

National Paediatric Undergraduate Curriculum

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1 Introduction

In essence this curriculum is designed to pool all our expertise to develop an agreed national paediatric curriculum. Individual paediatric courses vary in content and duration across the country but the aim is to ensure that those who complete the paediatric course will understand what is different about paediatrics and dealing with children and young people and in essence be a safe doctor in dealing with children. I have attempted to collate the best of current curricula (including national curricula from Canada and the UK) and to try to take out the very best of each and weave into an agreed national curriculum.

The curriculum identifies knowledge, skills and attitudes in child health that we think should be covered at some stage during the undergraduate medical course. The curriculum is deliberately brief, defining only the core components of child health for medical undergraduates. The specific details of what is covered, the depth of coverage and how teaching is delivered is up to individual medical schools.

All doctors will come across children and families in their work and it is essential that newly qualified doctors can competently interact with, assess and care for children and young people.

Our hope is that this curriculum represents the beginning of a process and we hope it will act as a springboard for sharing teaching aids, assessment methods and examination questions through national discussion and collaboration, generating ideas which will improve child health teaching for medical undergraduates in Ireland. Ultimately this process should enable the development of an agreed e-textbook or app for use by students (both undergraduate and postgraduate) across Ireland and the world.

2 Essential Curriculum Outcomes

The graduating student will:

- Be able to take a paediatric history and perform a clinical examination in newborns, infants, toddlers, older children and adolescents (including children with complex medical needs) to formulate a differential diagnosis and identify relevant investigations.
- Be able to communicate appropriately with children and effectively with parents and colleagues.
- Be able to describe the pathophysiology, natural history, clinical findings, relevant investigations and management approach for common and important paediatric conditions.
- Understand the childhood origins of adult disease
- Appreciate the importance of family and societal influences on child and adolescent health
- Understand the importance of prevention in improving child and adolescent health
- Understand health issues peculiar to adolescence and the importance of transition
- Understand patterns of disease , disease prevention and paediatric service provision in an Irish context

3 The Profile of the graduating student

3.1 Clinical Expertise

The student is able to:

- Demonstrate proficiency in acquiring a complete and accurate paediatric history with consideration of the child's age, development, and the family's cultural, socioeconomic and educational background.
- Describe differences between the medical management of paediatric patients versus adult patients.
- Recognise an acutely ill child.
- Demonstrate an approach (the generation of a differential diagnoses, appropriate initial diagnostic investigations, and management plan) to the core clinical paediatric presentations (eg fever, cough or abdominal pain)
- Demonstrate the required physical examination skills in a skilled and timely fashion that reflect the comfort, age, development, and cultural context of the infant, child, or young person

3.2 Professionalism

The student is able to:

- Demonstrate professional behaviours in practice including: honesty, integrity, commitment, compassion, respect and altruism.
- Demonstrate a commitment to perform to the highest standard of care through the acceptance and application of performance feedback.
- Recognise and respond to ethical issues encountered in clinical practice.
- Recognise the principles and limits of patient confidentiality as it pertains to paediatrics.
- Balance personal and professional responsibilities to ensure personal health, academic achievement, and the highest quality of patient care.
- Respect patient confidentiality, privacy and autonomy
- Work effectively, respectfully, and appropriately in an inter-professional healthcare team.
- Effectively collaborate/consult/participate with members of the inter- and intra-professional team to optimise the health of the patient/family.
- Understand the importance of priority setting, and time management skills that balance patient care, academic responsibilities, and personal well-being.

3.3 Communication Skills

The student is able to:

- Demonstrate communication skills that convey respect, integrity, flexibility, sensitivity, empathy, and compassion.
- Communicate using open-ended inquiry, listening attentively and verifying for mutual understanding.
- Demonstrate a patient-centred and family-centred approach to communication which requires involving the family and patient in shared decision making, and involves gathering information about the patients' and families' beliefs, concerns, expectations and illness experience.
- Acquire , synthesize and record accurately relevant information from relevant sources including: family, caregivers, and other health professionals.
- Demonstrate organised, complete, informative and accurate information in verbal patient presentations.

