

# ADVANCED INTERNAL MEDICINE RESIDENCY

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## TRAINING REQUIREMENTS

### (A) INTRODUCTION

The Residency Programme in Advanced Internal Medicine is a 2 year comprehensive programme that aims to build on the knowledge, skills, attitudes and behaviour gained during the basic residency years to provide excellent evidence based medical care for adult patients admitted into the hospital or seen in the clinic for multiple medical conditions or undifferentiated symptoms or signs.

### (B) PROGRAMME OVERVIEW

#### Core experiences of the Programme:

- The 2 year programme in advanced internal medicine should include 18 months of training in core internal medicine. This would include managing inpatients with acute medical problems, undifferentiated medical problems, multiple co-morbidities and with organ specific problems. The trainee is also expected to provide continuity ambulatory clinic experience once a week under supervision.
- The trainee should also be given the opportunity to rotate to medical sub-specialties of their choice over the remaining 6 month period of their training with a minimum rotation for one month to a maximum of three months. This would allow development of the broad expertise that is necessary to provide holistic and comprehensive patient care.

#### Objectives of the Training Programme:

To become an internist who is:

- **A Highly Proficient diagnostician:** in the assessment and diagnosis of acute or chronic multi-system illnesses or undifferentiated conditions.
- **A Highly Proficient provider of Integrated Care:** collaborating with other specialties in the management of patients in a holistic way.
- **A Highly Proficient Problem Solver:** who is able to find solutions to problems that imprecisely conform to established guidelines and available evidence.
- **A Highly Proficient Patient advocate:** who values patients' preferences and is able to personalize management strategies based on patients' socioeconomic and cultural needs.
- **A Highly Proficient Communicator:** who is able to counsel patients and family members and resolve conflicts
- **A Highly Proficient Leader and Innovator:** who provides evidence based, cost effective, and quality care devoid of conflicts of interest. Functions in leadership and management roles.
- **A Highly Proficient Teacher and Mentor:** Imparts essential knowledge, attitudes and skills that medical students, young doctors and other health professionals need to acquire if they are to adequately cope with the challenges of modern healthcare.

## **(C) ADMISSION REQUIREMENTS**

- Residents who have successfully completed their Basic Internal Medicine residency programme and upon passing the required intermediate examination [MRCP/M.Med (Internal Medicine)]
- Trainees who have completed Basic Specialist Training programmes in Internal Medicine and have passed MRCP/M.Med (Internal Medicine)

## **(D) TRAINING SYLLABUS**

### **Training requirements:**

#### **Clinical Exposure:**

- The senior resident should be conducting daily morning and evening exit general medical ward rounds, managing at least 10 patients daily under supervision by consultant.
- The senior resident should run minimum of one weekly outpatient clinics in general medicine under supervision by a consultant for 18 months.
- The senior resident should manage at least 30 outpatients per month (for the compulsory 18 months General Medicine posting) under supervision by consultant.
- They should be actively involved in communication and ethical issues with respect to patient care during their clinical exposure.
- They should be doing at least 2 night calls per month for a minimum of 2 years.
- They should be providing consult services (inpatient and outpatient) for other medical and surgical departments

#### **Procedural skills:**

- The senior resident had already been certified as competent in the procedures listed in Annex A by the Programme Director of the IM residency programme. Hence, the senior resident should maintain proficiency and able to supervise junior doctors in performing bedside procedures listed in Annex A. The senior residents could either supervise the junior doctors or attend the simulation training.
- Point of Care (POC) Ultrasound training (The training curriculum could be found in Annex B):  
  
The inflight AIM senior residents (SR1 and SR2) are to start the POC Ultrasound training. From 2021 intake onwards, POC Ultrasound training would be as part of the AIM training mandatory for the senior residents.

#### **Teaching and Education:**

- The senior resident should be actively involved in supervising junior residents during ward rounds, procedures and departmental CME activities.
- The senior resident should be actively involved in departmental CME activities like morbidity and mortality rounds, journal clubs, topic updates etc

- The senior resident should also be involved in undergraduate teaching.

