Training Requirements

PAEDIATRIC SURGERY

(A) INTRODUCTION

Background

Paediatric Surgery (PS) encompasses a broad range of congenital and acquired surgical diseases in babies, children and adolescents. PS diseases include operative and non-operative paediatric and neonatal conditions in general surgery, non-cardiac thoracic surgery, urology and gynaecology.

Training outcomes

The objective of the programme is to train a Paediatric surgeon who is:

1. Technically competent in paediatric and neonatal operations
2. Sound in clinical judgment
3. Able to critically appraise published literature and apply to patient care appropriately, to provide evidenced-based medical care
4. An active participant in clinical research /teaching

(B) PROGRAMME OVERVIEW

The duration of the PS Surgery-in-General (SIG) training programme is 6 years. Training duration maybe extended when the trainee does not meet stipulated learning requirements or assessments.

A candidate who is currently midway in another accredited training programme (local or overseas) that leads to Paediatric Surgery qualification may apply to enter the programme. His/her prior training experience reviewed by the Joint Committee for Specialist Training (JCST) on a case-by-case basis and he/she may be advanced to begin training at a more senior level if appropriate.

(1) PS SIG

The programme comprises 2 year SIG training followed by 4 years of PS training.

During the SIG R1 to R2 years, trainees rotate through postings in General Surgery, Urology, Thoracic Surgery and relevant Paediatric Surgery-specific electives. The training in the third year (PS R3) continues with General Surgery rotations to develop the broad basic general surgical competence required for Paediatric Surgery.

The aim of this component (SIG R1-R2 and PS R3) is for trainees to develop a good foundation in general surgical knowledge, critical reasoning and operative skills. In addition, the PS-electives aim to expose trainees to fine tissue-handling surgical skills and essentials of paediatric medicine.

The final years PS R4 to R6 involve core training in Paediatric Surgery where trainees are exposed to the full spectrum of Paediatric Surgery. The trainees are also required to actively participate in research and teaching at this level of seniority.

(2) MID-STREAM ENTRY

Trainees who are currently midway in another training programme (local or overseas) that leads to Paediatric Surgery qualification may apply to enter the programme. The applicant's prior training experience will be reviewed by the Specialist Training Committee on a case-by-case basis, to decide if the applicant may start at a more senior level of training.

Generally, applicants who have successfully completed General Surgery Residency or have equivalent General Surgery specialist qualification recognised by the Singapore Specialist Accreditation Board (SAB) can start training at PS R4 level. They then proceed to complete 3-year PS Advanced Specialist Training (i.e. PS R4 to R6).

Other applicants who have completed a few years of basic surgical training in other recognised residency / training programmes will need to submit proof of prior training records with letter of recommendation from their previous training director. Accredited prior training may be recognised and discounted from the rotation requirements such that the candidate maybe advanced to start at R2, R3 or R4 as appropriate.

(C) ADMISSION REQUIREMENTS

Entry criteria to PS SIG programme are listed below. The criteria 1 (iii/iv) are unique to PS as candidates require good foundation of surgical experience and adequate understanding of PS as career choice before embarking on training.

(1) PS SIG

Applicants must fulfill **all** of the following entry criteria / pre-requisites as stated below:

i. Qualification as a medical practitioner from a university recognised by the Singapore Medical Council
ii. Registration with the Singapore Medical Council (Full / Conditional)
iii. have completed at least 2 years' postgraduate working experience
iv. 12 months of surgical subspecialty experience, of which at least 3 months must be in Paediatric surgery

(2) MID-STREAM ENTRY

Applicants must have passed MRCS and fulfil **either** of the following entry criteria / pre-requisites as stated below:

i. Successful completion of Accreditation Council for Graduate Medical Education (ACGME) accredited General Surgery programme
ii. Doctors who are registered with the Singapore Medical Council (SMC) and have obtained specialist accreditation in GS by the Specialists Accreditation Board (SAB) upon commencement of the training program;

Doctors who are currently midway in a training programme (local or overseas) that leads to Paediatric Surgery qualification may apply to the JCST to have their prior training recognized on a case-by-case basis for consideration for eligibility. Overseas training must be in a recognized Paediatric Surgery training program in the UK, Australian, New Zealand, Ireland, Canada and US programmes.