3.4 Advocacy Skills

The student understands the role of a doctor in relation to:

- Engagement in advocacy, health promotion and disease prevention with patients and families including: mental health, child maltreatment, healthy active living, safety, and early literacy support.
- Identification of emerging and ongoing issues for paediatric populations who are potentially vulnerable or marginalized including new immigrants and populations living in poverty
- The importance of community engagement in steering health policy

3.5 Commitment to lifelong learning / quality improvement / research and education

The student is able to:

- Engage in self-directed lifelong learning strategies.
- Engage in self-assessment through reflective practice.
- Apply the principles of critical appraisal of the literature to guide evidenced based patient care.
- Demonstrate integration of new learning into practice.
- Understand of the process and importance of quality improvement
- Understand the importance of research in advancing medical care, and the importance of incorporating research into clinical care for patients

4 Essential Core Knowledge

By the end of the undergraduate paediatric training, the student should, at a minimum, have the following skills:

4.1 Growth

- Demonstrate ability to accurately plot height, weight, and head circumference measurements in a growth chart.
- Discuss the significance of growth percentiles, with particular attention to an appreciation of why growth is a good index of health.
- Discuss the adverse effects on growth of intrauterine factors, malnutrition, maternal deprivation, and social/cultural factors.

4.2 Development

- Describe the developmental changes that occur as the preterm baby matures.
- Identify and discuss major developmental milestones and developmental assessment for birth to 5 years of age.
- Demonstrate knowledge of disorders which may lead to developmental delay.

4.3 Health Promotion

- List the routine schedule of childhood immunizations and which vaccines are given, their common side effects, and contraindications to their administration.

4.4 Nutrition

- Describe the importance and benefits of breast feeding.
- Describe common nutritional disorders in Ireland including iron deficiency anaemia and obesity.
- State common food formulas for infants, their use, and their limitations.
- Describe the causes of failure to thrive.

4.5 Fluids and Electrolytes

- Recognise and clinically evaluate dehydration.
- Calculate maintenance fluid requirements for the paediatric patient with normal renal function.
- Describe the basic physiological principles and their application in the management of acute dehydration and acute metabolic acidosis.

4.6 Common Paediatric Illnesses

A finite list of the paediatric illness or presentations that should be understood by the undergraduate student is not possible. Included in Appendix 1 is a table of the more common paediatric presentations that forms the basis of what the undergraduate student should understand. Each complaint, diagnosis, physical finding/ laboratory test result (problem) is accompanied by a list of the most common related diagnoses as well as a list of less common but significant differential diagnoses that may need to be considered. Formal teaching and student centred learning should cover the common paediatric conditions in a range of different areas and specialties. These are listed in appendix 2.

More common and relevant conditions should be understood in greater detail than rarer conditions seen less frequently.

With all of these presentations and conditions, undergraduates are expected to identify **in a range of contexts** (primary care, acute care, outpatients):

- Key points in the history
- Key examination findings
- Red flags
- Differential diagnosis
- Initial investigations
- Initial clinical management

5 Essential Skills

5.1 Conduct a Patient/Parent Interview

- Obtain a history from a Parent/Guardian, as well as directly from the patient if age appropriate.
- Use different styles of questioning - open ended, directed, follow-up, and summary.
- Communicate information to parents/patients.
- Ensure that both the child and the parent understand the diagnosis and treatment and have an opportunity to ask questions.
- Direct an interview and exam for an acute specific complaint or for a specific purpose (e.g., evaluation of heart murmur)
- Ensure a complete past medical/surgical/neonatal history, family history , vaccination history and social history is taken to ensure an accurate overall picture .

5.2 Perform a physical exam

- Complete a physical examination, incorporating relevant observation/inspection, in children of all ages
- Perform a competent, sensible physical examination of the following systems
 - Cardiovascular
 - Respiratory
 - Abdominal
 - Neurological
 - Musculoskeletal
 - Skin
 - Ear Nose and Throat, Head and neck
- Adjust the approach, content, sequence, and focus of exam based on the patient's age.
- Assess the child's developmental level, modify the exam accordingly, and use strategies to improve rapport with the patient.
- Demonstrate age specific examination skills for the:
 - Newborn
 - Perform a full neonatal examination.
 - Assess infant maturity.
 - Toddler, pre-school child
 - Use techniques for building rapport with children who have stranger anxiety.
 - Assess motor, language, and social development.
 - Adolescent
 - Assess and stage secondary sexual characteristics.

- Be aware of the importance of Tanner pubertal staging
- Measurement/Recording
 - Measure height, weight, and head circumference.
 - Plot and interpret data on growth chart.
 - Calculate and interpret BMI.
- Specify how individual parts of the physical exam change with the patient's age and differ from the adult, including:
 - Specify how normal values for vital signs change for different ages.
 - Elicit primitive reflexes and state when they disappear.
 - Identify abnormal hearing.
 - Examine the eyes and assess if the infant or child can fix or follow. Look for strabismus and identify an abnormal light reflex and/or abnormal visual acuity.
 - Examine hips in the newborn using a model and be aware of screening methods for DDH.

