The Faculty of Intensive Care Medicine™

ICM CURRICULUM: SUPPORTING EXCELLENCE for a CCT in Intensive Care Medicine

Handbook: Special Skills Year

VERSION 1.0
4 August 2021

Change log

This document outlines the Special Skills Year Module programme of the curriculum to be used by doctors completing postgraduate training in Intensive Care Medicine in the UK. It is accompanied by the *ICM Curriculum*: *Supporting Excellence* and the *Assessment Strategy for Intensive Care Medicine.*

This is Version 1.0. As the document is updated, version numbers will be changed, and content changes noted in the table below.

Version number	Date issued	Summary of changes

Contents

1. Introduction

Intensive Care Medicine has a history of practitioners from many different backgrounds bringing skills and competencies into the Intensive Care Unit – these skills are of direct patient benefit and contribute to the construction of a comprehensive team. The GMC's 'Good Medical Practice' requires doctors to commit to life-long learning in order to maintain and improve performance; the foundations for this set of attitudes and behaviours must be established during training through aspiration to excellence, manifest by the acquisition of special skills and interests.

As such, all doctors on the ICM training programme are expected to develop a 'Special Skill' that is directly relevant to ICM practice and of direct benefit to the service and patient care. An indicative 12 months of Stage 2 training can be used to develop this special area of expertise – this is the 'Special Skills Year' (SSY).

During these blocks, doctors in training must continue to develop their patient-orientated intensive care skills and they should continue with a substantial clinical workload. For those SSYs with the need to devote time to non-clinical activities (more detail is outlined in each Special Skills Module, the clinical workload will be at least 50% on a pro-rata basis for in and out-of-hours workload.

1.1 Choosing your SSY Module

The choice of Special Skills Year (SSY) Module should be guided by discussion with the Training Programme Director to reflect the career intentions of the ICM doctor in training and the identified need either locally or for the wider NHS of that module's skillset. For example, a doctor intending to practice in a more remote area may wish to develop greater Echocardiography expertise as these skills may be required more regularly in such an environment than in a large central hospital. Acquisition of this expertise must be as part of the FICM-approved, outcomes-based training programme. The ability to undertake a particular SSY module within training regions varies.

When you have decided which SSY Module you would like to do, you should discuss this with your RA and TPD to determine that it is deliverable by the planned seconded unit.

1.2 Local availability

The choice of Special Skills Year Modules open to doctors in ICM training will depend on the local capability to deliver those modules. For example, if a doctor has a keen interest in undertaking a SSY module in home ventilation or ECMO training, this will be dependent on their Deanery having the required facilities and educational capacity to offer that training module. If a doctor wishes to do an SSY module that is not available in their Deanery, the option of applying for an OOPT to another Deanery can be explored with the relevant local trainers and Post Graduate Deans, at their discretion.

1.3 Duration

It is expected that a Special Skills Year Module will normally consist of an indicative continuous 12 months of training. However, it is recognised that some modules may have unique requirements or provisions – these are detailed within the respective modules herein.

1.4 Dual CCT programmes and the Special Skills Year

For doctors undertaking Dual CCTs in ICM and another specialty it is expected that their Special Skills Year will be undertaken in the other specialty, as this is the area of special expertise that they are developing. For example, a doctor undertaking Dual CCTs in ICM and Anaesthetics would spend an indicative 12 months acquiring their remaining capabilities in Stage 2 of their Anaesthetics curriculum.

1.5 CoBaTrICE competency mapping

Each SSY module has an overarching aim with underlying capabilities that are examples of how achievement of the special skillset can be demonstrated. This is similar in structure to the Outcomes and Capabilities of the curriculum, but the SSY module is not an Outcome in itself, as the skillset offered by the different SSY modules varies. The learning objectives of the SSY module have been mapped, where appropriate, to the competencies described within the CoBaTrICE framework. In many cases, the learning objectives described in each module will be a development of existing competencies within the CoBaTrICE framework, allowing doctors on the ICM training programme to achieve at a greater depth and breadth

than would be afforded within other areas of the curriculum. This is in keeping with the spiral-learning model that is an inherent principle within the whole of the learning programme.

1.6 Assessment Tools Key

Each learning objective is mapped to the relevant assessment tools as follows:

Assessment	Abbreviation (where used)
Acute Care Assessment Tool for Intensive Care Medicine	ACAT
Case Based Discussion	CBD
Direct Observation of Procedural Skills	DOPS
Educational Supervisors Structured Report	ESSR
Examination	
Mini-Clinical Evaluation Exercise	Mini-CEX
Multi Source Feedback	MSF

1.6.1 Additional Assessments

The FICM accepts that some Special Skills Year Modules may not lend themselves easily to the use of Supervised Learning Events (SLEs), or will require the use of additional, specific assessments (for example a *viva voce* assessment for an academic dissertation or thesis). However, all special skills modules are expected to be mapped to SLEs where appropriate, and any additional requirements are clearly stated within each module.

1.7 Generic Professional Capabilities and Good Medical Practice

Each Special Skills Year module has been mapped to the GMC's Generic Professional Capabilities Framework that encompasses the values expected of all doctors including those contained within Good Medical Practice.

1.8 Capability Level Descriptors

ICM trainees and trainers need to ensure that training is both comprehensive and that progression of training is occurring at a satisfactory rate. The capability level to which a doctor in ICM training is expected to function by the end of the module is defined in each individual Special Skill Module's Learning Objective table.

1.9 Completion of SSY Module

Completion of a full SSY Module is denoted by an Educational Supervisor (ES) approving a Learning Outcome Completion (LOC) Form for the module in their Lifelong Learning Platform (LLP). ICM Trainees should initiate the LOC Form in the LLP and send it to their ES when they have obtained sufficient evidence against each of the respective modules learning objectives. Doctors following a single ICM CCT Programme must complete an SSY Module in order to progress to Stage 3 training.

1.10 Further Special Skills Year Modules

As the scope of practice of Intensive Care Medicine evolves, it may be the case that other Special Skills Year Modules will be added to reflect the needs of patients and the service. However, these modules must be prospectively approved by the FICM and GMC before being undertaken by any doctor in ICM training.

Submissions for additional Special Skills Modules must include details of:

- Overall aim of the module
- Educational objectives of the module
- Educational attachments and training scheme of the module
- Supervision requirements of the module and how they will be delivered
- How achievement of the aim of the module can be demonstrated, including mapping to the Generic Professional Capabilities Framework, Good Medical Practice and the CoBaTrICE competency framework (where appropriate)
- The level of capability to be achieved, as measured against the FICM capability level descriptors of the learning

objectives of the module.
- Suitable assessment methods for use within the module
- Detail on any other module specific assessments which may be required

The FICM would also expect the submission to be endorsed by the local ICM Regional Advisor and ICM Training Programme Director. Any submission made without the endorsement of the ICM RA and TPD will not be considered.

Prospective approval by the FICM and GMC is essential; any training undertaken without approval cannot count toward CCT and may result in an extension of overall training time.

2. Special Skills training in ICM Partner Specialties

2.1 ICM Partner Specialties

There are specific acute medical specialties where areas of competence overlap with those of Intensive Care Medicine. The specialties encompassed in this mapping are:

- Acute Internal Medicine
- Anaesthetics
- Emergency Medicine
- Renal Medicine
- Respiratory Medicine

2.2 Dual CCT Programmes

For doctors undertaking Dual CCT programmes in ICM and another specialty it is expected that their Special Skills Year will be undertaken in the other specialty, as this is the area of special expertise that they are developing (See section 1.4).

2.3 Single ICM CCT Programme

Doctors on a single ICM CCT training programme may develop their Special Skills in an ICM partner specialty if this meets the career intentions of the doctor as well as local training capacity and workforce requirements. As with all Special Skills Modules, this training will be dependent on their deanery/LETB having the required facilities and educational capacity to offer that training module. However, where possible doctors in ICM training should be supported in achieving their career development aims, and OOPTs may be considered as before (See 1.2 Local availability of Special Skills Modules).

The partner specialties all have GMC approved CCT curricula. ICM doctors in training should follow those curricula as appropriate to their level of prior training and experience in the respective specialty. For example, a doctor on a standalone ICM CCT programme, who entered ICM via Core Anaesthetic Training would be able to undertake Special Skills training in that specialty at the Anaesthetics Curriculum Stage 2 level; however if that doctor had entered ICM via Internal Medicine Training they would only have undertaken an indicative 12 months of Anaesthetics as part of their Stage 1 training; as such, if they wished to further develop their anaesthetic skills during their Special Skills Year they would only be able to work and train in Anaesthetics at Core level.

