General Medical Council

Aviation and Space Medicine

Specialty Specific Guidance (SSG)

This guidance is to help doctors who are applying for entry onto the Specialist Register via the Portfolio pathway in Aviation and Space Medicine. You will also need to read the curricula for the specialty .

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Contents

Introduction

This document is designed to provide helpful information and guidance to enable you to make an application for specialist registration in Haematology. This is not a standalone document and should be read in conjunction with the curricula – please see the Haematology curriculum on the Joint Royal Colleges of Physicians Training Board (JRCPTB) website for more details. You can contact us and ask for advice before you apply.

It is worth noting that it is sometimes more difficult to make a successful application if you have not worked in the NHS and that applicants with a license to practise in the UK will have already provided some of the evidence below in order to achieve this. Key features of training and practice in the NHS are unlikely to be covered in the same way outside it and the types of evidence may differ. This might include, for example, multidisciplinary team meetings, appraisal, multisource feedback and patient feedback, safety and quality activity especially in clinical audit and quality improvement projects and other areas. You must look at the curriculum and this guidance carefully to make sure that you can demonstrate the knowledge, skills and evidence for entry to the Specialist Register for Haematology using an assessment framework of the high level learning outcomes in the curriculum rather than assessing your progress through a programme.

You evidence should focus on summative assessments rather than formative one. If you are or have recently been practising in an environment that is not comparable to practice in the NHS you might find it useful to consolidate your experience elsewhere before applying.

Applicants need to demonstrate that they have achieved the learning outcomes required for all stages of the curriculum.

Curriculum Framework

The curriculum is structured into high-level learning outcomes, known as Capabilities in Practice (CiPs). The CiPs are split into generic, clinical and specialty specific capabilities, as outlined below. To meet the standard you will need to provide evidence that you're working at the level of being entrusted to perform safely and independently for each CiP (described in the curriculum as Level 4 – entrusted to act unsupervised).

Level descriptors for clinical CiPs

Level	Descriptor
Level 1	**Entrusted to observe only:** No provision of clinical care

Level 2	**Entrusted to act with direct supervision**: May provide clinical care, but the supervising physician is physically within the hospital or other site of patient care and is immediately available if required to provide direct bedside supervision
Level 3	**Entrusted to act with indirect supervision**: May provide clinical care when the supervising physician is not physically present within the hospital or other site of patient care, but is available by means of telephone and/or electronic media to provide advice, and can attend at the bedside if required to provide direct supervision
Level 4	**Entrusted to act unsupervised**

The first six CiPs are generic and shared across all physician specialties, covering the universal requirements of Good Medical Practice and the Generic Professional Capabilities (GPC) framework.

The remaining ten CiPs describe the clinical tasks or activities which are essential to the practice of Aviation and Space Medicine. The CiPs have been mapped to the GPC domains to reflect the professional generic capabilities required to undertake the clinical tasks.

The range of experience needed to achieve the CiPs is outlined in the curriculum – this covers different settings, contexts, clinical problems, conditions and stages of a person's life and illness.

Generic CiPs
1. Able to function successfully within NHS organisational and management systems
2. Able to deal with ethical and legal issues related to clinical practice
3. Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement
4. Is focussed on patient safety and delivers effective quality improvement in patient care
5. Carries out research and manages data appropriately
6. Acts as a clinical teacher and clinical supervisor

Specialty Specific CiPs
1. Ability to perform medicals on aircrew and other aviation workers and define and understand the clinical standards of licensing requirements
2. Ability to understand and assess hazards to health in the aviation environment and workplace, and the illnesses, which they cause
3. Ability to carry out flight environment medical assessments and investigations and how these may contribute to aero-medical decision making
4. Ability to assess research studies to provide risk and hazard analyses based on research findings
5. Ability to show how personal protective equipment and life-support systems work and how the physiological effects of the aviation environment and alter aircrew performance
6. Ability to conduct the medical investigation of an aircraft accident or incident
7. Ability to describe the factors influencing human performance and human error
8. Ability to conduct and understand the requirements for an aeromedical transfer of a patient
9. Ability to assess pathophysiological challenges of the space environment
10. Ability to demonstrate the principles of management and the structure of international, military and civilian regulatory bodies

Currency of evidence

Evidence which demonstrates that you have met a curriculum outcome can be drawn from any point in your career. However, there should be corresponding evidence of recent (within the last five years of clinical practice (WTE) to confirm the maintenance of the skill or competency.

Evidence of your recent practice will be given more weight to reflect current capabilities and we suggest that approximately 50% of your evidence for a curriculum outcome is drawn from within the last five years of clinical practice (WTE).

Structured reports

You should nominate a minimum of three referees for the GMC to obtain structured reports from. They should include:

- Current Head of Department or other senior colleague with knowledge of the breadth of your clinical activity. Ideally, they should be an Educational Supervisor with at least 5 years experience themselves or appropriate training experience.
- One referee of consultant level who is able to provide comments based on direct observation. This is especially important if you are relying on your structured reports as evidence of your procedural competencies.
- At least one other report from a colleague working with you at consultant level in your specialty.

Submitting your evidence

Do not submit original documents. You must provide your evidence electronically – it's important that you follow the structure in our user guide when doing so.

You will need to make sure your evidence meets our requirements, this includes:

- Anonymising (redacting) identifiable information
- Verifying your evidence to confirm its authenticity
- Authenticating overseas qualifications
- Translating any documents not in English

It is important that you read and follow our guidance. If your evidence does not meet these requirements, it may not be included in your application.

