



**FACULTY OF
PAEDIATRICS**

ROYAL COLLEGE OF
PHYSICIANS OF IRELAND

INTERNATIONAL CLINICAL FELLOWSHIP TRAINING IN

PAEDIATRIC CARDIOLOGY



This curriculum of training in Paediatric Cardiology was developed in 2016 and undergoes an annual review by Dr. Colin McMahon, National Specialty Directors, Dr. Ann O’Shaughnessy, Head of Education and Professional Development and by the Paediatric Cardiology Training Committee. The curriculum is approved by the Faculty of Paediatrics .

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Introduction

The International Clinical Fellowship Programme (ICFP) provides a route for overseas doctors wishing to undergo structured and advanced postgraduate medical training in Ireland. The ICFP enables suitably qualified overseas postgraduate medical trainees to undertake a fixed period of active training in clinical services in Ireland. The programme is normally offered over one or two years of clinical training, after which the overseas doctors will be required to return to their country of origin. In limited certain circumstances, the period of training may extend to three years.

The purpose of the ICFP is to enable overseas trainees to gain access to structured training and in active clinical environments that they cannot get in their own country, with a view to enhancing and improving the individual's medical training and learning and, in the medium to long term, the health services in their own countries.

This Programme will allow participants to access a structured period of training and experience as developed by the Royal College of Physicians of Ireland to specifically meet the clinical needs of participants as defined by their home country's health service.

Aims

Upon satisfactory completion of the ICFP, the doctor will be **competent** to undertake comprehensive medical practice in their chosen specialty in a **professional** manner, in keeping with the needs of the healthcare system.

Competencies, at a level consistent with practice in the specialty, will include the following:

- Patient care that is appropriate, effective and compassionate dealing with health problems and health promotion.
- Medical knowledge in the basic biomedical, behavioural and clinical sciences, medical ethics and medical jurisprudence and application of such knowledge in patient care.
- Interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professionals, the scientific community and the public.
- Appraisal and utilisation of new scientific knowledge to update and continuously improve clinical practice.
- Capability to be a scholar, contributing to development and research in the field of the chosen specialty.
- Professionalism.
- Ability to understand health care and identify and carry out system-based improvement of care.

Professionalism

Medical professionalism is a core element of being a good doctor. Good medical practice is based on a relationship of trust between profession and society, in which doctors are expected to meet the highest standards of professional practice and behaviour. It involves partnership between patient and doctor that is based on mutual respect, confidentiality, honesty, responsibility and accountability. In addition to maintaining clinical competence, a doctor should also:

- Show integrity, compassion and concern for others in day-to-day practice
- Develop and maintain a sensitive and understanding attitude with patients
- Exercise good judgement and communicate sound clinical advice to patients
- Search for the best evidence to guide professional practice
- Be committed to continuous improvement and excellence in the provision of health care whether working alone or as part of a team

Prior to commencing their sponsored clinical placements, all participants will also be required to undergo the mandatory screening requirements of the relevant clinical site/service including occupational health assessment and Garda/Police clearance.

Training Programme Duration & Organisation of Training

The period of clinical training that will be provided under the International Clinical Fellowship Programme (ICFP) is normally 12-24 months, after which the overseas doctors will be required to return to their country of origin. In certain circumstances, the period of training may extend to three years.

- Each ICFP is developed by the Royal College of Physicians of Ireland will be specifically designed so as to meet the training needs of participants to support the health service in their home country.
- All appointees to the ICFP will be assessed by the Royal College of Physicians of Ireland to ensure that they possess the necessary requirements from a training and clinical service perspective.
- Each overseas doctor participating in the ICFP will be enrolled with the Royal College of Physicians of Ireland and will be under the supervision of a consultant doctor who is registered on the Specialist Division of the Register of Medical Practitioners maintained by the Medical Council and who is an approved consultant trainer.
- Appointees to the ICFP will normally be registered on the Supervised Division of the Register of Medical Practitioners maintained by the Medical Council in Ireland.
- Appointees will agree a training plan with their trainers at the beginning of each training year.
- For the duration of their International Medical Graduate (IMG) programme and associated clinical placements, all participants will remain directly employed and directly paid by their sponsoring state at a rate appropriate to their training level in Ireland and benchmarked against the salary scales applicable to NCHD's in Ireland;
- Successful completion of an ICFP will result in the participant being issued with a formal Certificate of completion for the Fellowship Programme by the Royal College of Physicians of Ireland. This Certificate will enable the participant's parent training body in their sponsoring home country to formally recognise and accredit their time spent training in Ireland.

The training programme offered will provide opportunities to fulfil all the requirements of the curriculum of training. There will be posts in both general hospitals and teaching hospitals. Each post within the programme will have a named trainer/educational supervisor and programmes will be under the direction of the National Specialist Director for the relevant medical speciality to be confirmed by the College. Programmes will be as flexible as possible consistent with curricular requirements, for example to allow the trainee to develop their sub-specialty interest.

ePortfolio logbook

Each trainee is responsible for maintaining an up-to-date record of progress through training and compiling a portfolio of achievements for presentation at each annual assessment review. The trainee also has a duty to maximise opportunities to learn, supplementing the training offered with additional self-directed learning in order to fulfil all the educational goals of the curriculum.

Up-to-date training records and an ePortfolio of achievements will be maintained by the trainee throughout. The training records will be countersigned as appropriate by the trainers to confirm the satisfactory fulfilment of the required training experience and the acquisition of the competencies set out in the training plan. They will remain the property of the trainee and must be produced at their annual assessment review.

Trainees must co-operate with the College in completing their training plan.

It is in a trainee's own interest to maintain contact with the Royal College of Physicians of Ireland, and to respond promptly to all correspondence relating to training. At review, your ePortfolio will be examined.

Review

A consultant trainer/educational supervisor will be identified for each participant in the programme. He/she will be responsible for ensuring that the educational potential of the post is translated into effective training which is being fully utilized. Only departments approved for Training by the Royal College of Physicians of Ireland and its constituent training bodies will be used.

The training objectives to be secured should be agreed between each trainee and trainer at the commencement of each posting in the form of a written training plan. The trainer will be available throughout, as necessary, to supervise the training process. In each year trainees undergo a formal review by an appropriate panel. The panel will review in detail the training record, will explore with the trainee the range of experience and depth of understanding which has been achieved and consider individual trainer's reports. An opportunity is also given to the trainee to comment on the training being provided; identifying in confidence any deficiencies in relation to a particular post.

