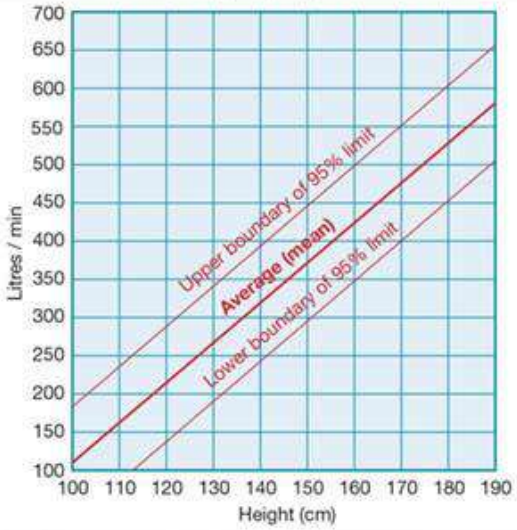


How to do a peak flow expiratory flow rate (PEFR) in a child

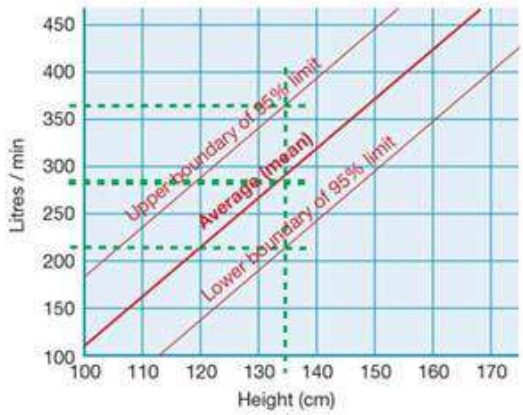
- The peak flow meter has a red pointer that slides up the scale as the child blows out.
- Check the red pointer is at zero.
- The child should stand or sit in a comfortable position.
- The peak flow meter should be held horizontally.
- Make sure child's finger is out of way of pointer scale.
- Ask the child to take a deep breath and seal their lips around the mouthpiece.
- Encourage them to blow out as fast and hard into the mouthpiece of peak flow meter - explain it's like blowing out a candle.
- Read the number the pointer reaches.
- Return the pointer to zero.
- Repeat the blow twice more.
- Document the highest number.
- Compare child's peak flow readings with the normal range which is based on height.

Normal PEF values in children best correlate with their heights. With increasing age larger differences occur between sexes.

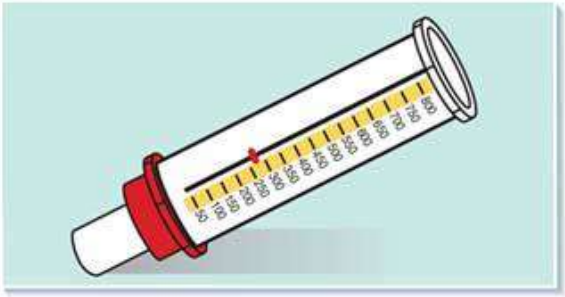
Peak flow chart: children both boys and girls
Source: Redrawn from Godfrey et al. (1970)



