Paediatric Surgery Postgraduate Training in Malaysia

GUIDE FOR APPLICANTS VERSION 1, 2022

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Preface

What is this document

The purpose of this document is to serve as a guide for prospective applicants by providing the following information:

- 1. Overview of the Paediatric Surgery postgraduate specialty
- 2. Outline of the Paediatric Surgery postgraduate training programme in Malaysia
- 3. Entry requirements
- 4. Application and entry process

The National Postgraduate Medical Curriculum

The National Curriculum for Paediatric Surgery is part of the National Postgraduate Medical Curriculum (NPMC) project. It is a collaborative effort and accomplished through the efforts of many who have the vision of providing the highest quality of surgical care to children in Malaysia. The contributors include paediatric surgeons from the Ministry of Higher Education (MOHE), Ministry of Health (MOH) and Academy of Medicine Malaysia (AMM).

This will be the common curriculum for training in Paediatric Surgery and sets the standard for training so as to deliver high quality, effective and safe patient care across the whole of Malaysia.

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Introduction

Purpose of this guide

The purpose of this guide is to inform prospective applicants seeking a career in Paediatric Surgery. It summarises the key aspects of the Paediatric Surgery curriculum (entry requirements, process, training structure, assessments, some documentation and exit criteria) and provides a guide as to how to prepare and proceed with the application.

What is Paediatric Surgery

Paediatric surgeons in Malaysia manage neonatal and paediatric surgical conditions from the newborn period to adolescence. For some clinical conditions, the management continues until early adulthood. The scope of practice encompasses disorders involving the gastrointestinal, hepatobiliary, thoracic, urological, vascular, and endocrine systems, and oncological conditions related to these systems. In addition, burns and polytrauma management is part of paediatric surgical care for children. Neonatal and complex congenital abnormalities are dealt with at tertiary referral centres. Minimally invasive procedures involving laparoscopy and thoracoscopy as well as transplantation (liver) are also performed by paediatric surgeons.

The role of a Paediatric Surgeon

Paediatric surgeons are involved with the diagnosis, preoperative, operative, and postoperative management of surgical problems in children, and they operate on children that range from the newborn stage through to teenage years. With appropriate management, Paediatric Surgeons are able to facilitate a full and healthy life in the years ahead for their patients.

Paediatric surgeons have a very varied and sometimes unpredictable workload, of which surgery is only a part. They also attend outpatient clinics and hospital ward rounds and have contact with children and their families. Reassuring children and parents, and explaining surgical procedures is a vital part of the work. For the more complex and difficult cases this can be emotionally demanding. Parents are naturally anxious about their children undergoing surgery.

Size of the specialty

There are approximately 50 – 60 paediatric surgeons in public practice in Malaysia, with services supplemented by paediatric surgeons in the private sector. Almost every state has a paediatric surgical referral centre, with three situated in the Klang Valley area. Growth in numbers of trained specialists in paediatric surgery will allow dynamic expansion of the specialty, such as focused subspecialty development, research and device development, increased involvement in and engagement with national public health policy development, and expansion of rural service support.

Unique features of the specialty

Paediatric surgeons need to have a high degree of manual dexterity and must work across a wide range of anatomical areas. The surgeon should be competent in the surgical repair of birth defects, and possess knowledge and surgical techniques specific to each stage of a child's development. Both the range of surgery areas as well as the wide age groups and therefore the differences, make paediatric surgery a unique specialty. Due to these challenges, paediatric surgeons can be considered amongst the most specialised and trained surgeons. The paediatric surgeon must therefore be competent in multiple domains that extend beyond clinical and technical expertise.

Why choose Paediatric Surgery as a career?

Paediatric Surgery will appeal to those who enjoy working with children, providing the opportunity to make a significant difference to the quality of life in children, and therefore impacting the rest of their lives.

Paediatric Surgeons require strong interpersonal and communication skills and have a unique perspective in that interactions are often with the family rather than the patient themselves. Dealing with anxious new parents as well as those of young children and teenagers, the successful surgeon must not only be an excellent technician but also dedicated, caring and compassionate.

With the increased use of technology in the surgical specialties, there are exciting developments in the field including laparoscopy and the potential for robotics. The surgeon will be required to keep up to date with all the latest advancements which can reduce the invasiveness of procedures and significantly improve the care of patients.

The Master of Paediatric Surgery programme enables trainees to enrol directly into a 4-year programme. There is wide scope for further sub-specialisation in areas such as urology, complex minimally invasive surgery, oncology, trauma surgery and organ transplantation surgery.

Career opportunities after qualification as a paediatric surgeon are good both in the public and academic sectors. An increase in the number of trained paediatric surgeons will improve the quality of paediatric surgical care, provide optimal working conditions for surgeons, and open pathways for subspecialisation.

1. The Paediatric Surgery Programme

Training Pathways

The Master of Paediatric Surgery programmes offered by the University of Malaya (since 2005) and Universiti Kebangsaan Malaysia (since 2015) provide the pathways for specialty training in paediatric surgery in Malaysia. Both programmes conclude with a Conjoint Master of Paediatric Surgery Final Examination.

The Master of Paediatric Surgery programme comprises of clinical exposure, coursework and a research component. The minimum period in which the trainee can successfully complete the programme is four years and the maximum period permitted is seven years.

