

United Lincolnshire Hospitals NHS Trust

Clinical Observational Teaching and Assessment Pack

Developed by
Resuscitation Services

Last update September 2015 by Le Beighton and Jane Dulake

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Aim

The aim of this teaching and assessment pack is to teach and assess all clinical staff the six core skills required for carrying out clinical observation on adult patients.

The pack will cover the following skills:-

Assessment of respiration rate

Use of pulse oximetry

Assessment of pulse rate

Assessment of blood pressure using a manual device

Assessment of AVPU (Alert, Voice, Pain, Unresponsive)

Measurement of Temperature

This document is based upon the Royal Marsden Manual and the assessment tool from The University of Nottingham School of Nursing (2009).

Teaching materials to support this programme are available on the intranet via the Resuscitation Services web page: <http://website.ulh.nhs.uk/resus/about/default.html>

This document needs to be read alongside the Trust Policy for Performing and Responding to Observations in Adult Patients

Teaching

This pack can be used as a standalone document or can be used along with other training programmes. This pack should be read prior to attending core module 3 Excellence in Action (trained) or Excel in Care (untrained).

Assessment

Once you have completed the required reading and practised the skills taught you will be assessed by direct observation.

This assessment will be carried out either in the class room or in the ward or department area, by someone who has completed the train the trainer programme by Resuscitation Services.

Once assessed a copy of your assessment sheet should be given to your ward manager for your personnel file.

Before commencing any observations please discuss the procedure and gain consent from the patient. Also ensure infection control is adhered to as per trust policy, to include hand hygiene and cleaning of equipment.

It is important to be aware of the NEWS Graded Response with reference to monitoring frequency and clinical intervention. Please refer to the front cover of the NEWS chart. Ensure any abnormal reading or observation is reported to a senior nurse/medical team.

Assessment of respiration rate

Respiration is the process of breathing. The chest rises each time we inhale and falls each time we exhale. One respiration is one inhalation and one exhalation. By looking at and counting a person's respirations, we are able to tell:

How fast the patient is breathing (the respiratory rate)

How regularly the person is breathing (the respiration rhythm)

How deeply the person is breathing (the depth of respiration)

Rate and depth determine the type of respiration. The normal rate at rest is approximately 12–20 breaths per minute in adults and is faster in infants and children.

Changes in the rate of ventilation may be defined as follows:-

Tachypnoea is an increased respiratory rate, seen in fever, for example, as the body tries to rid itself of excess heat. Respirations increase by about 7 breaths per minute for every 1°C rise in temperature above normal. It also increases with pneumonia, other obstructive airway diseases, respiratory insufficiency and lesions in the pons of the brainstem.

Bradypnoea is a decreased but regular respiratory rate, such as that caused by the depression of the respiratory centre in the medulla by opiate narcotics, or by a brain tumour.

Hyperventilation is an increase in both the rate and depth of respiration. In adults, more than 20 breaths per minute is considered moderate, more than 30 is severe. This can follow extreme exertion, fear and anxiety, fever, hepatic coma, midbrain lesions of the brainstem, and acid–base imbalance such as diabetic ketoacidosis (Kussmaul's respiration) or salicylate overdose (in both of these situations the body compensates for the metabolic acidosis by increased respiration), as well as an alteration in blood gas concentration (either increased carbon dioxide or decreased oxygen). The breathing pattern is normally regular and consists of inspiration, pause, longer expiration and another pause. However, this may be altered by some defects and diseases.

Procedure for respiratory rate

Observe the patients breathing rate, rhythm and depth for one minute and record on the NEWS chart. It is helpful to assess this when the person is not concentrating on their breathing. It may be useful to observe the breathing rate after taking the pulse while your fingers are still in position.

Use of pulse oximetry

All patients require a measurement on their oxygen saturations. A device called a **pulse oximetry** is clipped to the patients fingertip or earlobe to monitor oxygen levels in the bloodstream (ensure correct probe is used for each site).

DO NOT USE THE PULSE OXIMETRY TO RECORD HEART RATE. THIS MUST BE DONE MANUALLY.