(D) TRAINING SYLLABUS

(i) Clinical exposure

<table>
<tr><th>Training Year</th><th>Rotations</th><th>Rotation Duration</th></tr>
<tr><td>SIG R1</td><td>General Surgery</td><td>12 months</td></tr>
<tr><td rowspan="4">SIG R2
PS R3</td><td>PS-specific electives</td><td>3 + 3 months for any of the elective rotations
(choose 2 of the 3 options)
a) Emergency medicine or Children’s Emergency
b) Anaesthesia or Paediatric Anaesthesia
c) Paediatric Medicine</td></tr>
<tr><td>Urology</td><td>6 months</td></tr>
<tr><td>Thoracic</td><td>6 months</td></tr>
<tr><td>General Surgery</td><td>6 months</td></tr>
<tr><td colspan="3">General surgery – includes general surgical sub-specialties currently recognized by SAB as general surgery (i.e. Breast, HepatoPancreatoBiliary, Upper GI, Vascular, Colorectal, Trauma, Head & Neck surgery)</td></tr>
<tr><td>PS R4</td><td rowspan="3" colspan="2">Elective and Emergency Ward, Clinic and Operating theatre experience necessary for core training in Paediatric Surgery</td></tr>
<tr><td>PS R5</td></tr>
<tr><td>PS R6</td></tr>
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(ii) Syllabus R1-R3

1. Basic science knowledge relevant to surgical practice
   1.1. Anatomy, physiology, pharmacology, pathology, microbiology
2. Common Surgical conditions
   2.1. To get relevant history, do proper physical examination and order appropriate investigations in assessment of common surgical conditions in adults
   2.2. To propose appropriate differential diagnoses and management plan, offering surgical intervention as appropriate and/or referral to relevant specialists
   2.3. Preoperative preparation of the surgical patient, including management to reduce operative and anaesthetic risks
   2.4. Taking informed consent for straight forward cases
3. Basic surgical skills
   3.1. Familiarity with basic operative technical skills (instrument handling, tissue handling, haemostasis, diathermy use, suturing and knot-tying)
   3.2. Principles of endoscopy, thoracoscopy and laparoscopy
4. Peri-operative care of the surgical patient
   4.1. Operating theatre practices (anti-sepsis and safety)
   4.2. Principles of anaesthesia (general, regional and local) and pain control
   4.3. Principles of management of bleeding and use of blood products
   4.4. Post-operative care of the surgical patient, including fluid/nutrition management and complications
5. Assessment and management of the patient with trauma
   5.1. Principles of assessment and resuscitation in multi-trauma
6. Death and dying patient
   6.1. Management of the dying patient in consultation with the palliative care team

6.2. Principles of organ and tissue transplantation
6.3. Principles of brain stem death and its relevance to organ donation, including the relevant legislation in the Singapore context

7. Professional behaviour
   7.1. Ethical and legal concepts in patient care
   7.2. Inter-professional behaviours including good communication and teamwork
8. Practice based learning and improvement
   8.1. Basic Knowledge of evidence-based medicine
   8.2. Participation in teaching of medical students / nurses / peers
9. Systems based practice
   9.1. Knowledge of the healthcare systems in Singapore
   9.2. Familiarity with patient safety practices
10. Special characteristics of management of children's health and illness
   10.1. Obtaining history and doing physical examination in babies and children
   10.2. Communication with the family/care giver
   10.3. Differences in the basic sciences - e.g. Anatomy, physiology. pharmacology and relevance to clinical management
   10.4. Ethical issues in paediatrics and adolescence

Syllabus R4-R6

PS R4	1. Theoretical knowledge of general paediatric surgery 2. In-depth knowledge of paediatric resuscitation 3. Evaluation and management of emergency admissions and general assessment of outpatient general paediatric surgery patients.
PS R5	1. In-depth knowledge a. Paediatric Intensive Care b. Neonatal Care 2. Surgical management of all routine paediatric surgical procedures. Thorough familiarity with theory and surgical management of common index conditions such as: a. Pyloric Stenosis b. Intussusception c. Neonatal hernia d. Undescended Testis
PS R6	1. In-depth theoretical knowledge of index neonatal surgical conditions such as: a. Oesophageal atresia with/without Tracheo-Oesophageal Fistula b. Intestinal atresia c. Hirschsprung's disease d. Anorectal Malformations e. Abdominal Wall defects f. Congenital diaphragmatic hernia g. Biliary atresia 2. Knowledge and management of other areas of paediatric surgery such as paediatric urology, paediatric surgical oncology, paediatric trauma etc. (The above list is by no means comprehensive)

iii) Courses

Essential

1. Basic Cardiac Life Support
2. Advanced Cardiac Life Support
3. Advanced Paediatric life support APLS / PALS
4. Basic Laparoscopy
5. Advanced laparoscopy (R4-R6)

