NHS
The Leeds Teaching Hospitals
NHS Trust

Equipment and interventions

Information for visitors

Adult Critical Care

Introduction

This leaflet aims to help you understand the equipment and interventions used within Adult Critical Care.

Including the following:

- Breathing (page 3)
- Suction (page 7)
- Tubes & Lines and the connecting machines (page 8)
- Monitoring (page 14)
- Assessment (page 16)
- Pain and Agitation (page 17)
- Scans and Tests (page 19)

Breathing

Endotracheal Tube (ETT)

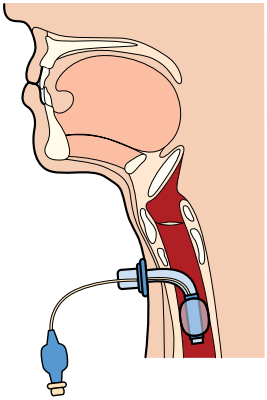
An endotracheal tube is a plastic tube that is inserted in to the patients windpipe through their mouth or nose to keep their airway open, helping with their breathing and delivering oxygen. The ETT is then connected to the Ventilator.

Intubation & Extubation

Intubation (insertion of the breathing tube) is required when patients cannot breathe properly for themselves. This may be due to sedation, a head injury or problems with their lungs or other organs. Patients will only be extubated (removal of the tube) when they are stable and alert enough to maintain their own airway. Sometimes, if the patient struggles to manage without the breathing tube, we may have to put the tube back in. This is not uncommon in patients with head injuries.

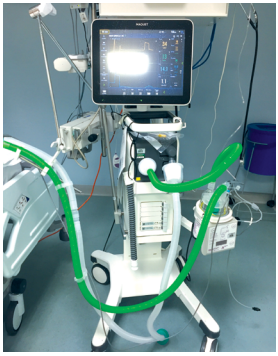
Tracheostomy

A tracheostomy is another type of breathing tube that is directly inserted in to the windpipe. Tracheostomies can be left in for longer periods of time than ETT's and are much more comfortable for patients allowing us to stop sedation and wean them from the ventilator.



Ventilator

A ventilator is a machine designed to breathe for patients when they are unable to breathe for themselves, or to provide support with a patients breathing when they are struggling to breathe adequately for themselves.



CPAP Hood

A CPAP Hood is a large plastic helmet that patients may need to wear to help with their breathing. The hood looks like an astronaut's helmet. It works by constantly applying mild air pressure keeping the airways open, improving gas exchange in the lungs. The Hood is then connected to a machine called an Aquavent, which is a type of breathing machine.

CPAP/ BIPAP Mask

A CPAP/BIPAP mask is a large tight mask that patients may need to wear to help improve their breathing. It works like the CPAP Hood, delivering constant pressure in order to keep the airways open, improving gas exchange. The mask is then connected to a breathing machine called an Aquavent or a Phillips V60, depending upon what type of respiratory support the patient requires.

Face Mask

A face mask is used to give patients oxygen, the mask sits over the patients nose and mouth.

Nasal Cannula

A nasal cannula is a device used to give patients oxygen. A small plastic tube sits in each nostril, which is connected to a larger tube that hooks around the patients ears to hold the nasal cannula in place.

Suction

Suction

Suction is used to remove any excess secretions or unwanted fluids, usually from patients airways. Suction tubing may be connected to the ETT / Tracheostomy in order to provide deep suctioning directly in to the patients airway, or may be connected to a device called a yanker situated at the patient's bedside, used to suction in to a patient's mouth.

Tubes & Lines and the Connecting Machines

Peripheral Venous Cannula (PVC)

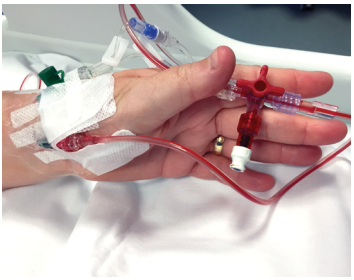
A PVC is a small plastic tube that is inserted in to the patients vein, usually in the hands or arms in order to administer intravenous fluids or medications.

Central Venous Catheter (CVC)

A CVC, also known as a central line is a tube which is inserted in to a large vein that sits in the chest near the heart. It allows us to administer fluids and medications that cannot be given by PVC's. It also allows us to monitor central venous pressure, which is a pressure related to the blood flow in to the heart. CVC's allow us to take blood samples easily without having to use needles.