There is an alternative fellowship pathway which only requires three years. This pathway requires candidates to already have an exit qualification in General Surgery.

Stages of Training

The programme of study is divided into 2 stages, Stages I and II.

Stage I (Basic Clinical Training) focuses on the development of competencies in applied basic sciences and general principles of paediatric surgery. This stage takes place in Year 1 of the Master of Paediatric Surgery programme. At the end of Year 1, trainees are required to sit for the Part I of the Master of Paediatric Surgery Examination. Trainees may only progress to Stage II on the satisfactory completion of Stage I and after passing the Part 1 Examinations.

Stage II, Years 2 to 4, comprises of Advanced Clinical Training and a research project.

2. Entry Requirements

Essential criteria

Applicants to the postgraduate training programme must meet the requirements as detailed below both in terms of the entry as well as the funding criteria as appropriate.

Applicants funded by the Ministry of Health (MOH), and applying to University programmes, must meet both MOH and University requirements to be considered for an entrance evaluation.

Self-funded applicants only need to meet the requirements of the programme and institution to which they apply.

MOH Administrative requirements:

- 1. Has a minimum of two years' clinical service after completion of house officer rotations.
- 2. Scored 85% or more on annual performance evaluations for three consecutive years
- 3. Does not have any disciplinary issues
- 4. Has a written recommendation from two supervising consultants

University requirements:

- 1. Holds a degree of Bachelor of Medicine and Bachelor of Surgery, or equivalent medical qualification, as recognised by the Malaysian Medical Council.
- 2. Language requirements: A non-Malaysian applicant whose degree is from a university or institution of higher learning where the medium of instruction for that degree is not the English language shall be required:
 - To obtain a score of 600 for a paperbased total (PBT), a score of 250 for a computer-based total (CBT), or a score of 100 for an internet-based total (IBT) for the Test of English as a Foreign Language (TOEFL); – OR
 - To obtain a band of 6 for the International English Language Testing System (IELTS) (Academic)

Other requirements:

- Qualifies for registration as a medical practitioner under the Medical Act 1971 (Act 50) of Malaysia.
- 2. Has at least two years of relevant experience following full registration with the Malaysian Medical Council at the time of entry.
 - a. This experience may include working in surgical specialties and paediatric medical specialties.
 - b. A minimum of 6 months should have been spent in general surgery.
- 3. Evidence of the ability to safely perform the required Entry Essential Learning Activities (ELA) as listed in the subsequent section. A minimum of 6 months prior experience in a paediatric surgical unit is highly recommended.
- 4. Satisfies a recognised Entrance Evaluation in the institution responsible for the programme.
- 5. Undergoes a minimum of three months' clinical attachment in a Malaysian paediatric surgical department prior to entry into advanced surgical training (for international applicants).

Entry Essential Learning Activities (ELA)

Entry ELAs are clinical activities that prospective trainees should be able to perform in a trustworthy manner by the time they enter the postgraduate training programme in Paediatric Surgery. The Entry ELAs have been selected to represent the typical and basic day-to-day work in Paediatric Surgery. They indicate the knowledge, skills and attitudes that the trainees need to be aware of when carrying out their tasks and responsibilities. They also serve as learning opportunities for prospective trainees when they are tasked to undertake the activities and then receive feedback regarding their performance. All prospective applicants are required to fulfil the following entry level essential learning activities:

ELA 1	Acute Appendicitis – Diagnosis & Management
ELA 2	Fluid Management In A Child

* The list of entry ELAs is not exhaustive and may be updated according to programme requirements

Essential Learning Activities Worksheet 1

Activity	Acute Appendicitis
Description	Diagnosis and management of acute appendicitis in a child
Level expected	Entry level (must demonstrate prior to entry)

All items on the table below are examples and do not constitute an exhaustive list in any aspect

Knowledge Know, Facts, Information	Skill <u>Do,</u> Practical, Psychomotor, Techniques	Attitudes + Values <u>Feel</u> , behaviours displaying underlying values or emotions	
Describe the symptoms and signs of appendicitis and common differential diagnosis	Correctly perform an appendicectomy skin to skin in a child	Communicate the clinical problem to caregivers with empathy	
Explain the complications of acute appendicitis in children		Explain treatment decisions without the use of medical	
Describe the appropriate investigations of relevance depending on the stage of the disease		Take surgical consent in a respectful manner	
Describe treatment protocols, including choice of antibiotics and surgery			
Example Behaviours			
Positive	Negative	Negative Passive	
Things that should be done, correct techniques or practices, things a trainee might do right	Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do	
Things that should be done, correct techniques or practices, things a trainee might do right Performs appendicectomy with care in tissue handling	Things that should not be done, incorrect techniques or practices, things a trainee might do wrong Rough handling of tissues Poor haemostasis	Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do Does not review the patient post-operatively	
Things that should be done, correct techniques or practices, things a trainee might do right Performs appendicectomy with care in tissue handling Maintains aseptic technique throughout surgery	Things that should not be done, incorrect techniques or practices, things a trainee might do wrong Rough handling of tissues Poor haemostasis Poor attention to infectious control during surgery	Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do Does not review the patient post-operatively Lack of empathy in dealing with caregivers and child	
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Essential Learning Activities Worksheet 2

