Specialty Training Requirements (STR)

Name of Specialty:	Infectious Diseases
Chair of RAC:	A/Prof Sophia Archuleta
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Contents

Note: In addition to the training requirements stated in this STR, residents must comply with any other regulatory requirements or practice-based requirements mandated by the healthcare institutions or place of practice.

Scope of Infectious Diseases

The field of adult *Infectious Diseases (ID)* covers the interaction between human hosts and microbes: preventing, managing and treating infections in individuals as well as larger populations. Intrinsic to the discipline are scientific knowledge, the scientific method of problem solving, evidence-based decision making, a commitment to lifelong learning, and an attitude of caring derived from humanistic and professional values.

Purpose of the Residency Programme

The programme in ID is a 3-year Senior Residency (SR) following the completion of the 3-year Internal Medicine (IM) Residency. The programme aims to train future ID specialists who are compassionate, inquisitive and well-rounded, who enjoy caring and advocating for individual patients but who are also able to appreciate bigger picture issues such as the impact of emerging infectious diseases on a population level. Our ID graduates must be effective communicators, comfortable in inter-professional teams, willing to drive programmatic improvements in healthcare delivery and develop patient-oriented research and/or quality improvement projects.

Admission Requirements

At the point of application for this residency programme:

a) Applicants must be employed by employers endorsed by Ministry of Health (MOH), and
b) Residents who wish to switch to this residency programme must have waited at least one year between resignation from his / her previous residency programme and application for this residency programme.

At the point of entry to this residency programme, residents must have fulfilled the following requirements:

a) Have completed local Internal Medicine Residency programme and attained the MRCP (UK) and / or Master of Medicine (IM) (NUS) qualifications or equivalent. Potential residents without these qualifications will need to seek ratification from the Joint Committee on Specialist Training (JCST) before they can be considered for the programme, and
b) Have a valid Conditional or Full Registration with Singapore Medical Council (SMC).

Selection Procedures

Applicants must need to apply for the programme through the annual residency intake matching exercise conducted by Ministry of Health Holdings (MOHH).

Continuity plan: Selection should be conducted via a virtual platform in the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed and cross institution movement is restricted.

Less Than Full Time Training

Less than full time training is not allowed. Exceptions may be granted by Specialist Accreditation Board (SAB) on a case-by-case basis.

Non-traditional Training Route

The programme should only consider the application for mid-stream entry to residency training by an International Medical Graduates (IMG) if he/she meets the following criteria:

a) He/she is an existing resident or specialist trainee in the United States, Australia, New Zealand, Canada, United Kingdom and Hong Kong, or in other centres/countries where training may be recognised by the Specialist Accreditation Board (SAB)

b) His/her years of training are assessed to be equivalent to the local training by JCST and/or SAB.

Applicants may enter residency training at the appropriate year of training as determined by the Programme Director and RAC.. The latest point of entry into residency for these applicants is Year 1 of the senior residency phase.

(Note: Entering at Year 1 of the senior residency phase by IMG in any of the IM-related programmes is regarded as 'mid-stream entry' because it requires the recognition of the overseas Junior Residency training.

Separation

The PD must verify residency training for all residents within 30 days from the point of notification for residents' separation / exit, including residents who did not complete the programme.

Duration of Specialty Training

The training duration must be 36 months.

Maximum candidature: All residents must complete the training requirements, requisite examinations and obtain their exit certification from JCST not more than 36 months beyond the usual length (IM residency + ID residency) of their training programme. The total candidature for ID Medicine is 36 months IM residency + 36 months ID residency + 36 months candidature.

Nomenclature: ID residents will be denoted by SR1, SR2 and SR3 according to their residency year of training.

"Make-up" Training

"Make-up" training must be arranged when residents:
Exceed days of allowable leave of absence / duration away from training or
Fail to make satisfactory progress in training.

The duration of make-up training should be decided by the Clinical Competency Committee (CCC) and should depend on the duration away from training and/or the time deemed necessary for remediation in areas of deficiency. The CCC will review residents' progress at the end of the "make-up" training period and decide if further training is needed. The RAC needs to be informed by PDs.

Any shortfall in core training requirements must be made up by the stipulated training year and / or before completion of residency training.

Learning Outcomes: Entrustable Professional Activities (EPAs)

Residents must achieve level 4 of the following EPAs by the end of residency training:

	Title
EPA 1	Managing patients with community and healthcare-associated infections
EPA 2	Managing people living with HIV (PLHIV)
EPA 3	Managing infections in non-HIV immunocompromised hosts (ICH)
EPA 4	Managing patients with emerging infections and outbreaks of public health importance

Learning Outcomes: Core Competencies, Sub-competencies and Milestones

The programme must integrate the following competencies into the curriculum, and structure the curriculum to support resident attainment of these competencies in the local context.

