

Welcome to ITU & HDU

Introduction

Welcome to the Critical Care Department at Chesterfield Royal Hospital. We are delighted to have you as part of our team during your placement. We hope you gain some useful skills and experiences whilst on your placement with us. You will be allocated an assessor and usually two supervisors for your placement and be sent this information via email prior to starting with us.

If you require any extra support or guidance please contact the LEM's for this area:

Learning Environment Managers



Laura Early

Nathalie Harlidge

Elizabeth Sheridan

Senior Matron

Amanda Marples

Matrons

Natalie Cooper-Hatch

Maxine Hardy

During your time in the ITU and HDU, you are considered supernumerary, meaning you are not responsible for patient care. Instead, you will work under the guidance and supervision of qualified staff, allowing you to learn and practice without the pressures of a mandatory workload.

Learning Goals

By the end of your placement, our aim is for you to gain valuable insights into the functioning of intensive and high dependency care and the crucial role they play in caring for critically ill patients.

Access and Security

The Intensive Therapy Unit and High Dependency Unit are well-signposted from the hospital's main entrance. Due to the high-security nature of these units, their main doors are kept locked. When you arrive, please ring the bell and have your identification ready. Changing rooms are available on both units and on HDU there are some lockers assigned for temporary use where you can use for your shift and return the key at the end. Please ask the nurse in charge if you require any help with locating these.

Car Parking

The hospital car parks are managed by Nexus, an outside company, and are equipped with ANPR (Automatic Number Plate Recognition) technology.

Students attending placements can park for free in staff-only car parks but must register their vehicles beforehand.

Failure to register a vehicle parked in the staff car park will result in a £30 fine.

How to register:

- 1) Using a desktop device only, go to www.nexusplatform.co.uk.
- 2) Click register and complete your details
- 3) You will need to use your university email address.
- 4) You will need to choose the option for non-employee stating that you are a student and the university you are attending.
- 5) You may be asked to enter an 'approver' email address which is: crhft.carparks@nhs.net.
- 6) When you have registered and approved you will need to check your emails for approval and complete the apply for permit information.
- 7) On the permit it will ask for an ESR number please put 00000000.
- 8) Then wait for your permit to be approved.

Philosophy of Care

Patient-Centred Care

Our primary aim is to create a welcoming environment for patients and their families. We place the patient's interests at the forefront of our care philosophy.

Respecting Individuality

We recognize each patient as a unique individual, respecting their perspectives, opinions, and feelings. Patient privacy and autonomy are highly valued.

Comprehensive Care

We consider the physical, psychological, social, cultural, and spiritual needs of patients and their families. Involving patients in decision-making and providing support to their families are integral to our approach.

High Standards of Care

We are committed to providing the highest standards of care by involving patients and their families in care planning, assembling skilled care teams, and ensuring transparency and honesty in all aspects of care.

Staff Well-Being

We prioritize the well-being of our staff, aiming to create a positive working and learning environment where everyone feels valued and respected.

Off Duty Schedule:

You are expected to be on time for your shifts and do not expect to leave early. It is advisable to arrive 15 minutes early to find out which unit you will be working on that day, this information is usually on HDU so please report here on arrival. There is a folder called student off duty on the staff base of ITU where your rota will be kept, you must not change shifts without it being signed off by an LEM.

Important note: To keep track of student hours there is a folder on each unit which you are required to ask the nurse you have been working with to sign at the end of the shift.

Shift Times

Mornings: 07:15 - 14:45
Afternoons: 12:15 - 19:45
Long Day: 07:15 – 19:45
Nights: 19:15 – 07:45

Contact us with any questions at:

ITU Direct Line: 01246 512287 / 512282
HDU Direct Line: 01246 512668 / 513237

Sickness

Please inform the nurse in charge or assessor if you are unable to attend placement and when you'll be "fit". It is also your responsibility to inform the University of any Sickness, as per University policy.

ITU and HDU Information

Level 2 Patient (High Dependency or Intermediate Care): There are 8 beds on HDU.