Activity	Fluid management in a child
Description	Assessment of hydration status and correction of dehydration in a child
Level expected	Entry level (must demonstrate prior to entry)

All items on the table below are examples and do not constitute an exhaustive list in any aspect

Knowledge <u>Know</u> , Facts, Information	Skill <u>Do,</u> Practical, Psychomotor, Techniques	Attitudes + Values Feel, behaviours displaying underlying values or emotions	
List the symptoms and signs of dehydration in a child Describe how to assess the degree of dehydration in a child Explain the pathogenesis of dehydration in surgical paediatric patients Outline the fluid and electrolytes requirements as per age and body weight (for maintenance, replacement of ongoing losses, and resuscitation of shock/severe dehydration) Describe how to monitor	Able to insert peripheral intravenous access in a child Able to insert urine collection device	Communicates the clinical problem to parents with empathy Explains the need for treatment procedures to caregiver and child	
Example Behaviours			
Positive Things that should be done, correct techniques or practices, things a trainee might do right	Negative Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	Negative Passive Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do	
Accurately assesses the degree of dehydration	Failure to recognise dehydration	Does not monitor response to treatment	
Accurately prescribes initial correction of hydration	Wrongly assesses the degree of dehydration	Lack of empathy in dealing with child and caregivers	
	Assessment / Evidence		
Case-based discussion			
Entrance evaluation			

3. Entry Process

Calls for applications will be advertised, and entrance evaluations conducted by the relevant bodies, (e.g., Conjoint Specialty Committee for Paediatric Surgery).

Eligible applicants may apply either through MOH (government-MOH sponsored candidates) or directly to the university of their choice (private Malaysian and international candidates).

Applicants are required to go through a selection process following which they are informed of the outcome of their application by the MOH and the university respectively.

MOH sponsored candidates:

Applications must be made to the Training Management Division, MOH. Any further enquiries should be directed to the Training Management Division, MOH.

Private candidates (Malaysian/International): Applications can be made directly throughout the year through the website of any university that is offering the training programme. Candidates may apply to more than one university and should refer to the university's postgraduate studies administrative office for further application details.

Entrance evaluations should comprise of the following:

- 1. A written examination
 - This should assess knowledge of basic and clinical sciences related to paediatric surgery
- 2. An interview to assess non-technical skills
 - A panel of interviewers appointed by the Conjoint Board will conduct the entrance interview.
- Review of evidence to support the applicant's prior training and development activities, which may include the following:
 - Procedure logbooks
 - Attendance at relevant courses

- » Advanced Trauma Life Support (ATLS)
- » Advanced Paediatric Life Support (APLS)
- » Good Clinical Practice (GCP)
- Care of the Critically III Surgical Patients (CCrISP)
- » Non-Technical Skills for Surgeons (NoTSS)
- » Basic Laparoscopy
- » Basic Endoscopy
- » Basic Surgical Skills
- Publications & presentations
- Documentation of proficiency in the entry ELA
- 4. The applicant may be asked for written testimonials from supervisors to support the application

All of above assessments will be evaluated as appropriate and weighted so as to rank applicants for consideration for admission to the programme.

Induction Process

The induction process is a set of steps put in place to orientate the trainee to the institution, curriculum and training requirements.

Each university is responsible for the organisation and conduct of the programme for its own candidates.

The induction programme covers the following aspects:

- Registration process
- Payment of fees
- Details of the programme of study to be followed
- Learning opportunities that will be provided

- Assessments used and their purpose
- Location of training centres
- The duties of a trainee
- Guidelines and protocols in the workplace
- Support provided in the workplace
- Role of trainers
- Continuous Professional Development (CPD) requirements
- Attendance during training
- Disciplinary processes
- Processes to report concerns about training
- Systems for supporting a trainee in difficulty

Attendance and participation in the induction programme is compulsory. Failure to attend the induction programme will result in the trainee not being able to commence training.

4. Syllabus

Overview

The syllabus defines what will be taught and learned as a paediatric surgeon throughout the training programme in Malaysia. It outlines the domains and the competency levels to be achieved in each stage of the training programme. It details the generic and specialtyspecific breadth of knowledge, skills and attitudes that a trainee needs to attain and apply to patient care.

The syllabus provides a framework for the

- 1. the structure of the training programme.
- competencies expected in the domains of knowledge, skills and professional behaviours in surgery.
- 3. expected levels of competency at different stages of training.

Training structure

Stage I (Basic Surgical Training)

By the end of this stage, trainees are required to achieve and demonstrate the competencies as outlined in the following domains:

- 1. Knowledge
 - a. Applied Basic Sciences(Applied Anatomy, Applied Physiology and Applied Pathology)
 - b. Principles of Surgery
 - c. Common Paediatric Surgery Pathologies
- 2. Skills Basic Surgical Skills in Paediatric Surgery
- 3. Professional Behaviours in Surgery

Training placements in Stage I must meet the following requirements:

- 1. A minimum of one (1) year in total
- 2. Placements must be in the university and/ or an accredited Ministry of Health (MOH) paediatric surgery training centre.

Stage II (Advanced Surgical Training)

Stage II of Paediatric Surgery training is designed to develop clinical knowledge in the principles and practice of paediatric surgery. In this stage, the emphasis of training is placed on the recognition, investigation and management of paediatric surgical conditions. Competencies in clinical knowledge and principles of practice achieved in Stage I are developed further in this stage of training.