Residents must demonstrate the following core competencies:

1) Patient Care and Procedural Skills

Residents must demonstrate the ability to:

- Gather essential and accurate information about the patient
- Counsel patients and family members
- Make informed diagnostic and therapeutic decisions
- Prescribe and perform essential medical procedures
- Provide effective, compassionate and appropriate health management, maintenance, and prevention guidance

Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

Residents must demonstrate clinical competence in:

- The practice of health promotion, disease prevention, diagnosis, care, and treatment of patients of each gender from adolescence to old age, during health and all stages of infectious disease illness; and
- The diagnosis and management of the following infectious disease areas:
  a) Fungal infections;
  b) Health care-associated infections;
  c) HIV/AIDS;
  d) Infections in patients in intensive care units;
  e) Infections in patients with impaired host defences;
  f) Infections in surgical patients;
  g) Infections in travellers;
  h) Mycobacterial infections;
  i) Parasitic infections;
  j) Prosthetic device infections;
  k) Sepsis syndromes;
  l) Sexually transmitted infections; and
  m) Viral infections.

2) Medical Knowledge

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioural sciences, as well as the application of this knowledge to patient care.

Residents must demonstrate knowledge of:

- The mechanisms of action and adverse reactions of antimicrobial agents, antimicrobial and antiviral resistance, and drug-drug interactions between antimicrobial agents and other compounds;
- The appropriate use and management of antimicrobial agents in a variety of clinical settings, including the hospital, ambulatory practice, non-acute-care units, and the home;
- The appropriate procedures for specimen collection relevant to infectious disease, including bronchoscopy, thoracentesis, arthrocentesis, lumbar puncture, and aspiration of abscess cavities;
- The principles of prophylaxis and immunoprophylaxis to enhance resistance to infection;
- The characteristics, use, and complications of antiretroviral agents, mechanisms and clinical significance of viral resistance to antiretroviral agents, and recognition and management of opportunistic infections in patients with HIV / AIDS;
- The fundamentals of host defence and mechanisms of microorganism pathogenesis;
- The development of appropriate antibiotic utilisations and restriction policies; and
- Infection control and hospital epidemiology.

3) System-based Practice

Residents must demonstrate the ability to:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty
- Coordinate patient care within the health care system relevant to their clinical specialty
- Incorporate considerations of cost awareness and risk / benefit analysis in patient care
- Advocate for quality patient care and optimal patient care systems
- Work in inter-professional teams to enhance patient safety and improve patient care quality. This includes effective transitions of patient care and structured patient hand-off processes
- Participate in identifying systems errors and in implementing potential systems solutions

Residents must demonstrate the ability to access the recommendations and guidelines on infectious diseases provided by both local and international public health authorities, such as MOH, Singapore, other public health related agencies in Singapore, and the World Health Organization (WHO).

4) Practice-based Learning and Improvement

Residents must demonstrate a commitment to lifelong learning.

Resident must demonstrate the ability to:

- Investigate and evaluate patient care practices
- Appraise and assimilate scientific evidence
- Improve the practice of medicine
- Identify and perform appropriate learning activities based on learning needs

5) Professionalism

Residents must demonstrate a commitment to professionalism and adherence to ethical principles including the SMC's Ethical Code and Ethical Guidelines (ECEG).

Residents must:

- Demonstrate professional conduct and accountability
- Demonstrate humanism and cultural proficiency
- Maintain emotional, physical and mental health, and pursue continual personal and professional growth
- Demonstrate an understanding of medical ethics and law

6) Interpersonal and Communication Skills

Residents must demonstrate ability to:

- Effectively exchange information with patients, their families and professional associates
- Create and sustain a therapeutic relationship with patients and families
- Work effectively as a member or leader of a health care team
- Maintain accurate medical records

Other Competency: Teaching and Supervisory Skills

Residents must demonstrate ability to:

- Teach others
- Supervise others

Learning Outcomes: Others

Residents must attend Medical Ethics, Professionalism and Health Law course conducted by Singapore Medical Association (SMA).

Curriculum

The curriculum and detailed syllabus relevant for local practice must be made available in the Residency Programme Handbook and given to the residents at the start of residency.

The PD must provide clear goals and objectives for each component of clinical experience.

Learning Methods and Approaches: Scheduled Didactic and Classroom Sessions

Not applicable.