Graphic representation of how to calculate expected peak flow value



Peak flow meter



Child using peak flow meter

How to use a peak flow meter

1. Set to 0	2. Breathe in	3. Blow as hard as you can	4. Repeat three times and record the highest reading

8.1. Examination of the Pregnant Abdomen

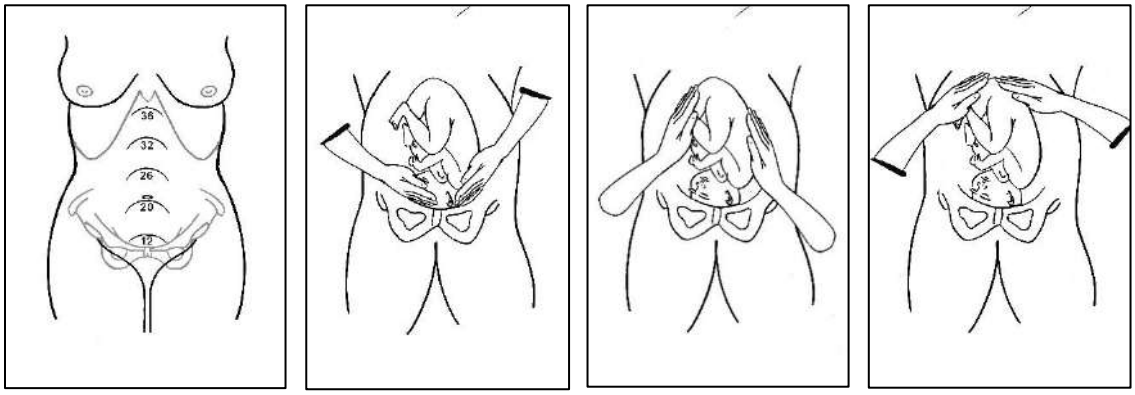
- Introduce yourself and ask permission to carry out the examination.
- Before any clinical examination make sure you have washed your hands.
- Make sure a chaperone is available and the patient is comfortable.
- It is reasonable to examine the abdomen with the couch at 30 degrees. If the patient is supine for any length of time, she may feel faint due to venocaval compression. If this occurs help her into the left lateral position.
- Expose the abdomen from the xiphisternum to below the symphysis pubis (scars may be concealed below the pubic hair line). Stand on the right side of the patient at the level of the abdomen. Make sure that, although facing the abdomen, you keep an eye on the patient's face in order to avoid hurting her.
- Now carry out your **Inspection**. Features to comment on include:
    - Abdominal distension
    - Scars (common gynaecological scars include laparoscopy and caesarean section scars)
    - Foetal movement
    - Skin pigmentation (linea nigra, striae gravidarum)
    - Rashes

Now proceed to **palpation.** This will include measurement of **fundal height.**

- Use a tape measure, which has been turned away to hide the numbers.
- Start at the fundus, which is felt using the ulnar border of your left hand or radial border of the index finger.
- Measurement is made by identifying the variable point, the fundus, and then measuring to the fixed point, the top of the symphysis pubis and the tape is run along the longitudinal axis of the uterus.
- Height in centimeters should correspond ± 3cm to the gestational age of the pregnancy in weeks after 24 weeks of gestation to predict small for gestation.
- **Feeling the presenting part:** Fetal presentation refers to the fetal part that directly overlies the pelvic inlet. Any presentation other than cephalic (vertex) is considered malpresentation and by term 96% pregnancies will have cephalic presentation. Commonest malpresentation a term is breech. The fetal head feels rather like a hard mass. It can be measured in 5ths using our finger breaths. If it is free from the pelvic brim it will be 5/5ths palpable. If the widest part (the biparietal diameter) is still above the brim it will be 3 or 4/5ths palpable. If the widest part is below the brim the head will be **engaged** in the pelvis and will be 2, 1 or even 0/5ths palpable. If the presenting part is breech this feels broader and softer than the head. Feel for which

side the back lies and try to build up a mental picture of how the fetus is positioned within the uterus to determine the position of the fetus.

- Establishing the fetal **lie**: Fetal lie refers to the long axis of the fetus relative to the longitudinal axis of the uterus and can be longitudinal, transverse, or oblique. If a presenting part is palpable at the pelvis (either head or breech) then the lie of the baby will be longitudinal. If there is no foetal part to feel in the lower part of the uterus then the lie may be oblique (lying diagonally) or transverse (lying sideways). Over 99% of singleton term babies have a longitudinal lie.
- **Estimating the liquor volume:** In most cases this will be normal, giving a cystic feel to the uterus. If liquor volume is excessive (polyhydramnios) then foetal parts are not easily felt. If liquor volume is reduced the foetal parts are felt easily.
- **Estimation of the fetal weight:** By gently palpating both the poles of the fetus the weight of the fetus within the hands can be estimated approximately.
- During your examination you may also palpate **foetal movement**, which should be recorded/commented on.
- A uterine **contraction** may also occur. If this happens then stop your examination temporarily as it will be uncomfortable for the patient and you will not be able to palpate foetal parts.
- **Auscultation:** The traditional instrument for this is the Pinnard's stethoscope, although in practice Doppler ultrasound is also used in clinics.
- Try to develop a system that flows in a professional manner, which appears logical in approach.



