

Specialty Training Requirements (STR)

Name of Specialty:	Paediatric Nephrology
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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 Paediatric Nephrology

Paediatric Nephrology is a branch of medicine that focuses on disorders of the kidney and urinary tract from the antenatal period through to adolescence. The subspecialty encompasses the entire spectrum of general nephrology disorders, chronic kidney disease, and end stage kidney failure requiring kidney replacement therapy and transplantation in children. It also includes care of the adolescent patient with chronic kidney disease up till transition and transfer of that care to the relevant adult service.

Purpose of the Residency Programme

The goal of the Paediatric Nephrology Residency Programme is to provide broad educational exposure to the residents in all aspects of Paediatric Nephrology, including acute and chronic paediatric kidney replacement therapy, as well as to participate as a team member with the various paediatric subspecialists in providing comprehensive care to children with chronic and complex illnesses.

The Paediatric Nephrology Residency Programme provides opportunities for further mandatory training in a designated Paediatric Nephrology Unit to residents who have achieved competence in basic paediatric and neonatal care, and have achieved the competencies of a General Paediatric Specialist, including an understanding of Adolescent Medicine, and its impact on Subspecialty care. The Paediatric Nephrology Residency Programme will provide training in the more complex nephrology problems which occur in infants, children and adolescents, including management of these problems in the context of the children's physical, mental and emotional growth and development from infancy to adolescence, and the transition into adulthood. The residents will also be trained to undertake the complex technologies involved in dialysis and transplantation.

Admission Requirements

At the point of application for this residency programme,

- a) Applicants must be either completing or had completed their primary specialty in Paediatric Medicine;
- b) Applicants must be employed by employers endorsed by Ministry of Health (MOH); and
- c) 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 obtained specialist accreditation in Paediatric Medicine, or have applied for specialist accreditation in the Paediatric Medicine from Specialists Accreditation Board (SAB); and

- b) Have a valid Conditional or Full Registration with Singapore Medical Council (SMC).

Selection Procedures

Applicants must apply for the programme through the annual residency intake matching exercise conducted by MOH 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 SAB on a case-by-case basis.

Non-traditional Training Route

The programme must not accept application for mid-stream entry to the residency programme by an International Medical Graduates (IMG).

Separation

The Programme Directors (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 24 months.

Maximum candidature: All subspecialty residents must complete the training requirements, requisite examinations and obtain their exit certification from JCST not more than 24 months beyond the usual length of their training programme. The total candidature for Paediatric Nephrology is 24 months Paediatric Nephrology residency + 24 months candidature.

“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 Joint Coordinating Committee (JCC) and should depend on the duration away from training and / or the time deemed necessary for remediation in areas of deficiency. The JCC should review residents' progress at the end of the "make-up" training period and decide if further training is needed.

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 3 of the following EPAs by the end of residency training:

	Title
EPA 4	Managing paediatric patients on haemodialysis
EPA 5	Managing paediatric patients on peritoneal dialysis
EPA 8	Managing paediatric patients who are peri- and post-kidney transplant

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

	Title
EPA 1	Managing paediatric patients with acute electrolyte, kidney and urological conditions in ambulatory, emergency or inpatient settings
EPA 2	Managing paediatric patients with chronic electrolyte, kidney and urological conditions in ambulatory or inpatient settings
EPA 3	Performing ultrasound-guided kidney biopsies
EPA 6	Managing paediatric patients on continuous kidney replacement therapy
EPA 7	Managing paediatric patients on therapeutic plasma exchange
EPA 9	Facilitating the transition of patients with kidney conditions from paediatric to adult health care

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:

- Perform complete, timely, accurate histories and physical examinations for patients referred to paediatric nephrology.
- Establish a differential diagnosis, evaluation plan and management plan for common signs and symptoms of kidney and urological conditions.

- Communicate findings in a complete, written note and present them in a concise manner during ward rounds and meetings.
- Order appropriate laboratory investigations, procedures and imaging studies for patients with kidney and urological conditions.
- Initiate appropriate therapy including prescribing appropriate dialysis orders in acute and chronic settings, therapeutic plasma exchange.
- Perform kidney biopsies and dialysis access procedures which may include the insertion of haemolysis catheters and acute peritoneal dialysis catheters.
- Provide advanced life support management.
- Evaluate potential kidney transplant candidates and monitor the status of kidney transplant recipients peri-transplant and in the long-term.
- Counsel patients and family members.
- Provide effective, compassionate and appropriate health management, maintenance, and prevention guidance.