**Personal and Professional Development:**

All senior residents will be encouraged to attend courses, conferences and personal development programmes to improve their knowledge and leadership skills.

All senior residents should attend Medical ethics, Professionalism and health law course conducted by Singapore Medical Association.

**Research and Quality:**

All senior residents are strongly encouraged to participate in research, scholarly activities and quality related projects under the guidance of senior clinicians during the 2 years of Advanced Internal Medicine residency programme. These should be done in addition to the clinical training. The senior residents are encouraged to present their work at local or international conferences.

**Postings and rotation:**

Rotation	Number of months
General Internal medicine  Geriatric Medicine (in-patient) posting (GRM departments admitting by Age) could be recognized as General Medicine posting. This posting will be capped at maximum 3 months. Senior resident is not allowed to do any further Geriatric Medicine posting and have it recognized as elective posting.	18 months
<b><u>Sub-specialty rotation</u></b>  Geriatric medicine Neurology Gastroenterology Cardiology Infectious diseases Renal medicine Endocrinology Respiratory medicine Haematology Medical Oncology Rheumatology Dermatology Palliative medicine Rehabilitation medicine Psychiatry MICU Tuberculosis Control Unit (TBCU)	Total 6 months full time  Each rotation should be minimum of 1 month and maximum of 3 months  *Accredited posting (maximum 1 month) is allowed, subject to IM RAC's review and approval.

**Expected Competencies for Senior Residents**

<b>Competencies</b>	<b>Minimum expectations: Year 1</b>	<b>Minimum expectation: Year 2 (expectations in addition to year 1)</b>
<b>Patient Care</b>	<p>Leads and guides the junior resident towards a complete and comprehensive assessment of the patient, formulate the problem list and management plan using good clinical reasoning skills under consultant supervision.</p> <p>Able to anticipate complications and take appropriate actions.</p> <p>Knows own's limit and when to escalate for advice</p> <p>Able to lead, guide and perform bedside cardiopulmonary resuscitation.</p> <p>Able to perform all bedside procedures competently.</p> <p>Able to make decisions with respect to extent of care, DNR orders, end of life care and CCOD under supervision.</p> <p>Reviews and follows up on the plans of all patients during afternoon exit rounds.</p> <p>Able to assess and manage patients in ambulatory care under supervision.</p> <p>Knowledge of Advanced Medical Directives and Advanced Care Planning guidelines and its application to patient care.</p>	<p>Able to function as an independent consultant and team leader to guide all junior doctors to assess and manage all inpatients.</p> <p>Able to make independent decisions with regards to management of all inpatients, their discharge and follow up plans.</p> <p>Able to make independent decisions with regards to ethical issues, extent of care, end of life care, DNR orders and CCOD.</p> <p>Able to assess and manage patients in ambulatory care and patients referred for inpatient consults independently.</p>
<b>Medical Knowledge</b>	<p>Knows management of acutely ill, sick and critically ill patients.</p> <p>Demonstrates knowledge of all common medical conditions.</p> <p>Knowledge of indications, contraindications, advantages,</p>	<p>Able to demonstrate qualities of a mentor and educator for all acute, chronic, complex, undifferentiated and multidisciplinary medical problems independently</p>