Learning Methods and Approaches: Clinical Experiences

Residents must do the following rotations:

- Infection Control - 1 month
- HIV - 4 months
- Microbiology - 2 months
- Paediatrics ID - 2 weeks
- Sexually Transmitted Disease - 2 weeks
- General Medicine - Minimum 4 months, maximum 6 months, spread over the 36 months (typically, 2 months per 12-month period)
- Geriatric Medicine - Minimum 1 month, maximum 2 months
- External rotations to another SI - 4 months (any time between 7 to 30 months of residency)

Residents must have at least 600 new patients / consults by the end of SR3 (at least 200 new patients per year). Patients should span a wide range of cases in inpatient and outpatient settings, in the following areas (with examples):

i. General ID and healthcare-associated infections:
(Mycobacterial infections, sepsis, pyrexia of unknown origin, CNS infections, endocarditis, hepato-biliary infections, genito-urinary infections including STIs, surgical infections, bone & joint infections, device-related and other healthcare associated infections, infections in ICU, obstetric & gynaecologic infections, skin & soft tissue infections, viral infections, antibiotic management)

ii. Infections in the immunocompromised host:
(Transplant, haematology / oncology, rheumatology, febrile neutropenia, fungal infections)

iii. HIV medicine:
(Cytomegalovirus (CMV), Pneumocystis Pneumonia (PCP), Disseminated Mycobacterium avium complex (DMAC), cryptococcosis, toxoplasmosis, extrapulmonary Tuberculosis (TB)

iv. Travel & tropical medicine:
(Malaria, dengue, typhoid, rickettsial & parasitic infections, travel vaccines, diarrhoea)

Residents must have a structured ambulatory experience in outpatient ID, travel medicine, Outpatient Parenteral Antimicrobial Therapy (OPAT) and the longitudinal care of people living with HIV.

SR3 residents should do elective rotations guided by individualised career choices.

* *Residents are encouraged to have the following clinical experience:*

- *Travel medicine clinic (strongly recommended)*
- *TB clinic (strongly recommended)*
- *Occupational health clinic (including management of needle stick injuries)*
- *Epidemiology or public health unit*
- *Transplant, haematology / oncology or burns unit*
- *Microbiology and laboratory medicine*

Learning Methods and Approaches: Scholarly / Teaching Activities

Residents must perform the following scholarly / teaching activities and document in their portfolio:

i. Give at least 20 ID lectures, topic reviews, or journal club presentations (required), AND

ii. Give at least 1 poster or oral presentation at a medical conference, OR

iii. Participate in research or quality improvement activities or write a report on a research or quality improvement project in which the resident participated as a co-investigator.

In the event where face-to-face meeting is disallowed, the programme must transition all didactic sessions / courses to virtual platforms. Or split into smaller groups to adhere to the prevailing safe management measures.

Learning Methods and Approaches: Documentation of Learning

Residents must log at least 600 new patients / consults by the end of residency training (at least 200 new patients / consults per year).

Summative Assessments

<table>
<tr><td></td><td colspan="2">Summative assessments</td></tr>
<tr><td></td><td>Clinical, patient-facing, psychomotor skills etc.</td><td>Cognitive, written etc.</td></tr>
<tr><td>R6</td><td>1. Programme checklist that all formative items completed, signed by PD and HOD.

2. Clinical Vignette Exit Exam - structured oral exam consisting of 5 clinical vignettes from 5 major areas:
• General ID
• HIV medicine
• Immuno- compromised (non-HIV)
• Infection control & nosocomial infections
• Travel & tropical medicine, vaccines, emerging infections

Duration: 1 hour</td><td>Starting from 2024, locally developed single best answer (SBA) will be used for the summative written exam.

In 2024, this consisted of 75 questions, and this will be 100 questions from 2025 onwards.</td></tr>
<tr><td>R5</td><td>1. CCC evaluation every 6 months, with decision made at end of R5 whether SR is able to progress.</td><td>Not applicable</td></tr>
<tr><td>R4</td><td>1. CCC evaluation every 6 months, with decision made at end of R4 whether SR is able to progress.</td><td>Not applicable</td></tr>
<tr><td>R3</td><td colspan="2" rowspan="3">IM Residency</td></tr>
<tr><td>R2</td></tr>
<tr><td>R1</td></tr>
</table>

S/N	**Learning outcomes**	**Summative assessment components**	
		Component a: Clinical Vignette	Component b: Written SBA (to be implemented from 2024 onwards)
1	EPA 1: Managing patients with community and healthcare-associated infections	√	√
2	EPA 2: Managing PLHIV	√	√
3	EPA 3: Managing Infections in Non-HIV ICH	√	√
4	EPA 4: Managing patients with emerging infections and outbreaks of public health importance	√	√