

PAEDIATRIC MEDICINE RESIDENCY

TRAINING REQUIREMENTS

(A) INTRODUCTION

Definition and Scope

Paediatric medicine is the branch of medicine that deals with the health of infants, children and adolescents. Childhood and adolescence is the period of greatest growth, development and maturation of the various organ systems, and therefore paediatric medicine must also address the influence of health and disease during this period. As physicians who assume a responsibility for children's physical, mental and emotional progress from conception to maturity, paediatricians must be concerned with social or environmental influences, which have a major impact on the health and well-being of children and their families, and recognize that the young are often among the most vulnerable or disadvantaged in society.

Duration of Training

The education in paediatric medicine is spread over a minimum of 6 years (R1 – R6), with an intermediate examination (MMED examination) taken after the first three years of training.

Entry into the Senior Residency Years is conditional upon fulfilling the following prerequisites:

1. Completion of the compulsory rotations in Internal Medicine/Surgery (minimum of 6 months) and at least 30 months in Paediatric Medicine and Neonatology
2. Completion of all formative work assessments as shown in the training log
3. Satisfactory reports during the rotations
4. Completion of all mandatory workshops and courses as listed in Table 5.
5. Passed the Masters of Medicine in Paediatrics (Singapore) and/or “ABMS” MCQ + PD certification

(B) PROGRAMME OVERVIEW

The total duration of training that is accredited by ACGME-I is 3 years from R1 to R3 years.

The total duration of training that is accredited by JCST is 3 years R4 to R6 years.

Programme for Paediatric Medicine is a seamless training programme extending over 6 years targeted at developing a Paediatric Specialist, and 7 years for Dual Accreditation in a Paediatric Subspecialty. It consists of a basic training component (Junior Residency Years) targeted at developing competencies expected of a Paediatric Registrar and an advanced training component (Senior Residency Years) targeted at developing a Paediatric Specialist competent to practise independently. Residents who are slower in progress may, on review and recommendation by the Residency Advisory Committee, be allowed up to a maximum of 2 years extension in their training period.

During the course of residency training, all residents are expected to achieve the following 6 core competencies:

- Patient care:

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.

- Medical knowledge:

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

- Practice based learning and improvement:

Residents must demonstrate the ability to investigate and evaluate their care of patients, appraise and assimilate scientific evidence, and to continuously improve patient care, based on constant self-evaluation and life-long learning.

- Interpersonal and communication skills:

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. They must demonstrate acceptable written and scholarly communication.

- Professionalism:

Residents must demonstrate a commitment to carrying out professional responsibilities, and an adherence to ethical principles. Professionalism encompasses 2 main aspects:

- Knowledge & application
- Attitudes, which includes the promotion of humanistic skills, inculcating values and behaviours expected by society. These include compassion, integrity and respect for others, responsiveness to patient needs which supersede self-interest, respect for patient privacy and autonomy, accountability to patients, society and the profession

- System-based practice:

Residents must demonstrate an awareness of, and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. To this effect, residents must understand and coordinate patient care in various health care delivery settings and systems, including insurance and coding issues. They should incorporate considerations of cost awareness and risk benefit analysis in patient and population-based care. Residents should also learn to advocate for quality care and optimal patient care systems by knowing the best resources for patients. They should work in inter-professional teams, and recognize that patient care is team care and not individual care. They should learn to enhance patient safety and improve the quality of patient care by participating in projects seeking to identify system errors followed by implementation of potential system solutions.

In-Training Examinations (ITE):

Paediatric Residents must take the In-training Examinations in Paediatric Medicine annually as an assessment of their training progress. Paediatric Residents must complete the Masters of Medicine in Paediatrics (Singapore) examination before being considered for progression to the Senior Residency Years (R4 onwards). Eligibility for the Masters of Medicine (Paediatrics) is completion of at least 24 months rotation in Paediatrics and Neonatology.

C) TRAINING REQUIREMENTS R1 – R3

ACGME-I's advanced specialty requirements can be found here: <http://www.acgme-i.org/web/requirements/specialtypr.html>

Programme Targets: Residency Training (R1-R3)

The first 3 years of Residency training (R1-R3) are aimed at providing the Paediatric Residents broad base exposure to common neonatal, paediatric and adolescent problems in medicine and surgery, including an early exposure to adult medical and surgical problems (minimum 6 months). This gives the Residents the basic foundation and understanding of the impact of perinatal and childhood problems on adult disease.

Postings and/or Rotations:

- a. For R1, the rotations must include at least 3 months internal medicine, 3 months general surgery or orthopaedic surgery, unless this has been completed satisfactorily prior to admission to the Paediatric Residency Programme, and 6 months Paediatrics.
- b. For R2 and R3, the rotations should include at least 12 months in general paediatrics and 4 months neonatology with maximum of 4 months in neonatal intensive care. The scope of training includes a broad exposure to the health care of children, and experience in the management of diverse acute and chronic pathological conditions.
- c. During the paediatric rotations, the resident is expected to receive exposure to all the paediatric subspecialties such as:
 - i. ambulatory paediatrics,
 - ii. allergy and immunology,
 - iii. adolescent medicine,
 - iv. cardiology,
 - v. endocrinology,
 - vi. genetics,
 - vii. gastroenterology and hepatology,
 - viii. haematology and oncology,
 - ix. infectious disease,
 - x. nephrology,
 - xi. neurology and developmental paediatrics,
 - xii. pulmonology/respiratory medicine,
 - xiii. ambulatory paediatrics
 - xiv. critical care medicine in terms of inpatient management, acute calls, outpatient clinics, and multi-disciplinary combined clinics.
- d. In addition, a minimum of 6 months of paediatric emergency rotation, must be completed within the 6 years of seamless training.
- e. The target for the first three years of the training programme is to produce a Paediatric Registrar who has attained the following general competencies:
 - Understanding the duties and responsibilities of a paediatrician to protect the interests of infants, children and young persons
 - Understanding the duties and responsibilities of a paediatrician to educate and support parents and caregivers to be effective in caring for their children
 - Knowledge about the community services that can support children and their families in coping with their health problems
 - Competence in the medical interview, physical examination, formulation of appropriate differential diagnoses, initiation of appropriate investigations for assessment and management of general paediatric conditions

- Ability to diagnose and manage acute paediatric emergencies
- Ability to diagnose and manage chronic problems that require tertiary care or multi-disciplinary team approach
- Recognition of normal and abnormal growth and development from infancy to adolescence
- Recognition of normal and abnormal child behaviour and development
- Understanding the influence of genetics on diseases
- Competence in handling social and ethical issues related to the patient and his/her family
- Communication and interpersonal skills
- Procedural skills
- Recognition of common paediatric surgical, orthopaedic, otorhinolaryngeal and ophthalmological problems
- Skills in effective teaching and learning in clinical context
- Skills in research and clinical audit
- Personal commitment to continuing medical education

Formative work-based assessment

All Residents are expected to undergo formative work-based assessment during the course of their training. These evaluations need to be documented and assessed by the respective programme's clinical competency committee on a regular basis (at least 6 monthly). These include mini-case examinations (mini-CEX), case based discussions (CBD), and multi-source feedback (MSF). Paediatric Residents must also take the In-training Examinations (ITE) in Paediatric Medicine annually as an assessment of their training progress. Residents who have not attained the required competencies as deemed by the Clinical Competency Committee (CCC) will not be allowed to progress to the next year of training.