	<p>disadvantages of diagnostic and therapeutic procedures and pharmacotherapy.</p> <p>Demonstrates comprehensive analysis and management of complex, undifferentiated and multidisciplinary cases.</p> <p>Knowledge of preventive care and maintenance of patients with chronic and multiple medical problems.</p> <p>Knows how to manage medicine throughout the lifespan – common presentations in pregnancy, common problems in menopausal women, common problems in geriatrics population and end-of-life care.</p> <p>Demonstrates Knowledge of local health care Screening policies</p> <p>Demonstrates ability to impart knowledge to all junior doctors in the team</p>	
<b>Practice based learning and Improvement</b>	<p>Able to set personal and team learning and improvement goals.</p> <p>Able to identify personal strengths and weaknesses.</p> <p>Involves in counselling and education of patients, families, students, residents and other health care professionals.</p> <p>Able to apply Evidence Based Medicine to daily clinical practice.</p> <p>Able to complete MINI-CEX evaluation of junior doctors and medical students under supervision.</p> <p>Knows clinical audit and quality improvement processes and be involved in audit/ improvement projects</p> <p>Preferably conduct research projects</p>	<p>Able to teach and guide juniors on Evidence based practice.</p> <p>Able to effectively teach, guide, counsel and evaluate junior doctors/residents and medical students.</p> <p>Knows and able to guide clinical audit and quality improvement processes and be involved or has completed audit/ improvement projects.</p> <p>Preferably complete a research project.</p>
<b>Interpersonal and Communication</b>	<p>Apply communication skills (compassion and empathy) to</p>	<p>Supervise juniors during communication encounters with patient and family.</p>

<p><b>skills</b></p>	<p>engage and reassure the patient in specific situations including:</p> <p>First encounters, history taking, physical examination, consent taking, discussing treatment options, counselling and breaking bad news.</p> <p>Communicate effectively extent of care and end of life issues with patients and their families.</p> <p>Communicate effectively within multidisciplinary teams</p> <p>Communicate effectively with referring doctors, and when referring a patient to another specialist.</p> <p>Apply communication skills to facilitate effective clinical handover and transfer of care.</p> <p>Able to conduct family conference to explain complex and difficult management plans, resolve conflicts and clarify care decisions under supervision.</p> <p>Able to answer complains and write medical reports</p>	<p>Able to conduct family conferences independently.</p> <p>Demonstrate excellent interpersonal communication skills to facilitate the function of multidisciplinary teams.</p>
<p><b>Professionalism</b></p>	<p>Respects patient autonomy and privacy.</p> <p>Responsible and accountable to patients, society and the profession.</p> <p>Demonstrates sensitivity and responsiveness to diverse patient cultures and preferences.</p> <p>Demonstrates respect, compassion, integrity and ethical behavior. Demonstrates behaviors that reflect an ongoing commitment to continuous professional development.</p>	<p>Display the ability to mentor and to train others in the team towards professional attitudes and behaviors in order to enhance team and individual effectiveness.</p> <p>Demonstrate personal behavior which contributes to building a productive culture within teams.</p>
<p><b>System based practice</b></p>	<p>Demonstrates ability to be a team leader and supervises all junior medical staff.</p> <p>Ensures proper hand over of</p>	<p>Efficient team leader and patient advocate for cost effective quality care for all patients</p> <p>Demonstrates a wider understanding of the healthcare system – funding, resource</p>

	<p>patients.</p> <p>Provides appropriate transitions of care.</p> <p>Able to work in interprofessional teams to enhance patient safety.</p> <p>Participates in identifying system errors and proposes reasonable solutions.</p> <p>Identifies functional and social issues of patient care and appreciates value of multidisciplinary and community based care.</p> <p>Provides appropriate discharge planning and follow up plans.</p> <p>Incorporates considerations of cost awareness and risk benefit analysis in patient care</p>	<p>allocation, social implications, etc.</p> <p>Applies and encourages concepts of quality and safety to clinical practice</p>
<b>Faculty Development</b>	<p>Able to teach and guide junior residents in clinical skills, procedures, and patient care</p> <p>Possess the broad-based IM knowledge to teach junior residents effectively</p> <p>Participate in co-ordinating medical students and junior residents teaching programs</p> <p>Participate in co-ordinating local examinations and courses (eg. MBBS/MRCP/M.Med)</p>	<p>Demonstrate highly proficient qualities of an educator (in teaching, giving lectures/talks)</p> <p>Able to appraise junior residents' learning and correct their deficiencies</p> <p>Able to help organise and develop training programs for the department / hospital / conferences</p> <p>Able to help develop assessment tools for learning for the department / hospital / PDs</p>
	<ol style="list-style-type: none"> <li>1. Conduct at least one department/junior resident teaching session every 3months (topic updates / mortality morbidity presentation / facilitation of MO case presentation, lectures, journal updates, etc) with feedback / evaluation from consultants.</li> <li>2. Conduct at least one MINI CEX for one junior resident every 3 months.</li> <li>3. Involve in teaching medical students bedside tutorials (year 2/3/5 medical students) with good end of posting feedback scores (at least 2 during the senior residency training period)</li> <li>4. Attend educational courses: MINI CEX (compulsory)</li> </ol>	