Supervision and assessment of these doctors in training would be carried out as established in the partner specialties. They would be required to demonstrate progression in the partner specialty as per that specialty's assessment system and include this evidence as part of their portfolio to be reviewed by their ICM Educational Supervisor before they can be signed off for Stage 2 training.

For reasons of space, the partner specialty curricula and their individual capabilities have not been reproduced within this guidance manual. In addition, the curricula are maintained by the respective Colleges; whilst the principle of ICM doctors in training following these curricula is maintained, it is not pragmatic to update this guidance document to match every individual change in each external curriculum.

3. Academic Research

3.1 Aim

Research training is an essential component in creating a high-quality specialist workforce for Intensive Care Medicine. The Health and Social Care Act (2012)[1] identifies research as a core responsibility of the NHS Academic activity within ICM can contribute to high quality recruitment to the specialty, enrich the professional lives of trained clinicians, and ensure continuous improvement of the care that we deliver.

Academic training in ICM falls into three broad categories: These categories of research training can be stratified by a rubric that has been used in the past to provide shorthand labels for each level: Research Aware – Research Ready – Research Active.

The **first category** of these is core academic training, which ensures that all doctors who achieve accreditation are Research Aware, and needs to be provided for all doctors in training, regardless of whether or not they elect to undertake a period of research. The provision of these basic research skills is identified in HiLLO 3, and a doctor in ICM training should achieve capability level 2 (at least) in that HiLLO before commencing the Special Skills Module - the purpose of a SSY Module in research is to provide research training that is more advanced.

The **second category** is access to a formal period of training which ensures that a newly appointed consultant is Research Ready. This training will often lead to a master's level qualification, which provides the interface between core academic training and formal research training. Progress in clinical medicine depends on research and the translation of research findings into effective changes in the way clinical care and treatment is delivered. Until recently, there was a widening division between research, as increasingly performed by professional researchers within university institutions, and the delivery of clinical care within the National Health Service. The detrimental effect of these changes has been recognised at a national level and one of the aims of the National Institute of Health Research (NIHR) has been to promote clinical research within the framework of the National Health Service. This initiative has led to real changes in the way clinical research is conducted and delivered within our hospitals.

The formation of Comprehensive Local Research Network (CLRN) led local research networks, with dedicated funding, has increased both the quantity and quality of clinical trial research that is now being undertaken in critical care. Complementing this approach has been significant work conducted by the Intensive Care Society via its Foundation and the Faculty of Intensive Care Medicine to promote clinical research in critical care. As a result, there are a significant number of randomised controlled trials being conducted in the United Kingdom in critical care units.

A Special Skills Module in Research represents one vehicle through which training programmes can provide access to this second level of research training. Such a module aims to equip individuals with the competencies to deliver multicentre clinical research within their critical care units following appointment as NHS consultants, and also initiate local research, if individual aspirations and local resources support this. The broad objectives of the module are to allow doctors to gain an understanding of research within the context of the National Health Service, to gain insight into clinical trial design and management, to understand the somewhat complex regulatory environment in which research is conducted and to enable them to undertake CLRN portfolio research within their future units.

Finally, the SSY Module also needs to provide doctors with an opportunity to enter a **third category of** formal research training, which aims to develop future clinical academics who are Research Active when appointed. Doctors in ICM training who aspire to a formal clinical academic career will undertake a longer period of research, typically leading to a PhD, and funded by a Clinical Research Training Fellowship (CRTF). However, a successful CRTF application needs considerable preparation, and usually needs to be preceded by a period of initial training which allows them to acquire key research skills, pilot data and regulatory approval.

3.2 Duration

Doctors taking this SSY should spend 50% of this time in formal research activities and 50% undertaking clinical duties (including maintaining and developing their clinical skills) rostered on a pro-rata basis between in- and out-of-hours commitments.

[1] HM Government, Embedding research as a core function of the health service – the Health and Social Care Act 2012

3.3 Educational objectives

- To understand the process of obtaining NHS permissions for research
- To understand the principles of GCP
- To understand the principles of good RCT design
- To understand the governance framework of NHS research

3.4 Educational attachments and training scheme

- Attendance at GCP course
- Attachment to Regional clinical trials unit

3.5 Assessments

- GCP certificate denoting completion of course
- Mock-up of research application for funding
- Mock-up of NHS permissions application
- Logbook detailing formal exposure to core training elements (method used by University of Cambridge to assess transferable skills for research students)
- A viva voce examination of the project thesis organised by the supervisor (conducted by two individuals not directly involved in the research project).
- Presentation at a national research meeting (as a minimum)
- Peer reviewed publication

A Masters qualification (e.g. MPH, MRes, MSc, MPhil) related to ICM research would satisfy the majority of these elements, with the exception of the requirement to present work at a national research meeting. Such a qualification may be offered by several Higher Education Institutions. A report of the examination (a candidate should have successfully defended their thesis to be able to complete the module), along with the logbook and details of presentations/publications achieved should be sent to the local RA for final sign-off. One alternative output that would meet the demands of a successful SSY Module would be success in a CRTF application, providing the individual had collected pilot data for this grant application and written this up as a research output.

3.5.1 Project based Discussion (PbD)

Project based Discussion (PbD) is a long-standing assessment tool within the field of Clinical Pharmacology and Therapeutics which has been adapted for use in academic intensive care. The PbD assesses the performance of a doctor in their use of clinical ICM knowledge in practice to provide an indication of capability in areas such as reasoning, decision-making and application of knowledge. It also serves as a method to document conversations about, and presentations of their projects. The PbD should include discussion about a written or formal verbal report (such as analysis of a published paper at a journal club, an application to a research ethics committee, a presentation at a Medicines Management Committee, a formal trial protocol designed by the doctor in ICM training, a draft paper for publication or presentation at a scientific meeting, written case notes, out-patient letter, discharge summary).

The PbD is a structured narrative-based instrument for assessment of areas of application, learning, capability and performance related to non-standard project(s) being undertaken by the doctor at a point in time. Given that departments may be small it is important that in this specific assessment of activity assessment does not rely on a single supervisor and access to an independent expert supervisor from outside the doctor's department might be necessary.

It enables the doctor to include reflective commentary and self-assessment in relation to such structured questions as:

- What did you do?
- What supporting documents are available (evidence)?
- What have you learned from this project (so far)?
- How does this project fulfil the requirements (all or partial) of the curriculum?
- Modules/Items listed?

It enables the assessor to comment critically on areas of performance on this occasion:

- Summary of what was described and the evidence available to support this
- Was the evidence presented satisfactory?
- Does the Project fulfil the requirements (all or partial) of the module items listed?

- Key points covered by the discussion
- If so, which capabilities were assessed?

Doctors in ICM training should complete one PbD assessment during their Academic SSY.

3.6 Evaluation of SSY Module at ARCP

The assessment of progress and achievement of training objectives in the SSY Module will occur at the ARCP that follows the Special Skills Module year. This ARCP panel should include a research active clinician, and the progress of the doctors will be assessed against the target competencies outlined in the table in the next section. The research active clinician participating in the ARCP could be a clinical university academic or research active NHS consultant. While, in practice, many of these individuals will be ICM clinicians, this is not essential. The aim here is to provide a credible assessment of research progress that complements the clinical ARCP, and this role could be served by a research active clinician in a partner specialty or from a laboratory or group where the doctor has undertaken research.

3.7 Supervision requirements

The supervisor must hold an Academic post in a relevant area with experience in research methods and implementation, as shown by publications, grants and supervision of researchers. An alternative supervisor would be the lead of a Critical Care Research Network. In any case, the supervisor needs to have credibility through having an appropriate track record and research outputs.

3.8 Learning objectives

Academic Research - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Appreciate the difference between audit and research, have a clear oversight of the ethical principles involved in conducting research and have a good understanding of the difference types of study design	4
Complete Good Clinical Practice (GCP) for clinical trials and have an oversight of the complex regulatory framework behind research including the Integrated Research Application System (IRAS)	4
Formulate a focused research question, undertake a systematic comprehensive literature search and be able to critically appraise the literature in addition to having a solid grounding in medical statistics	4
Have a comprehensive grasp of the management of clinical trials including the role of the National Institute Health Research (NIHR) as both a funder and the body that delivers high quality research and actively engage in recruitment to NIHR research studies	4
Engage directly in a research project related to ICM and present the results at a national meeting resulting ultimately in a peer-reviewed publication	4
GPC Domains	Domain 3: Professional knowledge • professional requirements national legislative requirements • the health service and healthcare systems in the four countries Domain 5: Capabilities in leadership and teamworking Domain 6: Capabilities in patient safety and quality improvement Domain 9: Capabilities in research and scholarship
Evidence to inform decision	➢ Portfolio evidence of self-study e.g. eLfH ➢ Academic Supervisors Report ➢ Appropriate statistics course attendance ➢ Evidence of academic activity e.g. courses, presentations, funding applications, awards, abstracts

4. Cardiothoracic Intensive Care Medicine

4.1 Aim

The aim of this Special Skills Module is to build upon the knowledge, skills, attitudes and behaviours gained in Stage 2 of ICM training and equip individuals with the capabilities required to work as a consultant in a specialist cardiothoracic intensive care unit.