Arterial Line

An arterial line is a small plastic tube that sits inside the artery, commonly inserted in to the radial artery in the wrist. It constantly monitors blood pressure and allows us to take small blood samples called ABG's (arterial blood gas) which can analyse a range values within the blood such as: Oxygen, carbon dioxide, sodium, potassium and glucose.

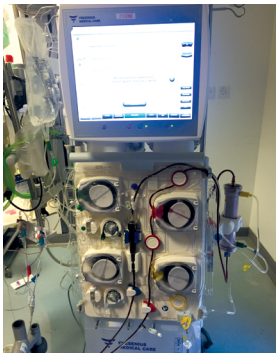


VasCath

A vascath is a specialised catheter that is used to deliver CVVHD (dialysis).

CVVHD (dialysis/haemofiltration)

This procedure is used to remove waste products and excess fluid from the blood stream when the kidneys stop working.



PA (Pulmonary Artery) Catheter

A PA catheter is a thin tube that sits in the heart and measures heart function.

Balloon Pump

A balloon pump helps the heart pump more blood. It is required if the heart is unable to pump enough blood around the body. A long thin balloon is attached to a catheter that goes from the groin into the heart. This is then attached to a computer console.

NG Tube

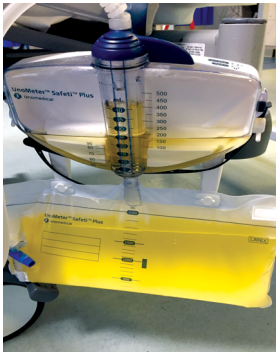
A nasogastric tube also known as a feeding tube, is a long plastic tube that is inserted in to the patients nostril. It passes past the throat and in to the stomach allowing us to administer medications and bags of feed which are filled with calories and nutrients. To ensure that patients are absorbing nutrients from their feed, we aspirate the NGT every few hours, which means attaching a syringe and drawing back on the tube, measuring the amount of stomach contents received.

OG Tube

An orogastric tube is very similar to an NGT, however it is inserted into the patient's mouth instead of their nose, and down into their stomach.

Urinary Catheter

A catheter is a silicone tube that is inserted through the patient's urethra in to the bladder. It has a small balloon attached to the end of the tube that is filled with water once that catheter has been inserted to hold it in place. A catheter constantly drains urine from the bladder in to a bag, allowing us to accurately measure the amount of urine a patient is producing.

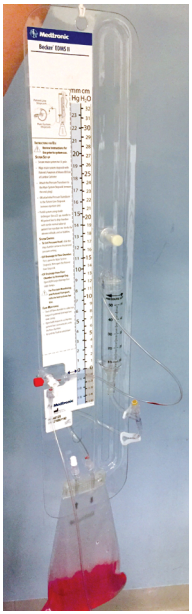


ICP Bolt

Intracranial pressure (ICP) is the pressure located within the brain. Sometimes with brain injuries this pressure can be elevated. In order to measure a patients intracranial pressure we can insert an ICP Bolt which sits inside the subdural space located within the brain. Monitoring ICP allows us to determine if the pressure is too high within the brain, if it is abnormally high then the patient may require specific medicine or even surgery called a craniectomy to alleviate the pressure.

External Ventricular Drain (EVD)

An EVD is inserted in to the fluid filled spaces within the middle of the brain called the ventricles. An EVD is inserted in patients with hydrocephalus, in order to drain off cerebrospinal fluid (CSF) when patients are unable to regulate it properly themselves. It is important to drain off CSF when it is building up as it can cause an increase in ICP which in turn would cause the patient to have a lower conscious level. Often an EVD is inserted acutely (in an emergency).



Lumbar Drain

A lumbar drain is very similar to an EVD, It has the same purpose, but is inserted in to the lower spine rather than the brain, and is often a planned procedure rather than an emergency.

Flowtrons

Flowtrons are stockings that are worn around the calf's and are connected to a pump, they intermittently inflate and deflate, massaging blood flow back up the legs towards the heart, reducing the risk of blood clots developing called deep vein thrombosis (DVT).

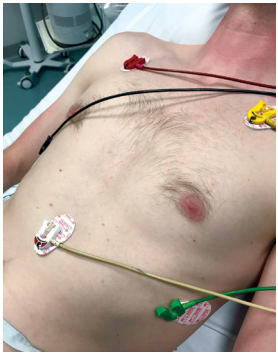
Anti-embolic Stockings (AES)

AES, also known as compression / flight stockings are worn in order to increase blood flow back up the legs towards the heart, reducing the risk of DVTs.