Level 2 patients are moderately ill or unstable but do not require the highest level of intensive care. They may require frequent monitoring of vital signs, oxygen levels, and organ function. Level 2 patients may need specialized interventions, such as non-invasive ventilation, close observation, or moderate doses of vasoactive medications (drugs that affect blood pressure). They often need close nursing care and observation with a 1:2 nurse-patient ratio.

While they are not critically unstable, level 2 patients are not fully self-sufficient in their care.

Level 3 Patient (Critical Care or Intensive Care): There are 7 beds on ITU.



Level 3 patients are critically ill and often require life-saving interventions and constant monitoring. They need continuous monitoring of vital signs, including invasive monitoring of blood pressure and other parameters. Level 3 patients typically require advanced interventions like mechanical ventilation, continuous renal replacement therapy (CRRT), and high doses of vasoactive medications.

They demand intensive nursing care, often with a 1:1 nurse-to-patient ratio. Level 3 patients are usually unable to care for themselves and rely entirely on medical and nursing support for survival.

Additional Learning

Emergency Situations



On critical care we are primarily managed by a team of anaesthetists so in an emergency we would dial 2222 and ask for anaesthetics to (insert name of relevant unit either HDU/ITU).

In an emergency we strongly encourage you to observe and be involved if you feel competent to do so. It can be a valuable learning experience, please do ask for a debrief afterwards though.

There is an emergency buzzer above each bedspace which you can pull in an emergency, please do not hesitate to ask for help whilst on critical care, we would rather you ask for help and find out its not needed than have no asked for help and patient safety be at risk.



To bleep we dial 8 (then the bleep number) followed by the extension of the phone you are calling from.

If someone asks you to fast bleep anaesthetist you would dial 2222 and say 'fast bleep anaesthetic registrar/consultant'.

Common Causes of Patient Admissions to Critical Care

Acute Myocardial Infarction (AMI): also known as a heart attack. An AMI can occur when the blood flow through one or more of the coronary arteries to the heart is reduced. This reduces the vital organs' continuous oxygen supply and results in an area of the heart being permanently damaged.

Acute Kidney Injury (AKI): is the sudden shut down of both kidneys. The kidneys are no longer able to make urine, rid the body of wastes, or keep a healthy balance of salts such as sodium and potassium.

Adult Respiratory Distress Syndrome (ARDS): a form of acute respiratory failure that occurs after a precipitating event such as trauma, aspiration, or inhalation of a toxic substance. It is particularly associated with septic shock.

Asthma: an acute severe asthma attack is an emergency situation requiring prompt assessment and management.

Cardiac Arrest: occurs when the heart suddenly stops pumping. This may be the result of a number of conditions, but is most commonly associated with a myocardial infarction.

Chronic Obstructive Pulmonary Disease (COPD): is a chronic debilitating disease. Patients include those with emphysema and chronic bronchitis, both of which can result from long term smoking. In this disease, the lungs lose their capacity to absorb adequate oxygen and/or excrete adequate amounts of carbon dioxide from the body.

Diabetic Ketoacidosis (DKA): is a medical emergency. It is a serious condition caused by either not enough, or a lack of insulin. Diabetic Ketoacidosis more commonly affects type 1 diabetics and may be the first sign that a person has developed diabetes.

Hyperosmolar, Hyperglycaemic State in Diabetes (HHS): this diabetic emergency is similar to DKA, however there are some notable differences.

Hypoglycaemic coma: occurs when the blood sugar level is extremely low and there is not enough sugar or glucose for normal brain metabolism.

Drug Overdose: is defined as taking an excessive amount of a drug or drugs which may lead to toxic effects on the body.

Guillain-Barre Syndrome (GBS): this is a rare illness that affects the peripheral nervous system. Symptoms include numbness and weakness in the limbs. It usually develops 10-20 days after a respiratory or gastrointestinal infection that provokes an allergic response in the peripheral nerves.

Heart Failure: occurs when the heart fails in its ability to work as a functional pump to adequately pump blood around the body.

Liver Failure: this can be due to a number of reasons. Hepatitis A, B or C, alcoholism, autoimmune diseases, metabolic disorders, toxins, drugs, fatty liver disease and biliary obstructions. If the disease is longstanding, liver tissue can sometimes be gradually replaced by extensive scar tissue, leaving small areas of liver cells (nodules) which regenerate and attempt to carry out the normal liver functions. This is called cirrhosis of the liver.