Please keep in mind when gathering your evidence:

- Triangulated evidence (evidence comprised of three different sources) will make a stronger application
- Evidence of your recent practice (≤within the last 5 years of clinical practise (WTE)) will be given more weight to reflect current capabilities; where some evidence is historical (> than last 5 years of clinical practise (WTE)), the assessors will want to see evidence that the applicant has maintained capabilities in that particular area and the applicant is working at the level of a senior independent clinician.
- Your evidence must be legible

How much evidence to submit

As a general guide, most applications are expected to include around 100 electronically uploaded documents. You must ensure that you follow our guidance on how to present and group your evidence in the online application.

The total number of documents and assessments presented is less important than the quality of the documents, and the breadth of cases covered. This allows the evaluators to form reliable judgements of performance and capabilities.

This guidance on documents to supply is not exhaustive and you may have alternative evidence. You do not necessarily have to supply every type of evidence listed, but you must submit sufficient evidence to address each of the required learning outcomes and the associated capabilities.

Your evidence **must** cover the knowledge, skills and experience to demonstrate the required CiPs in all areas of the curriculum. You should focus on providing **good quality** evidence, rather than quantity.

You should bear in mind the following points:

- Evidence should show that you are able to assess and offer a first opinion in any setting and for any age
- Don't duplicate evidence that is relevant to more than one CiP – you should include one copy and then list it under each relevant CiP (cross referencing)
- Evidence should only be cross referenced where it adds significant support to a CiP
- Evidence should be provided from a variety of clinical settings.

You must ensure you follow our guidance on how to present and group your evidence in the online application

Organising your evidence

Your evidence will need to be organised to reflect the structure of the online application. You should submit your evidence electronically under the correct section of your online application.

You should also submit the evidence requested about your training, qualifications and employment history and your CV in the format set out in the GMC's CV guidance. You will also be asked to nominate referees to provide structured reports.

Your evidence must be mapped to the high level learning outcomes by providing primary evidence for knowledge, skills and experience. If evidence is missing from any of the CiPs, your application may be unsuccessful.

You will not be able to compensate for shortfalls in your evidence of training and experience in a particular area, by providing extra evidence in other areas.

If you have a piece of evidence that is relevant to more than one area, do not include multiple copies in your evidence. Instead, include one copy and list it in your application under each relevant area, stating that the evidence is located elsewhere, and you would like to cross-reference it.

Where we ask in our guidance, please group your evidence together to keep the number of individual electronic uploads manageable. This will need to be done prior to uploading on the GMC application. There are many software solutions widely available that can be used for converting documents/excel sheets/PowerPoint presentations and images to PDFs and combining PDF documents.

Tips for a successful application

In our experience, applications fail because they provide inadequate or poor evidence of current capability covering the knowledge, skills and experience required for practising as an eligible specialist in the United Kingdom. Below are some tips for you to consider when making an application:

- Before submitting an application, you should review the current curriculum in conjunction with this document. A strong application will provide evidence that you hold the knowledge, skills and experience which demonstrate the outcomes set out in the curriculum
- Provide evidence of your **current capability** against the high level learning outcomes of the curriculum. This includes the maintenance of CiPs and key skills all evidence should be clearly linked to the CiPs
- Ensure you have evidence demonstrating core medical knowledge and application of this knowledge in practice to the level of two years of Internal Medicine stage 1 training. To demonstrate core internal medical capabilities, applicants need to provide MRCP (UK) or a comparable assessment of applied knowledge showing the application of core skills including outpatient capability. This evidence could include supervised learning events (SLEs) and workplace based assessments (WPBAs) including multisource feedback (MSF). Evidence of alternative core medical knowledge and training can be provided – e.g. FRCA, MRCGP
- Present your evidence in a clear, logical manner. You should refer to our user guide for advice on how to group, title and upload your evidence
- Ensure your referees can provide detailed support for your key skills across all (or most) areas of the curriculum and understand the requirements for specialist registration in the UK
- Provide evidence of managing a broad range of patients, as seen daily by Aviation and Space Medicine doctors in the UK
- Provide evidence of your clinical capability across the range of experience, ages and settings
- Ensure your evidence demonstrates you are entrusted to act at an independent level across all of the specialty CiPs

How your evidence can be used to demonstrate key capabilities in different CiPs

You will notice that some of the suggested evidence is listed more than once. This is because these documents are relevant to more than one CiP. For example, MSF can be used to demonstrate competence in most CiPs – therefore, you can use the same MSF to demonstrate the required capability across several CiPs

If you have a document that is relevant to more than one CiP, don't include multiple copies of it. Instead, provide one copy and list it in your application under each relevant CiP, stating that the document is located elsewhere, and you'd like to cross reference it.

Below is a list of evidence that are relevant to most CiPs – it is by no means exhaustive, and you are encouraged to submit a variety of evidence but you should aim to demonstrate knowledge, skills and experience with evidence that is comparable to the examples below.