8.2. Bi-Manual Examination

- Introduce self, gain consent and co-operation.
- It is really important that you don't rush this and that you spend time explaining the reasons for bi-manual examination.
- Ensure privacy and dignity is maintained throughout.
- Ensure that the patient has, emptied her bladder if necessary, and a urine specimen collected if required.
- Give the patient clear instructions as to what clothes will need to removed i.e. “You will need to remove all clothes from the waist down". Ensure that a gown is provided and state that you will return in a few minutes.
- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile).
- Help the patient into the correct position and then tell the patient that you now need to expose her.
- Ensure that there is adequate lighting.
- **Inspect:**
    - Inspect the vulva and perineum noting appearance, any abnormalities, soreness, inflammation, swelling, discharge, warts and any other signs.
    - Labia may require to be parted to ensure adequate exposure of clitoris and urethral meatus. Apply lubrication to your fingers.
    - Warn the patient that you are about to begin the examination and that you are about to touch her. (It helps to prepare the patient if you initially touch an area away from the genitals before parting the labia with your non dominant hand.)
    - Rest both your index and middle finger on posterior fourchette and look at your patient.
    - Ask the patient to try and relax, gently insert the fingers as she relaxes, aim for the posterior vaginal fornix. This is in a slightly downward and posterior direction.

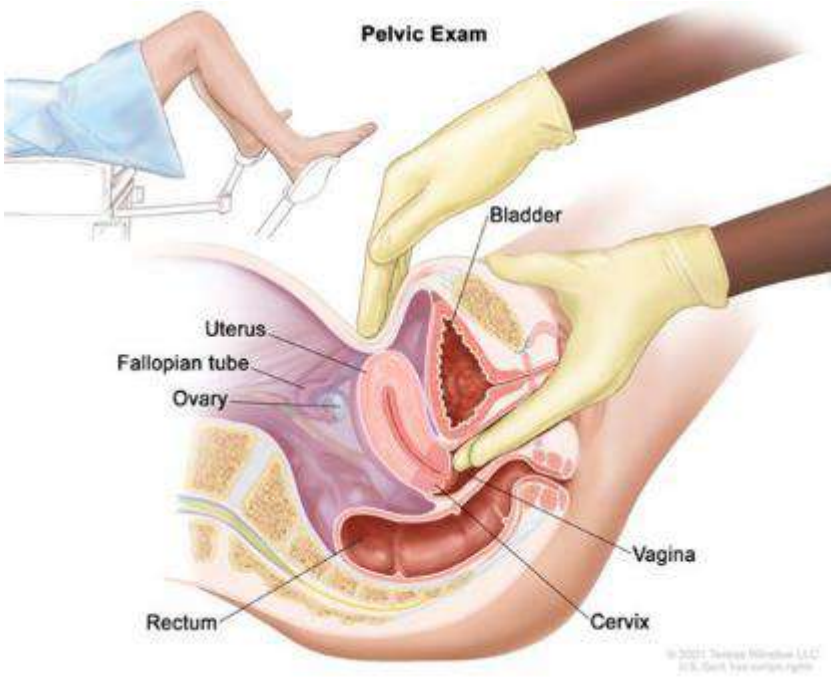
- **Cervix**
    - Palpate the cervix, noting its position, shape, consistency, regularity, mobility and tenderness.
    - Is the internal os open or closed (only open in evitable miscarriage and labour/post-partum).

- **Uterus**
    - Once you have found the cervix, place your fingers behind it so that you can gently push the cervix towards the abdomen.
    - With your other hand start pushing down on the abdomen.
    - Most information is often obtained with this hand.
    - This should then allow you to feel the uterus between your hands. Note the position of the uterus (anteverted / retroverted / axial) and its size and shape.
    - The retroverted uterus can be difficult to find.
    - To help, move your fingers anterially to the cervix and push down.
    - This brings the uterus up.

- **Adnexia**
    - Now move your fingers to the right of the cervix into the right fornix and then push down with the abdominal hand.
    - This will allow you to palpate between your fingers.
    - Try and palpate the right ovary. Note the size, shape, consistency and mobility. (It is frequently not possible to feel the ovary.)
    - Palpate for any masses.
    - Observe your patient as you do his watching for signs of discomfort, tenderness and pain.
    - It is really important that you build up a good relationship with the patient as she will be able to tell you how it feels.
    - Constantly reassure and explain what you are doing. Repeat the above on the left side.

- **Cervical motion tenderness**
    - Be aware of Cervical motion tenderness identified as part of a bi-manual examination.
    - Warn the patient that this might feel uncomfortable.
    - Place a finger either side of the cervix.
    - Push the cervix from side to side.
    - This will stretch the pelvic peritoneum.
    - Watch your patients face for signs of pain.