The broad objectives of the module are to develop and consolidate understanding of the management of patients with congenital and acquired heart and lung disease and the range of specialist supportive and curative therapeutic techniques available.

In the spirit of inspiring excellence, ICM doctors in training will also be encouraged to work towards accreditation in either transthoracic, transoesphageal or critical care echocardiography, and to contribute to quality and innovation in cardiothoracic intensive care.

4.2 Educational objectives

To understand the specialist management of patients with heart and lung disease. This will include:

- The management and associated complications of patients following cardiac and thoracic surgery.
- The management of patients with acute cardiological problems requiring interventional procedures and intensive care
- The management of patients with acute respiratory failure, pulmonary hypertension and associated therapies
- The management of patients with large airway disease requiring intervention

4.3 Educational attachments and training scheme

Whilst some capabilities can be attained in a general ICU, the SSY will require a placement in a specialist cardiothoracic intensive care unit. For those doctors who have little experience of cardiac anaesthesia and surgery, sometime following patients through the cardiac theatres to understand problems specific to various cardiac procedures, cardiopulmonary bypass and anaesthesia would be valuable, however at least 50% of the time available should be spent in the cardiothoracic ICU.

4.4 Supervision requirements

Supervisors should be an experienced Consultant in Intensive Care Medicine working in a specialist Cardiothoracic Intensive Care Unit.

4.5 Learning objectives

Cardiothoracic Intensive Care Medicine - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Understands the causes and can manage a peri-arrest cardiac surgery patient in the perioperative period as well as being able to manage cardiopulmonary resuscitation and post-resuscitation care in these patients	4
Can initiate and interpret the results of advanced cardiovascular monitoring techniques	3
Is able to provide multi-organ system support and in the context of underlying cardiopulmonary disease	4
Is able to manage the clinical care of non-surgical patients commonly seen in a cardiothoracic intensive care unit including pregnancy associated pathologies, heart and lung transplantation, structural and vascular heart disease and congenital heart disease	3
Manages the care of patients with cardiac disease who have critical illness due to non-cardiac causes	3
Manages the care of the patient following cardiothoracic trauma	3
Understands the principles behind and the functioning of mechanical support devices for the cardiovascular system	3
Is able to treat cardiac dysrhythmias by the use of external and internal pacing devices	4
Is able to provide perioperative care for patients who have undergone cardiac surgical procedures care and can provide perioperative care for patients with cardiothoracic disease undergoing non-cardiac surgical procedures	4
Manages the palliative care of the patient with end stage heart or lung disease	4
Describes the care of the patient prior to and following thoracic solid organ transplantation (heart, lung, heart-lung)	3
Describes the management of common congenital heart conditions in the adult patient	3
Understands ICU risk scoring systems in the context of cardiothoracic ICU practice	4
Is able to contribute to functioning of the multi-disciplinary team to provide optimal clinical and to participate in peri-operative planning and clinical governance meetings	4
GPC Domains	Domain 2: Professional skills Domain 5: Capabilities in leadership and team working Domain 6: Capabilities in patient safety and quality improvement
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ MSF ➢ Simulation ➢ Attendance Records

5. Echocardiography in Intensive Care Medicine

5.1 Aim

- To train an individual to echocardiography competence equivalent to Level I transthoracic Echocardiography Accreditation (Level I) as defined by the British Society of Echocardiographers.
- To equip an individual with the knowledge, skills and attitudes to be Clinical Lead for Echocardiography on a Critical Care Unit.
- Accreditation in ACCE examined by the British Society of Echocardiography (BSE) is designed to take place over a two-year period.
- Doctors will require a minimum of one day per week dedicated to echo training during their SSY.

Accreditation in Level I echocardiography is examined and accredited by the BSE.
Level I accreditation can be completed within the indicative 12 months and allows the accredited member to operate as part of a hospital emergency echo team, and to train and review Focussed Intensive Care Echo (FICE) level studies. However, the successful completion of the summative written examination is not required to successfully complete the SSY.

It is vital when considering implementation of this module that local interested parties, including specialist critical care echocardiography trainers, consider how to balance a significant level of accredited echocardiography expertise with the requirement that training must be attainable by all doctors in the time available. Doctors on an ICM CCT training programme will typically require a minimum of one day per week dedicated to echocardiography training during their SSY Module.

5.2 Educational objectives

- To achieve robust clinical echocardiography skills equivalent to BSE Level I accreditation.
- To gain the technical knowledge required to run and contribute to a Critical Care Echocardiography Service.
- To understand, plan and apply Clinical Governance to a Critical Care Echocardiography Service in accordance with the Echo Quality Framework set out by the BSE.
- To 'aspire to excellence' in Echocardiography by committing to a process of life-long learning.

5.3 Educational attachments and training scheme

- Appointment to a training unit with an established Critical Care Echocardiography Service.
- Availability of at least 25% of working hours (equivalent to 1 day/week) as dedicated echocardiography training time to include attendance at clinics and access to regular departmental echocardiography lists as required.
- Availability of administrative support for outpatient lists.
- Appropriate time to take an active part in echocardiography clinical governance.
- Access to appropriate and high-quality platforms to enable practice of echocardiography skills in the critical care environment.

5.4 Learning objectives

Echocardiography - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Will understand the technology, uses and care of echocardiography equipment, applying the skills and knowledge to perform and interpret studies and views in critically unwell patients. They will also be capable of supervising others to do so.	3
Will be able to accurately and clearly record echocardiography findings, and safely store images and studies for recall.	3
Will apply high personal standards of clinical governance, and understand the governance structure of an echocardiography service, while engaging and collaborating with the local echocardiography community.	4
GPC Domains	Domain 2: Professional skills Domain 5: Capabilities in leadership and team working Domain 6: Capabilities in patient safety and quality improvement Domain 9: Capabilities in research and scholarship
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ MSF ➢ Examination (Level 1 BSE) optional ➢ Logbook ➢ Peer review

5.5 Assessments

- Completion of a logbook to an acceptable standard equivalent to Level I Transthoracic Echocardiography Accreditation (Level I) as defined by the British Society of Echocardiographers (BSE).

5.6 Supervision requirements

- The supervisor must be an accredited echocardiography trainer with sessions in Intensive Care Medicine.
- The supervisor should either be the local Clinical Lead for the Critical Care Echocardiography Service or approved by them.
- The supervisor must have adequate identified time as a training commitment with the trainee.
- The training department must hold a formal link with the local cardiology department to unify reporting processes and quality.

6. Extra-Corporeal Membrane Oxygenation (ECMO)

6.1 Aim

The aim of this module is to equip an individual with the knowledge and skills to provide ECMO (Extra-Corporeal Membrane Oxygenation) as part of a team in a specialist Critical Care Unit.

6.2 Educational objectives

- To understand the indications/contra-indications and limitations of ECMO.
- To assist in the assessment of patients for ECMO.
- To participate in the retrieval of patients with severe cardiorespiratory failure who may require ECMO.
- To understand and assist with the day-to-day management of patients requiring ECMO.
- To independently manage intra-hospital transport of the ECMO patient.
- To assist in the management of patients with complex problems on ECMO, including major haemorrhage and surgery.
- To gain the technical knowledge required to participate in an ECMO service.
- To understand and apply Clinical Governance to an ECMO service.
- To aspire to excellence in extra-corporeal support by committing to a process of life-long learning.

6.3 Educational attachments and training scheme

- Attachment to a training unit with a nationally commissioned ECMO service.
- As this is a clinical SSY, the year should be spent predominantly with ECMO patients and the environments in which they are managed.
- Availability of local training for ECMO, including the provision of simulation.
- Appropriate time for preparation for and attendance at national and international conferences.
- Appropriate time to take an active part in ECMO clinical governance.

The majority of duty clinical working periods are to be available for responsibilities to, and training in, ECMO service activities, allowing a similar training exposure to that of service ECMO Fellows.