A quarterly and annual review of progress through training will be undertaken on behalf of the International Clinical Fellowship Programme (ICFP). These will include assessments and reports by educational supervisors, confirmation of achievements and the contents of the ePortfolio will be reviewed. At some or all of these annual reviews a non-specialty assessor will be present capable of addressing core competencies.

The award of a Certificate of completion will be determined by a satisfactory outcome after completion of the entire series of assessments.

Generic Components

This chapter covers the generic components which are relevant to trainees of all specialties but with varying degrees of relevance and appropriateness, depending on the specialty.

As such, this chapter needs to be viewed as an appropriate guide of the level of knowledge and skills required from all trainees with differing application levels in practice.

Standards of Care

Objective: To be able to consistently and effectively assess and treat patients' problems

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Relating to Patients; Communication and Interpersonal Skills; Collaboration and Teamwork; Management (including Self-Management); Clinical Skills.

KNOWLEDGE

Diagnosing Patients

- How to carry out appropriate history taking
- How to appropriately examine a patient
- How to make a differential diagnosis

Investigation, indications, risks, cost-effectiveness

- The pathophysiological basis of the investigation
- Knowledge of the procedure for the commonly used investigations, common or/and serious risks
- Understanding of the sensitivity and specificity of results, artefacts, PPV and NPV
- Understanding significance, interpreting and explaining results of investigations
- Logical approach in choosing, sequencing and prioritising investigations

Treatment and management of disease

- Natural history of diseases
- Quality of life concepts
- How to accurately assess patient's needs, prescribe, arrange treatment, recognise and deal with reactions / side effects
- How to set realistic therapeutic goals, to utilise rehabilitation services, and use palliative care approach appropriately
- Recognising that illness (especially chronic and/or incapacity) has an impact on relationships and family, having financial as well as social effects e.g. driving

Disease prevention and health education

- screening for disease, (methods, advantages and limitations),
- health promotion and support agencies; means of providing sources of information for patients
- Risk factors, preventive measures, strategies applicable to smoking, alcohol, drug abuse, lifestyle changes
- Disease notification; methods of collection and sources of data

Notes, records, correspondence

- Functions of medical records, their value as an accurate up-to-date commentary and source of data
- The need and place for specific types of notes e.g. problem-orientated discharge, letters, concise out-patient reports
- Appreciating the importance of up-to-date, easily available, accurate information, and the need for communicating promptly e.g. with primary care

Prioritising, resourcing and decision taking

- How to prioritise demands, respond to patients' needs and sequence urgent tasks
- Establishing (clinical) priorities e.g. for investigations, intervention; how to set realistic goals; understanding the need to allocate sufficient time, knowing when to seek help
- Understanding the need to complete tasks, reach a conclusion, make a decision, and take action within allocated time
- Knowing how and when to conclude

Handover

- Know what are the essential requirements to run an effective handover meeting
 - Sufficient and accurate patients information
 - Adequate time
 - Clear roles and leadership
 - Adequate IT
- Know how to prioritise patient safety
 - Identify most clinically unstable patients
 - Use ISBAR (Identify, Situation, Background, Assessment, Recommendations)
 - Proper identification of tasks and follow-ups required
 - Contingency plans in place
- Know how to focus the team on actions
 - Tasks are prioritised
 - Plans for further care are put in place
 - Unstable patients are reviewed

Relevance of professional bodies

- Understanding the relevance to practice of standards of care set down by recognised professional bodies – the Medical Council, Medical Colleges and their Faculties, and the additional support available from professional organisations e.g. IMO, Medical Defence Organisations and from the various specialist and learned societies

SKILLS

- Taking and analysing a clinical history and performing a reliable and appropriate examination, arriving at a diagnosis and a differential diagnosis
- Liaising, discussing and negotiating effectively with those undertaking the investigation
- Selecting investigations carefully and appropriately, considering (patients') needs, risks, value and cost effectiveness
- Appropriately selecting treatment and management of disease
- Discussing, planning and delivering care appropriate to patient's needs and wishes
- Preventing disease using the appropriate channels and providing appropriate health education and promotion
- Collating evidence, summarising, recognising when objective has been met
- Screening
- Working effectively with others including
 - Effective listening
 - Ability to articulate and deliver instructions
 - Encourage questions and openness
 - Leadership skills
- Ability to prioritise
- Ability to delegate effectively
- Ability to advise on and promote lifestyle change, stopping smoking, control of alcohol intake, exercise and nutrition
- Ability to assess and explain risk, encourage positive behaviours e.g. immunisation and preventive measures
- Ability to enlist patients' involvement in solving their health problems, providing information, education
- Availing of support provided by voluntary agencies and patient support groups, as well as expert services e.g. detoxification / psychiatric services
- Valuing contributions of health education and disease prevention to health in a community
- Compiling adequate case notes, with results of examinations, investigations, procedures performed, sufficient to provide an accurate, detailed account of the diagnostic and management process and outcome, providing concise, informative progress reports (both written and oral)
- Maintaining legible records in line with the Guide to Professional Conduct and Ethics for Registered Medical Practitioners in Ireland
- Actively engaging with professional/representative/specialist bodies

ASSESSMENT & LEARNING METHODS

- Consultant feedback
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace)
- Audit
- Medical Council Guide to Professional Conduct and Ethics

Dealing with & Managing Acutely Ill Patients in Appropriate Specialties

Objectives: To be able to assess and initiate management of patients presenting as emergencies, and to appropriately communicate the diagnosis and prognosis. Trainees should be able to recognise the critically ill and immediately assess and resuscitate if necessary, formulate a differential diagnosis, treat and/or refer as appropriate, elect relevant investigations and accurately interpret reports.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care, Clinical Skills.