Indications for pulse oximetry

- Monitoring effectiveness of oxygen therapy
- Sedation or anaesthesia
- Transport of patients who are unwell and require oxygenation assessment
- Haemodynamic instability (e.g. cardiac failure or MI)
- Respiratory illness (e.g. asthma, chronic obstructive pulmonary disease (COPD))
- Monitoring during administration of respiratory depressant drugs, e.g. opiate epidural or patient- controlled analgesia.

Possible sources of error

Light transmission:-

Barriers or obstruction, e.g. nail varnish, dirt, foreign objects, bright or fluorescent room lighting, intravenous dyes used in imaging.

Limitations of pulse oximetry

Oxygen saturation is only one factor in oxygenation of the tissues. In anaemia it is possible to have high oxygen saturation readings, but inadequate amounts of oxygen reaching the tissues. Carbon monoxide (CO) exposure will lead to uptake of CO molecules in preference to O₂. As carboxyhaemoglobin is also bright red it can lead to significant overestimation of oxygen saturation when using pulse oximetry.

Procedure for pulse oximetry

Ensure the patient is warm and comfortable.

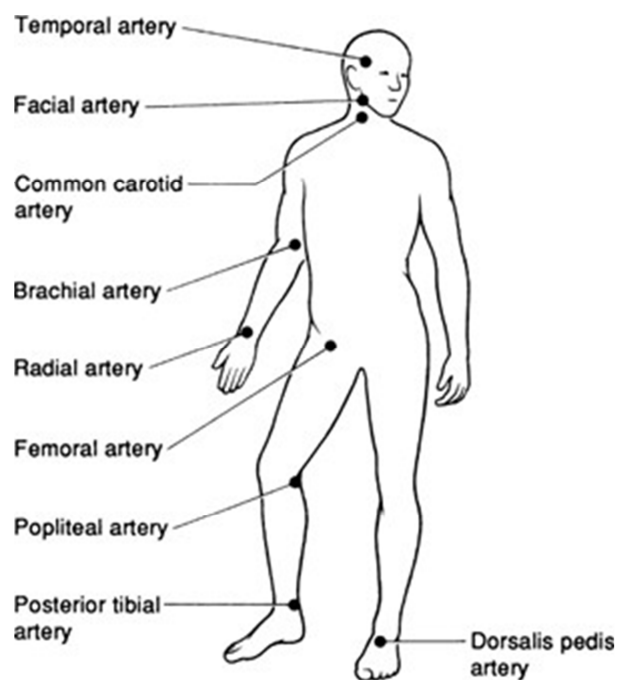
Place the probe on to the patient (usually finger) as per manufactures instructions. Ear probes can also be used. Take the reading of the oxygen saturations and any supplementary oxygen used.

Note:- a patient automatically scores, on the NEWS chart, if oxygen is administered. If the monitoring of oxygen saturation is required continuously, make sure the probe placement is checked regularly and the position changed frequently. Leaving the probe in one position for prolonged periods may cause discomfort or pressure damage.

Assessment of pulse rate

Each time the heart beats, it sends a wave, or pulse, of blood through the arteries. The pulse, a throbbing sensation underneath the skin, can be felt by placing your fingers gently over the artery that runs close to the surface of the skin, such as the carotid artery in the neck or the radial artery in the wrist.

Body sites where the pulse is most easily palpated



The pulse is taken for the following reasons:

- How fast the heart is beating (the *pulse rate*)
- How regularly the heart is beating (the *pulse rhythm*)
- How strong the heart is beating (the *pulse amplitude*)

Rate

The normal pulse rate varies in different client groups as age-related changes affect the pulse rate. The approximate adult range is 60-100 per minute.

The pulse may vary depending on the position of an individual. For example, the pulse of a healthy person may be around 66 beats per minute when he is lying down; this increases to 70 when sitting up, and 80 when he stands suddenly.

The pulse rate in a healthy heart tends to be relatively constant. However, when blood volume drops suddenly or when the heart has been weakened by disease, the stroke volume declines and cardiac output is maintained only by increasing the heart rate.

Tachycardia is defined as an abnormally fast heart rate, over 100 beats per minute in adults, which may result from a raised body temperature, increased sympathetic response due to physical/emotional stress, certain drugs or heart disease.