By the end of this stage of training, trainees are required to achieve and demonstrate the competencies as outlined in the following domains:-

- 1. Knowledge
 - a. Principles of Paediatric Surgery
 - b. Paediatric Surgery (General & Specialties)
- 2. Skills

Advanced Surgical Skills in Paediatric Surgery

3. Professional Behaviours in Surgery

Training placements in Stage II must meet the following requirements:

- 1. A minimum duration of three (3) years in total
- 2. A six (6) month training period that consists of placements in Paediatric Intensive Care, Neonatal intensive Care and an approved elective placement
- A minimum of five (5) placements of six
 (6) months each in an accredited MOH paediatric surgery training centre and/or university. A duration of six (6) months in the final year must be spent in the university.

At the start of Stage II, every trainee is required to initiate a research project leading to the completion of a thesis. Trainees will be periodically assessed to ascertain progress in their research project. By the end of Stage II, each trainee is required to successfully defend and submit a thesis that has been approved by the panel of assessors.

Competency Indicators

Every trainee is required to demonstrate the level of competence expected for each stage of training across all domains. The competency indicators for the knowledge and skills domains are described as follows:

Domain : Knowledge

Level	Descriptors
1	Able to recall knowledge/concepts learned
2	Able to comprehend meaning, interpret and explain learned concepts in own words
3	Able to apply learned concept in actual clinical situations appropriately
4	Capable of analysis by deconstructing concepts into smaller components/ segments for better understanding of its structure. Able to draw connections between facts and inferences
5	Able to evaluate, critique and appraise an approach/assessment/ decision
6	Able to create new approach/solution to solve a problem by combining learned concepts that requires creative/original thinking

Domain : Skills

Level	Descriptors	
1	Has observed	
2	Has assisted in the capacity of 1st assistant	
3	Able to carry out parts of procedure with assistance	
4	Able to perform the procedure safely and independently, with occasional help required for core steps	
5	Able to perform the procedure safely independently and employ different approaches/techniques	
6	Able to perform the procedure safely independently and manage complications	

Knowledge Syllabus

Stage I (Basic Clinical Training)

Stage I of Paediatric Surgery training is designed to build strong foundational knowledge that allows for the development of competencies in clinical practice and the general principles of paediatric surgery. In this stage the emphasis of training is placed on the correlation, integration and application of Basic Sciences in clinical practice. Trainees are introduced to common paediatric surgical conditions in preparation for advanced surgical training. The knowledge components of Stage I are:

- 1. Applied Anatomy
- 2. Applied Physiology
- 3. Applied Pathology
- 4. Principles of Surgery
- 5. Common Paediatric Surgery Pathologies

This stage takes place in Year 1 of the Master of Paediatric Surgery programme. At the end of Year 1, trainees are required to sit for the Part I of the Master of Paediatric Surgery Examination. Trainees may only progress to Stage II on the satisfactory completion of Stage I and after passing the Part 1 Examinations.

A summary of the Stage I Knowledge Syllabus is shown in Appendix 1.

Trainees should refer to the Paediatric Surgery Curriculum Document for details as to what trainees are expected to achieve and demonstrate, and the specified level of competency for each stage.

Example: Temperature Regulation in the Neonate (Applied Physiology: General application in the paediatric patient)

The knowledge level expected of the trainee on this topic by the end of Stage 1 should be at level 4, as defined in the competency indicators.

As such, the trainee should be able to explain modes of thermoregulation and heat loss in neonates, understand and explain differences compared to older paediatric patients, and relate these principles to clinical practice in neonatal surgery.

Stage II (Advanced Clinical Training)

This stage comprises of Advanced Clinical Training and a Research Project. The minimum period in which the trainee can successfully complete the programme (Stages I and II) is four years and the maximum period permitted is seven years.

By the end of this stage of training, trainees are required to achieve and demonstrate the competencies as outlined in the following domains:

- 1. Knowledge
 - a. Principles of Paediatric Surgery
 - b. Paediatric Surgery (General & Specialties)
- 2. Skills

Advanced Surgical Skills in Paediatric Surgery

3. Professional Behaviours in Surgery

Training placements in Stage II must meet the following requirements:

- 1. A minimum duration of three (3) years in total
- 2. A six (6) month training period that consists of placements in Paediatric Intensive Care, Neonatal intensive Care and an approved elective placement.
- A minimum of five (5) placements of six
 (6) months each in an accredited MOH paediatric surgery training centre and/or university. A duration of six (6) months in the final year must be spent in the university.

A summary of the Stage II Knowledge Syllabus is shown in Appendix 2.

At the start of Stage II, every trainee is required to initiate a research project leading to the completion of a thesis. Trainees will be periodically assessed to ascertain progress in their research project. By the end of Stage II, each trainee is required to successfully defend and submit a thesis that has been approved by the panel of assessors. See Research Syllabus section below.

Skills syllabus

Paediatric surgery demands a specific set of skills beyond that required in many other surgical specialties.

Case pathologies are rare and trainees often find that years lapse between seeing 2 instances of the same disease, even when the disease is considered a core part of the training syllabus. Operating on ill and tiny babies requires high manual dexterity and meticulous care for tissues. Importantly, children live with the outcomes of surgical procedures their entire life, which may span over 7 decades, putting an added responsibility on the surgeon to provide the highest quality of care.