KNOWLEDGE

Management of acutely ill patients with medical problems

- Presentation of potentially life-threatening problems
- Indications for urgent intervention, the additional information necessary to support action (e.g. results of investigations) and treatment protocols
- When to seek help, refer/transfer to another specialty
- ACLS protocols
- Ethical and legal principles relevant to resuscitation and DNAR in line with National Consent Policy
- How to manage acute medical intake, receive and refer patients appropriately, interact efficiently and effectively with other members of the medical team, accept/undertake responsibility appropriately
- Management of overdose
- How to anticipate / recognise, assess and manage life-threatening emergencies, recognise significantly abnormal physiology e.g. dysrhythmia and provide the means to correct e.g. defibrillation
- How to convey essential information quickly to relevant personnel: maintaining legible up-to-date records documenting results of investigations, making lists of problems dealt with or remaining, identifying areas of uncertainty; ensuring safe handover

Managing the deteriorating patient

- How to categorise a patients' severity of illness using Early Warning Scores (EWS) guidelines
- How to perform an early detection of patient deterioration
- How to use a structured communication tool (ISBAR)
- How to promote an early medical review, prompted by specific trigger points
- How to use a definitive escalation plan

Discharge planning

- Knowledge of patient pathways
- How to distinguish between illness and disease, disability and dependency
- Understanding the potential impact of illness and impairment on activities of daily living, family relationships, status, independence, awareness of quality of life issues
- Role and skills of other members of the healthcare team, how to devise and deliver a care package
- The support available from other agencies e.g. specialist nurses, social workers, community care
- Principles of shared care with the general practitioner service
- Awareness of the pressures/dynamics within a family, the economic factors delaying discharge but recognise the limit to benefit derived from in-patient care

SKILLS

- BLS/ACLS (or APLS for Paediatrics)
- Dealing with common medical emergencies
- Interpreting blood results, ECG/Rhythm strips, chest X-Ray, CT brain
- Giving clear instructions to both medical and hospital staff
- Ordering relevant follow up investigations
- Discharge planning
- Knowledge of HIPE (Hospital In-Patient Enquiry)
- Multidisciplinary team working
- Communication skills
- Delivering early, regular and on-going consultation with family members (with the patient's permission) and primary care physicians
- Remaining calm, delegating appropriately, ensuring good communication
- Attempting to meet patients'/ relatives' needs and concerns, respecting their views and right to be informed in accordance with Medical Council Guidelines
- Establishing liaison with family and community care, primary care, communicate / report to agencies involved
- Demonstrating awareness of the wide ranging effects of illness and the need to bridge the gap between hospital and home
- Categorising a patients' severity of illness
- Performing an early detection of patient deterioration
- Use of structured communication tool (e.g. ISBAR)

ASSESSMENT & LEARNING METHODS

- ACLS course
- Record of on call experience
- Mini-CEX (acute setting)
- Case based discussions
- Consultant feedback

Good Professional Practice

Objective: Trainees must appreciate that medical professionalism is a core element of being a good doctor and that good medical practice is based on a relationship of trust between the profession and society, in which doctors are expected to meet the highest standards of professional practice and behaviour.

Medical Council Domains of Good Professional Practice: Relating to Patients, Communication and Interpersonal Skills, Professionalism, Patient Safety and Quality of Patient Care.

KNOWLEDGE

Effective Communication

- How to listen to patients and colleagues
- Disclosure – know the principles of open disclosure
- Knowledge and understanding of valid consent
- Teamwork
- Continuity of care

Ethics

- Respect for autonomy and shared decision making
- How to enable patients to make their own decisions about their health care
- How to place the patient at the centre of care
- How to protect and properly use sensitive and private patient information according to Data Protection Act and how to maintain confidentiality
- The judicious sharing of information with other healthcare professionals where necessary for care following Medical Council Guidelines
- Maintaining competence and assuring quality of medical practice
- How to work within ethical and legal guideline when providing clinical care, carrying research and dealing with end of life issues

Honesty, openness and transparency (mistakes and near misses)

- When and how to report a near miss or adverse event
- Knowledge of preventing and managing near misses and adverse events. Incident reporting; root cause and system analysis
- Understanding and learning from errors
- Understanding and managing clinical risk
- Managing complaints
- Following open disclosure practices
- Knowledge of national policy and National Guidelines on Open Disclosure

Raising concerns about patient safety

- The importance of patient safety relevance in health care setting
- Standardising common processes and procedures – checklists, vigilance
- The multiple factors involved in failures
- Safe healthcare systems and provision of a safe working environment
- The relationship between ‘human factors’ and patient safety
- Safe working practice, role of procedures and protocols in optimal practice
- How to minimise incidence and impact of adverse events
- Knowledge and understanding of Reason’s Swiss cheese model
- Understanding how and why systems break down and why errors are made
- Health care errors and system failures
- human and economic costs

SKILLS

- Effective communication with patients, families and colleagues
- Co-operation and collaboration with colleagues to achieve safe and effective quality patient care
- Being an effective team player
- Ability to learn from errors and near misses to prevent future errors
- Using relevant information from complaints, incident reports, litigation and quality improvement reports in order to control risks
- Minimising errors during invasive procedures by developing and adhering to best-practice guidelines for safe surgery
- Minimising medication errors by practicing safe prescribing principles
- Using the Open Disclosure Process Algorithm
- Managing errors and near-misses
- Managing complaints
- Ethical and legal decision making skills

ASSESSMENT & LEARNING METHODS

- Consultant feedback at annual assessment
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): prioritisation of patient safety in practice
- Patient Safety (on-line) – recommended
- Leadership in Clinical Practice III
- Quality improvement methodology course - recommended
- RCPI Ethics programmes (I-IV)
- Medical Council Guide to Professional Conduct and Ethics
- Reflective learning around ethical dilemmas encountered in clinical practice

Infection Control

Objective: To be able to appropriately manage infections and risk factors for infection at an institutional level, including the prevention of cross-infections and hospital acquired infection

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Management (including Self-Management).

KNOWLEDGE

Within a consultation

- The principles of infection control as defined by the HIQA
- How to minimise the risk of cross-infection during a patient encounter by adhering to best practice guidelines available (including the 5 Moments for Hand Hygiene guidelines)
- The principles of preventing infection in high risk groups e.g. managing antibiotic use to prevent *Clostridium difficile*
- Knowledge and understanding the local antibiotic prescribing policy
- Awareness of infections of concern, e.g. MRSA, *Clostridium difficile*
- Best practice in isolation precautions
- When and how to notify relevant authorities in the case of infectious disease requiring notification
- In surgery or during an invasive procedure, understanding the increased risk of infection in these patients and adhering to guidelines for minimising infection in such cases
- The guidelines for needle-stick injury prevention and management

During an outbreak

- Guidelines for minimising infection in the wider community in cases of communicable diseases and how to seek expert opinion or guidance from infection control specialists where necessary
- Hospital policy/seeking guidance from occupational health professional regarding the need to stay off work/restrict duties when experiencing infections the onward transmission of which might impact on the health of others