Monitoring

ECG Wires

An ECG monitors the rhythm and the rate of the heart. The ECG wires attach to stickers that are placed on the patients chest which provide a trace on our monitor screens. We can observe if there any abnormalities with rhythm or rate on a basic level, which can then be investigated further if required.

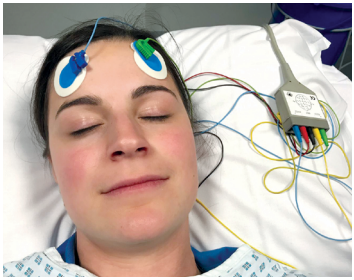


SPO2 Probe

An SPO2 Probe, also known as an oxygen saturation probe is commonly placed on the patients finger or ear, it reads the patients oxygen levels within the blood and provides us with a trace and percentage on our monitor screen.

CSA

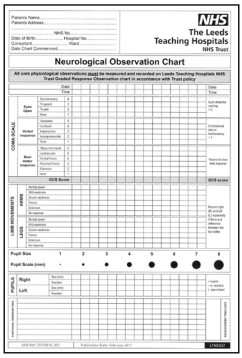
When patients are sedated on intensive care, we apply a cranial spectrum activity (CSA) monitor. A number of stickers are applied to the patients forehead and behind their ears, wires are then connected from the stickers to the screen at the bed space, providing us with a basic trace of the patient's brain activity, allowing us to monitor for any seizures.



Assessment

GCS

The glasgow coma scale (GCS) is an assessment that we use to assess a patients conscious level. It is scored out of 15, 15 being the highest score a patient can achieve, meaning that they are orientated to time and place and are able to follow instructions appropriately. 3 is the lowest score a patient can achieve, meaning that their conscious level is at the lowest possible level, the patient is unable to open their eyes, communicate or respond to any physical stimuli.



Patients Name.....
Patients Address.....
NHS No.....
Date of Birth..... Hospital No.....
Consultant..... Ward.....
Date Chart Commenced.....

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Neurological Observation Chart

All core physiological observations must be measured and recorded on Leeds Teaching Hospitals NHS Trust Graded Response Observation chart in accordance with Trust policy

Date
Time

COMA SCALE

Eyes Open
Spontaneously 4
To speech 3
To pain 2
None 1

Verbal response
Orientated 5
Confused 4
Inappropriate 3
Incomprehensible 2
None 1

Best motor response
Obeys commands 6
Localises pain 5
Normal flexion 4
Abnormal flexion 3
Extension 2
None 1

GCS Score

GCS score

LIMB MOVEMENTS

Normal power
Mild weakness
Severe weakness
Flexion
Extension
No response
Mild weakness
Severe weakness
Flexion
Extension
No response

Record right (R) and left (L) movements. Note any difference between the two sides.

Pupil Size 1 2 3 4 5 6 7 8

Pupil Scale (mm)

PUPILS

Right
Left

Reactive
Sluggish
Reactive
Fixed

Initially no reaction + eye closed

Additional observations

Additional observations

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Pain and Agitation

Pain & Agitation

It is common for patients to experience pain due to injuries sustained. We frequently assess pain by looking at the patient's physical condition, their observations and by communicating with them. When patients are sedated we administer a continuous infusion of a strong painkiller. When patients aren't sedated we assess their pain and administer different painkillers according to their level of pain.

Both pain and head injuries can cause agitation. There are many forms of agitation, for example: attempting to climb out of bed or pulling out invasive devices and monitoring equipment. It is essential to maintain patient safety, in some cases we may apply protective restraint in the form of 'boxing gloves' to prevent patients pulling out invasive devices and causing themselves harm. If agitation is severe, we may have to administer medications to relax the patient.

Collar

Patients may need to wear a collar when there is suspected or confirmed spinal cord injury to the C-Spine (Neck). The length of time the patient needs to wear the collar depends on the injury sustained. The collar is worn around the patient's neck, it requires a tight fit to ensure the patient's neck is protected and secure, the collar has a soft lining to protect the patient's skin.

When patients have a C-Spine injury they need to be log rolled, which means we have to position the patients in a certain way to protect their spine, keeping it in a neutral alignment.