With this in mind, the skills syllabus defines a core list of procedures, with recommended caseload and minimum technical performance expected. The trainee is expected to maintain up-to-date operative logs throughout the training period.

The table below outlines a summary of Skills Syllabus. Candidates should refer to the Paediatric Surgery Curriculum Document for full details.

Category	Description
	Core Procedures
II.	Abdominal Surgery
	General Procedures
IV	Thoracic Surgery
V	Neonatal Surgery (Abdominal)
VI	Liver/Biliary Tree
VII	Pancreas
VIII	Renal Surgery
IX	Suprarenal Gland
Х	External Genitalia Surgery
XI	Large Bowel, Rectum and Anus

Example: Circumcision (Category 1 Core Procedure)

This is an 'Essential' Procedure, which the trainee must have completed as a primary surgeon by the end of Year 1 of training.

The skill level expected at Year 1 is level 4. Thus the trainee should be able to perform the entire procedure independently, recognising situations when help should be requested (for example, when the trainee encounters a hypospadias).

At Years 2-4, the skill level expected is level 5. In addition to performing the procedure independently, the trainee should be able to employ different haemostatic techniques and adjust techniques (for example, adopting the use of the dorsal slit method in paraphimosis).

Professional Behaviours

Professionalism is 'placing the interests of the patient above those of the physician, setting and maintaining standards of competence and

integrity, and providing expert advice to society on matters of health'.

Paediatric surgeons face a unique set of challenges when dealing with the paediatric surgical patient. The needs of the patient must be weighed together with family dynamics and available support systems. There are often life-threatening situations that impact longterm quality of life, raising challenging ethical situations. The surgeon must advocate for the patient, while working for the needs of the child via parental or caregiver proxies.

Therefore, the highest standards of professional behaviour must be instilled and practised in all trainees.

Domains	Positive behaviours
Responsibility	Punctuality Conscientiousness Industriousness Accurate documentation
Relationships with and respect for patients	Maintenance of patient confidentiality Appropriate behaviour Respect of boundaries Respect of cultural differences Effective communication Courtesy in all interactions
Probity and honesty	Ethical decision-making based on best evidence Transparency Integrity
Self-awareness and capacity for reflection	Constructive attitude to feedback Willingness to learn from experiences of self and others Regular audit of outcomes

	Teamwork and collaboration
	Effective communication
Collaboration	Appropriate behaviour
colleagues	Avoidance of negative behaviours, such as bullying and harassment
	Respect of diversity & boundaries
	Promotion of a positive workplace culture

References:

- 1. ABIM Foundation, ACPeASIM Foundation, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physicians' charter. Lancet 2002;359:520e2
- 2. Rogers W, Ballantyne A. Towards a practical definition of professional behaviour. J Med Ethics. 2010 Apr;36(4):250-4. doi: 10.1136/jme.2009.035121

Research Syllabus

Paediatric surgeons must be trained in applying the principles of evidence-based medicine in clinical practice in order to offer the best available care to their patients, while accounting for local resources and cultural expectations. The postgraduate training syllabus includes the requirement for completion of a research project leading to a dissertation. Trainees are also exposed to journal clubs, symposia and scientific conferences, to improve and expand their understanding of research principles.

The research syllabus consists of the following:

Clinical research design

- 1. Understanding the value of clinical research
- 2. Formulating the research question
 - literature review
 - tools for managing your references
- 3. Choosing the right study design for the research question
- 4. Assessing feasibility
- 5. Ethics approval considerations and the application process
- 6. Funding sourcing, application and increasing their chances of success

Statistics and other methods of data analysis

- 1. Quantitative methods
- 2. Qualitative methods
- 3. Sample size & power calculation
- 4. Sampling methods

Good clinical practice

- 1. Defining Good Clinical Practice
- 2. Collaborators' roles in clinical research
 - investigator-initiated studies
 - sponsor-initiated studies
- 3. Institutional research boards (IRB) and institutional ethics committees (IEC)
- 4. Protocol deviations
- 5. Informed consent
- 6. Safety management

Scientific writing

- 1. Principles of scientific writing
- 2. Converting data into a manuscript
- 3. Plagiarism, and how to use plagiarism checkers
- 4. Choosing a journal
- 5. Journal formats
- 6. Writing an abstract
- 7. Writing a cover letter

Research presentation skills

- 1. Designing slide presentations and posters
- 2. Capturing an audience verbal and non-verbal skills
- 3. Defending your work
- 4. Concluding strongly

5. Assessment Tools

Introduction

This section outlines the assessment methods and modalities, their utility, and timing in paediatric surgery training. Formative and summative assessments are carried out to assess all domains in which the modern paediatric surgeon is expected to be competent. Assessments serve the following key functions:

- 1. To track the trainee's achievement of the required competencies, facilitate the provision of feedback, and identify opportunities for improvement.
- 2. To ascertain if the trainee has met the learning requirements and competencies expected from a placement/rotation as a precursor to progressing to the next placement and/or stage of training.