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 following and apply them to patient care:

- Advanced theoretical knowledge in paediatric nephrology.
- Diagnostic and therapeutic interventions individualised to the care of the patient's needs and consideration of specific indications, contraindications, and diagnostic and therapeutic alternatives.
- Relevant laboratory and imaging studies.
- Common histopathology findings for kidney biopsies.
- Pharmacology, indications, age-appropriate dosages and side effects of commonly prescribed medications.
- Principles and complications of haemodialysis.
- Principles and complications of peritoneal dialysis.
- Indications and complications of continuous kidney replacement therapy.
- Indications and complications of therapeutic plasma exchange.
- Management and complications of paediatric kidney transplant.

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 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.

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 Singapore Medical Council'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.

The milestones are still being worked on and will be included once these have been approved.

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

The programme must schedule a minimum of 16 hours of dedicated educational and learning activities each month. These could be a combination of didactic sessions (multidisciplinary meetings, Continuing Medical Education (CME) lectures, journal critique, topic reviews, peer review round, mortality and morbidity rounds) or bedside teaching sessions facilitated by faculty and peers. The residents must attend at least 70% of the scheduled didactic sessions.

Programme must schedule and residents must attend the following:

Type of scheduled learning activities	Minimum Frequency
*Procedural training	10 hours per month
Cased-based / Entrustment based discussions (EbD)	2 hours per month
Histopathology Meetings	2-hours for 2 times per year
Radiology meetings	3 times per year
CME lecture	1 hour per week Besides Renal-specific CME, department CME lectures can be counted for this.
Peer review round	4 times per year (General Paediatrics peer review rounds can be counted for this)
Morbidity and mortality round	4 times per year

	(General Paediatrics morbidity and mortality rounds can be counted for this)
Paediatric Nephrology grand round and/or journal club or evidence-based topic review	1 hour per week

* Procedural training may be acquired through clinical duties i.e. supervision of a ward, inpatient consults, outpatient subspecialty clinics and performing and interpreting special procedures related to Paediatric Nephrology.

In the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed, apart from procedural training, all the other learning activities stated above should be conducted online.

With regards to cross institution movement, discussion should be held between the 2 training sites (NUH and KKH) on how best to support ongoing training in dialysis and kidney transplantation prior to resumption of cross institution training. Discussion should be held with MOH to allow resumption of cross institution training for dialysis and kidney transplantation at the soonest possible period to minimise disruption in training.

Learning Methods and Approaches: Clinical Experiences

The clinical experience must include the following:

- Residents must conduct regular inpatient ward rounds, looking after patients admitted to paediatric nephrology service daily during weekdays and participate in weekend rounds based on service requirements, in compliance with the duty-hour guidelines.
- Residents must run their own specialty clinics in paediatric nephrology.
- Residents must perform kidney biopsy under supervision.
- Residents must be provided with the opportunity to provide subspecialty consult service to colleagues from general paediatrics and other subspecialties under supervision, both during and out-of-hours. The recommended frequency for this is at least 1 week every month for 24 months.
- Residents must spend minimum 12 months in a unit with chronic kidney replacement therapy and kidney transplantation.

Residents must acquire the following clinical experience:

- a) General paediatric nephrology throughout the 24-month residency training;
- b) Concurrently minimum 12-month exposure to chronic kidney replacement therapy, including chronic dialysis, both peritoneal dialysis and haemodialysis, and kidney transplantation during the 24-month residency training; and
- c) Concurrently minimum 12-month exposure to critical care nephrology including acute dialysis during the 24-month residency training.

The training sites in Singapore for paediatric nephrology are Department of Paediatrics of NUH and Department of Paediatrics of KKH. Both sites provide clinical experience in general paediatric nephrology and critical care nephrology. NUH site provides the clinical experience in chronic kidney replacement therapy and kidney transplantation.