6.4 Learning objectives

Extracorporeal Membrane Oxygenation (ECMO) - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Can assess a patient's suitability for ECMO therapy	3
Initiates ECMO therapy including cannulation, and management of complications	3
Leads the daily multidisciplinary ward round of patients on ECMO	3
Transfers patients between hospitals on ECMO	2
Transfers patients within the hospital on ECMO	3
Understands the multi-disciplinary team required to provide ECMO within the NHS	4
Takes part in clinical governance activities relating to ECMO	4
GPC Domains	Domain 1: Professional values and behaviours Domain 5: Capabilities in leadership and team working Domain 6: Capabilities in patient safety and quality improvement Domain 8: Capabilities in education and training
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ Simulation ➢ MSF

6.5 Assessments

- Successful completion of a theoretical ECMO course
- Successful completion of an ECMO simulation course
- Completion of a logbook to an acceptable standard with evidence of:
  - Assistance with at least 6 cannulations and 6 decannulations
  - Assistance with at least 6 inter-hospital transports
  - Assistance with at least 6 intra-hospital transports

6.6 Supervision requirements

- The supervisor must be an accredited ECMO consultant with sessions in Critical Care Medicine.
- The supervisor should either be the local Clinical lead for the Critical Care ECMO Service or approved by them.
- The supervisor must have adequate identified time as a training commitment with the trainee.

7. Home Ventilation

There has been a significant increase in the number of patients receiving long-term ventilation in the last 15 years, outside of traditional hospital inpatient settings. A pan-European survey, published in 2005, reported that over 27,000 patients were receiving such support with an estimated prevalence of 6.6 patients per 100,000 people[2]. In countries where home ventilation has been established for a long period of time the estimated prevalence was higher suggesting that, in a number of countries, there is still a gap between the need for home ventilation services and the actual provision[3]. In England there is currently no national registry of home ventilation services but an informal database, collected by a working group, identified 42 English NHS trusts that were offering this service in 2013[4].

There is good evidence that home ventilation is effective in both improving the quality of life for users and in prolonging the duration of their lives[5]. For example, cohort studies have shown a significant improvement in life expectancy in Duchenne Muscular Dystrophy following the introduction of home ventilation as a standard of care. Duchenne muscular dystrophy is a condition that inevitably results in respiratory failure. A randomised controlled trial and a number of observational studies have also shown improvement in both survival and quality of life in patients with Motor Neurone Disease who received home ventilatory support once they reached the stage of ventilatory failure. In addition to patients with slowly progressive neuromuscular disease, there are an increasing number of home ventilation users with both obstructive sleep apnoea/obesity hypoventilation syndrome and COPD.

Both the FICM and the British Thoracic Society [BTS] identified home ventilation as an area where formal training is necessary. Currently both the Intensive Care Medicine CCT and the Respiratory Medicine CCT contain some training relevant to home ventilation. In addition, the BTS has produced a brief outline of home ventilation training. Following discussion between the FICM and the BTS, a joint working group was constituted, and a competency-based curriculum was created by this expert group using a modified Delphi process. Following the development of the draft curriculum in 2010, the views of home ventilation providers were considered, and lay input was sought and finally, the curriculum was approved by the FICM and BTS training committees before submission to the GMC.

7.1 Aim

To train an individual in the management of patients with respiratory failure who require domiciliary ventilatory support. In addition, these individuals would become experts in the weaning of complex patients and in particular those that are likely to transition to domiciliary ventilation. These individuals could then join regional home ventilation services.

7.2 Educational objectives

- They will understand the pathophysiology of chronic respiratory failure (CRF) and will recognise the various ways that patients present to domiciliary ventilation services.
- They will be familiar with a number of conditions that can cause CRF, including their cause, presentation and natural history.
- They will be able to perform an initial assessment of the patient with CRF. This will include knowledge of the tests available, the ability to choose a relevant range of investigations and competence in the assessment of various investigations.
- They will have knowledge of and be competent in the use of a range of ventilators, interfaces and adjunct devices used in the treatment of CRF including tracheostomy.
- They will be able to assess and develop a weaning strategy for difficult to wean patients including their rehabilitation needs.
- They will understand the role of multi-disciplinary teams in the management of patients with CRF.
- End of life care: the doctor will be able to provide end of life care to patients with CRF who are dying.
- Models of service organisation: the doctor will understand the different organisational models of home ventilation provision in the context of the NHS.

7.3 Educational attachments and training scheme

The doctor will be attached to a regional home ventilation service or services during the 1-year attachment. An attachment to a sleep service is also required if the doctor has no previous training in sleep medicine (applicable to most doctors on the ICM CCT Programme). They will continue to maintain their general critical care skills with some participation in general ICM rotas

[2] Lloyd-Owen SJ, Donaldson GC, Ambrosino N, Escarabill J, Farre R, Fauroux B, et al. Patterns of home mechanical ventilation use in Europe: results from the Eurovent survey. Eur Respir J 2005;25(6):1025-31.
[3] Garner DJ, Berlowitz DJ, Douglas J, Harkness N, Howard M, McArdle N, et al. Home mechanical ventilation in Australia and New Zealand. Eur Respir J 2013;41(1):39-45.
[4] Mandal S, Suh E, Davies M, Smith I, Maher TM, Elliott MW, et al. Provision of home mechanical ventilation and sleep services for England survey. Thorax 2013;68(9):880-1.
[5] Hannan LM, Dominelli GS, Chen YW, Darlene Reid W, Road J. Systematic review of non-invasive positive pressure ventilation for chronic respiratory failure. Respir Med 2014;108(2):229-43.

during this period. Up to 50% of clinical time can be spent in home ventilation activities, including advanced respiratory care units with the remaining 50% in general ICU.

7.4 Additional assessments

One patient satisfaction survey using either a GMC approved or BTS approved survey tool.

7.5 Supervision requirements

The doctor in training should be supervised by a Consultant with expertise in Home Ventilation who is a member of a regional home ventilation service.

7.6 Learning objectives

Home Ventilation - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Understands the pathophysiology of CRF and will recognise the various ways that patients present to domiciliary ventilation services	4
Is able to make an initial assessment of patients with CRF including arranging and interpreting appropriate investigations	4
Understands the different organisational models of home ventilation within the NHS	4
Is able to manage the end of life care of patients with CRF	3
Understands the role of multi-disciplinary teams in the long-term management of patients with CRF	4
Is able to assess and develop a weaning strategy for difficult to wean patients including their rehabilitation needs	3
Is able to use a range of ventilators and adjunct devices in the treatment of CRF including tracheostomy	4
GPC Domains	Domain 2: Professional skills Domain 4: Capabilities in health promotion and illness prevention Domain 7: Capabilities in safeguarding vulnerable groups Domain 9: Capabilities in research and scholarship
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ MSF

8. Neuro Intensive Care Medicine

8.1 Aim

Consultants in Intensive Care Medicine with subspecialty training in Neurosciences Intensive Care Medicine (NICM) have a central role in neurosciences intensive care units. They share the ultimate responsibility of care with the admitting clinical teams and they collaboratively lead the provision of neurosciences intensive care medicine, coordinating a multi-specialty team of physicians, surgeons and allied health professionals including specialised nurses, physiotherapists, neurophysiologists and clinical scientists.

8.2 Educational objectives

After completion of the Neuro ICM SSY Module doctors should:

- Understand the physiological principles underlying management of critically ill patients with neurological disease
- Be informed about the therapeutic interventions used in neurocritical care
- Be aware of key guidelines and the associated literature related to neurocritical care
- Be able to manage patients with severe acute brain injury, both traumatic and non-traumatic
- Be able to manage post-operative neurosurgical patients following both elective and emergency neurosurgery
- Be able to manage common neurological disorders not requiring neurosurgery
- Be aware of the indications for discussion and transfer of critically ill patients to regional neurosciences units
- Be able to stabilise and transfer patients with acute neurosurgical conditions
- Be able to care for and manage the potential organ donor and their families.

8.3 Educational attachments and training scheme

Whilst some capabilities can be attained in a general ICU, many will require a placement in a specialist neuro intensive care unit. For this SSY, the doctor in training should work in a Neuro-ICU or if it is a mixed ICU, predominantly with neuro-ICU patients. For those doctors who have little experience of neuro intensive care, some time attending radiology and neurophysiology sessions or in the operating theatre would be valuable, however at least 50% of the time available should be spent in the neuro ICU.