A description of the assessments below, together with template forms, can be found on the JRCPTB website

Evidence / requirement	About	Indicative minimum numbers
Supervised Learning Events (SLEs)		
Case-based discussion and/ or mini-clinical evaluation exercise (mini-CEX)	These should have been undertaken with a consultant. CbDs and Mini-CEXs should cover different aspects of the specialty.	A total of 20 SLEs comprised of a mix of CbDs and mini-CEX at entrustment level 4 is recommended (2 per specialty CiP)
Workplace Based Assessments (WPBAs)		

Direct Observation of Procedural Skills (DOPS)	A structured report concentrating upon the procedural skills in ASM by a senior colleague – the GMC will request this as part of the application process so you should ensure you nominate at least on ASM doctor who are able to directly comment on your procedural competence OR Provide one summative DOPS for each procedure for which an applicant must be competent to perform unsupervised	
Quality Improvement Project Assessment Tool (QIPAT)	Can be used to demonstrate active involvement in service audit or development projects.	1 completed in the last 12 months clinical practice (WTE)
Patient Survey (PS)	Formal patient feedback is strong evidence as it's an anonymous feedback exercise. It should include approximately 15 patients. The JRCPTB has a template available on their website. A reflective entry reflecting on the survey must be made. If it is not possible to provide a formal patient survey an applicant could provide alternative evidence. However, this must provide equivalent details and breadth of information. Alternative evidence could include: ▪ Thank you letters/cards from patients ▪ Statements from referees ▪ Testimonial letters from colleagues ▪ Feedback from patients/colleagues	1 completed in last 12 months of most recent practise (WTE)
Teaching observation (TO)	At least one should be completed by a consultant in the specialty.	1 completed in last 12 months clinical practice (WTE)

Multi Source Feedback (MSF)	MSF is a strong piece of evidence as it is an anonymous feedback exercise. Minimum of 1 in the year before the application has been submitted – any available from the last 5 years should also be submitted. MSF should include approximately 15 colleagues, and not more than 4 should be doctors.	1 completed in last 12 months clinical practice (WTE)
Other evidence		
To be included in the portfolio of evidence	▪ **Appraisal** is good evidence of engaging with systems, processes and mandatory requirements and demonstrates performance (clinical and non-clinical) ▪ **Reflective** diaries/evidence of self-reflection ▪ **Supervisor report** reports from trainers and supervisors are important evidence to affirm and support capabilities and performance in both clinical and non-clinical activities. JRCPTB provides a Multiple Consultant Report (MCR) template for the purpose of these reports of which there should be four in the last 12 months. ▪ **Logbooks** must cover the last 5 years and show the type of procedures you performed and your role in the procedure ▪ **Training events** (courses, study days, meetings) over the last five years ▪ **Evidence of seeing patients** over the last five years covering a range of settings, referral contexts, conditions, stages of illness, ages ▪ **Academic activities** ▪ **Management activities (service development, minutes of meetings, providing appraisals, incident investigation, complaints management)** ▪ **Structured reports**	4 MCRs completed in the last 12 months clinical practise (WTE)

Continuing Professional Development (CPD)	CPD represents the acquisition and maintenance of knowledge, skills and key skills. Courses which would provide evidence towards a specific CiP have been listed in the suggested evidence. Examples of evidence could include a personal, reflective diary of learning achievements, in addition to detailed evidence of courses attended.	

Practical Procedures

Below details the practical procedures and the level of competency you will be expected to evidence. You can provide evidence for these procedures using DOPS.

Specialty Procedures

Procedure	Level of competence required
Altitude (hypobaric) chamber procedures	Competent to perform the procedure unsupervised
Long duration acceleration – human centrifuge procedures	Competent to perform the procedure unsupervised
Aircrew equipment integration procedures	Competent to perform the procedure unsupervised
Motion sickness desensitisation procedures	Competent to perform the procedure unsupervised
Aircraft accident investigation procedures	Competent to perform the procedure unsupervised
Noise and vibration assessment procedures	Competent to perform the procedure unsupervised
Thermal evaluation of aircrew equipment assembly performance procedures	Competent to perform the procedure unsupervised
Assessment of vision and visual (enhancement) systems	Competent to perform the procedure unsupervised
Assessment of aircrew helmet protection procedures	Competent to perform the procedure unsupervised

Evidence of training, qualifications, and employment

You can see below the evidence you must submit in these general areas. It is useful to submit evidence of your training as background evidence – this allows the evaluators to see your whole career pathway.

Evidence of training and qualifications	
Primary medical qualification (PMQ)	**If you hold full registration with us, you do not need to submit your PMQ** as we saw it when we assessed your application for registration. If you do not hold registration, you will need to have your PMQ independently verified before we can grant you full registration with a licence to practise. You can find out more about primary source verification on our website. You only need to get your PMQ verified by our provider. The rest of your evidence should be verified in line with our guidance.
Specialist medical qualification(s)	Please provide an **authenticated copy** of any overseas specialist medical qualifications you hold. You do not need to authenticate qualifications awarded in the UK. You should provide: Evidence of completion of full **MRCP(UK)** or comparable qualification. The MRCP(UK) is comprised of three tests, designed to assess acquisition of the full range of knowledge, skills and behaviour, as well as clinical understanding and execution, as detailed in the UK curriculum for Core Medical/Internal Medicine Training. For further information on the MRCP(UK), click here. Applicants **should** demonstrate an appropriate test of specialist knowledge such as The Diploma in Aviation Medicine (DAvMed) awarded by the Faculty of Occupational Medicine of the Royal College of Physicians following success in the faculty examination, or comparable qualification.