Bradycardia is a heart rate slower than 60 beats per minute. It may be the result of a low body temperature, certain drugs or parasympathetic nervous system activation. It is also found in fit athletes when physical and cardiovascular conditioning occurs. If persistent bradycardia occurs in an individual as a result of ill health, this may result in inadequate blood circulation to body tissues.

Rhythm (Regular or irregular)

The sinoatrial node is the pacemaker, initiating each wave of contraction. This sets the rhythm for the heart. Its characteristic rhythm is called *sinus rhythm*.

Defects in the conduction system of the heart can cause irregular heart rhythms, or arrhythmias, resulting in uncoordinated contraction of the heart.

Fibrillation is a condition of rapid and irregular contractions. A fibrillating heart is ineffective as a pump. Atrial fibrillation is a disruption of rhythm in the atrial areas of the heart occurring at extremely rapid and uncoordinated intervals. The rapid impulses result in the ventricles not being able to respond to every atrial beat and, therefore, the ventricles contract irregularly. There are many causes of this condition, but the following are the most common:- ischaemic heart disease, acute illness, electrolyte abnormality and thyrotoxicosis.

Procedure for pulse rate

The radial artery is often used as it is the most accessible. Place the first, second or third finger along the appropriate artery and press gently. Be aware that the thumb and forefinger have pulses of their own and therefore these may be mistaken for the patient's pulse. The pulse is taken for 60 seconds to allow sufficient time to detect any irregularities or other defects. If an abnormal pulse is detected, then the patient may require a cardiac monitor and an ECG. In severe hypotension a radial pulse may not be felt, therefore it will be necessary to locate a central pulse (carotid or femoral).

Assessment of blood pressure

The blood pressure is the pressure that the blood puts on the arterial walls. Blood pressure is considered a vital sign because it gives us important information about a person's health and risk for disease. If the blood pressure is too low, the tissues of the body do not receive enough oxygen and nutrients. If the blood pressure is too high, it forces the heart to do extra work and places too much strain on other vital organs and the blood vessels.

Blood pressure is measured for one of two reasons:

- To determine the patient's blood pressure on admission as a baseline for comparison with future measurements

- To monitor fluctuations in blood pressure.

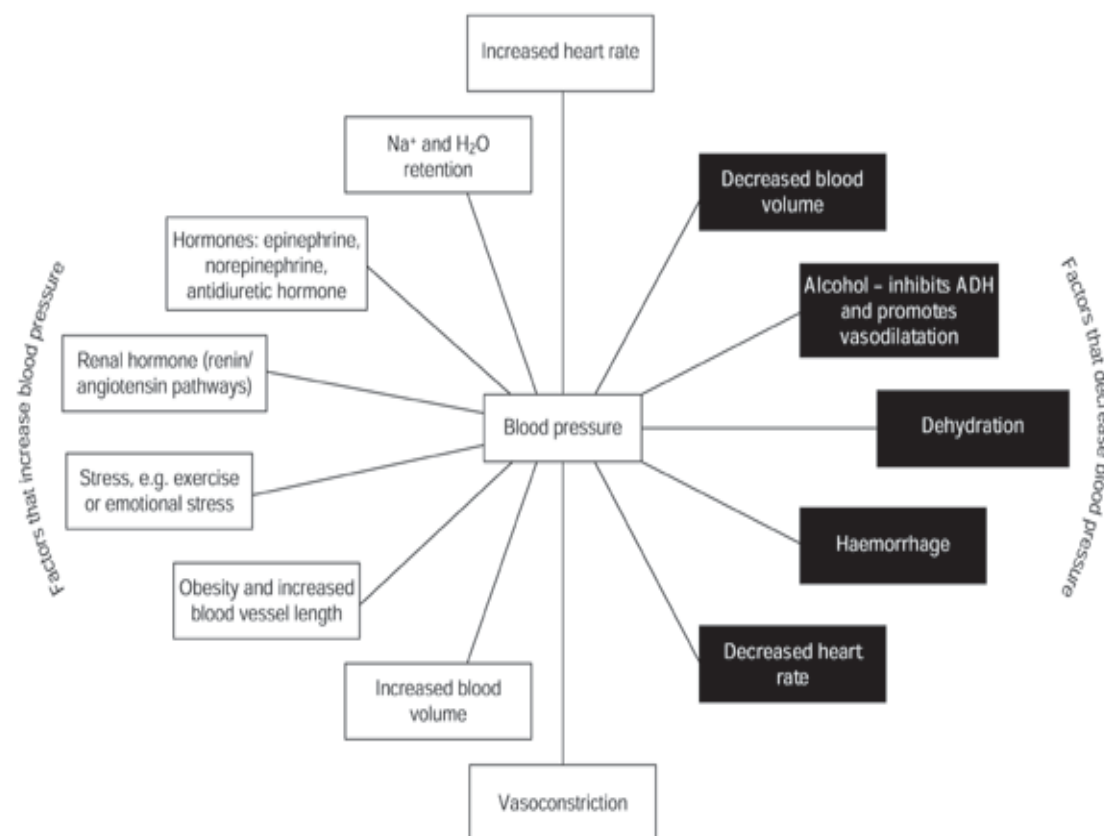
Blood pressure is measured in millimetres of mercury (mmHG) and is recorded as a fraction. The **systolic pressure**, which is higher, is recorded first, followed by the **diastolic pressure**, which is lower.