8.4 Supervision requirements

The supervisor must hold a substantive consultant post in a neurosciences intensive care unit. The standards of teaching and training essential for the delivery of the special skills module are enshrined in Good Medical Practice. Both trainees and trainers must be familiar with this guidance

8.5 Learning objectives

The learning objectives required to complete the Special Skills Module in neurosciences ICM are based on the structure of the CoBaTrICE syllabus and are summarised in the table below. The learning objectives are structured around the following domains:

8.5.1 Resuscitation and initial management of the patient with acute neurological injury

After successful completion of the module, doctors will be expected to understand the unique vulnerability of the CNS, and to be able to rapidly execute strategies aimed at the maintenance of cerebral homeostasis and the prevention of secondary neurological insults. They should also be able to demonstrate their knowledge of pathophysiology, prevention and management of systemic complications of acute CNS injuries, including acute airway compromise in patients with impaired consciousness (especially when associated with brainstem injuries), neurogenic cardiac injury associated with cerebrovascular accidents (especially ruptured cerebral aneurysm), vasoplegic shock associated with spinal trauma, and profound endocrine and electrolyte imbalance associated with cerebral injuries affecting the hypothalamus- hypophysis axis.

8.5.2 Diagnosis, assessment, investigation, monitoring

After successful completion of the module, doctors will be expected to be able to outline a rational diagnostic approach for patients with common neurological and neurosurgical conditions. They will also be expected to understand the fundamental principles, utility, safety and accuracy of imaging techniques (structural and functional) and neuromonitoring technologies (such as intracranial pressure (ICP) monitors, cerebral microdialysis, brain tissue oxygenation monitors, transcranial Doppler (TCD), electroencephalography (EEG), etc.), and their appropriate use (including contraindications) and interpretation (including pitfalls) in specific clinical conditions.

8.5.3 Disease management

After successful completion of the module, doctors will be expected to know the relevant evidence-base guiding the treatment

of traumatic brain and spinal injury, intracranial haemorrhage (including aneurysmal and non-aneurysmal subarachnoid haemorrhage, intraparenchymal, intraventricular, extradural and subdural haemorrhage), stroke (including "malignant" stroke, cerebellar stroke and spinal infarction), infective and autoimmune encephalitis and meningoencephalitis, epileptiform encephalopathy (including status epilepticus), acute hydrocephalus, neuromuscular disease and peripheral neuropathy (including Myasthenia Gravis and Guillain–Barré syndrome).

8.5.4 Therapeutic interventions and organ support

The central nervous system exerts tonic control and modulates organ-system function. Patients with acute neurological injury often develop organ-system failure as a result of their neurological injury. Conversely, organ-system failure can result in significant secondary brain injury.

After successful completion of the module, doctors will be able to provide skilled organ-system support, aimed at the maintenance of adequate CNS perfusion, oxygenation, and metabolic homeostasis. They will also be aware of indications and contraindications of ICP-lowering interventions and other neuro-protective strategies. They will be expected to know the clinical pharmacology of sedatives, antiepileptic drugs and osmotic agents, and the theoretical and practical aspects of therapeutic hypothermia, hyperventilation, CSF drainage and surgical decompression of the cranium. Their competences should include strategies for the prevention of delayed ischaemic neurological deficits in patients at risk, including indications and contraindications of endovascular treatments and arterial blood pressure augmentation.

8.5.5 Practical procedures

After successful completion of the module, doctors will be expected to safely perform a range of practical procedures in patients at risk of neurological injury, including strict control of arterial carbon dioxide and oxygen during airway instrumentation and mechanical ventilation, the maintenance of adequate haemodynamic stability during procedures requiring sedation, and the ability to appropriately modify sodium concentration of dialysis replacement fluid to prevent rebound intracranial hypertension in patients requiring renal replacement therapy. They should be competent in the use of external ventricular drainage systems for controlled CSF drainage, CSF sampling and the administration of intrathecal medications. They should also be able to perform a lumbar puncture to provide an accurate estimate of CSF opening pressure and to appropriately drain CSF in patients with communicating hydrocephalus. They may also be required to establish and/or to interpret bedside neurological monitors in particular Intracranial pressure (ICP), and in some centres brain tissue oxygen, microdialysis and jugular oxygen monitoring and to perform instrumental evaluation of cerebral blood flow (transcranial Doppler) and EEG monitoring.

8.5.6 Perioperative care

After successful completion of the module, doctors will be expected to be able to provide physiological optimisation and monitoring, and to be aware, prevent and manage the main complications of common neurosurgical procedures, including the risk of airway compromise in patients undergoing posterior fossa surgery, common disturbances of the hypothalamic pituitary axis in patients undergoing pituitary surgery, etc.

8.5.7 Comfort and recovery

The process of rehabilitation of patients with life-threatening neurological injuries should be initiated in intensive care, and it is usually continued for months and years following discharge from hospital. Patients admitted with neurological injuries are at very high risk of experiencing physical and psychological suffering. Doctors and allied healthcare professionals practicing in NICM need to be extremely vigilant in order to prevent unnecessary distress in patients that are cognitively intact but are unable to communicate or interact with the outside world, for example in patients with expressive dysphasia, severe neuropathy, or locked-in syndrome.

Doctors are expected to treat patient with dignity and respect on all occasions. Bearing in mind the recent evidence based on fMRI studies showing that patients (wrongly) diagnosed as being in persistent vegetative state can retain superior cognitive functions, they should always interact with neurologically impaired patients under the assumption that they may be cognitively intact.

After successful completion of the module, doctors will be expected to be able to safely provide analgesia in patients with a variety of neurological conditions (including neuropathies and neuropathic pain), to formulate prognoses and to communicate with other members of the clinical team, patients and their families regarding realistic expectations for recovery, and to appropriately refer patients for rehabilitation and long-term management.

Neuro Intensive Care Medicine - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Can recognise, resuscitate and initiate treatment of the patient with acute neurological injury, having an enhanced understanding of the specific neuropathophysiologies. They will be able to institute advanced pharmacological and physical therapeutic interventions, and continue ongoing diagnostic and disease management strategies, including multi-organ support.	4
Can initiate and interpret the results of advanced neuro imaging techniques and monitoring technologies, understanding their fundamental principles, indications and safety profiles.	3
Will be capable of diagnostic and treatment strategies for the specific presentations and provide ongoing management and care.	3
Is able to provide comprehensive perioperative care for patients who are to undergo neurosurgical procedures.	4
Will provide high quality comfort, care and dignity to optimise a neurocritical care patient's recovery and outcome.	4
Understands the principles, practicalities and consequences of neurological injury and rehabilitation	3
GPC Domains	Domain 1: Professional values and behaviours Domain 2: Professional skills Domain 5: Capabilities in leadership and team working
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ MSF ➢ Simulation

9. Paediatric Intensive Care Medicine

9.1 PICM within the CCT in Intensive Care Medicine

General ICM training contains an indicative 3-month block of Paediatric Intensive Care Medicine in Stage 2 training. Specialists in ICM will often obtain consultant posts in district general hospitals without paediatric services and expertise immediately available on site. They must therefore be able to contribute with other disciplines to the stabilisation and initial management of the critically ill child before and during transfer to a paediatric centre, or before more senior or expert assistance arrives.

At the end of the indicative 3 month block the doctor in ICM training will:

- Be able to resuscitate, stabilise and transfer an acutely ill child
- Understand the fundamentals of paediatric intensive care including post-operative care following surgery
- Be aware of the indications for discussion and transfer of critically ill children to Regional Paediatric Intensive Care Units.

9.2 The PICM subspecialty curriculum

In October 2018, Paediatric Intensive Care Medicine became a GMC recognised subspecialty of Intensive Care Medicine. The approved subspecialty curriculum[6] and training requirements for PICM have been written and set by the Paediatric Intensive Care Medicine Intercollegiate Specialty Advisory Committee [PICMISAC], with representation from the Royal College of Paediatrics and Child Health (RCPCH), FICM, RCoA and Paediatric Intensive Care Society. The RCPCH are the GMC-designated Lead College for the subspecialty of PICM. The application process for entry to PICM CCT subspecialty training is overseen entirely by the RCPCH and runs as part of their NTN Grid training programme[7].

Doctors that are successfully recruited to the PICM subspecialty NTN Grid training programme will have their progression monitored through the RCPCH's PICM curriculum by their Paediatric ICM Educational Supervisor and will record their progress in the RCPCH's ePortfolio system.

On successful completion of the PICM subspecialty training programme, the College Specialty Advisory Committee's (CSAC) progression form will be signed off by the Chair of the RCPCH's PICMISAC. The completed CSAC progression form should be uploaded as a Personal Activity and linked to the PICM SSY Module in the doctor's ICM LLP account. Once this form has been uploaded in the ICM LLP, a Learning Outcome Completion (LOC) form can be initiated for the PICM SSY Module and sent to your Educational Supervisor for approval for ARCP purposes and progression to Stage 3 (for doctors on a single ICM CCT Programme only).