	Information about the current diploma, including guidance for candidates, is available on the Faculty of Occupational Medicine website www.facoccmed.ac.uk If you do not hold the MRCP (UK) and DAvMed or a comparable qualification as above, you can aim to demonstrate the same level of knowledge by providing: A detailed, thorough and succinct cross-referencing mapping exercise, demonstrating how each and every competency in the qualification has been covered in your own qualifications. The evaluators will then determine whether what has been provided is comprehensive enough to demonstrate the same level of knowledge. it will be assessed on a case by case basis and will involve the applicant to produce a portfolio of evidence. There are no qualifications from outside Europe that enable automatic entry to the Specialist Register in any specialty. An evaluation is made based on an applicant's whole career and therefore two applicants with the same qualifications but different training and/or experience may not receive the same decision. If your specialist medical qualification is from outside the UK, please ensure that you provide the following evidence **in addition** to your qualification: ○ Training curriculum or examination syllabus ○ Formal period assessments completed during training (these may be from any point in your career)
Recent specialist training	If you have worked in posts approved for a specialist training programme for a relevant qualification outside the UK in the past five years, please provide an **authenticated copy** of the curriculum or syllabus that was in place when you undertook your training. If a formal curriculum or syllabus (including assessment methods) is not available please provide a letter from the awarding body outlining the content of the training programme or examination. Should you wish to provide further evidence obtained within your UK specialty training, this evidence should have been reviewed and signed off through an ARCP from completed years in training. You must provide evidence of formal periodic assessment during your training. This evidence must have been completed at the time the training was undertaken (if it is completed retrospectively less weight will be given to the information

	provided). If you do not supply formal assessment documents, the curriculum must demonstrate how you were assessed. A detailed letter of verification from an educational supervisor would satisfy this requirement. If areas for development were highlighted, please provide evidence to demonstrate that you have subsequently addressed them.

Evidence of employment in posts and duties (including training posts)	
CV	You must provide an up to date copy of your CV, which includes all the details listed in the guidance on our website.
Employment letters	The information in these letters **must** match your CV. They should confirm the following: • dates you were in post • post title, grade, training • type of employment: permanent, fixed term, or part time (including percentage of whole time equivalent) Usually this will be set out in the letters offering you the post and renewing your contracts. **We do not need to see contracts and terms and conditions of employment**.
Job descriptions	These **must** match the information in your CV. They will usually confirm the following: • your position within the structure of your department • your post title • your clinical and non-clinical commitment • your involvement in teaching or training.
Rotas	You must provide samples of your rotas drawn from (not covering) the last three years of clinical practise (WTE). These should demonstrate your weekly clinical and non-clinical activities. For example, if you worked a 1:8 rota, you should submit eight consecutive weeks' rota to represent that placement.
Departmental/Unit annual caseload statistics	You should provide departmental and unit caseload statistics, activity data, range and scope of work undertaken in a placement from the last three years clinical practise (WTE).
Appraisal	Those working in an NHS or managed environment should submit evidence of annual appraisals or performance reviews. A revalidation or appraisal portfolio would be appropriate (if it is completed retrospectively less weight will be given to the information provided).

	For non-training posts you should provide evidence of ongoing evaluation of your performance. This may take the format of formal appraisals by the department head or line manager (clinical director, medical director, professor). For those applicants working in independent practice it is recommended that at least one employer. Appraisal is undertaken and summary documentation of this submitted with the application. Where an applicant is not based in the UK alternative forms of appraisal are strongly advised. Alternative evidence may include letters (written at the time) commenting on your performance. In addition, where no formal appraisal or assessment forms are available you must provide information on the method of career review or progression.

Generic CiPs

The suggested documentation is given below each CiP and the overall numbers expected are given in the section above. Each piece of evidence can support more than one CiP and you should cross reference

CiP 1: Able to function successfully within NHS organisational and management systems

Key skills:

- Aware of, and adheres to, the GMC professional requirements
- Aware of public health issues including population health, social determinants of health and global health perspectives
- Demonstrates effective clinical leadership
- Demonstrates promotion of an open and transparent culture
- Keeps up to date through learning and teaching
- Demonstrates engagement in career planning
- Demonstrates capabilities in dealing with complexity and uncertainty
- Aware of the role and processes for commissioning
- Aware of the need to use resources wisely

Suggested documentation:

▪ Reports from consultants who have worked with you, such as the Multiple Consultant Report (MCR)
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of taking an active role in governance structures, including service development. This may, for example, include the minutes of meetings for governance and unit management in which the applicant has been involved, MDT meetings, and any documented service development initiatives such as QIPAT.
▪ Evidence of attendance at an NHS / health service management course
▪ CPD evidence including courses in management and business

CiP 2: Able to deal with ethical and legal issues related to clinical practice

Key skills:

- Aware of national legislation and legal responsibilities, including safeguarding vulnerable groups
- Behaves in accordance with ethical and legal requirements
- Demonstrates ability to offer apology or explanation when appropriate
- Demonstrate ability to lead the clinical team in ensuring that ethical and legal factors are considered openly and consistently

Suggested documentation:

▪ Reports from consultants who have worked with you, such as the Multiple Consultant Report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of ability to assess the mental capacity of patients to make healthcare decisions. Evidence could include: • Reflections on cases where you had to assess a patient's mental capacity
▪ Evidence of involvement in making 'best interests' decisions, such as: • Notes • Letters • Meeting minutes
▪ Awareness of relevant legislation, including mental capacity legislation by completion of an online training course, for example: • eLfH Mental Capacity Act: **https://www.e-lfh.org.uk/programmes/mental-capacity-act/** • CPD Online Mental Capacity Act: **https://cpdonline.co.uk/course/mental-capacity-act/** • SCIE Mental Capacity Act: **https://www.scie.org.uk/e-learning/mca**