5.3 Written and verbal communication skills

- Produce a written record of the history and physical examination. The history must:
 - Identify the chief or presenting complaint.
 - Chronologically organize the present illness.
 - Specify the past history with specific emphasis on areas which are unique to paediatrics, including: Neonatal history (birth weight; approximate gestational age; complications of pregnancy in mother; exposure to drugs, alcohol, medications; infections and complications of the newborn period, (such as prematurity, respiratory distress, jaundice).
 - Immunizations.
 - Development (6-7 milestones to ask about - social smile, roll over, sit alone, transfer object, stand alone, walk, say first words).
 - Diet (breast fed, formula).
 - A detailed family and social history
- Detail a review of systems
- Document the physical exam, including patient's appearance, vital signs, height, weight, head circumference, and centiles
- Generate a differential diagnosis
- List a number of appropriate investigations to enable diagnosis confirmation.
- Complete a problem list assessment.
- Give an oral presentation that includes the essential elements of the patient's history in a chronological sequence and a summary of the pertinent physical exam

5.4 Problem solving skills

- Identify the medical problems during the history and physical exam.
- Recognise patterns of illness sharing a unified aetiology
- Develop a differential diagnosis for each problem or group of problems which seem to logically coincide and describe how age affects the differential diagnosis.
- Describe the usefulness of laboratory tests which may help to confirm or refute the clinical diagnosis under consideration.
- Discuss the usefulness, limitations, and costs of various studies

5.5 Medicine and Prescribing

- Explain prescription by weight, age and body surface area in children
- Identify common prescribing errors in children
- Outline the differences in drug metabolism between infants, children and adults
- Identify common aides to safe prescribing in children eg. British National Formulary for children (BNFc), ward pharmacist

5.6 Practical procedures/investigations

- Identify the common challenges of undertaking practical procedures in children
- Describe techniques for undertaking practical procedures in children eg. distraction, play therapists, topical anaesthetic
- Outline the need to justify practical procedures in children

5.7 Child protection

- Define the main types of child maltreatment
- Describe the symptoms, signs and red flags of child maltreatment
- Identify the procedure for raising concerns about child maltreatment
- Identify the duty of care for any health professional to report concerns about child maltreatment

5.8 Legal & ethical basis of child health

- Be aware of the principles of consent in children and young people including Fraser competence
- Be aware of the principles of confidentiality in relation to children and young people
- Identify ethical and legal dilemmas in child health

5.9 Public health and Global health

- Explain the concept of notifiable diseases

- Identify national sources of information about notifiable diseases in children
- Outline the social and environmental determinants of child health
- List some of the particular health needs of vulnerable groups in child health eg. refugees, looked after and traveller children
- Be aware of the major global health concerns in children

5.10 Patient safety & Quality improvement

- Understand the importance of patient safety in relation to child health and the importance of raising your concerns when patient safety is or may be compromised
- Outline opportunities to improve patient safety within child health eg. learning from critical incidents & near misses, quality improvement projects
- Demonstrate commitment to continued improvement, reflection and learning (including from families)

5.11 Essential attitudes/behaviours

- In clinical practice, demonstrate:
 - respect for patients by patient-centred practice
 - ethical standards including honesty, integrity, empathy and altruism
 - reflection/self-awareness by reflective practice
 - personal responsibility for actions by responsible behaviour, including safeguarding one's own health and well-being
 - teamwork commitment by effective communication and teamwork, including, where appropriate, acting as the leader of a team
 - social responsibility demonstrated by commitment to the health of the community
- Adopt an approach to children, young people and families which:
 - is developmentally appropriate
 - is non-judgemental and open minded
 - shows an understanding of the impact of illness, disease and disability on children, families and their community as well as on friendships, social development and education
 - recognises the importance of family in a child's health, growth and development
 - shows a willingness to listen to children, young people and their families and take their concerns seriously
 - shows awareness for gender , ethnicity, race and religious belief
- Adopt an approach to colleagues which demonstrates:
 - respect for, and willingness to work with, the multi-professional team in child health
 - willingness to share skills and ideas with others