Oesophageal Varices: resemble varicose veins, but appear inside the oesophagus and occasionally inside the stomach. A 'varix' is part of a vein that has become enlarged and has thin walls. These may rupture and bleed, resulting in hematemesis.

Pancreatitis: acute pancreatitis comes in mild and severe forms. In severe disease, the effects of the inflammation spreads to other organs and the patient will require intensive medical therapy. The main causes of pancreatitis are gallstones and excess alcohol consumption.

Pleural Effusion: occurs when there is a build-up of fluid in the pleural space. This can occur for a number of reasons including a Hydrothorax – a collection of serous or protein fluid (e.g. in pancreatitis or heart failure).

Pneumonia: is a serious respiratory disorder and occurs when an organism, most commonly a bacteria, causes an overwhelming infection in the lungs leading to inflammation and sputum production.

Shock

Hypovolemic Shock: caused by loss of large amounts of blood or body fluids. It occurs in serious accidents, with major surgery, in burns and with medical conditions where there is severe vomiting and diarrhoea. The patient's heart will pump faster to try to compensate for the decreased blood volume. This is seen as a raised pulse.

Cardiogenic Shock: this is due to heart muscle damage, and can occur as a result of an MI (Myocardial Infarction) or when the heart muscle has a severe infection, for example endocarditis. The damaged heart muscle often results in abnormal heart rates ie tachy or bradycardia. Inotropic drug therapy may be needed to support the heart to pump with more force.

Septic Shock: caused by severe infection. Septic shock is triggered by the body's reaction to the toxins (poison) released by the bacteria into the blood. In severe septic shock, blood vessels may constrict or dilate. Drugs (vasoconstrictors) can be used in critical care to narrow the blood vessels and improve blood pressure. Vasodilators are used if needed to widen the blood vessels, lowering the blood pressure.

Anaphylactic Shock: caused by an allergic reaction. In a severe allergic reaction, the small blood vessels (capillaries) leak fluid and the blood vessels dilate. Usual treatment for this type of shock includes adrenaline.

Neurogenic Shock: caused by damage to the nervous system. The autonomic nervous system keeps the muscles of blood vessels slightly contracted. When a part of this system is damaged, the blood vessels lose the ability to constrict and instead they dilate, causing shock.

All of the above types of shock require admission to critical care.

Cerebrovascular Accident (CVA): is caused by a disruption to the circulation to the brain. When the circulation to a part of the brain stops, the brain tissue is permanently damaged, and the brain cells die. If the blood supply has been blocked by a blood clot in a blood vessel it is called an Ischaemic stroke. When there has been bleeding from an artery or vein, it is called a Haemorrhagic stroke.

Surgical Procedures: after significant elective or emergency surgical procedures which require close monitoring such as gastrointestinal or colorectal surgery for peritonitis, inflammatory bowel disease.

Common Drugs Used in Critical Care

Adrenaline: several uses, e.g. Anaphylaxis. Commonly used in critical care as a vasoconstrictor to treat hypotension and give circulatory support. Can be administered as a bolus or more long term via a continued infusion via a central line.

Alfentanil: used for analgesia and suppresses respiratory activity in patients receiving invasive ventilation.

Clonidine: used as a sedative agent to wean patients off deeper sedating agents.

Dexmedetomidine: used as a sedative agent to wean patients off deeper sedating agents.

Insulin: hyperglycaemia occurs in most critically ill patients. When admitted to ITU, all patients are commenced on infusions of 20% Glucose and intensive insulin regime until alternative nutrition is established.

Metaraminol: a vasoconstrictor used to treat hypotension which can be given via a peripheral vein.

Noradrenaline: a vasoconstrictor used to treat hypotension. Administered by continuous intravenous infusion via a central line.

Omeprazole: A proton pump inhibitor used as a prophylaxis for gastro-oesophageal reflux.

Phenylephrine: a vasoconstrictor used to treat hypotension. Can be given via a peripheral vein.