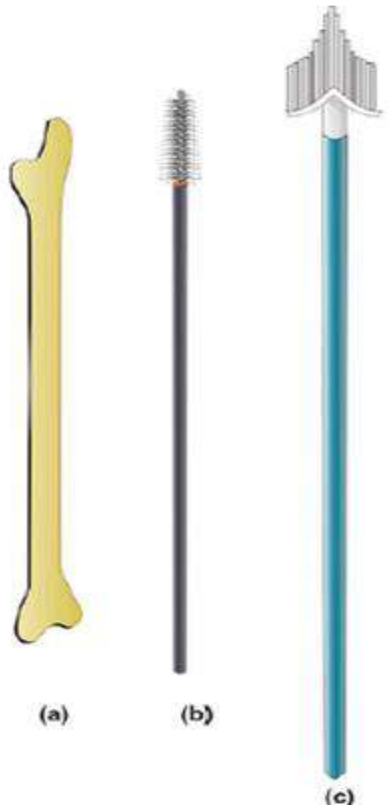
- The presence of cervical motion tendernessimplies peritonism.
- Remove fingers and comment on any discharge and its properties.
- Allow patient to cover up and dress themselves.
- Leave clinical area clean and tidy, wash hands.



8.3. Obtaining a Cervical Smear

- Introduce self, gain consent and co-operation.
- **Prepare equipment:** Aylesbury spatula / cervix brush, tray, gloves, slide/sample collection vial, speculum which has been warmed, warm water, good light source.
- Make sure a chaperone is available.
- This must be a member of staff not a relative.
- Explain the reason for requiring a sample and explain the procedure.
- Give clear instructions as to which items of clothes will need to be removed i.e. 'You will need to undress from the waist down including underwear'. Provide the patient with a gown or towel. Allow the patient to undress in privacy and tell them when you will return.
- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile).
- Drape the patient appropriately and then assist her into the lithotomy position.
- Then ask her to slide all the way down the examining table until her buttocks extend slightly beyond the edge. Her thighs should be flexed, abducted, and externally rotated at the hips. A pillow should support her head.
- Warn the patient that you will now remove the drape and then inspect the vulva.
- Ask the patient to try to relax, warn her that you are about to insert the speculum.
- A speculum is inserted into the vagina: the cervix must be clearly visualised using a direct light source and the cervical os should be located.
- The sampling device(s) used should be selected according to the shape and size of the cervix and the location of the squamocolumnar junction.
- The mucus plug is wiped away gently to make sure the spatula/brush is in direct contact with the epithelial surface; otherwise insufficient cells may be collected and the sample obscured by mucus and inflammatory cells.
- An Aylesbury spatula or the extended tip of the Ayre spatula is suitable for sampling the cervix of a young or nulliparous woman.
- The rounded end is used for a parous woman. A brush may be needed as well as a spatula to sample the cervix of a post-menopausal woman where the squamocolumnar junction lies within the endocervical canal.
- The broom device should be rotated 360 degrees five times to remove cells from the region of the transformation zone, squamocolumnar junction and endocervical canal. A broom may be used for a conventional smear or liquid-based cytology.

- The material on the spatula or brush must be transferred immediately to a glass slide for conventional cytology or to the liquid-based cytology vial for LBC cytology which has been previously labelled with the patient's name and date of birth.
- As long as it can be done quickly enough before the cells of the first sample air dry, spatula and brush samples may be spread on the same slide.
- For conventional cytology, the glass slide must be fixed immediately with an appropriate fixative (95% alcohol) and the slides transported to the cytology laboratory in a container for processing together with the corresponding cytology request form.
- Remove speculum carefully and dispose of this and gloves into clinical waste.
- Allow patient to cover up and dress themselves.
- Leave clinical area clean and tidy, wash hands.