Structured assessment

Paediatric Residents are expected after two years of Paediatric/Neonatology rotations to succeed in the Master of Medicine degree in Paediatrics (Singapore).

- Satisfactory completion of Year 3 of Residency training OR at least 30 months in Paediatric Medicine and Neonatology as certified by the respective Residency Programme AND
- Passing the Masters of Medicine in Paediatrics (Singapore).

Residents who have attained the professional competencies to function as a Registrar at the end of R3 or at least 30 months in Paediatric Medicine/Neonatology as certified by their respective Residency Programmes, and who have passed the Masters of Medicine in Paediatrics (Singapore) can proceed to the next phase of training after review by the RAC. Residents who have not achieved the required competencies to function as a Registrar may on review, by the respective Programme Directors and the RAC, be allowed a year's extension in this phase of their training. Residents who fail to complete the Masters of Medicine in Paediatrics (Singapore) after this extension will not be allowed to continue in the Residency Programme, unless special permission has been granted by the RAC and the Joint Committee on Specialist Training (JCST) for any extenuating circumstances.

Progression to Year 2:

Table 1: Checklist of criteria for accelerated progression to R2

Core Competencies	Criteria
Patient care	<ol style="list-style-type: none"> 1) Take a focused history 2) Perform a systematic physical examination 3) Make a list of differential diagnosis 4) Decide on relevant investigations 5) Interpret laboratory tests and X-rays 6) Initiate management for common paediatric conditions 7) Paediatric prescription writing 8) Assess response therapy and daily progress 9) Recognise an ill child and know when to escalate to next level of care 10) Discharge planning 11) Practical skills 12) Write discharge summaries 13) Learn how to give a hand-over
Medical knowledge	<ol style="list-style-type: none"> 1) Knowledge of normal growth and development in childhood 2) Knowledge of the symptoms and signs of common childhood illnesses
Practice-based learning and improvement	<ol style="list-style-type: none"> 1) Able to perform a literature search 2) Understanding of what evidence based medicine is 3) Receive feedback and incorporate it into daily practice
Interpersonal and communication skills	<ol style="list-style-type: none"> 1) Explain diagnosis and management plan to patient/family 2) Explain procedures 3) Communicate well with nursing staff, allied health care workers 4) Make inter-department referrals 5) Communicate with external agencies
Professionalism	<p>To display the following:</p> <ol style="list-style-type: none"> 1) Honesty, integrity, respect 2) Ethical behaviour 3) Coming on time to work 4) Attend teaching activities regularly: attain 75% to 80% attendance

Clinical Competencies:

The aim at the end of Residency Training, is for the Resident to function effectively as a Paediatric Registrar who has attained certain general and specialty-specific clinical competencies, as well as competencies in certain practical core skills.

1. GENERAL CLINICAL COMPETENCIES

- ***Development – physical, emotional, social and educational***
 - Pattern of normal development from birth to adulthood
 - Deviation of normal pattern of development

- Abnormal patterns of development
- Physical, emotional, intellectual and social factors that influence development and health
- How to assess and investigate developmental problems
- Child neglect and abuse that might affect a child's development
- Assessment of neurodisabilities and multidisciplinary approach to management
- Assessment of parenting skills and recognition of unsafe parenting
- Principles of management of common behavioural problems
- Eating disorders
- Psychosomatic disorders
- Autistic spectrum disorders
- Common learning disorders
- ***Growth and nutrition***
 - Assessment of nutritional status of a child
 - Understand the nutritional requirement for healthy and sick children
 - Biological, psychological and social aspects of normal growth and puberty
 - Relationship between nutritional status and disease and the effects of malnutrition on clinical outcomes
 - Obesity, its long term effects on health and the therapeutic intervention strategies
 - Fetal growth and its long term effects on health
 - Principles and methods of dietary supplementation
 - Breast feeding and infant feeding
- ***Adolescence***
 - The physical, emotional, intellectual and social aspects of adolescent development
 - Normal and abnormal pubertal development
 - Understanding of adolescent behaviour with special reference of chronic disease management

2. SPECIALITY-SPECIFIC COMPETENCIES

- ***Behavioural Paediatrics***
 - Normal emotional and behavioural development at different stages
 - Assessment and principles of management of common behavioural problems such as temper tantrums, sleep disorders, oppositional behaviour, enuresis, encopresis and school refusal
 - Recognition of psychosomatic disorders
 - Recognition of conditions such as attention deficit hyperactivity disorder (ADHD), autistic spectrum disorder, depression and psychosis
- ***Cardiology***

- Knowledge and skills to assess and initiate management of babies and children presenting with cardiac disorders
 - Genetic and environmental aetiology of congenital heart disease
 - Approach to the diagnosis of cardiac diseases with basic understanding of the anatomical anomalies, haemodynamic changes, diagnostic roles of electrocardiogram, 2-D echocardiogram and cardiac catheterisation in the evaluation of cardiac anomalies and cardiac functional status
 - Cardiopulmonary resuscitation skills
 - Ability to assess and manage acute symptoms of cyanosis, heart failure, arrhythmia and infective endocarditis
 - Ability to assess and investigate children with heart murmur, hypertension, palpitations and syncope
- ***Dermatology***
 - Ability to describe accurately any rash
 - Ability to recognise, investigate and manage common skin conditions
 - Skin infections
 - Cutaneous drug reactions
 - Erythematous rash and fever
 - Eczema
 - Seborrheic dermatitis
 - Knowledge of cutaneous and mucosal manifestations of systemic diseases
 - Understand the principles of therapy of skin disorders
- ***Endocrinology***
 - Ability to assess and initiate management of patients presenting with endocrine disorders including
 - Diabetes and its pathophysiology, clinical presentation, principles of management and long term side effects
 - Diabetic ketoacidosis
 - Hypoglycemia
 - Thyroid diseases
 - Ambiguous genitalia
 - Short and tall stature
 - Delayed and early puberty
 - Hypopituitarism
 - Obesity
 - Ability to assess growth with measurements, growth charts, parental heights and pubertal status
 - Ability to assess pubertal status
 - Knowledge of endocrine complications of other diseases

- ***Gastroenterology and Hepatology***

- Knowledge and skills for the assessment and management of patients presenting with gastroenterological problems in acute and outpatient settings
 - Acute and chronic abdominal pain
 - Acute and chronic diarrhoea and vomiting
 - Jaundice
 - Gastrointestinal bleeding
 - Abdominal distension
 - Acute and chronic liver failure
 - Gastro-esophageal reflux
 - Constipation with or without soiling
 - Dysphagia
 - Malabsorption
 - Malnutrition
 - Congenital malformations
- Understanding of the role of interventional procedures (upper and lower gastrointestinal endoscopies) in the investigation of gastrointestinal disorders