9.3 Special Skills Module in PICM

Doctors who are unsuccessful in applying or do not want to apply for the PICM NTN Grid may still undertake a Special Skills Year in PICM (dependent not only on the doctor's career aspirations but on the Deanery/local HEE office having the required facilities and educational capacity to offer that training) but will not receive any official CCT subspecialty recognition for doing so (i.e. a notation on their CCT that they are officially trained in the subspecialty of Paediatric Intensive Care Medicine). GMC regulations state that a doctor must have undertaken their PICM training via the RCPCH NTN Grid (entered via a competitive national application and interview) in order for that training to count towards CCT subspecialty recognition.[8]

Within the Special Skills Year, ICM Specialty Registrars should follow the approved PICM training curriculum as appropriate to their level of prior training and experience in the subspecialty. The modules and years within Stage 2 ICM are interchangeable in terms of their arrangement; a doctor may therefore undertake their Special Skills Year in ST5 and their specialist area modules (PICM, Neuro ICM, Cardiac ICM) in ST6, or vice-versa. In either case, doctors following a single ICM CCT Programme should begin their PICM SSY following the Basic level PICM curriculum; whilst it may be appropriate, depending on their level of previous PICM training, for them to begin to achieve some Advanced level capabilities, this will be at the discretion of local PICM trainers in liaison with the doctor's ICM Educational Supervisor.

Supervision and assessment of these doctors would be carried out as established in PICM training.
Doctors in ICM training would be required to demonstrate progression in PICM as per the established assessment system and include this evidence as part of their portfolio to be review by their ICM Educational Supervisor before they can be signed off for Stage 2 training.

[6] https://www.rcpch.ac.uk/sites/default/files/2018-03/paediatric_intensive_care_medicine_syllabus_final.pdf
[7] https://www.rcpch.ac.uk/resources/apply-sub-specialty-training-ntn-grid-guidance
[8] https://www.rcoa.ac.uk/sites/default/files/FICM-RCPCH-GRID-STATEMENT.pdf

The full PICM subspecialty curriculum is available on the RCPCH's website[9]. For reasons of space, the curriculum and its competencies have not been reproduced within this guidance manual. In addition, the curriculum is maintained by the Royal College of Paediatrics and Child Health; whilst the principle of doctors in ICM training following this curriculum is maintained, it is not pragmatic to update this guidance document to match every individual change to the external PICM curriculum.

9.4 Aim

The aim of this special skills module is to build upon the knowledge, skills, attitudes and behaviours gained in Stage 2 of ICM training and equip individuals with the capabilities required to work as a consultant in a non-specialist hospital with a lead role in paediatric intensive care provision for that hospital. This will broaden and deepen the capabilities learnt in the paediatric placement in Stage 2 but will not allow the doctor to achieve the level of an independent practitioner in the way a sub-specialty qualification in PICM would. There is a significant role for such a skillset in non-specialist hospitals.

9.5 Educational objectives

To understand the specialist management of paediatric patients presenting as an emergency. This will include:

- The management and associated complications of emergencies occurring in paediatric patients
- The education of staff involved in the care of paediatric patients presenting as an emergency to a non-specialist hospital
- The design and procurement and provision of equipment, to ensure there is a safe and functional clinical environment in which to treat paediatric patients
- The specialist skills required for the safe and timely transfer of paediatric patients
- Understanding of the elements of a clinical governance structure to ensure safe quality treatment of these patients.

9.6 Educational attachments and training scheme

This SSY will require placement in a specialist paediatric intensive care unit. In addition, the doctor will be expected to spend a minimum of 25% of their SSY working on a specialist paediatric retrieval team.

9.7 Supervision requirements

The doctor's Educational Supervisor needs to be an experienced Consultant in Paediatric Intensive Care Medicine working in a specialist Paediatric Intensive Care Unit.

9.8 Learning objectives

Paediatric Intensive Care Medicine - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Recognise, assess and manage the full range of both medical and surgical paediatric conditions requiring intensive care support, including the management of safeguarding issues within this environment.	3
Assume the role of Paediatric Intensive Care Team Lead for a non-specialist hospital and liaise with hospital and community specialist teams, effectively manage and coordinate patient flow, staffing, safety and quality in the context of emergency paediatric care in a non-specialist hospital	3
Effectively lead the team in resuscitating, stabilising and transferring a critically ill child, perform the and supervise others in performing high-level clinical and technical skills and procedures necessary to carry this out in paediatric patients in a non-specialist hospital's intensive care, emergency and transport environments.	3
Perform and supervise others performing high-level technical skills and procedures utilising the appropriate medications necessary for managing critically ill children in a non-specialist hospital	3

[9] https://www.rcpch.ac.uk/sites/default/files/2018-03/paediatric_intensive_care_medicine_syllabus_final.pdf

Supports and communicates with families when their child is extremely unwell, dying or has died.	4
GPC Domains	Domain 3: Professional knowledge • professional requirements • national legislative requirements • the health service and healthcare systems in the four countries Domain 5: Capabilities in leadership and teamworking Domain 6: Capabilities in patient safety and quality improvement Domain 7: Capabilities in safeguarding vulnerable groups Domain 9: Capabilities in research and scholarship
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Simulation ➢ MSF ➢ ESSR ➢ Portfolio evidence of self-study e.g. eLfH

10. PHEM (Pre-Hospital Emergency Medicine)

Doctors have the option of completing their CCT in Intensive Care Medicine with sub-specialty accreditation in Pre-Hospital Emergency Medicine (PHEM). Entry into the PHEM sub-specialty programme is via a competitive national application process during Stage 1 training (ST4 at the earliest for doctors on a single CCT programme) for a programme commencement in Stage 2 training (ST5 or 6). They would then undertake PHEM as their Special Skills Year within ICM training.

Undertaking PHEM sub-specialty training is separate to undertaking an ICM Special Skills Module in Transfer Medicine; whilst PHEM and the Transfer Medicine Special Skills module contain some shared High-Level Learning Outcomes, they are by no means identical and do not have the same learning outcomes. In addition, the PHEM programme must be entered via competitive national application and interview.

The full syllabus for PHEM training is not reproduced within this manual; you should refer to the full PHEM curriculum available via IBTPHEM at: www.ibtphem.org.uk. Assessments should be completed and documented as required by the PHEM subspecialty curriculum.

10.1 Eligibility for PHEM programme

Doctors must have 6 months Emergency Medicine (EM), 6 months Acute Internal Medicine (AIM), 6 months Anaesthetics and 6 months ICM training to be eligible to apply for PHEM. For ICM Specialty Registrars entering from one of three approved core programmes with an interest in PHEM, methods of meeting this requirement are:

Core	**6/12 EM**	**6/12 AIM**	**6/12 Anaesthetics**	**6/12 ICM**
ACCS (any route)	Completed in ACCS	Completed in ACCS	Completed in ACCS	Completed in ACCS
Core Anaesthetic Training (CAT)	Not completed – doctor in training must either undertake 6/12 EM as part of remaining 12/12 ICM Stage 1 medicine requirements or undertake 6/12 OOPE in EM	Part of Stage 1 ICM Medicine requirement	Completed in CAT	Completed in CAT
Internal Medicine Training (IMT)	Not completed – however doctor in training will already have completed the full 12/12 medicine requirement of ICM Stage 1 so will require OOPE to achieve 6/12 EM	Completed in IMT	Completed after recruitment to ICM in remainder of Stage 1 training	Completed after recruitment to ICM in remainder of Stage 1 training

It is also recommended that doctors should have completed the neuro, paediatric and cardiac ICM HiLLOs of Stage 2 ICM before commencing the PHEM training; however, it is recognised by the Faculty and IBTPHEM that this will not always be possible and is a matter for local organisation.

10.2 ICM CCT and PHEM

Pre-Hospital Emergency Medicine is an indicative 12-month whole time equivalent [WTE] programme that can if necessary be broken into two 6-month WTE blocks or similar blended programmes that can be agreed between local TPDs. The actual proportion of a training period reserved for PHEM and ICM training will depend on the programme delivered by the Deanery in consultation with the Intercollegiate Board for Training in Pre-Hospital Emergency Medicine [IBTPHEM]. Capabilities achieved in the PHEM programme can also be applied to any relevant general ICM HiLLOs, for Stage 2 and for Stage 3, if undertaken at the appropriate capability levels. It may be possible for doctors to complete the PHEM component of training within the indicative 7 years programme for ICM or 7.5 years if OOPE is required. The actual training programme length will be governed by the career aspirations of the doctor and the requirements for a CCT in ICM.