CiP 3: Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement

Key skills:

- Communicates clearly with patients and carers in a variety of settings
- Communicates effectively with clinical and other professional colleagues
- Identifies and manages barriers to communication (e.g. cognitive impairment, speech and hearing problems, capacity issues)
- Demonstrates effective consultation skills including effective verbal and non-verbal interpersonal skills
- Shares decision making by informing the patient, prioritising the patient's goals and wishes, and respecting the patient's beliefs, concerns and expectations
- Shares decision making with children and young people
- Applies management and team working skills appropriately, including influencing, negotiating, re-assessing priorities and effectively managing complex, dynamic situations

Suggested documentation:

▪ Reports from consultants who have worked with you, such as the Multiple Consultant Report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of your ability to analyse a patient's communication difficulties: • Reflective diaries
▪ Feedback from patients, such as a patient survey
▪ Reflective practice entries about patients or families who posed difficulties
▪ Assessment of observed clinical skills, attitudes and behaviours, such as a Mini-CEX
▪ CPD evidence including courses in simulation (including clinical scenarios and human factors) and communication

CiP 4: Is focused on patient safety and delivers effective quality improvement in patient care

Key skills:

- Makes patient safety a priority in clinical practice
- Raises and escalates concerns where there is an issue with patient safety or quality of care
- Demonstrates commitment to learning from patient safety investigations and complaints
- Shares good practice appropriately
- Contributes to and delivers quality improvement
- Understands basic Human Factors principles and practice at individual, team, organisational and system levels
- Understands the importance of non-technical skills and crisis resource management
- Recognises and works within limit of personal competence
- Avoids organising unnecessary investigations or prescribing poorly evidenced treatments

Suggested documentation:

▪ Reports from consultants who have worked with you, such as the Multiple Consultant Report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Reflective practice entries about patients or families who posed difficulties
▪ Evidence that you have arranged and attended meetings about a patient with Social Services or other non-health organisations. For example: • Meeting minutes, demonstrating your attendance and participation • Invites sent from you demonstrating arranging meetings
▪ Assessment of observed clinical skills, attitudes and behaviours, such as a Mini-CEX
▪ Documented evidence of development of procedures to improve inter-service and inter-agency communication, you will need to demonstrate your involvement in the new procedure and its effectiveness
▪ Evidence of specific quality improvement activity, such as evidence of specific quality improvement activity, such as a QIPAT
▪ Copies of letters you have written to NHS and non-NHS services involved with patients

- CPD evidence including courses in simulation (including clinical scenarios and human factors)

CiP 5: Carries out research and manages data appropriately

Key skills:

- Manages clinical information / data appropriately
- Understands principles of research and academic writing
- Demonstrates ability to carry out critical appraisal of the literature
- Understands the role of evidence in clinical practice and demonstrates shared decision making with patients
- Understands public health epidemiology and global health patterns
- Demonstrates appropriate knowledge of research methods, including qualitative and quantitative approaches in scientific enquiry
- Demonstrates appropriate knowledge of research principles and concepts and the translation of research into practice
- Follows guidelines on ethical conduct in research and consent for research
- Recognises potential of applied informatics, genomics, stratified risk and personalised medicine and seeks advice for patient benefit when appropriate

Suggested documentation:

- Reports from consultants who have worked with you, such as the Multiple Consultant Report (MCR), end of placement and appraisal reports
- Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
- Evidence of completion of Good Clinical Practice (GCP) training:
  - **www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice**
- Documented evidence of research activity. This may include evidence of:
  - Helping in a project
  - Reviewing research papers / grants
  - Writing and co-authoring research papers
  - Contributing to research projects
- Presentations – either lectures (podium presentations) or poster presentations

▪ Documented evidence of development of procedures to improve quality of care beyond personal practice, e.g. QIPAT or evidence of performing an audit
▪ Publications
▪ CPD evidence including courses in research methodology

CiP 6: Acts as a clinical teacher and clinical supervisor

Key skills:

- Delivers effective teaching and training to medical students, junior doctors and other healthcare professionals
- Delivers effective feedback with action plan
- Able to supervise less experienced trainees in their clinical assessment and management of patients
- Able to supervise less experienced trainees in carrying out appropriate practical procedures
- Able to act as a clinical supervisor to doctors in earlier stages of training

Suggested documentation:

▪ Reports from consultants who have worked with you, such as the Multiple Consultant Report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Completion of relevant Medical Education training course(s)
▪ Teaching Observation (TO) or other observational assessment of teaching
▪ Evidence of organising educational events / programs, with feedback.
▪ CPD evidence including courses in education and teaching

Specialty Specific CiPs

Applicants must demonstrate that they are currently practising at the level of 'entrusted to act independently' in all specialty CiPs. Further detail regarding the descriptors for the key skills in each specialty specific CiP can be found in the curriculum.