- ***Genetics and Dysmorphology***

- Understanding of the scientific basis of chromosomal disorders and inheritance
- Ability to construct a pedigree and interpret common patterns of inheritance
- Understanding the basis of molecular genetics
- Knowledge of the basis of prenatal screening and diagnosis
- Ability to describe the dysmorphic features of a baby or child and recognition of features suggesting common chromosomal disorders or genetic syndromes
- Skills in genetic counselling and in breaking bad news
- Knowledge of the implications of pre-symptomatic carrier testing in children

- ***Haematology and Oncology***

- Knowledge and skills in assessment of patients presenting with hematological or oncological problems in the inpatient and outpatient settings
- Ability to initiate management of common presentations of non-malignant disorders
- Knowledge of the principles of cancer treatment
- Knowledge of the short and long term side effects of chemotherapy and radiotherapy
- Knowledge of the indications and complications of bone marrow transplantation
- Knowledge and understanding of the following problems:
 - Anaemia (iron deficiency anaemia, haemolytic anaemia, hereditary anaemia and haemoglobinopathy)
 - Polycythaemia (in the newborn and in cyanotic congenital heart diseases)

- Neutropenia and neutropenic sepsis
- Purpura and bruising
- Coagulopathy
- Leukaemia
- Lymphomas
- Other solid tumours including Wilm's tumour and neuroblastoma

- ***Infection and Immunology***

- Knowledge and skills in the assessment and management of patients presenting with infectious disease and allergic disorders
- Knowledge and understanding of the host defence mechanisms and disorders that increase vulnerability to infection
- Knowledge of materno-fetal transmissible diseases
- Knowledge of the epidemiology of infectious disease affecting children
- Knowledge of the role of active and passive immunisation in disease prevention
- Understanding of the rationale of the use of antimicrobials for treatment and prophylaxis
- Knowledge of the principles of infection control of nosocomial as well as communicable diseases
- Understanding of the pathophysiology and principles of treatment of allergic and autoimmune disorders
- Knowledge of the classification, clinical manifestations of the different types of immunodeficiencies
- Ability to understand and manage the following acute and specific disorders:
 - Septic shock
 - Pyrexia of unknown origin
 - Anaphylaxis
 - Recurrent infections
 - Food intolerance

- ***Metabolic disorders***

- Knowledge of the common clinical presentations of metabolic disease including encephalopathy, neurodevelopmental regression, muscle weakness, visceromegaly and failure to thrive
- Ability to interpret the biochemical profile of disturbed glucose, electrolyte and acid-base metabolism including hypoglycaemia, hyperammonaemia, metabolic alkalosis and acidosis
- Ability to carry out appropriate initial screening investigations for diagnosis of metabolic disorders
- Ability to carry out further diagnostic tests for specific metabolic disorders
- Understanding of the principles of dietary, vitamin and pharmacological treatment of metabolic disorders

- Knowledge of the availability of treatment options including enzyme therapy or bone marrow transplantation for certain types of metabolism disorders
 - Knowledge of neonatal screening tests for inborn error of metabolism
 - Knowledge of inheritance patterns of common inborn errors of metabolism
 - Ability to offer genetic counseling in common inborn errors of metabolism
- ***Musculoskeletal disorders and Rheumatology***
 - Knowledge and skills in the assessment and management of patients presenting of musculoskeletal disorders
 - Ability to recognise features in the presentation which suggest serious pathology, that is, inflammation, malignancy, infection and vasculitis
 - Ability to recognise clinical features of physical abuse, emotional abuse and neglect
 - Knowledge of the spectrum of conditions that can lead to musculoskeletal problems
 - Understanding of the multisystemic nature of rheumatological disorders
 - Ability to assess and diagnose problems relating to:
 - Joint swelling
 - Joint and bone pains
 - Limping
 - Torticollis
 - Acquired and congenital musculoskeletal deformities
 - Limb pains
 - Back pains
 - Multisystemic diseases
- ***Neonatology***
 - Perinatal medicine
 - Embryological basis of malformation syndromes
 - Fetal physiology and fetal-maternal interactions
 - Prenatal screening and diagnosis
 - Understanding of ultrasound and biochemical screening for fetal abnormalities and other invasive and non-invasive diagnostic methods
 - Medical disorders in pregnancy and their implications on fetal growth and development
 - Assessment of fetal growth, intrauterine growth restriction, small for gestational age, and large for gestational age
 - Understanding of preterm onset of labour, preterm pre-labour rupture of fetal membranes, and prolonged pregnancy
 - Understanding of intra-partum fetal assessment
 - Effects of prescribed and self-administered drugs during pregnancy
 - Knowledge on multiple gestation
 - Understanding and knowledge of ethical issues in Maternal-Fetal Medicine

- Care around the time of birth
 - Resuscitation of the newborn infant
 - Stabilisation and transport of the high-risk newborn
 - Metabolic emergencies
- General Neonatal Care
 - Physical examination of the newborn
 - Evaluation of the dysmorphic infant
 - The physical environment and the newborn
 - Infant feeding and nutrition including breastfeeding
 - Breastfeeding and the use of human milk
 - Drugs in pregnancy and lactation
 - Basic principles of neonatal intensive care monitoring
 - Care of the normal term newborn baby, normal small baby and convalescing NICU graduate
 - The infant of diabetic mother
- Disorders of the Newborn
 - Respiratory distress syndrome and its management
 - Control of breathing and neonatal apnoea
 - Congenital diaphragmatic hernia
 - Assisted ventilation in managing respiratory problems of the newborn
 - Cardiovascular adaptation to postnatal life
 - Persistent pulmonary hypertension
 - Evaluation and management of cardiac disease in newborn
 - Management of feeding problems
 - Neonatal jaundice and management of neonatal hyperbilirubinaemia
 - Necrotising enterocolitis
 - Congenital gastrointestinal defects and surgical problems
 - Haemolytic disease of the newborn
 - Bleeding and coagulation disorders
 - Thrombocytopaenia
 - Hydrops fetalis: immune and non-immune
 - Common birth defects and syndromic disorders
 - Retinopathy of prematurity
 - Neonatal screening for metabolic and endocrine disease
 - Neonatal infections including congenital infections
 - Nosocomial infection
 - Neonatal immunization
 - Assessment of the neonatal nervous system
 - Common neonatal neurological emergencies including seizures, intracranial haemorrhage, hypoxic-ischaemic encephalopathy and preterm brain injury