Learning Methods and Approaches: Scholarly / Teaching Activities

Residents must complete the following scholarly / teaching activities:

	Name of activity	Brief description: nature of activity, minimum number to be achieved, when it is attempted
1.	Case presentation with literature review	At least once for every 6-month rotation, such as during department/ service grand rounds, peer review learning, morbidity and mortality rounds, subspecialty meetings.
2.	Teaching and supervision of medical students, interns and junior residents	At least one teaching session to interns and junior residents during residency.
3.	Research or clinical practice improvement / quality improvement project or publication	At least one of any of the following: • Presentation of the results of a research project at a local, regional or international conference • Writing of guidelines • Clinical practice improvement / quality improvement project • 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

Learning Methods and Approaches: Documentation of Learning

Residents must keep a log of their clinical and procedural experience in the designated Paediatric Nephrology Training Logbook / Portfolio.

Residents must complete the following:

1. Record of Cases in the Training Portfolio for Paediatric Nephrology. A minimum of 8 cases per condition as stated in the record of cases should be completed by Year 2 of training. The programme recognises that some conditions may be rare and this will be taken into account at the 6 monthly semi-annual review discussion with the resident.

The record of cases is detailed as follows with a minimum of 8 cases per condition to be completed by Year 2 of training:

A. Glomerulonephritis (GN)

Minimal change nephrotic syndrome (MCNS)

Focal segmental glomerulosclerosis (FSGS)

Lupus nephritis

Henoch-Schonlein nephritis

IgA nephropathy

Post-infectious GN

Others

B. Urinary Tract Disorders

Urinary tract infection (UTI)

Vesicoureteric reflux (VUR)

Obstructive uropathy

Bladder dysfunction

Urolithiasis

Renal tumors

Congenital abnormalities of the kidney and urinary tract (CAKUT)

C. Tubular Disease

Polycystic kidney disease

Other cystic disease

Multicystic-dysplastic kidneys

Renal tubular acidosis

Nephrogenic diabetes insipidus

Tubulointerstitial nephritis

Others

D. Systemic Disease

Renal vasculitis

Haemolytic uremic syndrome (HUS)

Diabetic nephropathy

Others

E. Hypertension

F. Acute kidney injury (AKI)

G. Chronic kidney disease (CKD)

H. End-stage kidney disease

Dialysis

Renal transplantation

2. Procedures

Procedure requirements for exit of paediatric nephrology training:

Procedure	Required number to be completed satisfactorily by end of training
Kidney biopsy (EPA 3)	Minimum of 10 successful kidney biopsies (of which 3 must be accompanied by Entrustment based Discussions (EbD) achieving level 4 supervision)
Haemodialysis (EPA 4)	2 cases with EbD discussion
Peritoneal dialysis (EPA 5)	2 cases with EbD discussion
CKRT (EPA 6)	2 cases with EbD discussion
Therapeutic plasma exchange (EPA 7)	1 case with EbD discussion
Kidney transplant (EPA 8)	3 cases with EbD discussion

Summative Assessments

	Summative assessments	
	Clinical, patient-facing, psychomotor skills etc.	Cognitive, written etc.
SS2	Attainment of requisite entrustment levels for EPAs	Viva Voce Exit Examination (total 4 stations, 30 minutes per station): a. 3 stations on Paediatric Nephrology Clinical Cases b. 1 station on Journal Critique (with additional 60 minutes reading time, prior to the exam)
SS1	Nil	Nil

S/N	<u>Learning outcomes</u>	<u>Summative assessment components</u>	
		Component a: Attainment of requisite entrustment levels for EPAs	Component b: Viva Voce Exit examination
1	EPA 1: Managing paediatric patients with acute electrolyte, kidney and urological conditions in ambulatory, emergency or inpatient settings	✓	✓
2	EPA 2: Managing paediatric patients with chronic electrolyte, kidney and urological conditions in ambulatory or inpatient settings	✓	✓
3	EPA 3: Performing ultrasound-guided kidney biopsies	✓	
4	EPA 4: Managing paediatric patients on haemodialysis	✓	✓

5	EPA 5: Managing paediatric patients on peritoneal dialysis	✓	✓
6	EPA 6: Managing paediatric patients on continuous kidney replacement therapy	✓	✓
7	EPA 7: Managing paediatric patients on therapeutic plasma exchange	✓	✓
8	EPA 8: Managing paediatric patients who are peri- and post-kidney transplant	✓	✓
9	EPA 9: Facilitating the transition of patients with kidney conditions from paediatric to adult health care	✓	