SKILLS

- Practising aseptic techniques and hand hygiene
- Following local and national guidelines for infection control and management
- Prescribing antibiotics according to antibiotic guidelines
- Encouraging staff, patients and relatives to observe infection control principles
- Communicating effectively with patients regarding treatment and measures recommended to prevent re-infection or spread
- Collaborating with infection control colleagues to manage more complex or uncommon types of infection including those requiring isolation e.g. transplant cases, immunocompromised host
- In the case of infectious diseases requiring disclosure:
 - Working knowledge of those infections requiring notification
 - Undertaking notification promptly
 - Collaborating with external agencies regarding reporting, investigating and management of notifiable diseases
 - Enlisting / requiring patients' involvement in solving their health problems, providing information and education
 - Utilising and valuing contributions of health education and disease prevention and infection control to health in a community

ASSESSMENT & LEARNING METHODS

- Consultant feedback at annual assessment
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): practicing aseptic techniques as appropriate to the case and setting, investigating and managing infection, prescribing antibiotics according to guidelines
- Completion of infection control induction in the workplace
- Healthcare Associated Infections (on-line) – recommended

Therapeutics and Safe Prescribing

Objective: To progressively develop ability to prescribe, review and monitor appropriate therapeutic interventions relevant to clinical practice in specific specialities including non-pharmacological therapies and preventative care.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care.

KNOWLEDGE

- Pharmacology, therapeutics of treatments prescribed, choice of routes of administration, dosing schedules, compliance strategies; the objectives, risks and complications of treatment cost-effectiveness
- Indications, contraindications, side effects, drug interaction, dosage and route of administration of commonly used drugs
- Commonly prescribed medications
- Adverse drug reactions to commonly used drugs, including complementary medicines
- Identifying common prescribing hazards
- Identifying high risk medications
- Drugs requiring therapeutic drug monitoring and interpretation of results
- The effects of age, body size, organ dysfunction and concurrent illness or physiological state e.g. pregnancy on drug distribution and metabolism relevant to own practice
- Recognising the roles of regulatory agencies involved in drug use, monitoring and licensing e.g. IMB, and hospital formulary committees
- Procedure for monitoring, managing and reporting adverse drug reaction
- Effects of medications on patient activities including potential effects on a patient's fitness to drive
- The role of The National Medicines Information Centre (NMIC) in promoting safe and efficient use of medicine
- Differentiating drug allergy from drug side effects
- Good Clinical Practice guidelines for seeing and managing patients who are on clinical research trials

SKILLS

- Writing a prescription in line with guidelines
- Appropriately prescribing for the elderly, children and pregnant and breast feeding women
- Making appropriate dose adjustments following therapeutic drug monitoring, or physiological change (e.g. deteriorating renal function)
- Reviewing and revising patients' long term medications
- Anticipating and avoiding defined drug interactions, including complementary medicines
- Advising patients (and carers) about important interactions and adverse drug effects including effects on driving
- Providing comprehensible explanations to the patient, and carers when relevant, for the use of medicines
- Being open to advice and input from other health professionals on prescribing
- Participating in adverse drug event reporting
- Taking a history of drug allergy and previous side effects

ASSESSMENT & LEARNING METHODS

- Consultant feedback
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): prioritisation of patient safety in prescribing practice
- Principles of Antibiotics Use (on-line) – recommended
- Guidance for health and social care providers - Principles of good practice in medication reconciliation (HIQA)

Self-Care and Maintaining Well-Being

Objective:

1. To ensure that trainees understand how their personal histories and current personal lives, as well as their values, attitudes, and biases affect their care of patients so that they can use their emotional responses in patient care to their patients' benefit
2. To ensure that trainees care for themselves physically and emotionally, and seek opportunities for enhancing their self-awareness and personal growth

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care, Relating to Patients, Communication and Interpersonal Skills, Collaboration and Teamwork, Management (including self-management).

KNOWLEDGE

- Self knowledge – understand own psychological strengths and limitations
- Understand how own personality characteristics (such as need for approval, judgemental tendencies, needs for perfection and control) affect relationships with patients and colleagues
- Knowledge of core beliefs, ideals, and personal philosophies of life, and how these relate to own goals in medicine
- Know how family-of-origin, race, class, religion and gender issues have shaped own attitudes and abilities to discuss these issues with patients
- Understand the difference between feelings of sympathy and feelings of empathy for specific patients
- Know the factors between a doctor and patient that enhance or interfere with abilities to experience and convey empathy
- Understanding of own attitudes toward uncertainty and risk taking and own need for reassurance
- How own relationships with certain patients can reflect attitudes toward paternalism, autonomy, benevolence, non-maleficence and justice
- Recognise own feelings (love, anger, frustration, vulnerability, intimacy, etc) in “easy” and difficult patient-doctor interactions
- Recognising the symptoms of stress and burn out

SKILLS

- Exhibiting empathy and showing consideration for all patients, their impairments and attitudes irrespective of cultural and other differences
- Ability to create boundaries with patients that allow for therapeutic alliance
- Challenge authority appropriately from a firm sense of own values and integrity and respond appropriately to situations that involve abuse, unethical behaviour and coercion
- Recognise own limits and seek appropriate support and consultation
- Work collaboratively and effectively with colleagues and other members of health care teams
- Manage effectively commitments to work and personal lives, taking the time to nurture important relationship and oneself
- Ability to recognise when falling behind and adjusting accordingly
- Demonstrating the ability to cope with changing circumstances, variable demand, being prepared to re-prioritise and ask for help
- Utilising a non-judgemental approach to patient's problem
- Recognise the warning signs of emotional ill-health in self and others and be able to ask for appropriate help
- Commitment to lifelong process of developing and fostering self-awareness, personal growth and well being
- Be open to receiving feedback from others as to how attitudes and behaviours are affecting their care of patients and their interactions with others
- Holding realistic expectations of own and of others' performance, time-conscious, punctual
- Valuing the breadth and depth of experience that can be accessed by associating with professional colleagues

ASSESSMENT & LEARNING METHODS

- Occupational Stress course
- On-going supervision
- Ethics courses
- Leadership in Clinical Practice III

Communication in Clinical and Professional Setting

Objective: To demonstrate the ability to communicate effectively and sensitively with patients, their relatives, carers and with professional colleagues in different situations.

Medical Council Domains of Good Professional Practice: Relating to Patients; Communication and Interpersonal Skills.