Common Complaint	Common Diagnoses	Other Diagnoses to Consider
	Croup	Cystic fibrosis
	Bronchiolitis	Habit cough
	Viral respiratory infection	Pulmonary aspiration
	Bronchitis	Foreign body inhalation
	Pneumonia	
	Asthma	
	Pertussis	
	Croup (stridor)	Foreign body inhalation
	Bronchiolitis	Interstitial lung disease
	Viral-induced wheeze	
	Asthma	
	Viral respiratory infection	
	Pneumonia	
	Occult bacteraemia	Kawasaki's disease
	UTI, pyelonephritis	Juvenile idiopathic arthritis
	Viral infections	Tuberculosis
	Cervical lymphadenitis Osteomyelitis	Scarlet fever
	Meningitis	Neoplasms
	Septic arthritis	
	Iron deficiency anaemia	Hereditary spherocytosis
	Haemolytic anaemia	Red cell aplasia
	Acute illness	Acute ALL/AML
	Blood loss	Sickle cell anaemia
		Beta thalassemia
	Non-specific headache	Raised intracranial pressure
	Head injury	Meningitis
	Migraine	
	Sinusitis	
	Viral illnesses	
	CF	Metabolic problems
	Coeliac disease	Chronic illness
	GORD	Anorexia
	Breast feeding issues	
	Non-organic FTT	
	GOR or GORD	Diabetic Ketoacidosis

	Gastritis	Raised ICP
	Acute non-GI infection	Drugs
	Bowel obstruction	Cyclical vomiting
		Non-organic
	Gastroenteritis	Short gut
	Toddler diarrhoea	CF
	Inflammatory bowel disease	Malabsorption
	Antibiotics	
	Coeliac disease	
	Acute urticaria	Juvenile idiopathic arthritis
	Eczema	Systemic inflammatory conditions
	Impetigo	
	Scabies	
	Viral rashes	
	Erythema Multiforme	
	Congenital hip dislocation	Osgood-Schlatter disease
	Non-accidental trauma	Legg-Calvé-Perthes disease
	Transient synovitis	Slipped femoral epiphysis
	Osteomyelitis	Leukaemia/tumours
	Septic arthritis	JIA
	Febrile Convulsions	Increased ICP
	Epilepsy	Hydrocephalus
	Head trauma	
	CNS infections	
	Stills Murmur	Valvular Stenosis
	Pulmonary branch stenosis (neonates)	Cyanotic congenital heart disorders
	Flow murmur (anaemia)	Acyanotic congenital heart disorders
	ASD/VSD	
	Familial short stature	Skeletal dysplasia
	Constitutional delay	
	Endocrine causes	
	Chromosomal disorders	

6 Appendices

6.1 Appendix 1: Common paediatric and neonatal presentations

The following list is not exhaustive and is meant as a guide for the student in relation to common presentations in children and some of the relevant causes. It should include a clear understanding of the normal child including health surveillance and the importance of screening and prevention. It should include a clear understanding of the challenges posed to families by a child with complex ongoing needs (for example a child with trisomy 21)

Neonatal training should incorporate the following:

The normal newborn

The newborn examination including systematic assessment of the skin , eyes , head (including palpation of fontanelles and measurement of head circumference) , chest and abdomen , hip examination , examination for testicular descent , assessment of tone and examination for primitive reflexes

Common issues in the first 4 weeks of life

The evaluation of jaundice , feeding (including breast feeding) , common rashes , recognition of trisomy 21 , screening in newborns (including heel prick testing , DDH screening and screening for congenital heart disease

The sick newborn

Problems seen in preterm infants (IRDS, apnoea, IVH and PDA) , the term infant with hypoxic ischaemic encephalopathy , suspected sepsis and hypoglycaemia.

6.2 Appendix 2: Key specialties and areas of relevance in paediatrics

Formal teaching and student centred learning should cover the common paediatric conditions in a range of different areas and specialties listed below. A complete and inclusive list of all conditions and the degree of required knowledge of these conditions is not possible in this document. More common and relevant conditions should be understood in greater detail than rarer conditions seen less frequently.

Key Areas of Relevance in Paediatrics	
Abuse/neglect	Malignant conditions
Allergic disorders	Metabolic
Behavioural/emotional	Musculoskeletal
Cardiac	Neonatal
Endocrine	Neurological
ENT Conditions	Adolescent Health and Transition
Gastrointestinal	Oncology
General Surgical	Renal and urological
Haematological	Respiratory
Immunity/infection	Skin conditions