PCAS

PCAS is short for patient controlled analgesia. A PCAS pump is used if the patient is in a lot of pain, commonly used following surgery. The syringe is filled with pain relief, usually morphine; which is then attached to a PVC, the patient is given a button to press which delivers a small intravenous dose of morphine every five minutes, this is regulated and a set dose is administered each time.

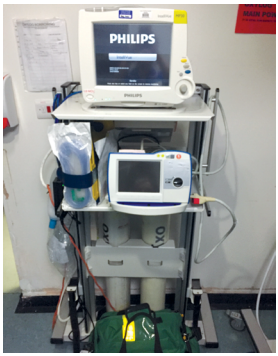
Epidural

An epidural is a type of painkiller which is delivered into the epidural (spinal) space in order to numb parts of the body from pain.

Scans and Tests

Stack

The stack is a large stand which we attach to the bottom of the patients bed when they are leaving the ward for a procedure. The stack holds all of our portable monitoring equipment which is connected to a screen just like the ones at the bed space. The stack also has a portable ventilator for our intensive care patients.



CT Scan

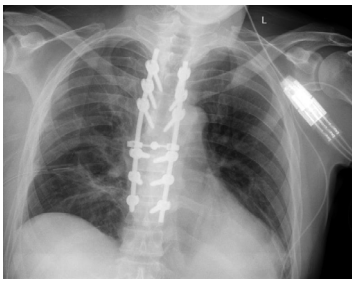
A CT Scan is also known as a CAT Scan or computed tomography. This scan provides detailed imaging of the body's structures such as organs, blood vessels and bones. The scanner takes multiple X-rays from different angles, the computer then puts these images together to make a 3D image.

MRI Scan

A magnetic resonance imaging (MRI) scan is similar to a CT scan, however it takes longer to perform as it is more detailed. Strong magnetic fields and radio waves are used to create detailed images of the structures within the body. MRI scans are noisy due to the sound of the magnets; therefore patients can wear earphones & listen to music whilst having their scan.

X-ray

X-rays are a type of radiation that can pass through the body. X-rays are mainly used to look at bones and joints, they are sometimes used to look at problems affecting soft tissues such as organs. CT & MRI scans provide much more detailed images of these structures; X-rays find it more difficult to pass through denser parts of the body, which is why bones show as white areas on the image and organs such as the lungs show as darker areas.

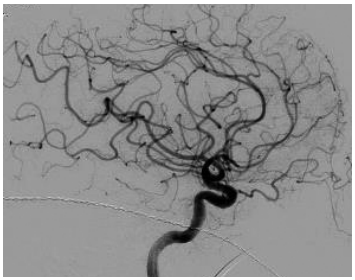


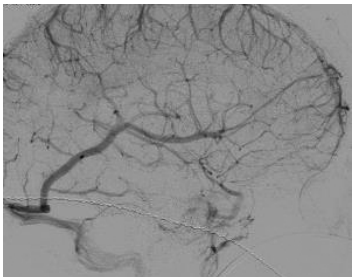
USS

An ultrasound scan uses high frequency sound waves to capture live images of structures inside the body. Commonly, USS are performed during pregnancy to monitor the baby, but can also be conducted to look at the abdomen or kidneys, like shown in the picture.

Angio

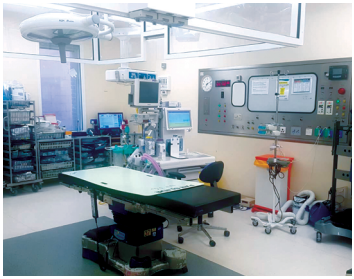
Cerebral Angiograms use X-rays and a contrast dye to analyse the blood vessels in the brain, diagnosing any abnormalities or blockages inside the blood vessels. A thin plastic catheter is inserted in to an artery, usually in the groin and is fed up in to the brain where the dye is released, multiple X-rays & CT scan is conducted, providing images of the blood vessels.





Theatre

Patients go to theatre for a range of operations and procedures, depending upon the injuries that they have sustained. The length of operations varies depending upon each individual patients injuries. On ICU, patients will often come straight back to the unit after their surgery. When patients are returning to HDU they will go to the recovery room until they are alert enough and stable enough to be cared for on HDU. The length of time patients spend in recovery varies depending upon each individual patient and the surgery that they have had.



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Comments

Comments

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Your views matter

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