8.5. Genital Swabs

- Introduce self, gain consent and co-operation.
- It is really important that you don't rush this and that you spend time explaining the reasons for vaginal swabs.
- Women have varying amounts of vaginal discharge present, either at certain times of the menstrual cycle or all of the time. Infection can be caused by a variety of organisms, sometimes sexually transmitted. Offensive discharge may result from a forgotten tampon or other foreign body.
- It is important to establish exactly what a woman is complaining about when she says she has a vaginal discharge.
- A high vaginal swab and cervical swab will usually be required to identify the cause of infection.
- Ensure privacy and dignity is maintained throughout.
- Offer chaperone if female practitioner and will NEED a chaperone if male practitioner.
- Give the patient clear instructions as to what clothes will need to be removed i.e. ''You will need to remove all clothes from the waist down".
- Provide the patient with a gown and state that you will return in a few minutes.
- Roll up sleeves, remove watch, wash hands and put on gloves (non sterile).
- Help the patient into the correct position, and then tell the patient that you now need to expose her.
- Ensure there is adequate lighting.
- Warm speculum and insert gently, rotate and open correctly.
- Ensure you know how to open and use a speculum prior to this stage. Clumsiness is not welcomed by the patient and it shows lack of professionalism if you do not know how to use your equipment.

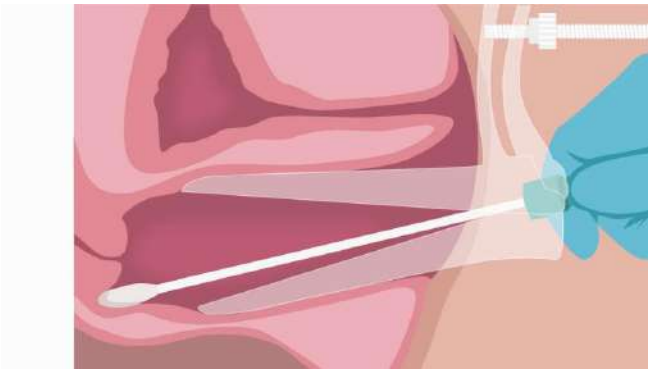
Vaginal swabs:

- Gently part the labia to visualise the introitus and swab inside the vagina.
- Gently swab the lateral vaginal wall and posterior fornix (behind the cervix)
- This will test for bacterial vaginosis, candiduric and trichomoniasis.

Endocervical Swabs:

- Pass a speculum.
- The cervix is first cleaned with a large headed cotton wool swab, if provided (according to local policy).
- The endocervical swab is rotated in the endocervix for 30 seconds, to obtain the specimen.
- A sample of cells is needed to test for Chlamydia DNA, unlike the samples of discharge collected by other swabs.
- The sample must immediately be placed in the container and be stored and transported in accordance with the manufacturer's instructions.

- A second swab should be taken for neisseria gonorrhoeae culture.
- Gently rotate swab in the endocervix (as for the chlamydia swab) and place into transport medium for transfer to the laboratory.
- Remove speculum carefully and dispose of this and gloves into clinical waste.
- Allow patient to cover up and dress themselves.
- Leave clinical area clean and tidy, wash hands.



8.6. Insertion of a Speculum

- Introduce self, gain consent and co-operation.
- It is really important that you don't rush this and that you spend time explaining the reasons for inserting a speculum.
- Ensure privacy and dignity is maintained throughout.
- Give the patient clear instructions as to what clothes will need to be removed i.e. "You will need to remove all clothes from the waist down". Provide the patient with a gown and state that you will return in a few minutes.
- Select a speculum of appropriate size and shape.
- Speculum are made of metal or plastic and come in two basic shapes named Sims and Cusco's. Both types come in small, medium and large.
- Before using a speculum make sure you are aware how to open, close the blades and lock the blades. If you have not done this prior to beginning the procedure you may show lack of professionalism to the patient and increase their anxiety.
- Make sure a chaperone is available.
- Roll up sleeves, remove watch, wash hands and put on gloves.
- Help the patient into the correct position and then advise the patient that you now need to expose her.
- Ensure that there is adequate lighting.
- Inspect the patient's external genitalia, the clitoris, the labia minora, the urethral meatus, the vaginal opening, or introitus.
- Ask the patient to strain down and observe / note any bulging of the vaginal walls.
- Warn the patient that you are about to insert the speculum, lubricate it with warm water.
- Introduce the speculum at a downwards slope.
- Observe at all times as you do this to ensure you do not pull on the pubic hair or pinch the labia with the speculum. Use your other hand to part the labia to help prevent this.
- Continue with the examination taking any swabs / smear as required.
- Remove speculum carefully and dispose of this and gloves into clinical waste.
- Allow patient to cover up and dress themselves.
- Leave clinical area clean and tidy, wash hands.