The whole of the PHEM SSY is spent within the PHEM programme: For more details on Pre-hospital Emergency Medicine, contact the Faculty Tutor, Regional PHEM Lead/Programme Director where applicable or the Intercollegiate Board for Training in Pre-hospital Emergency Medicine at www.ibtphem.org.uk.

10.3 Dual CCTs and PHEM

Doctors undertaking Dual CCTs in ICM/Anaesthetics or ICM/Emergency Medicine may also wish to apply for the PHEM sub-specialty programme. Whilst this is possible as long as the doctor meets the eligibility criteria for the PHEM programme, it should be considered that undertaking Dual CCTs and sub-specialty recognition will result in a significantly prolonged period of training. The indicative minimum duration for ICM Dual CCT programmes is 8.5 years; these programmes have been agreed by the Faculty and its partner colleges based on the mapping of capabilities between the respective curricula. For these programmes to be kept to a manageable length, the ICM Special Skills Year within a Dual CCT programme is undertaken within the partner specialty. Therefore, the Special Skills Year is not available to these doctors to undertake PHEM and an additional indicative 12 months of training would be required.

As such, any doctor in training already undertaking Dual CCTs in ICM and a partner specialty who also wished to apply for PHEM sub-specialty recognition should have the explicit support of their Postgraduate Dean before applying for PHEM. Postgraduate Deans should also be made aware of the funding implications of Dual CCT doctors undertaking PHEM, and the Training Programme Directors for each of the dual specialties of the possible impact on training rotations.

Furthermore, doctors should bear in mind the need to revalidate in dual specialties *and* an additional sub-specialty.

11. Quality Improvement in Healthcare

11.1 Aim

Quality is at the heart of the NHS Constitution. The AoMRC and NHS Institute for Innovation and Improvement have collaborated to create a Medical Leadership Framework that supports the concept of innovation, improved patient care and increased organisational flexibility and responsiveness. Quality underlies several of the domains within this framework, namely:

- Working with others
- Managing services
- Improving services
- Setting direction

Learning about quality improvement and change management begins in Medical School, continues in postgraduate training and features in many HiLLOs within the ICM curriculum.

This SSY module will occur during Stage 2 training. This module covers the capabilities required to adopt a logical, scientific and analytical approach to quality improvement. It encourages the development of leadership skills to allow doctors a platform to influence change in future practice. It aims to develop expertise to share with other members of the healthcare team. The doctor may supplement this module with study towards a relevant postgraduate qualification.

The SSY module will allow the doctor to develop skills and a portfolio of QI activity that may support application for further experience in a national leadership fellowship or programme with the Faculty of Medical Leadership and Management or the NHS Leadership Academy.

11.2 Duration

Doctors undertaking this module will participate in quality improvement initiatives for the duration of the indicative 12 months of their special skills year. They will also spend not less than 50% of their time maintaining and further developing their clinical skills in ICM.

11.3 Educational objectives

- To train an individual to become a lead contributor to quality improvement in healthcare through project work, teaching and supervision of other doctors in training.
- To train an individual to develop their leadership and collaborative skills prior to completion of ICM specialty training.

11.4 Educational attachments and training scheme

- Attendance at local, regional and national quality improvement meetings.
- Attachment to an ICU, clinical network and/or Trust that will encourage contributions from the doctor and provide feedback for reflective learning.
- There should be provision within the chosen institution to deliver the knowledge required for the doctor to develop their skills in quality improvement.

11.5 Additional assessments

- A portfolio of quality improvement activity including project work and contributions to teaching and supervising others.
- Presentation of a completed project at a meeting (as a minimum).
- The candidate is encouraged to submit their project(s) to a peer reviewed publication.

There are various postgraduate qualifications (for example PGCert, PGDip, MSc) related to quality improvement in healthcare that would support the doctor's acquisition of competencies during the SSY. Such qualifications are offered by several Higher Education institutions. The doctor should submit their portfolio for appraisal by their QI lead supervisor who will forward this with their recommendations to the local RA for final sign-off.

11.6 Supervision requirements

The supervisor should be experienced in quality improvement methodology and implementation. They could be a clinician or a lead member of a Quality Improvement department. The doctor undertaking this SSY should also have a separate supervisor to oversee their educational and clinical work. Engagement of an appropriate supervisor should be done in consultation with the Regional Advisor in ICM.

11.7 Learning objectives

Quality Improvement - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Understands the principles and purpose of quality improvement including evidence-based practice, best practice guidelines and benchmarking, as well as being able to appreciate different sampling methodology.	4
Can propose, initiate, implement, develop and evaluate protocols, guidelines and quality improvement	4
Can collate, manage and interpret information gathered from different resources	4
Can understand and apply statistical modelling, including variance and graphical models, to analyse, organise and present information	4
Can describe the general change, reliability and lean concepts	4
Understands the principles and structure of local and national healthcare provision and management, including health economics, departmental budgeting, development and preparation of business plans.	4
Understands the role of the ICU specialist outwith the intensive care unit in raising the profile of the Specialty within the hospital and to the general population	4
Recognises and promotes change within ICU to improve healthcare provision and adopts strategies to minimise and counter resistance to such change.	4
Work effectively within the MDT by respecting, acknowledging and collaborating with others to achieve a common goal	4
Understands the principles of group dynamics	4
Demonstrates proficiency in leadership and communication through providing supervision to members of MDT, conducts and chairs meetings and by managing conflict between different professional and patient groups	4
Delivers effective teaching and training to medical and non-medical members of the healthcare team	4
GPC Domains	Domain 4: Capabilities in health promotion and illness prevention Domain 6: Capabilities in patient safety and quality improvement Domain 8: Capabilities in education and training Domain 9: Capabilities in research and scholarship
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ MSF ➢ Simulation

12. Transfer Medicine

12.1 Aim

All doctors on an ICM CCT Programme will need to achieve certain capabilities in transfer medicine as part of their training. However, for most doctors the majority of transfers will be intra-hospital; transferring the critically ill from wards or the Emergency Department to the ICU, or transferring critically ill patients from the ICU to theatre or radiology for further treatment or investigation. Inter-hospital transfers will constitute only a small proportion of the doctor's transfer experience. The commonest reason for transfer of a critically ill patient is for specialist treatment in a regional centre (for example for neurosurgery, vascular surgery, cardiothoracic surgery, interventional radiology). There may also be transfers to supra-regional centres for treatments such as liver, lung or cardiac transplantation. In the future, there may be an expansion in the need for transfers of critically ill patients with re-configuration of Critical Care services, trauma services and ECMO centres.

This Transfer Medicine SSY module is different to the set year of training that comprises Pre-Hospital Emergency Medicine sub-specialty training; however, the competencies described in this module are in part derived from within the PHEM curriculum. Whilst PHEM training programmes are run by several Deaneries and doctors will have to compete nationally for places, the Faculty recognises that there are very limited numbers of PHEM training posts and that not all regions are able to run PHEM programmes. However, such regions may be able to run more broad-based transfer-oriented training modules as described herein. The Faculty also recognises that ICM Specialty Registrars with enhanced training in transfer or retrieval medicine will provide benefits to ICUs when they become Consultants.

This module covers the capabilities required to make transfer decisions, select the most appropriate transport platform, provide safe, effective and focused in-transit critical care and ensure that the patients' condition and immediate needs are communicated to receiving hospital clinical staff.

12.2 Educational objectives

- To be capable of leading on issues related to transfer of critically patients recognising that transfers will include patients from all parts of the hospital, not just from the Intensive Care Unit;
- To acquire the necessary skill set to become a Network Transfer Lead;
- To be a competent member of a Critical Care Retrieval Team (for example from an ECMO Centre)
- To complete and present an appropriate Quality Improvement project.

12.3 Educational attachments and training scheme

- Attend Network Transfer meetings.
- Attachments to local air ambulance to acquire an understanding of the capabilities, limitations of and safety aspects of air transport.
- Attachment to a Retrieval Team (in some Regions this may need to be a Paediatric Retrieval Service as there may be no others).
- Attendance on the Aero Medical Transport (CCAT) Foundation level course
- Attendance on the Helicopter Medical Flight Crew (HFMC) course.
- Depending on the local transfer service set-up, clinical sessions may also include ICM in addition to transfer service responsibilities.

12.4 Supervision requirements

Supervision would depend on the sorts of attachments undertaken. The quality improvement project may require a supervisor from the Critical Care Network. Educational supervision should be provided by the clinical lead for the transfer service, or an appropriately trained nominated consultant with ICM consultant sessions.