Specialty CiP 1: Ability to perform medicals on aircrew and other aviation workers and define and understand the clinical standards of licensing requirements

- Performs medicals on aircrew and other aviation workers including air traffic controllers to ensure individuals are medically fit and reach the required medical standards.
- Defines the patterns of symptoms found in patients presenting with disease, and how these are related to aviation environment.
- Defines the pathophysiological basis of investigations, including those relevant to aviation, and functional prognosis.
- Interprets the results of investigations, especially to those relating to occupational attribution, functional prognosis and to licensing gain/retention.
- Understands the clinical conditions requiring secondary review procedures.
- Understands the clinical conditions which define the licensing requirements
- Understands the clinical conditions and their effect in the flight environment.
- Provides certification of individuals within the medical standards necessary to achieve and maintain a high level of aviation safety.
- Understands the requirements of aviation regulatory bodies and the implications of clinical conditions on the setting of regulatory policies.
- Understands the importance of evidence-based literature reviews to inform licensing and regulatory decision making.
- Understands how to effect policy changes at national and international level.
- Demonstrates knowledge of the limitations of statutory regulation on some clinical conditions.
- Demonstrates knowledge of the effects on health of travelling by air.
- Demonstrates knowledge of research and other relevant information on aviation health and to set priorities for areas which require further attention.
- Acquires practical knowledge and experience of the conditions in which flight deck crew and other operators, including air traffic control workers, carry out their duties.
- Issues or revokes aircrew and air traffic controller's certificates to ensure medical standards are maintained
- Be responsible for identifying the clinical condition and licensing implications and take responsibility for these

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Reports/logbooks demonstrating ability to conduct medicals on aircrew and other aviation workers, and understands the limitations of statutory regulation on the clinical conditions.
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Feedback from patients, such as a patient survey
▪ Copies of letters you have written to aviation and non-aviation services involved with care of aircrew and passengers
▪ Evidence of completion of Good Clinical Practice (GCP) training: **www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice**

Specialty CiP 2: Ability to understand and assess hazards to health in the aviation environment and workplace, and the illnesses which they cause

- Understands the physical (e.g., acceleration, pressure change, low ambient pressures, temperature, impact), chemical, biological, ergonomic, psychosocial, and other hazards to health in the aviation workplace, and the illnesses, which they cause.
- Understands the military and civilian flight environment and the broader aviation working environments with the aim to have practical flight deck (or Simulator) experience.
- Understands the principles of toxicology, physical (including thermal, noise, vibration, and radiation) hazards, occupational hygiene and ergonomics.
- Knows about the clinical features and investigation of occupational diseases relevant to aviation.
- Recognises situations where specialist assessment of the aviation environment is needed and be able to seek and evaluate advice.
- Diagnoses work related ill health and provide advice on prognosis, prevention, and management.
- Customises assessments to subgroups (such as pregnant women) and to individuals.
- Understands the sources of information on and methods of evaluating and controlling risk.
- Understands the principles of health risk management in the aviation environment.
- Evaluates the implementation of health risk management in the aviation workplace.

- Undertakes assessments of the aviation working environment, recognise hazards, and provide preliminary advice.
- Undertakes quantitative measurements and advises on control measures for hazards in flight.
- Understands the importance of risk assessment to ensure those with medical conditions are fit to fly on commercial aircraft.
- Understands the health issues for passenger flying in commercial airlines and the hazards of microbiological and communicable diseases for commercial air travel.
- Carries out and evaluates health surveillance including biological monitoring for workers exposed to hazards on the ground or in the air.
- Understands aviation health standards, biological monitoring, and the principles of health surveillance.
- Understand the implications for military and commercial flying from global pandemics and biosecurity threats.
- Understands the management of inflight medical emergencies for commercial aircraft passengers and how to deal with on-board sick passengers.

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Including provision of reports/logbooks detailing the assessment of the aviation environmental hazards and the illnesses, which they cause. Reports/logbooks detailing where specialist assessment of the aviation environment was conducted.
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Feedback from patients, such as a patient survey
▪ Copies of letters you have written to aviation and non-aviation services involved with care of aircrew and passengers
▪ Evidence of completion of Good Clinical Practice (GCP) training: **www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice**
▪ Feedback from formal teaching sessions to medical and non-medical staff: • Teaching Observation SLE (TO)

Specialty CiP 3: Ability to carry out flight environment medical assessments and investigations and how these may contribute to aero-medical decision making

- Understands the limitations of ground based clinical assessments, equipment investigation and research.
- Understands how flight environment (including in-flight or synthetic simulator) investigations may contribute to aero-medical decision making, formal equipment clearances and clinical fitness to fly judgements.
- Recognises the valuable contribution that flight environment assessment and rehabilitation offer, and the potential for error without consideration of in-flight factors.
- Has a thorough understanding of the flight environment, and the limitations involved with conducting such work on board aircraft.
- Is aware of all appropriate regulations.
- Writes flight protocols, in conjunction with experienced aircrew, for flight environment assessment, research or rehabilitation using skills and knowledge acquired from all aspects of Aviation and Space Medicine practice.
- Understands the various modalities of clinical and physiological monitoring that may be used in flight, and their principal limitations.
- Understands appropriate format and channels for reporting.
- Understands how monitoring can be integrated with aircraft systems to ensure there is no impact on flight safety or escape systems. Is familiar with the use of flight environment clinical rehabilitation assessment and its use in returning to fitness-for-flight.
- Determines areas of investigation that require flight environment assessment, or conditions where in-flight rehabilitation is justified and cost effective.
- Demonstrates an understanding of the physiological principles underlying monitoring techniques used.
- Describes the most appropriate parameters to be monitored and be familiar with the limitations.
- Identifies typical sources of error, and the problems associated with inflight instrumentation.
- Has knowledge of aircrew and passenger equipment procurement organisations and responsible bodies.
- Writes a report based on the findings of the assessment, with recommendations.
- Produces reports to a high standard of clarity and accuracy, comparable with those in peer reviewed scientific literature.