	<p>Optional courses:</p> <ul style="list-style-type: none"> <li>• Teaching for Effective Learning: Small Group Teaching (run by MEU)</li> <li>• Teaching for Effective learning: Large Group Teaching</li> <li>• TBL Workshop: Using Team-based Learning in the Clinical Environment</li> <li>• Teaching for Effective Learning: Case Based Learning</li> </ul> <p>5. Present papers or posters at conferences. At least one paper/poster presentation during the SR training.</p>
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## (E) SUPERVISION AND WORK HOURS OF RESIDENTS

### I. Supervision

All residents will be supervised by a designated training supervisor with whom the resident works closely on a monthly basis. The ratio of all teaching faculty to residents should be 1:1. The number of core clinical faculty to resident ratio must be no less than 1:2. 20% of resident's time must be protected for training activities (CME, case discussions, case write ups, etc).

### II. Work Hours

Work hours can be defined as all clinical and academic activities related to residency training. Work hours must be limited to 80 hours per week, averaged over a month, including all on-calls. Residents must be allowed 1 day (i.e. 24 continuous hours) in 7 days free from all clinical administrative and academic responsibilities, averaged over a month. On-call hours must not exceed 24 + 6 hours. The senior residents are not allowed to see new cases during the additional 6 hours. Work hours must be tracked by the Programme Director.

## (F) ASSESSMENT AND FEEDBACK

### I. Log of operative / clinical experience

All residents are expected to keep a log of their clinical experience in the designated case log system.

### II. Assessment

Program specific evaluation tools (eg: MINI CEX, CSR, MSF etc) could be used to assess and feedback progress of the residents' performance in the core competencies. These should be submitted to the PD and RAC on a 6 monthly basis for review.

### III. Feedback

Residents should perform a yearly evaluation of teaching faculty and the training programme. These forms must be submitted to the RAC and kept absolutely confidential.



#### IV. Passing the Residency Year

Year of training	6 monthly Clinical Competency Committee recommendation (based of formative assessment, Journal presentation and blue letter evaluations)	Case and procedure logs (vetted by PD)	Attendance at CME (Structured department teaching programme)  Note: Attendance for conference is not counted towards CME  (Total of 160 hours over 2 years)	Leave
Year 1	Clear pass	Satisfactory	Minimum 80 hours	Not exceeding HR policy
Year 2	Clear pass	Satisfactory	Minimum 80 hours	Not exceeding HR policy

#### Criteria for Exit Certification by RAC

- Successfully completed 2 years of Advanced Internal Medicine training
- Successfully completed the logbook requirements
- Successful Pass recommendation by Clinical Competency Committee
- Attended Medical Ethics, Professionalism and Health Law course
- MRCP (UK) Specialty Certificate Examination in Acute Medicine should only be taken during the Advanced IM residency training period
- Senior residents are required to pass the MRCP (UK) Specialty Certificate Examination in Acute Medicine and the Exit Examination. Please refer to Annex C on the Exit Examination format and marking guidelines.

### (G) CHANGES IN TRAINEESHIP PERIOD AND LEAVE OF ABSENCE

#### I. Changes in Training Period

Residency should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC may at its discretion, require the resident to undergo a further period of training in addition to the minimum requirements of the programme or terminate the residency altogether. All residents are required to conform to the residency training plan as approved by the RAC and complete all the exit and training requirements within the maximum candidature.