The heart muscle contracts in two phases, called the cardiac cycle. During systole the myocardium contracts, sending blood out from the heart. During diastole the myocardium relaxes, allowing the heart to fill with blood.

Shock, myocardial infarction and haemorrhage are factors that cause a fall in blood pressure as they reduce cardiac output.

A loss of elasticity in the muscle layer of the body's blood vessels decreases the body's ability to control blood pressure and blood flow. This is why many older people feel dizzy or light headed when they get up quickly after lying down.

Factors that lead to a change in blood pressure



Hypotension or low blood pressure is generally defined in adults as a systolic blood pressure below 100 mmHg. In many cases, hypotension simply reflects individual variations; however, it may indicate orthostatic hypotension, i.e. postural changes that result in a lack of normal reflex response

leading to a low blood pressure, or it may be the first indicator of a shock condition, e.g. septic shock, cardiogenic, hypovolaemic or toxic shock syndrome.

Hypertension is an elevation in the blood pressure and may be an acute or chronic physiological response. Hypertension may be a temporary response to fever, physical exertion or stress. The British Hypertension Society recommends that patients who have:

- Sustained blood systolic blood pressure of greater than or equal to 160 mmHg or
- Sustained diastolic blood pressure of greater than or equal to 100 mmHg should be commenced on antihypertensive drug treatment.

Persistent hypertension is a common disease and approximately 30% of people over the age of 50 years are hypertensive. Persistent hypertension is diagnosed in an individual when the average of three or more blood pressure readings taken at rest, several days apart, exceeds the upper limits of what is considered normal for the patient.

Automated sphygmomanometer

Automated devices to measure blood pressure have been available for some time now. Devices are manufactured for a variety of different purposes, including home use.

As with all medical devices, use should be in accordance with the procedures recommended by the manufacturer. The principles of measuring an accurate blood pressure using an electronic device will be similar to manual recording of blood pressure with regard to patient factors such as positioning, choice and placement of the cuff. All medical devices should be properly serviced and maintained and may need calibration at intervals. Guidance should be sought from the manufacturer.

Users of electronic sphygmomanometers should also be aware that errors in measurement (for example, if there is a weak, thread or irregular pulse) may not be readily obvious to the operator and that manual blood pressure measurement may be indicated.

A bladder that is too short and/or too narrow will give falsely high pressures. The British Hypertension Society recommended in 1986 that the centre of the bladder should cover the brachial artery and that the bladder length should be 80% of the arm circumference and the width at least 40%.

Manual blood pressure

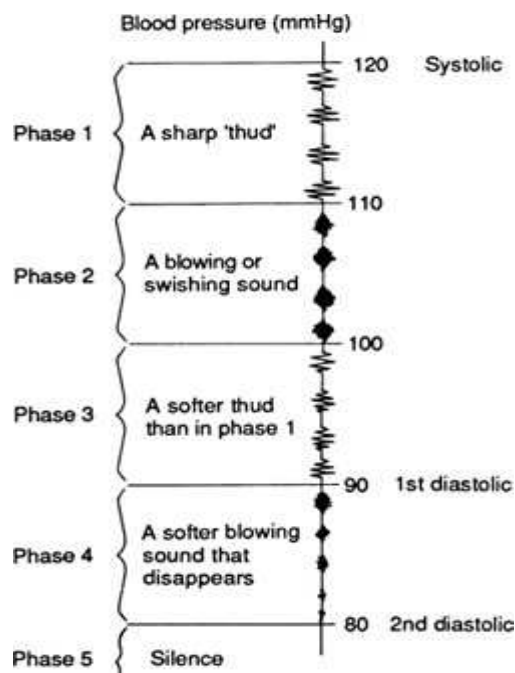
The most common types of error for sphygmomanometers are:

- Rapid deflation of the cuff during measurement
- Improper placement
- Perished rubber tubing
- Systematic error (e.g. lack of concentration, poor hearing, inattention to audible or visual cues)
- Failure to interpret the Korotkoff sounds correctly
- Terminal digit preference (tendency to record blood pressures ending in '5' or '0')

- Bias (e.g. recording a blood pressure corresponding to what would be expected for the patient, not the actual reading).

The Stethoscope

Using the stethoscope it is possible to identify a series of five phases as blood pressure falls from the systolic to the diastolic. These phases are known as Korotkoff's sounds.



When the cuff pressure has fallen to just below the systolic pressure, a clear but often faint tapping sound suddenly appears in phase with each cardiac contraction. The sound is produced by the transient and turbulent blood flowing through the brachial artery during the peak of each systole.

As the pressure in the cuff is reduced further, the sound becomes louder, but when the artery is no longer constricted and the blood flows freely, the sounds become muffled and then can no longer be heard. The diastolic pressure is usually defined as the cuff pressure at which the sounds disappear.

The stethoscope's diaphragm should be placed lightly over the point of maximal pulsation of the brachial artery. The diaphragm is designed to amplify low-frequency sounds such as Korotkoff's sounds. Excessive pressure on the stethoscope's diaphragm may partially occlude the brachial artery and delay the occurrence of Korotkoff's sounds. For this reason the diaphragm should not be tucked under the edge of the cuff.

Patients with lines or shunts for dialysis in their arms or superior vena cava obstruction may be unsuitable for upper arm measurements of blood pressure; however, the blood pressure may be measured in the leg or forearm.

Patients who have had breast surgery with lymph node dissections and/or radiotherapy, or have lymphoedema should not have their blood pressure recorded on the affected side. This is due to the

increased frailty of tissue in the area and the risk of developing lymphoedema. Patients should be told to only have their blood pressure taken on the unaffected arm or legs.

Procedure in taking a manual blood pressure

Allow the patient to rest before taking a blood pressure; blood pressure is normally taken in a sitting position.

Remove any tight or restrictive clothing and ensure the upper arm is supported and positioned at heart level.

Use a cuff that covers 80% of the upper arm circumference and apply snugly around the arm, with the centre of the bladder over the brachial artery.

Inflate the cuff until the radial pulse can no longer be felt for an estimation of systolic blood pressure. Deflate the cuff completely and wait 15-30 seconds before continuing.

Inflate the cuff 30 mmHg higher than the estimated systolic blood pressure.

Place the diaphragm of the stethoscope over the brachial artery pulse point. Do not tuck the diaphragm under the edge of the cuff.

Deflate the cuff at 2 mmHg per second and listen for the first sound (systolic) and the last (diastolic).

Record readings on NEWS chart.

Assessment of AVPU (Alert, Voice, Pain, Unresponsive)

Conscious level should be initially assessed on all patients using the AVPU scale.

AVPU scale		
A	Alert	<i>Awake</i>
V	Responds to voice	<i>Lethargy</i>
P	Responds to pain	<i>Stupor</i>
U	Unresponsive	<i>Coma</i>

- Deteriorations in conscious level can be caused by many factors, and a more comprehensive physical assessment should be undertaken by a competent practitioner.
- A response only to pain or unresponsive, correlates to a GCS of ≤ 8 and should be treated as a medical emergency.
- Any deterioration in conscious level should be followed by a more in depth assessment of GCS.
- Patients having seizures are at significant risk and should have a senior medical review.

- A blood glucose should be taken and recorded in all patients with a reduced conscious level.