KNOWLEDGE

Within a consultation

- How to effectively listen and attend to patients
- How to structure an interview to obtain/convey information; identify concerns, expectations and priorities; promote understanding, reach conclusions; use appropriate language.
- How to empower the patient and encourage self-management

Difficult circumstances

- Understanding of potential areas for difficulty and awkward situations, knowing how and when to break bad news, how to negotiate cultural, language barriers, dealing with sensory or psychological and/or intellectual impairments, how to deal with challenging or aggressive behaviour
- How to communicate essential information where difficulties exist, how to appropriately utilise the assistance of interpreters, chaperones, and relatives.
- How to deal with anger, frustration in self and others
- Selecting appropriate environment; seeking assistance, making and taking time

Dealing with professional colleagues and others

- How to communicate with doctors and other members of the healthcare team; how to provide concise, problem-orientated statement of facts and opinions (written, verbal or electronic)
- Knowledge of legal context of status of records and reports, of data protection (confidentiality), Freedom of Information (FOI) issues
- Understanding of the relevance to continuity of care and the importance of legible, accessible, records
- Knowing when urgent contact becomes necessary and the appropriate place for verbal, telephone, electronic, written communication
- Recognition of roles and skills of other health professionals
- Awareness of own abilities/limitations and when to seek help or give assistance, advice to others; when to delegate responsibility and when to refer

Maintaining continuity of care

- Understanding the relevance to outcome of continuity of care, within and between phases of healthcare management
- The importance of completion of tasks and documentation (e.g. before handover to another team, department, specialty), of identifying outstanding issues and uncertainties
- Knowledge of the required attitudes, skills and behaviours which facilitate continuity of care such as maintaining (legible) records, being available and contactable, alerting others to avoid potential confusion or misunderstanding through communications failure

Giving explanations

- The importance of possessing the facts, and of recognising uncertainty and conflicting evidence on which decisions have to be based
- How to secure, retain attention avoid distraction
- Understanding how adults receive information best, the relative value of the spoken, written, visual means of communication, use of reinforcement to assist retention
- Knowledge of risks of information overload
- Interpreting results, significance of findings, diagnosis, explaining objectives, limitations, risks of treatment, using communication adjusted to recipients' ability to comprehend
- Ability to achieve level of understanding necessary to gain co-operation (compliance, informed choice, acceptance of opinion, advice, recommendation)

Responding to complaints

- Value of hearing and dealing with complaints promptly; the appropriate level, the procedures (departmental and institutional); sources of advice, assistance available
- The importance of obtaining and recording accurate and full information, seeking confirmation from multiple sources
- Knowledge of how to establish facts, identifying issues and responding quickly and appropriately to a complaint received

SKILLS

- Ability to elicit facts, using a mix of open and closed-ended questions appropriately
- Using "active listening" techniques such as nodding and eye contact
- Giving information clearly, avoiding jargon, confirming understanding, ability to encourage co-operation, compliance; obtaining informed consent
- Showing consideration and respect for other's culture, opinions, patient's right to be informed and make choices
- Respecting another's right to opinions and to accept or reject advice
- Valuing perspectives of others contributing to management decisions
- Conflict resolution
- Dealing with complaints
- Communicating decisions in a clear and thoughtful manner
- Presentation skills
- Maintaining (legible) records
- being available, contactable, time-conscious
- Setting (and attempting to reach) realistic objectives, identifying and prioritising outstanding problems
- Using language, literature (leaflets) diagrams, educational aids and resources appropriately
- Ability to establish facts, identify issues and respond quickly and appropriately to a complaint received
- Accepting responsibility, involving others, and consulting appropriately
- Obtaining informed consent
- Discussing informed consent
- Giving and receiving feedback

ASSESSMENT & LEARNING METHODS

- Mastering Communication course
- Consultant feedback at annual assessment
 - Workplace based assessment e.g. Mini-CEX, DOPS, CBD
 - Educational supervisor's reports on observed performance (in the workplace): communication with others e.g. at handover. ward rounds, multidisciplinary team members
- Presentations
- Ethics courses
- Leadership in Clinical Practice III

Leadership

Objective: To have the knowledge, skills and attitudes to act in a leadership role and work with colleagues to plan, deliver and develop services for improved patient care and service delivery.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Communication and Interpersonal Skill; Collaboration and Teamwork; Management (including Self-Management); Scholarship.

KNOWLEDGE

Personal qualities of leaders

- Knowledge of what leadership is in the context of the healthcare system appropriate to training level
- The importance of good communication in teams and the role of human interactions on effectiveness and patient safety

Working with others

- Awareness of own personal style and other styles and their impact on team performance
- The importance of good communication in teams and the role of human interactions on effectiveness and patient safety

Managing services

- The structure and function of Irish health care system
- Awareness of the challenges of managing in healthcare
 - Role of governance
 - Clinical directors
- Knowledge of planning and design of services
- Knowledge and understanding of the financing of the health service
 - Knowledge of how to prepare a budget
 - Defining value
 - Managing resources
- Knowledge and understanding of the importance of human factors in service delivery
 - How to manage staff training, development and education
- Managing performance
 - How to perform staff appraisal and deal effectively with poor staff performance
 - How to rewards and incentivise staff for quality and efficiency

Setting direction

- The external and internal drivers setting the context for change
- Knowledge of systems and resource management that guide service development
- How to make decisions using evidence-based medicine and performance measures
- How to evaluate the impact of change on health outcomes through ongoing service evaluation

SKILLS

- Effective communication with patients, families and colleagues
- Co-operation and collaboration with others; patients, service users, carers colleagues within and across systems
- Being an effective team player
- Ability to manage resources and people
- Managing performance and performance indicators

Demonstrating personal qualities

- Efficiently and effectively managing one-self and one's time especially when faced with challenging situations
- Continues personal and professional development through scholarship and further training and education where appropriate
- Acting with integrity and honesty with all people at all times
- Developing networks to expand knowledge and sphere of influence
- Building and maintaining key relationships
- Adapting style to work with different people and different situations
- Contributing to the planning and design of services

ASSESSMENT & LEARNING METHODS

- Mastering Communication course
- Leadership in Clinical Practice III
- Consultant feedback at annual assessment
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): on management and leadership skills
- Involvement in hospital committees where possible e.g. Division of Medicine, Drugs and Therapeutics, Infection Control etc.