Formative Assessments	Summative Assessments
 Formative assessments enable continuous provision of feedback and identification of areas for improvement. These assessments are carried out throughout the training period. The modalities that will be described later in this section aim to: Improve learning Individualise training Enable monitoring of training Assess approach to training The following formative assessment modalities are utilised in the paediatric surgery training programme:- Workplace-Based Assessments Mini-Clinical Evaluation Exercise (mini-CEX) Case Based Discussions (CBD) Direct Observation of Procedural Skills (DOPS) Procedure Based Assessments (PBA) 	 Summative assessments serve to evaluate the attainment of competencies required for the completion of a component or stage of training. The following summative assessments are utilised in the paediatric surgery training programme:- Examinations Part I Examinations (end of Stage I of training) Part II (Final) Examinations (end of Stage I of training) End of training placement evaluations (6 monthly) Thesis defence (semester preceding Part II (Final) Examinations) A trainee who fails any of the summative assessments outlined above will have to repeat the rotation/placement/component of the programme and may not otherwise be allowed to progress to the next stage or placement.

Trainees are required to maintain consolidated documentary evidence of assessments having taken place in the form of a Trainee Portfolio (see Maintenance of Trainee Portfolio). Failure to produce a Trainee Portfolio that contains the complete evidence of successful achievement of competencies during a training placement will result in the trainee having to repeat the rotation/placement.

Key Events in Paediatric Surgery Training & Assessment

Learning Agreement

Every trainee will be assigned an overall supervisor and mentor, and a series of trainers/ supervisors for placements. Trainees are required to set up/have a learning agreement meeting at the beginning of each training placement. The learning agreement is a document that details the objectives of a training placement and the goals the trainee intends to achieve within a specified period as guided by the curriculum. A meeting will be held between the trainer and the trainee to discuss and agree on the objectives of the training placement, trainee and trainer expectations of training, competencies to be achieved, and number of workplace based assessments throughout the placement. The learning agreement should be signed by the trainer and the trainee before the placement starts. It encourages trainees to take responsibility for their own learning process, and to take the initiative to discover the best methods of learning.

This document will be reviewed at the end of the training placement, during the End of Training Placement assessment.

Maintenance of Trainee Portfolio

The Trainee Portfolio is a compilation of training / learning events and formative assessments activities throughout training. The Trainee Portfolio should contain the following documents:-

- Learning agreements
- Procedure logbook
- ALL Workplace Based Assessments
- All thesis progress evaluation reports
- End of Posting evaluation reports
- Proof of attendance of continuing professional development activities

End of Training Placement Assessment

The End of Training Placement Assessment is held at the end of the six month placement. The outcome of the six month training period is evaluated by reviewing the Trainee Portfolio that contains completed formative assessment forms, procedure logbook and learning agreement. The outcome of this assessment determines if the trainee is allowed to progress to the next training placement or if the trainee requires to repeat the placement.

Meeting of Trainers / Supervisors and Specialty Conjoint Board

A meeting is held every 6 months at the end of each training period. This is attended by the Specialty Conjoint Board, programme coordinators, and the trainers/supervisors from all the respective training centres for the trainees. The following matters are discussed during these meetings:

- trainee progress and performance
- issues concerning trainee performance and progress
- remedial plans for non-performing trainees

Thesis Progress Evaluations & Thesis Defence

Thesis progress is evaluated six (6) monthly. This meeting is attended by trainees in Stage II of training, supervisors, and programme coordinators. This exercise aims to identify potential problems and allows for the provision of feedback and suggestions to overcome problems identified. Each evaluation is recorded in a thesis progress evaluation form. This form must be kept in the Trainee Portfolio with a copy provided to the office of the programme administrators.

Trainees are required to defend their thesis and submit the completed thesis 6 months before the Part II (Final) Examination. A panel of assessors will determine if the trainee's thesis defence is successful. A failed thesis defence and/or failure to submit a complete thesis six (6) months before the Part II (Final) examination will result in an automatic extension of training by a minimum duration of six (6) months.

Part I and Part II (Final) Examinations

The Part I and Part II (Final) Examinations are summative assessments conducted at the end of each stage of paediatric surgery training.

Training Placements for Stages I and II

Stage I of Training

- 1. Stage I (Basic Surgical Training) comprises a minimum of two (2) training placements for a duration six (6) months each.
- Trainees are required to obtain a "Satisfactory" grade in each End of Training Placement assessment to be eligible to attempt the Part I examinations.
- 3. Failure to obtain a "Satisfactory" grade in a trainee placement will result in the trainee having to repeat the training placement.
- 4. Trainees must obtain a "Satisfactory" grade for the placement immediately preceding the date of the Part I examination. Failure to obtain a "Satisfactory" grade for this placement will disqualify the trainee from the Part I examination. Failure to sit for the Part I examination for this reason may be considered a failed attempt at the examination.
- Trainees are allowed a maximum of three (3) attempts at the Part I examination.
 Failure to pass the Part I examination within 3 attempts means termination from the programme.

Trainees are required to pass the Part I examinations before progressing to Stage II of Paediatric Surgery Training (Advanced Surgical Training)

Stage II of Training

1. Stage II (Advanced Surgical Training) comprises a minimum of six (6) training

placements for a duration of (6) months each. One of these 6-month placements will include rotations to paediatric intensive care, neonatal intensive care, and an approved elective.