Recommended

1. Advanced Trauma Life Support ATLS
2. Fundamental Critical Care Support

(iv) Specific Requirements of PS Advanced Specialist Training* (PS R4 - R6)

1. Participate in a research project as the principal researcher. The trainee is expected to present research findings at local /regional conference and work towards a publication in a peer reviewed journal.

2. Participate actively in all departmental activities. These would include performing administrative duties required of a registrar, presenting at surgical audits, attending regular teaching conferences, supervision of junior trainees and teaching of juniors (e.g. medical officers/ residents, nurses and medical student).

*Note that Index paediatric surgery cases logged during R1-R3 may be included in the total logbook requirement for index cases. Relevant research activities and courses attended in the R1-R3 are also included towards the total required.

(v) Operative case log

At the end of Advanced Specialist Training in Paediatric Surgery (i.e. at the end of R6), the trainee should have scrubbed in for the following types of cases:

Overall categories (main)	Recommended	Minimum
Neonatal cases	40	30
GI surgery (exclude neonatal cases)	90	60
Head and Neck Surgery	30	10
Thoracic surgery	25	10
Tumour	20	10
Urology	60	40

Categories defined: Neonatal	Recommended	Minimum
Malrotation	5	2
Atresia/ stenosis/ web	5	2
NEC	5	2
Neonatal stoma	5	2
Abdominal wall defects	5	2
Diaphragmatic hernia	5	2

Oesophageal atresia +/- TOF	2	1
Sacrococcygeal teratoma	1	nad
Other Neonatal (not included in main category above)		
Neonatal herniae (no. of patients)	30	20

Categories defined: Gastrointestinal	Recommended	Minimum
ARM definitive surgery	10	5
Hirschsprung's definitive surgery	5	3
Biliary atresia / Choledochal cyst	5	3
Intestinal obstruction	10	5
Fundoplication	10	5
Splenectomy	5	3
Other GI (not included in main category above)		
Hernia/ hydrocele	200	100
Pyloric stenosis	10	3
Appendicectomy (lap / open)	100	50

Categories defined: Thoracic	Recommended	Minimum
Lung resection	5	2
Empyema	10	5

Categories defined: Tumour	Recommended	Minimum
Wilms/ neuroblastoma	5	2
Hepatoblastoma	2	nad
Rhabdomyosarcoma / sarcomas	1	nad
Other (not included in main category above)		
Central lines	20	10

Categories defined: Urology	Recommended	Minimum
Pyeloplasty/ Ureter Reimplantation	15	10
Hypospadias	30	10
Nephrectomy / Nephroureterectomy	5	2
Cystoscopy +/- intervention	20	10
Other Urology (not included in main category above)		
Orchidopexy	50	25
Exploration for torsion	10	5

(vi) Assessment and supervision

For each rotation during R1 to R3, the trainee is assigned a rotation supervisor who liaises with the PS SIG Program director regarding the educational requirements and progress of the trainee. For R4-R6, the trainee stays within an accredited department of Paediatric Surgery and maybe assigned one or more supervisors during this period.

The educational experience offered at each rotation should include both structured lectures and clinical teaching (e.g. Grand Ward Rounds, Journal Club, M&M Sessions, X-Ray Meetings, Topic Presentations, etc.). Trainees are granted protected time to attend teaching and are expected to attend at least 80% of all training

activities. The programme should document recommended textbooks for the resident's reference, with the caveat that sole reliance on textbook review is inadequate.

Duties of the supervisor include regular meetings with the trainee, assigning rotation assessments and providing mentorship. Trainees are expected to maintain an updated logbook on the training experience. Supervisors should review the accuracy of the content of the logbook and provide guidance to the trainees on areas of deficiency. The supervisor will submit end-of rotation trainee evaluations to the PS SIG Program Director who retains overall responsibility for the programme and the trainees.