#### II. Leave of Absence

All residents are to comply with the prevailing MOH policy on Leave of Absence.

#### III. Overseas Postings

Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (refer to JCST Circular 114/14).

**Annex A**

<b>No.</b>	<b>Procedure</b>
1	Arthrocentesis (Eg: Knee Aspiration)
2	Thoracentesis / Chest Tube Insertion
3	Abdominal tap
4	Arterial line placement
5	Central line placement
6	Lumbar puncture
7	Endotracheal intubation
8	Ventilator management

**Training Requirement for Ultrasound Guided Pleural and Ascites tap and Central Venous Catheter insertion via Internal Jugular and Common Femoral route for AIM Residency**

**A. Content**

1. Introduction
2. Curriculum
3. Educational material and method
4. Proficiency at performing POC US
5. Conclusion
6. Appendix

**B. Introduction**

1. This document serves as a guide for the training in POC US for ultrasound guided procedures for the AIM senior residency programs in Singapore, listed as follows:

- i) US guided Pleural tap and/or drain
- ii) US guided Ascites tap
- iii) US guided central venous catheter insertion via internal jugular and/or common femoral route.

2. All the AIM Senior Residents should be equipped with the training in the first 12 months of their senior residency program. Individual hospitals would provide the hands-on training to the AIM senior residents and their proficiency would be certified by accredited trainers (Eg: Diagnostic Radiology).

3. The document narrates the following objectives for the hands-on training on point of care US use in patients with general medical problems.

4. Objectives –

- i) To train the AIM senior residents to have a good understanding of the role and utility of point-of-care ultrasound in US guided procedures listed above.
- ii) To train the AIM senior residents to perform POC US and be able to diagnose simple and complex pleural effusions and ascites as well as recognise pertinent anatomy and pathology is region of interest for purpose of diagnostic taps or vascular access and to be able to determine suitability for the bed-side US performance of such procedures.
- iii) To train the AIM senior resident to be able to integrate POC US into his clinical decision making process and perform the US guided procedure as required.

## C. Curriculum

1. The curriculum for the POC US training for AIM Residency is divided into two modules:
  1. Ultrasound physics & anatomy and 2. Interventional role of POC US in General Medicine.
  
2. Module 1. Ultrasound physics, anatomy and relevant pathology
  - Basic Ultrasound physics & knobology
  - Indications for POC US
  - Principles of POC US interpretation (inclusive of artefacts, bioeffect & safety) including pertinent anatomy and relevant pathology in the region of interest.
  - Ultrasound techniques, workflow & image management
  - Care of ultrasound equipment
  
3. Module 2. Interventional role of POC US (Ultrasound Guided Procedures)
  - Basics of interventional POC US - Preparation and equipment, Infection control and asepsis and General principles of ultrasound guidance and needle localization technique
  - Handling of Rocket Seldinger Drainage Catheters & Kits
  - Scanning techniques and scan windows in identifying pleural effusion and peritoneal fluid
  - US guided peripheral vascular access / central vascular access (Internal Jugular Veins and Femoral Veins and surrounding structures)
  - US guided thoracentesis
  - US guided abdominal paracentesis
  - US Limitations and Pitfalls.
  - Recognise and manage complications.
  - Include 5 attempts at hand on training using US phantom with at least 2 successful attempts.

## D. Educational methods

1. The AIM training committee will arrange a POC US training course for all the AIM senior residents entering the AIM senior residency program.
  
2. The course will be conducted in the first 12 months of the AIM residency program, so as to equip all the new SRs with the skills of POC US in the initial phase of their training.
  
3. The course will comprise of 2 half-days or 1 full-day workshop (theory and practical), conducted on Saturday through the Academy of Medicine (Singapore). The course will be held at the hospital (on rotational basis) for the month of August, September and October (i.e. 1 month for each cluster). The AIM senior residents who are not able to attend the course at their own cluster can attend it at another cluster.
  