Quality Improvement

Objective: To demonstrate the ability to identify areas for improvement and implement basic quality improvement skills and knowledge to improve patient safety and quality in the healthcare system.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Communication and Interpersonal Skills; Collaboration and Teamwork; Management; Relating to Patients; Professionalism

KNOWLEDGE

Personal qualities of leaders

- The importance of prioritising the patient and patient safety in all clinical activities and interactions

Managing services

- Knowledge of systems design and the role of microsystems
- Understanding of human factors and culture on patient safety and quality

Improving services

- How to ensure patient safety by adopting and incorporating a patient safety culture
- How to critically evaluate where services can be improved by measuring performance, and acting to improve quality standards where possible
- How to encourage a culture of improvement and innovation

Setting direction

- How to create a 'burning platform' and motivate other healthcare professionals to work together within quality improvement
- Knowledge of the wider healthcare system direction and how that may impact local organisations

SKILLS

- Improvement approach to all problems or issues
- Engaging colleagues, patients and the wider system to identify issues and implement improvements
- Use of quality improvement methodologies, tools and techniques within every day practice
- Ensuring patient safety by adopting and incorporating a patient safety culture
- Critically evaluating where services can be improved by measuring performance, and acting to raise standards where possible
- Encouraging a culture of improvement and innovation

Demonstrating personal qualities

- Encouraging contributions and involvement from others including patients, carers, members of the multidisciplinary team and the wider community
- Considering process and system design, contributing to the planning and design of services

ASSESSMENT & LEARNING METHODS

- Leadership in Clinical Practice III
- Consultant feedback at annual assessment
- Involvement in hospital committees where possible e.g. Division of Medicine, Drugs and Therapeutics, Infection Control etc.

Scholarship

Objective: To develop skills in personal/professional development, teaching, educational supervision and research

Medical Council Domains of Good Professional Practice: Scholarship

KNOWLEDGE

Teaching, educational supervision and assessment

- Principles of adult learning, teaching and learning methods available and strategies
- Educational principles directing assessment methods including, formative vs. summative methods
- The value of regular appraisal / assessment in informing training process
- How to set effective educational objectives and map benefits to learner
- Design and delivery of an effective teaching event, both small and large group
- Use of appropriate technology / materials

Research, methodology and critical evaluation

- Designing and resourcing a research project
- Research methodology, valid statistical analysis, writing and publishing papers
- Ethical considerations and obtaining ethical approval
- Reviewing literature, framing questions, designing a project capable of providing an answer
- How to write results and conclusions, writing and/or presenting a paper
- How to present data in a clear, honest and critical fashion

Audit

- Basis for developing evidence-based medicine, kinds of evidence, evaluation; methodologies of clinical trials
- Sources from which useful data for audit can be obtained, the methods of collection, handling data, the audit cycle
- Means of determining best practice, preparing protocols, guidelines, evaluating their performance
- The importance of re-audit

SKILLS

- Bed-side undergraduate and post graduate teaching
- Developing and delivering lectures
- Carrying out research in an ethical and professional manner
- Performing an audit
- Presentation and writing skills – remaining impartial and objective
- Adequate preparation, timekeeping
- Using technology / materials

ASSESSMENT & LEARNING METHODS

- Health Research – An Introduction
- Effective Teaching and Supervising Skills course - recommended
- Educational Assessment Skills course - recommended
- Performing audit course
- Health Research Methods for Clinicians - recommended

Management

Objective: To understand the organisation, regulation and structures of the health services, nationally and locally, and to be competent in the use and management of information on health and health services, to develop personal effectiveness and the skills applicable to the management of staff and activities within a healthcare team.

Medical Council Domains of Good Professional Practice: Management.

KNOWLEDGE

Health service structure, management and organisation

- The administrative structure of the Irish Health Service, services provided in Ireland and their funding and how to engage with these for best results
- Department of Health, HSE and hospital management structures and systems
- The national regulatory bodies, health agencies and patient representative groups
- Understanding the need for business plans, annual hospital budgets, the relationship between the hospital and PCCC

The provision and use of information in order to regulate and improve service provision

- Methods of collecting, analysing and presenting information relevant to the health of a population and the apportionment of healthcare resources
- The common ways in which data is presented, knowing of the sources which can provide information relevant to national or to local services and publications available

Maintaining medical knowledge with a view to delivering effective clinical care

- Understanding the contribution that current, accurate knowledge can make to establishing clinical effectiveness, best practice and treatment protocols
- Knowledge of sources providing updates, literature reviews and digests

Delegation skills, empowerment and conflict management

- How to assess and develop personal effectiveness, improve negotiating, influencing and leadership skills
- How to manage time efficiently, deal with pressure and stress
- How to motivate others and operate within a multidisciplinary team

SKILLS

- Chairing, organising and participating in effective meetings
- Managing risks
- Managing time
- Delegating tasks effectively
- Managing conflicts
- Exploring, directing and pursuing a project, negotiating through the relevant departments at an appropriate level
- Ability to achieve results through an understanding of the organisation and its operation
- Ability to seek / locate information in order to define an issue needing attention e.g. to provide data relevant to a proposal for change, establishing a priority, obtaining resources
- Ability to make use of information, use IT, undertake searches and obtain aggregated data, to critically evaluate proposals for change e.g. innovative treatments, new technologies
- Ability to adjust to change, apply management, negotiating skills to manage change
- Appropriately using management techniques and seeking to improve these skills and personal effectiveness

ASSESSMENT & LEARNING METHODS

- Mastering Communication course
- Performing Audit course
- Leadership in Clinical Practice III
- Annual audit
- Consultant feedback on management and leadership skills
- Involvement in hospital committees

General Paediatrics

KNOWLEDGE

The disadvantaged child

- Community problems: racism, bullying, gender issues, traffic-safe play spaces, pollution. Access to health care for marginalised groups
- Local community: demographic structure, areas of deprivation, service provision and access.
- Ethnic minority health needs
- Ability to elicit accurate information about a family's social circumstances with sensitivity.
- Awareness of potential communication problems with people of different social, ethnic and racial backgrounds – strategies to cope with these
- Appreciate the impact on the child's ability
- Develop sensitivity on assessing the impact of being disadvantaged

Health promotion/education

- Knowledge of local and national health promotion initiatives
- Knowledge of health promotion and education in relation to injury prevention
- Knowledge of the role of the public health service.
- Liaise with health promotion departments and other groups involved in health promotion, i.e. PHN, GPs, teachers, school nurses
- Knowledge of the national policy on health gain