(E) EXAMINATION

(1) INTERMEDIATE EXAMINATION

At the end of PS SIG R2, a trainee must pass the MRCS Intermediate Examination before he/she can progress to R3.

At the end of R3, the trainee should demonstrate competency in general surgical skills and decision-making before promotion to senior resident R4. Trainees would have to achieve a minimum grade of 'satisfactory' at the end-of-year assessment by the HOD/Programme Director and faculty of the training sites (NUH / KKH).

(2) EXIT EXAMINATION

The trainee will sit for the exit examination at the end of R6 where he/she is Assessed on the following criteria:

1) Track record of clinical competence
2) Knowledge and experience in Paediatric surgery
3) Performance in research activities
4) Attendance at regular teaching conferences/ courses

The Paediatric Surgery Residency Advisory Committee convenes the exit exam with at least 3 examiners. Candidates need to fulfil course attendance and case-log requirements to proceed to the exam. The exit examination follows the format of

- Viva: 1 Long Case and 3 Short Cases
- Objective Structured Clinical Examination (OSCE): 10 Questions

(Note: Candidates have to pass Viva in order to proceed to OSCE)

Although it is not mandatory, the trainee should aim to have at least one scientific paper, either published or accepted for publication by R6. The minimum requirement is for the trainee to have presented at least once, either in the form of oral presentation or poster, in a local scientific meeting.

(F) CERTIFICATION FOR COMPLETION OF TRAINEESHIP (EXIT)

At the end of the traineeship period, trainees are required to submit of the following documents to the RAC for review to determine completion of advanced training:

1. Logbook
2. 6-monthly performance reports from supervisor for all the completed postings.
3. Leave records for the entire period
4. Attendance of Medical Ethics, Professionalism and Health Law Course
5. Research publication if any
6. Membership Examination of the Royal College of Surgeons (MRCS) certification or its equivalent

(G) GENERAL GUIDELINES

These guidelines follow General JCST guidelines. For 3-month rotations, allowed leave is pro-rated accordingly.

Please refer to Annex 1 for general guidelines on the following:

- Leave Guidelines
- Training Deliverables
- Overseas Training
- Withdrawal of Traineeship
- Exit Certification

Annex 1

Leave Guidelines

As a guide to ensure adequate educational exposure, in a 6-monthly posting, a trainee should not be away for more than 34 days (in totality) from training. For NS men, due to national service, they may be away for an additional 14 days from training.

In the event of leave in excess of the guidelines, the RAC shall determine:

- if make-up training is required; and
- whether it is an essential posting that may render extension of traineeship, or
- can the make-up be carried out in future postings

The guidelines shall apply to postings with effect from May 2017.

Trainees are advised to discuss their training requirements with their supervisors before taking any extended leave. If extended leave needs to be taken, the trainees are required to seek approval from the Training Committee and JCST via JCST Secretariat.

Training Deliverables

All training units must provide all trainees, except for SAF sponsored trainees, (irrespective of the specialties pursued) with the training deliverables, as follows:

a) At least one session (half day) of protected time per week to be dedicated to pure training/learning activities.

b) 12 days of training leave per year for relevant structured training as approved by supervisors.

Changes to Training Period

Specialty training should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC/JCST may, at its discretion, require the trainee to undergo a further period of training in addition to the minimum requirements of the programme or terminate the traineeship altogether.

All trainees are required to conform to the traineeship period and training plan as approved by RAC and JCST. If the trainee wishes to change to part-time training or defer traineeship, approval is to be sought prospectively from JCST through RAC.

Deferment of training will only be allowed up to a maximum of 1 year except in special circumstances.

Overseas Training

Approval for accreditation for training programmes conducted in overseas centres has to be sought prospectively from JCST through the RAC.

Withdrawal of Traineeship

Upon appointment as trainee, should you decide to withdraw from traineeship, you are required to submit a withdrawal letter to JCST indicating your reasons for withdrawal. There is no automatic re-instatement of traineeship. The candidate has to re-apply in the next traineeship exercise.

Exit Certification

On successful passing of the exit exam, completion of all training requirements and the mandatory SMA's Medical Ethics, Professionalism and Health Law Course, trainees are required to submit the pass letter / scroll to the JCST secretariat. Upon RAC's review and recommendation and JCST certification for exit from specialist training, the doctor may apply to SAB and SMC for specialist accreditation and specialist register.