12.5 Learning objectives

Transfer Intensive Care Medicine - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Contrast the risks and benefits associated with emergent inter-facility transfer	4
Describe the physiological and physical effects of movement of patients	4
Describe the principles of planning and co-ordinating patient transfer	4
Demonstrate a professional approach to the planning and co-ordination of patient transfer	4
Demonstrate correct preparation of patients for safe inter-facility transfer	4
Demonstrate a professional approach to preparation of patients for transfer	4
Differentiate the risks and benefits of road, helicopter, fixed wing and other transport modalities	4
Demonstrate the ability to transfer patients using a range of modalities	4
Describe the common problems experienced during patient transfer	4
Demonstrate the safe inter-facility transfer of all age groups of ventilated patients	4
Demonstrate a professional approach to the clinical management of patients undergoing emergent inter-facility transfer	4
GPC Domains	Domain 1: Professional values and behaviours Domain 2: Professional skills Domain 6: Capabilities in patient safety and quality improvement Domain 8: Capabilities in education and training
Evidence to inform decision	➢ ACAT ➢ CBD ➢ DOPS ➢ Mini-CEX ➢ Simulation

13. Education

13.1 Aim

This Special Skills Module is intended for doctors who are considering developing a special interest in medical education in their Consultant career. It intends to further a doctor's professional development as an educator through taking part in a wide variety of educational activities, self-evaluation and utilising frameworks in which to describe their own development as a trainer. It is in addition to the capability levels required for HiLLO4 in Stage 2 of ICM training.

The learner may enter this Special Skills Year Module with only ICM Stage 1 HiLLO4 capabilities, with regard to pedagogical knowledge or they may have previous knowledge (e.g. hold a Certificate in Medical Education or similar) that this year will build on. The overall objectives are in addition to those required for HiLLO4 in Stage 2 of the ICM curriculum.

13.2 Educational objectives

Over-arching educational objectives are from the GMC supervisor framework originally set out by the Academy of Medical Educators:

- Ensuring safe and effective patient care through training
- Establishing and maintaining an environment for learning
    - Analyse the key features of the learning environment, in particular clinical settings relevant to your professional practice, and identify the teaching skills required to support successful education in these settings
- Teaching and facilitating learning
    - Demonstrate a critical understanding of key principles and methods of curriculum planning and design through application to particular clinical settings and educational contexts
    - Demonstrate experience in utilising a variety of teaching and learning techniques
    - Create and evaluate novel teaching and learning experiences
- Enhancing learning through assessment
- Supporting and monitoring educational progress
    - Support fellow professionals in their development as educators through critical application of professional development processes (such as mentoring, peer review, teamwork and action learning)
- Guiding personal and professional development
- Continuing professional development as an educator
    - Plan and maintain your own continuing development as an educator through critical application of professional development processes (such as reflective practice, peer review, and scholarship of teaching).

13.3 Educational attachments and training scheme

50% of protected time is required for specialist module activities (which may take place within or outside of the clinical environment). Supervisor sessions are required monthly to discuss progress and identify any barriers to effective completion of the module. They will spend the remaining 50% of their time maintaining and further developing their clinical skills in general ICM, on a pro-rata rota basis, in- and out-of-hours.

13.4 Additional assessments

Doctors must develop their own Educational Portfolio (EP) which collects evidence of teaching, evaluation and reflection, demonstrating familiarity with relevant educational theory, and:

- Separate out own learning of education theory and pedagogy from creating or participating in learning events for others;
- Demonstrates:
    - Contents from different educational domains (e.g. curriculum design or planning, teaching and learning, assessment, learner support, educational research, educational management)
    - A variety of types of teaching sessions (e.g. lecturing, small group teaching, one-to-one teaching, skills-based workshops to opportunistic teaching in clinical situations)
    - A variety of different learners (UG/PG/CPD/ IPE/Patients)
    - Both non-clinical teaching and clinical teaching including practical skills training using both part-task trainers and intermediate/ high fidelity simulators if available
    - Supervision of more junior colleagues in clinical situations (and superior completion of Supervised Learning Events)
- Gives evidence for providing a minimum of 4 teaching or assessment sessions per month
- Gives evidence of quality assurance of education through

  - Reciprocal peer observation of training with feedback and reflection
  - Repeating a teaching session, developing an assessment item or repeating a course with evidence of development from evaluation.
- Aligned with GMC Trainer Recognition

In order to fulfil the required learning objectives the learner may add to the EP any completed e-learning modules, work towards a recognised certificate in medical education or higher award if already obtained, attendance at any specialist courses or meetings during the year, or attend specific supervisor teaching sessions.

Included in the EP as specified above, with reflections, doctors must complete the following assessments during this Special Skills Year:

Mandatory (Essential)

- Reflect on at least one reciprocal peer observed teaching practice
  AND
- Write and deliver a presentation for a group of learners that has elements directed at learners of different experiences (e.g. junior and senior doctors) or learners of different backgrounds. Produce a handout, a CPD quiz and an evaluation for this.
  OR
- Write and pilot an assessment relating to critical care (MCQs, SBA, OSCE, simulation, structured viva), reflection and re-delivery, discuss its validity and reliability.
  OR
- Organise an educational meeting or course (minimum 4 hours and 3 faculty) to be held twice demonstrating reflection and development e.g. faculty development, simulation training, clinical (ICU), generic skills relevant to critical care (e.g. careers, interview) or education focus.

13.5 Supervision requirements

- The Supervisor for this module should hold a Certificate, Diploma or a Master's in Medical Education,
  OR
- Be a Member or Fellow of the Academy of Medical Educators,
  OR
- An individual with extensive experience in delivery and management of medical education (e.g. is/has been in a HEE/Deanery appointed post such as TPD, Director of Medical Education or similar).

The supervisor needs to be knowledgeable of educational theory (in accordance with standard 10.4, the relevant professional experience of assessors should be greater than that of candidates being assessed).

All the learning objectives may be portrayed through the EP (not added to assessment method column). Other assessment items (A, EM, P, O, S, M) should be added where they make a good fit.

13.6 Learning objectives

Education - Special Skills Module	
Learning Objectives	**SSY Target capability level**
Can deliver educational sessions pertinent to learners from varying backgrounds and levels of prior knowledge using a variety of teaching formats (e.g. small group, lecture, e-learning) demonstrating appropriate planning and design, considering awareness of the curriculum and learner needs, use of teaching methods and technology and showing evaluation and plans for improvement of future sessions	4
Can deliver simulation teaching with assistance from faculty, considering the evidence base and teaching theory related to simulation teaching, awareness of levels of fidelity and relevant advantages/disadvantages of this teaching format. Aware of use in relation to critical incidents and non-technical and communication skills teaching	3

Uses assessment tools in the workplace appropriately, demonstrating theoretical knowledge including awareness of validity, reliability and feasibility of the assessment tools chosen and how this influences the choice of assessments used to maximise learning	4
Provides structured feedback appropriately after learning encounters demonstrating awareness of various models of feedback. Demonstrates professionalism and empathy during this process and shares enthusiasm for teaching and learning in the clinical environment	4
Produces an educational portfolio demonstrating involvement in educational activities aligned with GMC guidance on recognition and approval of trainers, including involvement in teaching and learning, appropriate use of assessment, supporting and monitoring learners, guiding personal and professional development and developing own skills as an educator	3
Can organise an educational event, considering choice of topic, speakers and environment and manages a system for collecting feedback and using this to improve future events	3
Demonstrate skills in leadership and management relating to education and what role clinicians specialising in medical education may have at a local or regional level to influence change and improve teaching and learning in the workplace	3
Can critically evaluate research within medical education, showing up-to-date knowledge of developments within this field and applies new knowledge learnt to improve their own practice. Shows willingness to share knowledge with others.	4

GPC Domains	Domain 1: Professional values and behaviours Domain 4: Capabilities in health promotion and illness prevention Domain 8: Capabilities in education and training
Evidence to inform decision	➢ Peer observed teaching session feedback ➢ ESSR ➢ Presentation session feedback ➢ MSF ➢ Portfolio evidence of self-study e.g. eLfH, continuing professional development record ➢ Assessment design and delivery tool - feedback from ES ➢ Formal qualification in medical education ➢ Evidence of lead organiser for a non-departmental educational meeting

The Faculty of
Intensive
Care Medicine

@FICMNews
www.ficm.ac.uk

Churchill House | 35 Red Lion Square | London | WC1R 4SG
tel 020 7092 1688 | email contact@ficm.ac.uk