Potassium: electrolyte used in the correction of hypokalaemia (low potassium). Can either be taken orally, or more commonly in critical care, via a continuous intravenous infusion via a central line. See potassium protocol & policy.

Propofol: sedation used in ITU given continuously via intravenous infusion.

Remifentanil: sedation. Has a much shorter duration onset than Alfentanil, often used overnight when patients not quite ready for extubation.

Tinzaparin: anticoagulant used for the prevention of venous thromboembolism.

Vasopressin: is a drug which has many uses. Its use in critical care is in support of other vasoconstrictors, usually Noradrenaline.

Antibiotics: all antibiotics are commenced and discontinued on advice of the consultant microbiologist who conducts a ward round daily.

Patient Procedures/Treatment

Bronchoscopy: is a medical procedure which allows a long thin tube to be passed into the airway – this is called the bronchoscope. And allows the structures in the airway such as the larynx, vocal chords and trachea to be visualised.

ECG (Electrocardiograph): this is a recording of the electrical activity of the heart. The rate and regularity of the heartbeat can be examined. It also enables heart muscle problems such as ischaemia to be detected.

ECHO (Echocardiography): this uses sound waves to create an image of the beating heart and is essentially an ultrasound of the heart. This allows doctors to view the hearts action in real time which enables diagnosis of a number of serious problems.

Extubation: this is the removal of the endotracheal tube, discontinuation of mechanical ventilation.

Intubation: the insertion of an endotracheal tube into the trachea via the mouth.

Suctioning an artificial airway: this involves passing a long thin tube (suction catheter) through the airway to remove secretions that have collected. This ensures the patient has a clear airway for their breathing and that the tube doesn't occlude.

Common Blood Tests: performed on admission and at least daily

Full Blood Count (FBC) – monitors Hb, platelet count and white blood cell count

Urea and Electrolytes (U&E) – monitors levels of urea, creatinine and salts such as sodium and potassium.

Liver Function Tests (LFT)

Coagulation Screen – monitors levels of clotting factors in the blood

CRP – C reactive Protein, an inflammatory marker which can be used to assess infection

Arterial Blood Gas (ABG) – monitors blood oxygen saturation and enables ventilation changes to be made.

Critical Care Equipment Overview:

Patient Monitor: Monitors heart rate, blood pressure, oxygen levels, temperature, and respiratory rate, with options to include additional parameters.

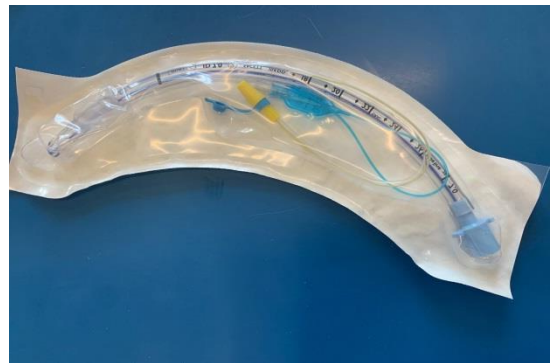
Ventilator: Assists or controls a patient's breathing using an endotracheal tube or tracheostomy.



Arterial Line: A thin catheter inserted into an artery for continuous blood pressure monitoring and frequent blood sampling.

Central Line: An intravenous line placed in a larger vein (jugular, femoral, or subclavian) for administering fluids and medications.

Endotracheal Tube (ETT): A plastic tube inserted into the trachea during mechanical ventilation to aid breathing. This one shows the type we commonly use with a cuff inflation port and a subglottic suction port.



Indwelling Urinary Catheter: Measures urine output for accurate fluid balance assessment.

Nasogastric (NG) Tube: Flexible tube inserted through the nose into the stomach for drainage and medication/nutrition administration.

Renal Dialysis: Used to treat kidney failure by removing toxins and excess fluid. Continuous Venovenous Hemodiafiltration (CVVHDF) is a specific method used in the ICU.

Tracheostomy Tube: A tube placed directly into the trachea through a small hole in the neck, often used for weaning patients from ventilatory support.

Vas Cath: A specialized central line exclusively for dialysis, inserted into jugular, femoral, or subclavian veins.