- Birth trauma
- Surgical emergencies in the newborn
- Basic understanding of neonatal pharmacology and therapeutics
- Follow-up care of the high risk infant
 - Behavioural and neurodevelopmental assessment
 - Knowledge of social and community support for the family
- ***Nephrology***
 - Knowledge and skills in the assessment and management of patients presenting with nephrology problems in the acute and outpatient setting
 - Ability to assess fluid status and initiate appropriate fluid management
 - Knowledge and understanding of fluid and electrolyte imbalance in children with renal problems
 - Understanding of the role of different imaging techniques in the investigation of urinary tract disorders:
 - Ultrasound scan of the kidneys and urinary tract
 - Voiding cystourethrography
 - Radio-isotope scans
 - Intravenous urography
 - Magnetic resonance urography (MRU)
 - Understanding of the social implications of chronic renal disease and renal failure
 - Understanding of the principles of prescribing in children with renal dysfunction
 - Knowledge and understanding of the following specific renal disorders:
 - Nephrotic syndrome
 - Acute nephritic syndrome
 - Acute and chronic renal failure
 - Hypertension
 - Prenatal diagnosis of urinary tract abnormalities
 - Renal calculi
 - Voiding disorders
 - Haematuria and proteinuria
 - Urogenital abnormalities and their surgical management
 - Renal tubular disorders
- ***Neurology and Developmental Paediatrics***
 - Knowledge and understanding of common causes of disabilities in children
 - Ability to assess with accurate history and clinically the developmental status of the child
 - Ability to examine the nervous system in the newborn, infant and young child
 - Ability to recognise a disabled child and initiate appropriate management with intervention measures in a multidisciplinary approach

- Ability to recognise acute neurological emergencies
- Understanding the emotional and social implications of neurological disabilities on the child and the family and the social and community support services available
- Ability to understand the principles and use of neuro-physiological and neuro-imaging tests in the diagnostic work-up of the neurological problems
- Knowledge and understanding of the diagnosis and management of the following specific neurological disorders:
 - Seizure disorders
 - Faints and funny turns
 - Acute focal neurological disorders including spinal cord disorders
 - Altered state of consciousness
 - Neuromuscular disorders
 - Gait and movement disorders
 - Acute infections of the central nervous system
 - Neural tube defects and other congenital malformations
 - Traumatic injuries to the brain and peripheral nerves
 - Neurodevelopmental regression
 - Developmental and intellectual disability
- ***Ophthalmology***
 - Ability to examine the eye and recognise those abnormalities that require urgent referral or treatment
 - Ability to suspect from history visual impairment and to test visual acuity at various ages
 - Knowledge about the eye manifestations of common genetic and systemic diseases
 - Ability to examine with an ophthalmoscope the fundus and recognise abnormalities such as papilloedema, abnormal vessels and pigmentation, and haemorrhages
 - Ability to recognise and interpret abnormal eye movements and alignment
 - Ability to treat common eye infections
- ***Respiratory medicine and diseases of the ear, nose and throat***
 - Knowledge and ability to assess and manage patients with acute respiratory problems including:
 - Throat and mouth infections
 - Nose bleeds
 - Snoring and obstructive sleep apnoea
 - Earache
 - Acute stridor
 - Acute severe asthma
 - Lower respiratory tract infection
 - Acute respiratory failure

- Cervical lymphadenopathy
- Knowledge and ability to assess and manage patients with chronic respiratory problems including:
 - Chronic stridor
 - Asthma
 - Chronic and recurrent chest infections
 - Cystic fibrosis
 - Chronic respiratory failure
- Recognition of those life-threatening respiratory conditions and when to call for help

3. COMPETENCIES IN GENERAL PRACTICAL SKILLS

- Knowledge of the indications, contraindications and complications of practical procedures and diagnostic investigations and ability to communicate this information to the parents and/or the child
- Ability to obtain informed consent according to national guidelines
- Knowledge and ability to prescribe sedation and pain relief
- Ability to practise aseptic technique and safety precautions when appropriate
- Ability to provide and maintain proper documentation of patient information
- Ability to communicate appropriate medical information when making requests for investigations or consultation
- Ability to interpret test results and respond appropriately
- Ability to perform defined essential practical procedures
- Ability to prescribe safely for the newborn and for children of all ages
- Ability to acquire basic computer skills to enable utilization of the hospital-specific patient management networks
- Ability to perform electronic retrieval of medical literature
- Ability to access electronic information networks

Table 2: Areas of curriculum and assessment during Residency training (R1-R3)

Patient Care	Lectures, interactive tutorials, journal clubs All Residents must clock in ≥4 hours training time per week, averaged out over a month, encompassing these activities. Assessment: Mini-CEX CBD ITE Masters of Medicine (Paediatrics)
Medical knowledge	

Practice-based learning	Evidence based medicine workshop Journal club Assessment: Residents will be evaluated by the journal club trainer
Communication skills	Communication workshop Tutorials / role play Assessment: Documentation of performance at tutorials Masters of Medicine (Paediatrics) MSF CBD: skills in written documentation
Professionalism	Ethics Workshop Reflective exercises documented and discussed with mentor Assessment: MSF
System based practice	Morbidity / Mortality rounds / Sentinel events: identify system errors Health care delivery course Assessment: MSF

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(D) TRAINING REQUIREMENTS R4 – R6

1. Foundational Requirements

The R4-R6 years must be in compliance with ACGME-I's Foundational Requirements.

Foundational requirements for all other specialties: <http://www.acgme-i.org/web/requirements/internationalfoundational.pdf>

2. Program Overview

This consists of 36 months of training that is accredited by JCST and comprises:

12 months in General Paediatrics and Adolescent Medicine; and
12 months in Paediatric Medicine subspecialties; and
06 months in Neonatology
06 months in Childrens' emergency (if not done during R1-R3 years)
Research for 6 months is fully accredited.

Senior Resident must document a minimum of 144 calls in General Paediatrics postings / rotations (core and elective and duration in each posting / rotation)

For exit certification in Paediatric Medicine, the resident must complete 36 months of recognised Residency Year R4-R6 Training after the intermediate examinations (MMed).

3. Specialty Specific Requirements

The Senior Residency Years (R4-R6) aim to provide the Paediatric Senior Resident with a broad educational experience in order to develop the necessary clinical experience and skills to be able to practise independently and competently as a General Paediatric Consultant both in the community and as a hospitalist in general paediatrics and neonatal care (level 1 and 2). The training will focus on broad-based competencies in general paediatrics, neonatology and adolescent medicine, so that he/she will be able to understand the complexities and social psychobiology involved in the management of diseases in these age groups.

The Senior Resident may also choose to train in a paediatric subspecialty (R4-R7), ending in dual accreditation in Paediatric Medicine and their subspecialty of choice. The subspecialties in the Dual Accreditation programme are Neonatology, Paediatric Cardiology, Paediatric Critical Care, Paediatric Gastroenterology and Hepatology, Paediatric Nephrology, and Paediatric Oncology and Haematology.

4. Programme Targets: Senior Residency Training (R4 – R6)

The duration of Senior Residency training in Paediatric Medicine and Adolescent Medicine is 3 years. The Senior Residency training includes a minimum of 6-months in neonatology, and exposure to hospital paediatrics, community paediatrics, paediatric emergencies, child development and adolescent medicine. The Senior Resident should also demonstrate evidence of scholarly activity during his/her period of training.

The programme is competence-based rather than time-based. The period of training can be extended if the Senior Resident has not been able to satisfy the minimum requirements as stipulated in the training objectives and content. The maximum period of Senior Residency training is 5 years or a total of 8 years for the seamless programme in Paediatrics.