Suggested documentation:

- Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Reports/logbooks detailing how the flight environment investigations contribute to aero-medical decision making, formal equipment clearances and clinical fitness to fly judgements.
- Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports

- Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
- Evidence of having passed DAvMed
- Feedback from patients, such as a patient survey
- Copies of letters you have written to aviation and non-aviation services involved with care of aircrew and passengers
- Evidence of completion of Good Clinical Practice (GCP) training: **www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice**

Specialty CiP 4: Ability to assess research studies to provide risk and hazard analyses based on research findings

- Publishes and communicates internally and externally the results of research undertaken, to respond to and raise awareness of issues or directives.
- Delivers accurate and scientifically sound research
- Demonstrates curiosity and a critical spirit of enquiry
- Demonstrates the persistence needed to follow a project from inception to completion.
- Ensures that research is undertaken using relevant ethical guidelines.
- Applies for appropriate ethical research approval.
- Converts a problem into a researchable question.
- Demonstrates the ability to write a scientific paper.
- Can set up a hypothesis and test it.
- Knows how to design a research study.
- Carries out a literature search.
- Plans data collection for simple survey (sample selection and recording and storing data).
- Knows how to use appropriate statistical methods and utilise the knowledge of a statistician or epidemiological expert.
- Interpret scientific data in journals and from own research.
- Develops critical appraisal skills and apply these when reading literature.
- Demonstrates good verbal and written presentations skills

Suggested documentation:

- Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
- Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)

▪ Evidence of completion of Good Clinical Practice (GCP) training: www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice
▪ Documented evidence of research activity. This may include evidence of: • Helping in a project • Reviewing research papers / grants • Writing and co-authoring research papers • Contributing to research projects
▪ Presentations – either lectures (podium presentations) or poster presentations
▪ Publications
▪ CPD evidence including courses in research methodology
▪ Evidence of having completed higher academic/research degree. Provision of published research papers and reports detailing own research.
▪ Feedback from formal teaching sessions to medical and non-medical staff: • Teaching observation SLE (TO)

Specialty CiP 5: Ability to show how personal protective equipment and life-support systems work and how the physiological effects of the aviation environment can alter aircrew performance

- Assesses how personal protective equipment works and how the physiological effects of hypoxia can alter aircrew performance.
- Conducts assessments of the fit and function of individual items of aircrew personal protective equipment under hypobaric conditions.
- Performs physiological monitoring necessary to assess the performance and limitations of protective equipment.
- Understands altitude chamber procedures, including medical fitness and contraindications.
- Demonstrates how personal protective equipment mitigates the effects of long duration acceleration of the human.
- Assesses the fit and function of individual items of aircrew personal protective equipment under increased acceleration.
- Demonstrates how the physiological effects of acceleration exposure can alter aircrew performance and how aircrew life support systems mitigate these effects.
- Operates a human centrifuge in a safe manner.
- Medically monitors human centrifuge exposures.
- Manages safely centrifuge emergency procedures.
- Conducts accurate and appropriate non-human subject tests of life support equipment.

- Assesses medical fitness to undergo high-G exposure and to detect medical conditions contra-indicating exposure.
- Assesses the performance of aircrew life support systems and health related medical investigations.

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Reports/logbook detailing assessments of personal protective equipment and life support systems. Evidence of involvement with altitude chamber, and human centrifuge assessments.
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Feedback from patients, such as a patient survey
▪ Copies of reports you have written

Specialty CiP 6: Ability to conduct the medical investigation of an aircraft accident or incident

- Documents and records evidence during an investigation.
- Demonstrates cockpit/cabin crashworthiness structural assessments and identify hazards.
- Demonstrates assessments on the performance of restraint systems.
- Demonstrates assessments on the crashworthiness and energy attenuation capabilities of seat systems.
- Identifies morphological abnormalities and interprets autopsy and clinical findings in relation to the injury mechanisms.
- Can identify issues to be addressed by the clinical/autopsy examination.
- Assesses post-crash survivability.
- Assesses the performance and functioning of aircraft assisted escape systems and understands the associated injury mechanisms.
- Demonstrates how design and test failings can influence the causation of injury.
- Is conversant with current legislation and regulations relating to medico-legal aspects of accident investigations.
- Makes recommendations to improve flight safety and injury outcome.

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Evidence of involvement in aircraft accident investigations including reports and logbooks of cases.
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Copies of reports or publications you have written
▪ Evidence of involvement in air accident or incident investigations

Specialty CiP 7: Ability to describe the factors influencing human performance and human error

- Describes the factors influencing human performance and the use of human error classification systems.
- Assesses the human factors issues associated with the design of flight decks.
- Delivers and enhances crew and management awareness of human factors.
- Understands the concept of risk as the product of event frequency and the application of as low as reasonably practical criteria (or likelihood and severity) to safety decision making.
- Describes the personal and organisation factors that affect safety.
- Demonstrates knowledge of safety and risk analysis, nature and location of aircraft accidents, benefits of aircraft warning systems, and reporting systems.
- Demonstrates knowledge of the factors influencing human performance and error, including the effects of fatigue, stress, individual differences, and medical conditions.
- Uses and interprets fatigue risk management systems and measures to mitigate the effects of fatigue.