Immunisation

- Local and national immunisation policy: role of the local immunisation committee
- Knowledge of infectious diseases controlled by immunisation
- Knowledge of the role of immunisation co-ordinator
- Awareness of groups who do not agree with immunisations and their reasons

Behavioural Paediatrics

- Self-harm in young people and its consequences
- Immediate and longer term reactions to stress, bereavement, loss and trauma and how to manage them as part of a clinical network
- Recognition of time-limited emotional and behavioural symptoms as response to psychological or social stress
- Origin of enuresis and encopresis in children, including those with special needs
- Indirect effects of substance misuse on mental and physical health, through experimental behaviour and lifestyle, the effects on educational, emotional and behavioural development and the impact on self-care skills
- Possible impact of a sleep disorder on child and family
- The association of sleep disorder in developmental disorders such as ADHD, ASD, Learning Disability
- Principles of treatment of chronic fatigue syndrome/ME and the need to engage the family with a rehabilitative approach
- Impact of behaviour disorders on those with developmental difficulties, including specific phenotypes

Child abuse

- Knowledge of forensic medicine, especially in relation to sexual abuse
- Strategies and agencies available to help children and families cope with child abuse
- Develop sensitivity in elucidating information
- Develop understanding of the multifaceted team that may be involved
- Be aware of the importance of accurate assessments
- Knowledge of induced illness

Child protection and children in special circumstances

- The immediate and long term impact of parental factors on outcomes for children in child protection and for children looked after, for example substance misuse, domestic violence, mental health problems, chronic physical illness, learning difficulties
- Health and lifestyle factors of carers/birth parents which may impair the current and future health and wellbeing of children, for example smoking, mental health problems, learning difficulties
- The long term implications of being looked after, for example, the consequences of separation, loss, multiple moves, risk of subsequent abuse in care, disrupted education and routine health care
- Consent and parental responsibility in relation to child protection examinations and the health needs of looked-after children and the relevance of the child's care status
- Understand the role and responsibilities of the named and designated professional for child protection and looked-after children
- Be aware of the difficulties of asylum seekers, refugees, travelling families, Forces families and young carers

Developmental Paediatrics

- Diagnosis
- Parental Diagnosis
- Management

Neurological and Developmental disorders

- General
 - The acute management of neurological emergencies in childhood: organising transfer to the specialist unit: safe transport
 - The inter-relationship of neurological diseases with other body systems, including growth and nutrition: feeding difficulties, reflux, aspiration
 - Paediatric assessment of the child with hearing and/or vision impairment
 - The child with regression in abilities – causes and investigation
 - Liaison with the specialist, district clinics: when to seek specialist advice
- Diagnostic methods
 - appropriate use of neuroradiology and other screening modalities
 - significance of common patterns of abnormality on the EEG
 - of the place for special investigations e.g. nerve conduction, electromyogram, muscle biopsy, MRI
 - Neurometabolic investigations (in conjunction with the specialist laboratory)
- Therapy
 - Basic knowledge of aids to treatment and rehabilitation: hearing and vision aids, eating, mobility aids, orthosis, communications aids, computers etc.
 - The principles of management of behaviour disorders, including counselling and psychotherapy
- Multidisciplinary approach
 - Use a team approach to management of neurological and developmental disorders, and understand its advantages and limitations
 - Understand the methods used by occupational, speech and physiotherapists, nurses, specialist health visitors, play therapists, dieticians, clinical and educational psychologists, teachers and social workers in assessment, treatment and rehabilitation
 - Knowledge of the methods used by other medical specialists including paediatric neurologists, ophthalmologists, ENT surgeons, community paediatrician, child and adolescent psychiatrist, neurosurgeon
 - Planning handover to adult services
- Appreciate the importance of early diagnosis and family support
- Appreciate the importance of a co-ordinated multidisciplinary assessment and management plan

Movement problems

- Normal variations in motor development: rollers, shufflers
- Abnormal patterns of development
- Appreciate importance of multidisciplinary approach to assessment
- Enforce need for ongoing assessment of patient

Speech and language

- Knowledge of:
 - developmental phonological problems: deviant patterns
 - developmental language delay: differentiation
 - role of speech therapist in disorders of language, phonology, articulation/feeding
 - taking a history of communication and language development
 - role of speech therapist in assessment
 - importance of treatment speech plan

Developmental paediatrics

- Understand the common causes and the patterns of disability
- Understanding of the tests of cognitive function
- Competence in assessing disability at different ages, in conjunction with other relevant specialists
- Acknowledge the impact on child and family inclusive of schooling

Behavioural and psychological problems

- Members and roles of the child and family counselling team
- Other health service resources available to families
- How to apply a child psychiatry perspective to normal, as well as abnormal illness behaviour, as encountered in all aspects of child health
- Understanding the concept of therapeutic interventions used and perspectives in child psychiatry, psychology and psychiatric social work
- Understand the use of behaviour questionnaires
- Knowledge and understanding of drug and alcohol abuse
- Knowledge of normal and abnormal reactions to stress, bereavement, chronic illness, death
- knowledge of how to take a detailed child psychiatric history, including eliciting painful information sensitively and efficiently
- Make a mental state examination
- Use and understand non-verbal communication
- Define which are appropriate referrals to child psychiatry and psychology
- Learn to be sensitive to opportunities for therapeutic intervention during history taking
- Learn basic skills in supportive psychotherapy, behaviour therapy, family therapy
- Develop sensitivity to the impact of behaviour and psychological problems on relationships and family functioning
- Knowledge of Autism, ADHD, learning disabilities
- Knowledge of tests to determine brain death

Nutrition and Metabolic Disease

- Methodologies of energy expenditure
- Principles of dietary analyses: indications and procedures
- Understanding of measurement of body composition
- Nutrient turnover: obligatory nutrient losses
- Advise on health eating for normal children, including minority groups
- Prescribe parenteral nutrition
- Use and care of central venous catheters
- PEGs
- Be willing to discuss impact of disease (disease burden) on family functioning

Metabolism

- Normal physiology and biochemistry, including changes during childhood of:
 - Fluid and electrolyte balance
 - Acid base regulation
- Intermediary metabolism including glucose and metabolic response to fasting, lactate, ammonia, amino acids, organic acids, fatty acids
- Calcium metabolism