During his/her training, the Senior Resident will be expected to have acquired the defined competencies in General Paediatrics including Adolescent Medicine, both in principles and practice. This should meet the competencies required of a hospitalist and community-based paediatrician, and the minimum requirement in knowledge and skills in neonatal medicine to be able to provide levels I (normal) and II (special care) neonatology care, so that the Senior Resident is able to proceed on to the exit examination in Paediatric Medicine. Successful candidates will then be able to register as a Specialist in Paediatrics under the Specialists Accreditation Board of the Singapore Medical Council, and be appointed an Associate Consultant. He (She) is recognised only as a specialist in Paediatrics but not a specialist in Neonatology and is not allowed to be addressed as a “neonatologist”. He (She) is considered fully competent in managing newborn infants under level I (normal) and level II (special care) neonatal care categorisation.

The Paediatric Medicine Senior Resident has to fulfill a minimum of 24 months in Paediatric Medicine and 6 months in Neonatology.

The rotations in Paediatric Medicine should include:

- i. 12 months in General Paediatrics and Adolescent Medicine.
- ii. Senior Residents in this track should also rotate through a minimum of three subspecialties, which may include any of the following:
 - a. allergy and immunology,
 - b. cardiology,

- c. endocrinology,
- d. genetics,
- e. haematology,
- f. hepatology and gastroenterology,
- g. intensive care,
- h. infectious disease,
- i. neurology and developmental paediatrics,
- j. nephrology,
- k. oncology,
- l. pulmonology/respiratory medicine,
- m. rheumatology
- n. emergency medicine.

The Senior Resident has to fulfill 6 months in Children's Emergency if this has not been done during the Residency years. Additional rotations in Children's Emergency may be undertaken but should not exceed a total of 12 months.

Research for 6 months is fully accredited.

The Senior Resident is expected to pass the Postgraduate Examinations in Paediatric Medicine before the end of R5 of the Residency Programme in order to progress to R6. Eligibility for the Postgraduate Examinations in Paediatric Medicine is completion of at least 36 months of Paediatrics and Neonatology rotations with certification of competency by the respective Residency Programme. The Senior Resident must continue to take the ITE in Paediatric Medicine unless he/she has passed the Postgraduate Examinations.

The Senior Resident must submit a review on an adolescent clinical problem and achieve a pass grade in order to successfully exit from the training program. The Senior Resident must also participate in some form of scholarly activity with written evidence, and this must be submitted at the Exit Examination in Paediatric Medicine.

Competencies

The expected competencies to be achieved at the end of Senior Residency training are as follows:

- Acquisition of fundamental knowledge base and ability to apply such knowledge base to provide appropriate clinical care, regardless of their area of subspecialisation
- Acquisition of advanced theoretical knowledge, clinical examination and assessment skills required for competent practice within their area of clinical specialisation
- Acquisition of communication skills to be able to communicate effectively and sensitively with patients and their families, colleagues and other allied health professionals
- Ability to recognise the various socio-economic and cultural factors that contribute to illness and vulnerability in patients from diverse backgrounds
- Acquisition of advanced life support management skills
- Acquisition of all basic and advanced technical skills related to General Paediatrics and Adolescent Medicine
- Ability to perform allocated tasks and plans and prioritises tasks appropriately

- Ability to work within multi-disciplinary teams and development of leadership skills while still accepting leadership from other members of the multi-professional team
- Ability to perform allocated teaching and training tasks and plans and deliver teaching to residents and other professionals
- Development of peer-mentoring skills
- Development of management skills and ability to take responsibility for a defined project
- Ability to design audit projects and understand risk management
- Ability to write appropriate clinical guidelines
- Understanding the principles of critical appraisal and research methodology and appraising the literature critically, with application to clinical practice
- Recognising the need for, and development of appropriate patient advocacy skills
- Recognising the need to promote and maintain excellence through actively supporting or participating in research and a program of continuing professional development.

Competency in Adolescent Medicine

As part of his/her training rotations, the Senior Resident should be exposed to common problems in Adolescent Medicine as listed in the schedule below. The Senior Resident must submit a review on an adolescent clinical problem from the outlined schedule as part of the exit process from the Paediatric Medicine training programme.

This review may consist of either a case or series of cases with a particular adolescent condition or a detailed discussion of a specific adolescent related clinical problem with reference to the cases that he has encountered. The submission must represent high standards of scholarly inquiry, technical mastery and literary search, and should reflect the Senior Resident's independent efforts with guidance from the faculty members. The choice of a topic is the responsibility of the Senior Resident, with assistance from the faculty members. The review should not be more than 2000 words (6-8 pages). The review should be submitted to the Adolescent Medicine faculty coordinator who will evaluate the work. A pass grade for the case review is a prerequisite for exit from the Pediatric Medicine Training Programme.

The completed review and evaluation must be submitted at the exit examination, before he/she can be successfully exited from the training programme.

Schedule of Topics:

- Pubertal growth and development and problems related to them.
- Adolescent sexuality including heterosexuality, homosexuality, contraception and pregnancy
- Adolescent gynecological problems including dysmenorrhea, pre-menstrual syndrome, virilism, hirsutism, amenorrhea
- Infectious diseases including sexually transmitted infections in adolescents
- Adolescent psychosocial disorders including eating disorders, antisocial behavior, depression, other behavioral problems, suicide, substance abuse, addictions, smoking etc.
- Transition of health-care in adolescents with chronic diseases.

Scholarly Activity

In addition to participating in a core curriculum in scholarly activities which include formal lectures, teaching programmes and subspecialty meetings, all Senior Residents are expected to present evidence of this scholarly activity at the Exit Examination in Paediatric Medicine. Senior Residents are encouraged to participate in one research project annually, and to present the results at a local, regional or international conference. Senior Residents are also encouraged to publish journal papers during the training period, and to participate in clinical trials or undertake laboratory research. Accreditation for research training is up to a maximum of 6 months.

Evidence of scholarly activity can include any of the following:

- Writing of guidelines
- Clinical practice improvement projects
- Successful submission of an external grant
- First author paper published in a peer-reviewed journal, preference will be for a hypothesis-driven piece of work, or a critical meta-analysis of the literature, or a systematic review of clinical practice
- Part of a thesis submission for a PhD or Masters of Clinical Investigation
- Book chapter

Clinical exposure

Clinical duties will include supervision of a ward, inpatient consults, outpatient general and subspecialty clinics, and special procedures provided by a subspecialty. Senior Residents must keep a log of their training activities and record their training experience.

Teaching responsibilities

Senior Residents are expected to be able to deliver bedside teaching or tutorials for medical students, interns and residents.

Formative work-based assessment

Senior Residents are expected to undergo formative work-based assessments on a 6-monthly basis. All Senior Residents must meet with the RAC with their portfolios on a 6-monthly basis. Those who have not attained the required competencies will not be allowed to progress to the next year of training.

The Senior Resident is expected to pass the Postgraduate Examinations in Paediatric Medicine before the end of R5 of the Residency Programme in order to progress to R6. The Senior Resident must continue to take the In-training Examinations in Paediatric Medicine unless he/she has passed the Postgraduate Examinations in Paediatric Medicine.