Measurement of Temperature

Monitoring the patient's temperature is an important aspect of nursing assessment. Temperature needs to be measured accurately and monitored effectively to enable temperature changes to be detected quickly and any necessary intervention commenced. Measurement of body temperature is carried out for two reasons:

- To determine the patient's temperature on admission as a baseline for comparison with future measurements.
- To monitor fluctuations in temperature.

Pyrexia is defined as a significant rise in body temperature. Sudden temperature elevations usually indicate infection.

Temperature recording sites

Oral

To most accurately measure the temperature orally, the thermometer is placed in the posterior sublingual pocket of tissue at the base of the tongue. This area is in close proximity to the thermoreceptors which respond rapidly to changes in the core temperature, hence changes in core temperatures are reflected quickly here.

Oral temperatures are affected by the temperatures of ingested foods and fluids and by the muscular activity of chewing.

It is important that the thermometer is placed in the sublingual pocket and not in the area under the front of the tongue as there may be a temperature difference of up to 1.7°C between these areas. This temperature difference is due to the sublingual pockets being more protected from the air currents which cool the frontal areas.

Axilla

The axilla is considered less desirable than the other sites because of the difficulty to achieve accurate and reliable readings as it is not close to major vessels, and skin surface temperatures vary more with changes in temperature of the environment.

To take an axillary temperature reading the thermometer should be placed in the centre of the armpit, with the patient's arm firmly against the side of the chest.

Whichever route is used for temperature measurement, it is important that this is then used consistently, as switching between sites can produce a record that is misleading or difficult to interpret.

All observations must be recorded on to a NEWS chart as per Trust policy, any patient scoring 5 or more or 3 in one parameter requires a sepsis screen. All patients that score 5 or more or high risk patients MUST have their fluid balance charted.

Please ensure that all scoring is related to the graded response on the front of the NEWS chart.

Please find below the observations assessment OSCE form, if required please undertaken sufficient practice in your clinical area prior to your assessment. All trained clinical staff require this assessment as core module 3 – it is an optional requirement for untrained clinical staff.

United Lincolnshire Hospitals Trust

Clinical Observational Assessment

Candidate's name - Ward/Department

Date of assessment- Hospital-

Criteria	Achieved	Not Achieved
Introduction and Preparation		
Greets patient and introduces self		
Positions self appropriately (e.g. eye level, proximity)		
Briefly explains to patient what has been asked to do		
Explains that observations are required as part of a reassessment and		
Asks patient which arm is preferred for the BP / Pulse		

Blood Pressure		
Exposes arm – removes restrictive top garment		
Supports arm if required		
Applies correct cuff (from a choice of 3) appropriately		
Identifies brachial pulse on patient –		
Estimates systolic pressure by palpating radial pulse and inflating cuff till		
States estimated systolic pressure		
Waits 15 – 30 seconds		
Places stethoscope diaphragm/bell on brachial artery		
Inflates cuff to 30mmHg above estimated systolic pressure		
Deflates cuff at rate of approx. 2mmHg / second		
States blood pressure reading		
Removes cuff - cleans stethoscope diaphragm/bell and ear pieces		
* Documents correct results accurately		
		Pass / Fail

Pulse		
Supports arm		
Locates radial pulse		
Counts pulse for 60 seconds		
States pulse rate		
Describes rhythm (regular or irregular)		
* Documents correct results accurately		
Respirations		
With finger still on the radial pulse, counts respirations for 60 seconds		
States respiratory rate		
Describes rhythm and depth of respirations		
* Documents correct results accurately		
		Pass / Fail

Oral Temperature		
Gains consent from patient		
Places cover over probe		
Places probe either under the tongue or axilla		
Inserts probe for given time		
Shows reading to examiner		
Disposes of sheath in clinical waste bag		
* Documents correct results accurately		
Pulse Oximetry		
Can give two indications for use of pulse oximetry		
Can indicate limitations of pulse oximetry and oxygen saturation		
Applies correct probe to patient		
Takes reading and documents correctly		
Documents how much oxygen the patient is receiving		

General		
1. Correctly adds up the NEW's score		
2. Identifies if the patient requires an escalation at scores of 3, 5, 7"		
3. Washes hands and cleans equipment		
4.		

OVERALL RESULT	PASS	FAIL
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Assessor: (print)
(signature)

Assessor comments:

This form will be kept within the ward / department as a record of completion.