- Trainees are required to obtain a "Satisfactory" grade in each End of Training Placement assessment to be eligible to attempt the Part II (Final) examinations.
 Failure to obtain a "Satisfactory" grade in a trainee placement will result in the trainee having to repeat the training placement.
- 3. Trainees must obtain a "Satisfactory" grade for the placement immediately preceding the date of the Part II (Final) examination. Failure to obtain a "Satisfactory" grade for this placement will disqualify the trainee from the Part II (Final) examination. Failure to sit for the Part II (Final) examination for this reason may be considered a failed attempt at the examination.
- Trainees are also required to complete, successfully defend, and submit a thesis six (6) months prior to the Final examination.
- 5. A failed thesis defence and/or failure to submit a complete thesis six (6) months before the Final examinations will result in an automatic extension of training by a minimum duration of six (6) months.
- Trainees are allowed a maximum of three

 (3) attempts at the Part II examination.
 Failure to pass the Part II examination within 3 attempts means termination from the programme.

Trainees are required to pass the Part II (Final) examinations to complete the training programme.



Fig. 1 Summary of Trainee Progression

Formative Assessments

Workplace Based Assessments

Workplace-based assessments (WBAs) measure trainees' ability to apply the skills and knowledge learned during the placement. Work or tasks challenge trainees to use their higherorder thinking and technical skills to achieve an objective or complete a process. Assessments types are described as follows:

Mini Clinical Evaluation Exercise (Mini-CEX)

Domains Assessed:

- 1. Cognitive (Knowledge)
- 2. Psychomotor (Skills)
- 3. Affective (Professional Behaviours)

The Mini- CEX assesses competencies that are essential to the provision of good care in a clinical setting. This formative assessment facilitates focused feedback provision. Any clinical encounter involving that involves a trainee – patient encounter can be assessed. This includes, and is not limited to the following:

- patient initial assessment (from history taking to formulation of management plan)
- ward rounds (including handover)
- post-operative assessment
- patient counselling
- consent taking

Professionalism & communication skills can be assessed in any of the interactions above. Each assessment typically takes 15-20 minutes with an allowance of trainee reflection (optional) and feedback provision by the assessor.

Case Based Discussion (CBD)

Domains Assessed:

- 1. Cognitive (Knowledge)
- 2. Affective (Professional Behaviours)

CBDs afford the trainer the means of reviewing a trainee's practice or their thoughts about practice. It enables trainers to explore the thinking of their trainee, share understanding, and develop professional thinking. CBDs can be utilised to assess various aspects of knowledge and behaviours. Different levels of competencies within a domain can be assessed. For example, the level of competency in the cognitive (knowledge) domain can be assessed by the following:

- Knowledge base in a surgical condition (e.g., classification of a disease and its implication on management and prognosis)
- Trainee's ability to correlate between a surgical condition and the symptoms manifested
- Ability to rationalise judgement and clinical decisions

Each assessment should typically take 15-20 minutes with an allowance of an additional 5-10 minutes for feedback provision by the assessor.

Direct Observation of Procedural Skills

Domain Assessed:

1. Psychomotor (Skills)

DOPS utility as an assessment tool is best applied to short procedures or components/ segments of a longer procedure. It is particularly useful in early stages of training. Assessment of psychomotor skills in the latter stage of training is then performed using the Procedure Based Assessments (PBAs) tool. DOPS can be used when a trainee performs any procedure or part of a procedure listed in the syllabus, under supervision. The typical sequence of a DOPS assessment is as follows:

- 1. Assessor observes the trainee perform a procedure
- 2. Evaluation is recorded on a structured form
- 3. Feedback to the trainee is provided immediately after

The emphasis of DOPS assessments is provision of feedback that supports the development of competency and proficiency in a procedure. The assessment typically takes 15-20 minutes, with an additional 5 minutes for feedback.

Procedure Based Assessment (PBA)

Domains Assessed :

- 1. Cognitive (Knowledge)
- 2. Psychomotor (Skills)
- 3. Affective (Professional Behaviours)

A PBA is designed to assess the trainee's competency in performing a surgical procedure. It provides a holistic assessment of the elements relevant to performing a specific procedure from obtaining consent and pre-operative planning to immediate postoperative management. The assessment may focus on a specific competency in a domain depending on the stage of training the trainee is in. Feedback provision to the trainee occurs immediately after the procedure. The length of the assessment varies with the domains of the PBA undertaken, the stage of training, and the difficulty/complexity of the procedure itself. This assessment modality is more detailed than DOPS and is suited for procedures which are defined as essential in the syllabus.

Procedural/Operative Logbook

The procedure logbook is documentary evidence of the exposure and involvement of a trainee in operative procedures throughout a training placement. It enables the monitoring of a trainees progress in terms of adequacy of exposure, volume and involvement in operative procedures. Trainees are required to record patient details, diagnosis, surgery performed, and the trainee's level of involvement for each procedure the trainee is involved in. The logbook must be verified by the supervisor. The logbook will then be reviewed by the trainer / supervisor during the End of Training Placement Evaluation.

Thesis progress evaluation

Thesis progress is evaluated six (6) monthly intervals. During this evaluation a panel of assessors will evaluate the progress of a trainee's research project. This aims to identify potential problems and allows for provision of feedback and suggestions to overcome problems identified. Each evaluation is recorded in a thesis progress evaluation form.