Syllabus – R4-R6

Detailed Syllabus for Senior Residency Training (R4-R6)

The aim of advanced training is for the resident to function effectively as a Paediatric Consultant who has achieved the necessary clinical experience and skills to be able to practise independently and competently.

1. General Clinical Competencies

- ***Development – physical, emotional, social and educational***

- Pattern of normal development from birth to adulthood
- Deviation of normal pattern of development
- Abnormal patterns of development
- Physical, emotional, intellectual and social factors that influence development and health
- How to assess and investigate developmental problems
- Child neglect and abuse that might affect a child's development
- Assessment of neurodisabilities and multidisciplinary approach to management
- Assessment of parenting skills and recognition of unsafe parenting
- Principles of management of common behavioural problems
- Eating disorders
- Psychosomatic disorders
- Autistic spectrum disorders
- Common learning disorders

- ***Growth and nutrition***

- Assessment of nutritional status of a child
- Understand the nutritional requirement for healthy and sick children
- Biological, psychological and social aspects of normal growth and puberty
- Relationship between nutritional status and disease and the effects of malnutrition on clinical outcomes
- Obesity, its long term effects on health and the therapeutic intervention strategies
- Fetal growth and its long term effects on health
- Principles and methods of dietary supplementation
- Breast feeding and infant feeding

- ***Adolescence***

- The physical, emotional, intellectual and social aspects of adolescent development
- Normal and abnormal pubertal development
- Understanding of adolescent behaviour with special reference of chronic disease management

2. Specialty-Specific Competencies

- ***Behavioural Paediatrics***

- Normal emotional and behavioural development at different stages
- Assessment and principles of management of common behavioural problems such as temper tantrums, sleep disorders, oppositional behaviour, enuresis, encopresis and school refusal

- Recognition of psychosomatic disorders
- Recognition of conditions such as attention deficit hyperactivity disorder (ADHD), autistic spectrum disorder, depression and psychosis
- **Cardiology**
 - Knowledge and skills to assess and initiate management of babies and children presenting with cardiac disorders
 - Genetic and environmental aetiology of congenital heart disease
 - Approach to the diagnosis of cardiac diseases with basic understanding of the anatomical anomalies, haemodynamic changes, diagnostic roles of electrocardiogram, 2-D echocardiogram and cardiac catheterisation in the evaluation of cardiac anomalies and cardiac functional status
 - Cardiopulmonary resuscitation skills
 - Ability to assess and manage acute symptoms of cyanosis, heart failure, arrhythmia and infective endocarditis
 - Ability to assess and investigate children with heart murmur, hypertension, palpitations and syncope
- **Critical Care**
 - Ability to manage patients with acute life-threatening conditions in the context of the intensive care unit
 - To have developed special competence in areas such as cardiopulmonary resuscitation, stabilization for transport, trauma, triage, ventilatory, circulatory and neurological support, continuous monitoring and nutritional support
 - To have acquired procedural experience in long line and central line insertion, endotracheal intubation, thoracostomy tube placement, sedation, and intracranial monitoring
- **Dermatology**
 - Ability to describe accurately any rash
 - Ability to recognise, investigate and manage common skin conditions
 - Skin infections
 - Cutaneous drug reactions
 - Erythematous rash and fever
 - Eczema
 - Seborrheic dermatitis
 - Knowledge of cutaneous and mucosal manifestations of systemic diseases
 - Understand the principles of therapy of skin disorders
- **Endocrinology**
 - Ability to assess and initiate management of patients presenting with endocrine disorders including
 - Diabetes and its pathophysiology, clinical presentation, principles of management and long term side effects

- Diabetic ketoacidosis
 - Hypoglycaemia
 - Thyroid diseases
 - Ambiguous genitalia
 - Short and tall stature
 - Delayed and early puberty
 - Hypopituitarism
 - Obesity
- Ability to assess growth with measurements, growth charts, parental heights and pubertal status
- Ability to assess pubertal status
- Knowledge of endocrine complications of other diseases
- ***Gastroenterology and Hepatology***
 - Knowledge and skills for the assessment and management of patients presenting with gastroenterological problems in acute and outpatient settings
 - Acute and chronic abdominal pain
 - Acute and chronic diarrhoea and vomiting
 - Jaundice
 - Gastrointestinal bleeding
 - Abdominal distension
 - Acute and chronic liver failure
 - Gastro-oesophageal reflux
 - Constipation with or without soiling
 - Dysphagia
 - Malabsorption
 - Malnutrition
 - Congenital malformations
 - Understanding of the role of interventional procedures (upper and lower gastrointestinal endoscopies) in the investigation of gastrointestinal disorders
- ***Genetics and Dysmorphology***
 - Understanding of the scientific basis of chromosomal disorders and inheritance
 - Ability to construct a pedigree and interpret common patterns of inheritance
 - Understanding the basis of molecular genetics
 - Knowledge of the basis of prenatal screening and diagnosis
 - Ability to describe the dysmorphic features of a baby or child and recognition of features suggesting common chromosomal disorders or genetic syndromes
 - Skills in genetic counselling and in breaking bad news
 - Knowledge of the implications of pre-symptomatic carrier testing in children

- ***Haematology and Oncology***

- Knowledge and skills in assessment of patients presenting with haematological or oncological problems in the inpatient and outpatient settings
- Ability to initiate management of common presentations of non-malignant disorders
- Knowledge of the principles of cancer treatment
- Ability to communicate treatment options and skill in breaking bad news
- Knowledge of the short and long term side effects of chemotherapy and radiotherapy
- Knowledge of the indications and complications of bone marrow transplantation
- Knowledge of symptom management and palliative care
- Knowledge and understanding of the following problems:
 - Anaemia including iron deficiency anaemia, haemolytic anaemia, hereditary anaemia and haemoglobinopathy
 - Polycythaemia in the newborn and in cyanotic congenital heart diseases
 - Neutropenia and neutropenic sepsis
 - Purpura and bruising
 - Coagulopathy
 - Leukaemia
 - Lymphomas
 - Other solid tumours including Wilm's tumour and neuroblastoma

- ***Infection and Immunology***

- Knowledge and skills in the assessment and management of patients presenting with infectious disease and allergic disorders
- Knowledge and understanding of the host defence mechanisms and disorders that increase vulnerability to infection
- Knowledge of materno-fetal transmissible diseases
- Knowledge of the epidemiology of infectious disease affecting children
- Knowledge of the role of active and passive immunisation in disease prevention
- Understanding of the rationale of the use of antimicrobials for treatment and prophylaxis
- Knowledge of the principles of infection control of nosocomial as well as communicable diseases
- Understanding of the pathophysiology and principles of treatment of allergic and autoimmune disorders
- Knowledge of the classification, clinical manifestations of the different types of immunodeficiencies
- Ability to understand and manage the following acute and specific disorders:
 - Septic shock
 - Pyrexia of unknown origin
 - Anaphylaxis
 - Recurrent infections