4. Hands-on/simulation & on-the-job

- a. ability to obtain images of diagnostic quality
- b. use and/or understanding of gain
- c. use and/or understanding of depth
- d. transducer placement
- e. use and/or understanding of measurement techniques
- f. use of appropriate compression
- g. use and/or understanding of M-Mode, Color Doppler and/or Power Doppler
- h. overall experience with the chosen clinical area
- i. practice good infection control in context of US guidance
- j. Develop good hand eye coordination for safe insertion of needle in addition to the understanding the principles of needle tip localisation.

#### **E. Proficiency at performing POC US**

1. All the senior residents are required to obtain the Certification of Proficiency in POC US before they are deemed eligible for exit examination.
  
2. For proficiency in diagnostic POC US limited to diagnosis pleural effusion and ascites, the senior resident must perform at least 5 scans of each examination covered in the curriculum, and such that
  - a) All scans must be recorded in print or digital (preferred) format.
  - b) All scans must be obtained adequately and be of sufficient quality for interpretation.
  - c) At least 2 out of the 5 scans must be done under direct observation of procedural skills (DOPS) by the ultrasound mentor.
  - d) At least 2 of the scans must have pathological findings.
  - e) The ultrasound mentor and the program director must agree that the senior resident is competent in performing diagnostic ultrasound by the end of the residency program.
  
3. For proficiency in Interventional POC US, the senior resident must perform at least 5 ultrasound guided interventions per procedure as covered in the curriculum, and such that
  - a) All scans must be recorded in print or digital (preferred) format.
  - b) All scans must be obtained adequately and of sufficient quality for intervention.
  - c) At least 2 out of the 5 intervention must be done under direct observation of procedural skills (DOPS) by the ultrasound mentor.
  - d) The ultrasound mentor and the program director must agree that the senior resident is competent in performing procedural ultrasound.
  
4. The scans that are logged in for the proficiency certification are cumulative over the entire period of training.
  
5. The certification for proficiency is done in last semester of the residency program.

## **F. Conclusion**

The POC US committee believes that with a structured and integrated POC US training program in place, the AIM senior residents will gain the competency and confidence required to perform POC ultrasound in the diagnosis and management of general medical patients in the context of US guided pleural and ascites tap and US guided central venous catheter insertions.

**Exit Examination Format**

- a. MRCP (UK) Specialty Certificate Examination in Acute Medicine
- b. Clinical Viva on
  - Clinical consultations
  - Journal critique

There will be 3 stations (15 minutes each) for the Clinical Viva and it would be conducted like an OSCE:

1. General Medicine (a case scenario) – This section assesses the ability to approach a complex diagnostic medical problem. In addition to medical history and examination, investigations may include laboratory tests, X-rays, photographs and pathological data. Candidates may also be tested on management principles, which might extend reasonably beyond the core scenario.
2. Acute Medicine (a case scenario) – This section includes the recognition and management of a critically ill patient usually, but not exclusively, referred from other specialties. Questions on pathophysiological aspects of the diseases may be asked. Candidates may be questioned about management principles, which might extend reasonably beyond the case scenario.
3. Journal critique – This section assesses the ability for critical analysis of data in the medical literature, and will be based on one published paper given to the candidates before the viva. In the 60 minutes of study time, candidates may be required to read limited amounts of material, supplementing the main paper, to aid comprehension. Candidates may be tested on the wider principles of critical appraisal related to the context of the paper.

Total duration: 45 minutes

**Marking Guidelines (Clinical Viva)**

Maximum total mark for each station = 80

Pass:  $\geq 56$

Borderline: 32 to 55

Fail:  $\leq 31$

Maximum total score for the three stations = 240 marks

To attain a satisfactory outcome (i.e. to pass the examination), candidates must attain a minimum total score of 152 out of 240 (i.e. 63.33%); and must not fail any section. A fail in any one section is an automatic failure of the whole examination.