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Provision of reports/logbooks detailing the involvement in the assessment of human factors issues associated with flight.
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports

▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Copies of reports or publications you have written

Specialty CiP 8: Ability to conduct and understand the requirements for an aeromedical transfer of a patient

- Understands how to aero-medically evacuate patients safely.
  - Factors influencing the decision to transfer patients and the classification categories of patients for aeromedical evacuation.
  - Composition of the transfer team and the requirements of civilian and military patient transfers.
- Can identify the essential data and requirements for safe and effective aeromedical transfers.
  - Requirements of the pre-flight preparation of the patient.
  - Requirements of the pre-existing clinical conditions, the relative contraindications to transfer and the presentation of difficulties which may be encountered during transfers.
  - Factors which influence the choice of aircraft for aeromedical evacuation
- Understands the principles for the aeromedical transfer of the critically ill patient.
- Demonstrates an understanding of in-flight medical equipment and understands the rationale behind the aviation standards relevant to aeromedical equipment.
  - Principles of monitoring and maintenance of the equipment during flight.
- Demonstrates how the environment can influence the physiology and pathology of disease processes.
  - Aeromedical considerations for the patient regarding altitude, temperature, noise, air sickness, vibration and movement, visibility for medical staff and communication.
- Is aware of the availability of in-flight resources and the influence on patient transfer and care.
- Understands the importance of the administration of medication during transit though different times zones.
- Understands the principles of transfer of patients with infectious diseases and those suffering from biological and chemical agents.

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Provision of reports/logbooks detailing the involvement aeromedical transport of patients with a range of clinical conditions.

▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Evidence of aeromedical retrieval cases you have been involved
▪ Evidence of completion of Good Clinical Practice (GCP) training:www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice
▪ Feedback from patients, such as a patient survey
▪ Reflective practice entries about patients and aeromedical retrieval cases

Specialty CiP 9: Ability to assess pathophysiological challenges of the space environment

- Assesses the pathophysiological challenges of the space environment (including sub orbital and long duration space missions).
    - Problems associated with decreased pressure with the consequent risk of hypoxia, decompression sickness, ebullism, barotrauma and thermal injury and in comparison, with these factors in the non-space flying environment.
    - Problems associated with the accelerations of launch, atmospheric re-entry and landing.
    - Principles relating to nutrition, fluid balance, waste management and personal hygiene.
- Understands the hazards of radiation and micrometeoroids
- Understands the rationale and methods for rehabilitation from the long-term physiological effects of human spaceflight.
- Assesses how microgravity influences space adaption
    - Problems associated with decreased accelerations (microgravity) with specific reference to the effects on the cardiovascular, neurovestibular and musculoskeletal systems.
    - Mechanisms and countermeasures available to minimise the effects of long duration space flights.
    - Knowledge of the limitations of medical intervention in a microgravity environment.
- Demonstrates an understanding of the protection requirements for space flight.
    - Requirements for space craft and space suit pressurisation schedules.
    - Protection requirements for portable life support systems for extra-vehicular activities (space walks).

- Understands of the constraints and challenges of delivering space medicine within a multinational operational environment such as the International Space Station.
- Understands of the role of the space medicine specialist within a wider team centred around crew medical support.
- Understands the behavioural consequences of prolonged space flight.
    - Importance of pre-selection psychological evaluation of prospective astronauts (and potentially space tourists).
    - Interrelationships between humans, their environment and spacecraft including the psycho-physiological factors associated with spacecraft habitability.

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc). Provision of reports/logbooks detailing the involvement with the assessment of the pathophysiological challenges of the space environment and demonstrates an understanding of the constraints and challenges of delivering space medicine.
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Copies of reports or publications you have written
▪ Evidence of space or analogue space missions you may have been involved with
▪ Evidence of completion of Good Clinical Practice (GCP) training:www.nihr.ac.uk/health-and-care-professionals/learning-and-support/good-clinical-practice

Specialty CiP 10: Ability to demonstrate the principles of management and the structure of international, military and civilian regulatory bodies

- Is able describe the structure and function of the healthcare system and medical regulation as it applies to Aviation and Space Medicine
- Demonstrates knowledge of the need for safety standards in aircraft operations.

- Understands the military and civilian aviation regulatory bodies and promote a culture where safety is paramount.
    - Structure and authority of UK, European and other international regulatory bodies including CAA, FAA, EASA, and ICAO.
    - How and why regulatory bodies interact with each other.
    - Military and civilian flying regulations and how military civilian counterparts interact.
- Develops appropriate relationships that facilitates solutions to aviation workers health/licensing problems.
- Understands and interacts with the aerospace industry and demonstrates how it functions to enhance flight safety and aviation worker and passenger health

Suggested documentation:

▪ Minimum of 2 Supervised learning events (SLEs) (including CbDs, mini-CEX, DOPS etc).
▪ Reports from consultants who have worked with you such as the multiple consultant report (MCR), end of placement and appraisal reports
▪ Feedback from a variety of clinical and non-clinical colleagues who have worked with you, such as the Multisource Feedback (MSF)
▪ Evidence of having passed DAvMed
▪ Copies of reports or publications you have written
▪ Reflections on involvement with regulatory bodies relevant to the specialty