- Food intolerance

- ***Metabolic disorders***

- Knowledge of the common clinical presentations of metabolic disease including encephalopathy, neurodevelopmental regression, muscle weakness, visceromegaly and failure to thrive
- Ability to interpret the biochemical profile of disturbed glucose, electrolyte and acid-base metabolism including hypoglycaemia, hyperammonaemia, metabolic alkalosis and acidosis
- Ability to carry out appropriate initial screening investigations for diagnosis of a metabolic disorder
- Ability to carry out further diagnostic tests for specific metabolic disorders
- Understanding of the principles of dietary, vitamin and pharmacological treatment of metabolic disorders
- Knowledge of the availability of treatment option with enzyme therapy or bone marrow transplantation for certain types of metabolism disorders
- Knowledge of neonatal screening tests for inborn error of metabolism
- Knowledge of inheritance patterns of common inborn errors of metabolism and ability to offer genetic counselling

- ***Musculoskeletal disorders & Rheumatology***

- Knowledge and skills in the assessment and management of patients presenting of musculoskeletal disorders
- Ability to recognise features in the presentation which suggest serious pathology, that is, inflammation, malignancy, infection and vasculitis
- Ability to recognise clinical features of physical abuse, emotional abuse and neglect
- Knowledge of the spectrum of conditions that can lead to musculoskeletal problems
- Understanding of the multisystemic nature of rheumatological disorders
- Ability to assess and diagnose problems relating to:
 - Joint swelling
 - Joint and bone pains
 - Limping
 - Torticollis
 - Acquired and congenital musculoskeletal deformities
 - Limb pains
 - Back pains
 - Multisystemic diseases

- ***Neonatology***

- Perinatal medicine
 - Understanding and knowledge of perinatal and fetal medicine
 - Fetal physiology and fetal-maternal interactions

- Fetal response to intrauterine hypoxic-ischaemic insults
- Medical disorders in pregnancy and their implications on fetal growth and development
- Assessment of fetal growth, intrauterine growth restriction, small for gestational age, and large for gestational age
- Understanding of methods of assessment and monitoring of fetal well-being
- Understanding of intra-partum fetal assessment
- Effects of prescribed and self-administered drugs during pregnancy
- Knowledge on multiple gestation
- Understanding and knowledge of ethical issues in Maternal-Fetal Medicine
- Adult consequences of fetal disease
- Care around the time of birth
- Resuscitation of the newborn infant
- Stabilisation and transport of the high-risk newborn
- General Neonatal Care
- Classification and physical examination of the newborn
- Evaluation of the dysmorphic infant
- Temperature control and its disorders
- The physical environment and the newborn
- Infant feeding and nutrition
 - Nutritional physiology, dietary requirements of term and preterm infants
 - Feeding the full-term infants
 - Feeding the preterm and low birth weight infants
 - Breastfeeding and the use of human milk
 - Infant formulae and other special formulae
 - Drugs in pregnancy and lactation
- Parenteral nutrition
- Intensive care monitoring
- Acid-base, fluid, and electrolyte management
- Care of the normal term newborn baby
- Care of the normal small baby and the convalescing NICU graduate
- Skin care
- The infant of diabetic mother
- Twins and multiple births
- Analgesia and sedation in the newborn
- Post-surgical care and monitoring
- Developmental supportive care

- ***Nephrology***

- Knowledge and skills in the assessment and management of patients presenting with nephrology problems in the acute and outpatient setting

- Ability to assess fluid status and initiate appropriate fluid management
- Knowledge and understanding of fluid and electrolyte imbalance in children with renal problems
- Understanding of the role of different imaging techniques in the investigation of urinary tract disorders:
 - Ultrasound scan of the kidneys and urinary tract
 - Voiding cystourethrography
 - Radio-isotope scans
 - Intravenous urography
 - Magnetic resonance urography (MRU)
- Understanding of the social implications of chronic renal disease and renal failure
- Understanding of the principles of prescribing in children with renal dysfunction
- Knowledge and understanding of the following specific renal disorders:
 - Nephrotic syndrome
 - Acute nephritis
 - Acute and chronic renal failure
 - Hypertension
 - Prenatal diagnosis of urinary tract abnormalities
 - Renal calculi
 - Voiding disorders
 - Haematuria and proteinuria
 - Urogenital abnormalities and their surgical management
 - Renal tubular disorders

- ***Neurology and Developmental Paediatrics***

- Knowledge and understanding of common causes of disabilities in children
- Ability to assess with accurate history and clinically the developmental status of the child
- Ability to examine the nervous system in the newborn, infant and young child
- Ability to recognise a disabled child and initiate appropriate management with intervention measures in a multidisciplinary approach
- Ability to recognise acute neurological emergencies
- Understanding the emotional and social implications of neurological disabilities on the child and the family and the social and community support services available
- Ability to understand the principles and use of neuro-physiological and neuro-imaging tests in the diagnostic work-up of the neurological problems
- Knowledge and understanding of the diagnosis and management of the following specific neurological disorders:
 - Seizure disorders
 - Faints and funny turns
 - Acute focal neurological disorders including spinal cord disorders
 - Altered state of consciousness

- Neuromuscular disorders
 - Gait and movement disorders
 - Acute infections of the central nervous system
 - Neural tube defects and other congenital malformations
 - Traumatic injuries to the brain and peripheral nerves
 - Neurodevelopmental regression
 - Developmental and intellectual disability
- ***Ophthalmology***
 - Ability to examine the eye and recognise those abnormalities that require urgent referral or treatment
 - Ability to suspect from history visual impairment and to test visual acuity at various ages
 - Knowledge about the eye manifestations of common genetic and systemic diseases
 - Ability to examine with an ophthalmoscope the fundus and recognise abnormalities such as papilloedema, abnormal vessels and pigmentation, and haemorrhages
 - Ability to recognise and interpret abnormal eye movements and alignment
 - Ability to treat common eye infections
- ***Respiratory medicine and diseases of the ear, nose and throat***
 - Knowledge and ability to assess and manage patients with acute respiratory problems including:
 - Throat and mouth infections
 - Nose bleeds
 - Snoring and obstructive sleep apnoea
 - Earache
 - Acute stridor
 - Acute severe asthma
 - Lower respiratory tract infection
 - Acute respiratory failure
 - Cervical lymphadenopathy
 - Knowledge and ability to assess and manage patients with chronic respiratory problems including:
 - Chronic stridor
 - Asthma
 - Chronic and recurrent chest infections
 - Cystic fibrosis
 - Chronic respiratory failure
 - Recognition of life-threatening respiratory conditions and the emergency management

Table 3: Areas of curriculum and assessment during Senior Residency (R4-R6)

Patient Care	Lectures, interactive tutorials, journal clubs All residents must clock in ≥ 4 hours training time per week, encompassing these activities.
Medical knowledge	Assessment: Mini-CEX CBD In-training Examination Postgraduate Examination in Paediatric Medicine Review in Adolescent Medicine Exit Examination
Practice based learning	Journal club: leads Junior Residents Clinical Practice Improvement Programme or Audit Project Evidence of scholarly activity Assessment: Supervisor to assess performance
Communication skills	Leads tutorials, supervised teaching of junior residents by senior residents Assessment: Supervisor to assess performance at tutorials MSF CBD: skills in written documentation
Professionalism	Ethics Workshop Reflective exercises documented for portfolio and discussed with supervisor Assessment: MSF
System based practice	Morbidity / Mortality rounds / Sentinel events: identifying system errors Health care delivery course Assessment: MSF: Ability to function as part of a multi-disciplinary team

For Senior Residents, documentation of all formative teaching and work-based assessments should be performed according to the schedule shown in table 4.