Summative Assessments

End of Training Placement Evaluation

This evaluation is performed at the end of every training placement by the trainer/supervisor. During this evaluation, assessors are required to review the training portfolio to determine if the trainee has achieved the following:

- the competencies expected in all the domains in the stage of training the trainee is currently in (based on the syllabus)
- adequacy of training exposure and progression during training placement.

The outcome of this evaluation determines if the trainee may proceed to the next training placement and/or stage of training. If the trainee's evaluation is unsatisfactory, training will be extended for a minimum duration of six (6) months.

Thesis defence

Trainees are required to defend their thesis and submit the completed thesis 6 months before the Final Examination. A failed thesis defence and/or failure to submit a complete thesis six (6) months before the Final examinations will result in an automatic extension of training by a minimum duration of six (6) months.

Part I and Part II (Final) Examinations

The Part I and Final Examinations are summative assessments conducted at the end of each stage of paediatric surgery training.

Part I Examination

The eligibility criteria for attempting the Part I examination is as follows:

- successful completion of a minimum of one (1) year in Stage I of paediatric surgery training
- achieving a satisfactory grade in each end of training placement assessment in Stage I
- if an unsatisfactory grade results in repetition

of a training placement, the trainee MUST have achieved a satisfactory grade for the repeated placement AND for the placement immediately preceding the date of examination

The components of the Part 1 Examination are as follows:

Written Component

Paper I	Single Best Answer questions and Extended Matching questions
Paper II	Short Answer type questions

Viva Voce Component

This comprises of four (4) stations that assess:

- Applied Anatomy
- Applied Physiology
- Applied Pathology
- Principles of Surgery

Part II (Final) Examination

The eligibility criteria for attempting the Part II Examination is as follows:

- Must have passed the Part I Examination
- successful completion of a minimum of three (3) years in Stage II of paediatric surgery training
- achieving a satisfactory grade in each end of training placement assessment in Stage II
- if the trainee receives an unsatisfactory grade for a training placement, the placement must be repeated
- the trainee MUST achieve a satisfactory grade for the placement immediately preceding the date of examination
- submission of a thesis that has been assessed to be of sufficient standard no later than six months before the Part II Examination.

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The components of the Part II (Final) Examination are as follows:

Written Component (Short Answer Type questions)

Paper I	Principles of Paediatric Surgery, Neonatal Surgery, Oncology & Paediatric Trauma
Paper II	Thoracic, Gastrointestinal, Hepatobiliary & Vascular Paediatric Surgery
Paper III	Paediatric Urology, Surgical Advances & Research in Paediatric Surgery

Clinical Component

One (1) long Case and three (3) short cases

Viva Voce Component

This comprises of three (3) stations that assess:

- 1. Operative Surgery
- 2. Applied Radiology
- 3. Surgical pathology & Principles in Paediatric Surgery

6. Appendices

Appendix 1: Overview of Stage I Knowledge Syllabus

APPLIED ANATOMY & EMBRYOLOGY
APPLIED EMBRYOLOGY
Systems Based Embryology
APPLIED ANATOMY
Head and Neck
Thorax
Abdomen
Upper Limb
Lower Limb
APPLIED PHYSIOLOGY
Applied Physiology: General Application in the Paediatric Patient
Cellular and Molecular Basis of Physiology
Haematology
Cardiovascular Physiology
Respiratory Physiology
Gastrointestinal Physiology
Renal Physiology
Endocrine Physiology and Metabolism
APPLIED PATHOLOGY
Cellular injury, cell death and adaptation
Inflammation and Repair
Neoplasia
Haemodynamic disorders, thromboembolic disease and shock
Infectious Diseases
Shock
Genetics related to paediatric surgical diseases
Hematopoietic and lymphoid systems
PRINCIPLES of SURGERY
COMMON CONDITIONS in PAEDIATRIC SURGERY

Appendix 2:	Overview	of Stage	2 Knowledge	Syllabus
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General Paediatric Surgery & Paediatric Surgery Specialities	
Principles of Paediatric Surgery	
Perioperative considerations in paediatric surgical patients	
Paediatric and neonatal intensive care for surgical patients	
Ethical considerations in paediatric surgery	
Perioperative principles in paediatric surgery	
Role of investigations in paediatric surgical practice	
Basic surgical procedures and principles	
Principles of endoscopy	
Principles of access in surgery	
Abdomen	
Liver and biliary tree	
Spleen	
Pancreas	
Head and neck	
Thorax	
Minimally invasive surgery	
Urology	
Endocrine Surgery	
Skin, Soft Tissue and Blood Vessels	
Neurology and Spine	
Day care surgery	
Oncology	
Trauma	
Transplantation	
Recent advances and miscellaneous topics	

Glossary of Terms

AMM	Academy of Medicine Malaysia
CBD	Case-Based Discussion
DOPS	Direct Observation of Procedural Skills
ELA	Essential Learning Activities
IELTS	International English Language Testing System
Mini-CEX	Mini-Clinical Evaluation Exercise
MOH	Ministry of Health
MOHE	Ministry of Higher Education
NPMC	National Postgraduate Medical Curriculum
PBA	Procedure Based Assessment
TOEFL	Test of English as a Foreign Language
WBA	Workplace-based assessments



Contact

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