Table 4: Expected frequency of assessments for Senior Residency (R4-R6)

	R4	R5	R6
Mini-CEX	2 every 6 months	2 every 6 months	2 every 6 months
CBD	2 every 6 months	2 every 6 months	2 every 6 months
MSF	1 every 6 months	1 every 6 months	1 every 6 months
DOPS	Compulsory score of ≥ 2 for each practical skill on 2 occasions 5 practical skills on the DOPS checklist (List 3) for advanced training (unless completed during basic training) Senior Residents must show evidence of having completed both List 1 and List 2 in the DOPS checklist in their Junior Residency training in addition to the 5 procedures in List 3		
Portfolio review	1 every 6 months	1 every 6 months	1 every 6 months
Supervisor's report	1 every 6 months	1 every 6 months	1 every 6 months
In-training Examinations	Annual unless Senior Resident has passed the Postgraduate Examinations		
Postgraduate Examination	Complete by end of R5		
Review in adolescent Medicine (2000 words)			Submission required for Exit Examination
Exit Examination			Taken at the end of R6

5. Resident Competencies

R4 to R6	
1. Patient Care	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.
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 to patient care.
3. Practice-based Learning and Improvement	Residents must demonstrate the ability to investigate and evaluate their care of patients, appraise and assimilate scientific evidence, and to continuously improve patient care, based on constant self-evaluation and life-long learning.
4. Interpersonal and Communication Skills	Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. They must demonstrate acceptable written and scholarly communication.
5. Professionalism	Residents must demonstrate a commitment to carrying out professional responsibilities, and an adherence to ethical principles.

	<p>Professionalism encompasses 2 main aspects:</p> <ul style="list-style-type: none"> - Knowledge & application - Attitudes, which includes the promotion of humanistic skills, inculcating values and behaviours expected by society. These include compassion, integrity and respect for others, responsiveness to patient needs which supersede self interest, respect for patient privacy and autonomy, accountability to patients, society and the profession
6. Systems-based Practice	<p>Residents must demonstrate an awareness of, and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.</p> <p>To this effect, residents must understand and coordinate patient care in various health care delivery settings and systems, including insurance and coding issues.</p> <p>They should incorporate considerations of cost awareness and risk benefit analysis in patient and population-based care. Residents should also learn to advocate for quality care and optimal patient care systems by knowing the best resources for patients.</p> <p>They should work in inter-professional teams, and recognize that patient care is team care and not individual care.</p> <p>They should learn to enhance patient safety and improve the quality of patient care by participating in projects seeking to identify system errors followed by implementation of potential system solutions.</p>

(E) LOG OF OPERATIVE / CLINICAL EXPERIENCE

All residents must to keep a log of their operative / clinical experience in the designated Logbook.

Paediatric Medicine Senior Residency Logbook – Section 2 – Record of Cases.

*Note: Patient confidentiality must be observed

(F) ASSESSMENT

I. Supervisors Assessment

The supervisor's evaluation of the resident should be performed at the end of every rotation using the designated form and then submitted to the RAC for review.

II. Feedback

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

List of compulsory courses to be completed by senior residents listed in table 5:

Table 5

Workshops/Courses	Expected Year of Attendance
Basic Cardiac Life Support	R1 or evidence of valid certification
Paediatric Advanced Resuscitation Course	R1 or evidence of valid certification
Sedation Course	R1 or evidence of attendance
Evidence based medicine workshop	R1-R3
Communication workshop	R1-R3
Ethics Workshop	R1-R3 or R4-R6
Health Care Delivery Course	R1-R3 or R4-R6
Mortality and Morbidity Rounds	R1-R3 or R4-R6

Formative & Summative Assessments required to be completed:

Table 6

R1	R2	R3	R4	R5	R6
ITE	ITE	1. ITE 2. MMed/MRCPCH 3. ABMS MCQ	ABMS MCQ [if not already passed]	ABMS MCQ [if not already passed]	

(G) CHANGES IN RESIDENCY PERIOD AND WITHDRAWAL OF RESIDENCY

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

II. Withdrawal of Residency

Withdrawal of residency requires approval from the JCST.

(H) OTHER REQUIREMENTS BY RAC

Call requirements

The Senior Resident must document a minimum of 144 calls in General Paediatrics and either 3 months in Paediatric Intensive care or 500 hours of Paediatric Intensive Care calls, during the 3 years of training.

A waiver of 24 calls in 6 months will be granted ONLY for the training year that the first Children's Emergency posting is done. For all subsequent training years where the resident is posted again to Children's Emergency, the minimum call requirement of 48 calls per training year must be fulfilled. Senior Resident seeking to accredit 6 months of research training must still fulfil the minimum call requirement of 48 calls per training year. Any request for waiver of the minimum number of calls per training period must be submitted to the Residency Advisory Committee for consideration. This will be granted only on a case-by-case basis.

Accreditation on Research Track

Senior Residents designated on recognised research tracks, namely NMRC-PhD programme, Masters of Clinical Investigation and other research scholarships, can choose to be accredited on the Research Track. A formal application for admission to the Research Track must be submitted by the Senior Resident to the RAC, accompanied by the scholarship offer.

Senior Residents must complete at least 3 years of training with a total of 6000 training hours of which 5000 hours of accredited clinical exposure is required. Each 6 months of clinical posting will contribute to a maximum of 1000 hours of clinical time, based on 8 hours per day and a 5 day week:

- The compulsory 6 months of neonatal posting will contribute 1000 hours.
- In the Research Track, Senior Residents are expected to perform full time research studies for 6 months to complete their research modules. This is equivalent to 1000 hours.
- In addition, Senior Residents can perform research work during the 2 years or more, of which 20% of the posting rotations are still expected to contribute to clinical time. This will be equivalent to at least 800 hours of clinical training (20% X 4000 hrs). Senior Residents are still expected to have a minimum of 1 year general paediatric rotations during the minimum 2-year rotation unless they are on the Dual Accreditation Track.
- For Senior Residents in the Research Track, night duties during the research training period can also be counted to their clinical training, as follows:
 - Senior Residents are expected to perform up to 5 weekday calls per month during their clinical postings. This is equivalent to 5 calls/month X 15 hours X 24 months = 1800 hours
- Senior Residents are expected to perform up to 1 weekend call per month, and this is equivalent to 1 call/month X 24 hours X 24 months = 576 hours
- An extra clinical posting may be necessary for 6 months to contribute the final 1000 hours to their clinical training following the minimum 2 years of research work.
- During their period of training, Senior Residents must have done 3 months of intensive care posting or 500 hours of intensive care calls.
- Senior Residents must complete the requisite 6 months or 1000 hours of emergency paediatrics within the training period (inclusive of Residency years).