SKILLS

- History taking
- Take a detailed history, including eliciting painful information sensitively and efficiently
- Detailed developmental and neurological assessment
- Drawing up a management plan, taking into account continuing medical problems and attendant social, educational and psychological factors
- Work as part of a clinical network in management of childhood issues
- Reassure and advise parents and professionals on management
- Assess injuries in relation to history, developmental stage and ability of the child
- Recognise when additional expert advice is needed, for example radiology, orthopaedics, neurology, ophthalmology
- Recognise fabricated or induced illness including the significance of repeated or bizarre physical symptoms and be able to take appropriate action and be able to access help at an appropriate time
- Multidisciplinary team working
- Co-ordination of care for the critically ill child, the initial management of neurological emergencies, the principles of safe transport
- Make a mental state examination
- Differential diagnosis

ASSESSMENT & LEARNING METHODS

- Attend outpatient clinics
- Inpatient care

Emergency Medicine

KNOWLEDGE

Accident prevention

- Understanding models and strategies of prevention

Principles of emergency care

- Recognition and management of non-accidental injury
- Resuscitation: recognition of treat to life and limb
- Assessment and initial management of the seriously injured child
- Organisation of safe transport
- Paediatrician's role in major incident planning
- System Emergencies:
 - Cardiovascular:
 - Resuscitation of infants and children
 - Recognition and management of shock (including septicaemia)
 - Supraventricular and ventricular tachycardias: bradycardias
 - CNS:
 - Coma: emergency management of raised intracranial pressure
 - Seizures: management of status epilepticus
 - Meningitis
 - Pain relief
 - Respiratory:
 - Recognition and management of acute respiratory failure
 - The choking child and upper airway obstruction
 - Inhalational injury and carbon monoxide poisoning
 - Management of severe or life-threatening asthma
- Behavioural:
 - Deliberate self-harm
 - Alcohol and other drug misuse
- Social: (see also community paediatrics)
 - Frequent attenders
 - Environmental
 - Burns and scalds: assessment: initial management: when to transfer to the burns unit
 - Electrical injury
 - Treatment of poisoning
 - Anaphylaxis
 - Musculoskeletal trauma including:
 - common childhood fractures
 - minor injuries
 - head injuries
 - the limping child
- APLS (will be expected from trainees in general paediatrics)
- Basic airway management
- Intra-osseous access
- Understanding of the importance of trauma as a cause of morbidity and mortality in childhood
- Awareness of the importance of early recognition and management of potentially life-threatening illnesses to minimise morbidity and mortality

Accidents

- Understanding of injury surveillance systems
- Liaise with A&E Department for:
 - Training of staff
 - Provision of child appropriate service
 - Setting up of information systems
 - Support for parents whose child has died suddenly
- Demonstrate an ability to liaise with General Practitioners
- Appreciate importance of Team Relationships
- Appreciate detection of sentinel events to detect NAI (non-accidental injury) and non-accidental ingestions

SKILLS

- Assessment and initial management of the seriously injured child
- Management of non-accidental injury
- Resuscitation
- Organisation of safe transport

ASSESSMENT & LEARNING METHODS

- Experience in Emergency Department
- ACLS

APLS

Specialty Section

Cardiovascular Collapse in Newborn/Infant

Objective: To be able to carry out specialist assessment and management of infants who present with cardiovascular collapse

KNOWLEDGE

- Cardiac and non-cardiac causes of cardiovascular collapse
- Causes of cardiovascular collapse and likely diagnoses on the basis of the timing of presentation
- Natural history, anatomy, physiology and clinical features of cardiac disorders that cause collapse in infancy
- Physiology of duct dependent systemic circulation
- ECG, CXR and echocardiographic findings in congenital heart disease that presents with collapse in infancy
- Indications, limitations and risks of invasive and non-invasive investigation in infants that present with collapse
- Angiographic and haemodynamic findings at cardiac catheterisation in congenital heart disease that presents with collapse
- Indications and risks of catheter intervention and surgery in congenital heart disease that presents with collapse
- Impact of cardiovascular collapse on other organs

SKILLS

- Identify cardiovascular collapse and carry out direct resuscitation, medical treatment and intensive care
- Interpret investigation results and appreciate their importance and limitations in reaching a diagnosis
- Use echocardiography to accurately diagnose abnormalities in cardiac structure or function
- Carry out further investigation either by non-invasive imaging or cardiac catheterisation when necessary
- Initiate prostaglandin E where appropriate and know how to monitor its effect and when to alter the dose administered
- Plan and coordinate surgery or catheter intervention where necessary
- Identify compromise to other organs secondary to collapse and refer to other specialties where necessary
- Provide advice to referring paediatricians in respect of emergency management before transfer to the cardiac centre
- Counsel parents/carers about the underlying cause of the collapse and give a realistic prognosis
- Outline a treatment plan in terms understood by the parents/carers
- Plan and participate in outpatient follow-up

ASSESSMENT & LEARNING METHODS

- Trainer's review of triage criteria for Telephone or Emergency Department referral
- Mini-CEX
 - Transfer management
 - Assessment on arrival
 - History taking
 - Clinical examination
 - Medical/surgical interventions
- DOPS
 - Echocardiography
 - Balloon septostomy
- Study day – neonatal cardiac emergencies
- ACLS/APLS

Cardiac Failure in Infants and Children

Objective: To be able to carry out specialist assessment and treatment of infants who present with cardiovascular failure and plan surgery or other intervention when necessary

KNOWLEDGE

- Physiology of cardiac failure caused by:
 - Pressure overload
 - Volume overload
 - Restriction to inflow
 - Reduced contractility
- Physiology of pulmonary oedema
- Cardiac failure at different ages, from newborn to adult life
- How to distinguish cardiac failure from other causes of increased respiratory effort
- Causes of cardiac failure and likely diagnoses based on timing of presentation
- Investigations findings in cardiac disorders that present with cardiac failure
- Angiographic and haemodynamic findings at cardiac catheterisation in congenital heart disease that presents with cardiac failure
- Indications, contraindications, action and side-effects of drug treatment for cardiac failure
- Indications and risks of catheter intervention and surgery in congenital heart disease that presents with cardiac failure

SKILLS

- Identify cardiac failure in children of all ages
- Interpret invasive and non invasive investigations appreciate the importance and limitations of these investigations in diagnosing cardiac failure and elucidating its underlying cause
- Use echocardiography to diagnose abnormalities in cardiac structure or function
- Make an accurate anatomical and physiological diagnosis of the cause of cardiac failure on the basis of the clinical information and investigations
- Institute and monitor appropriate drug therapy
- Optimise nutrition and manage failure to thrive caused by cardiac failure
- Plan and coordinate surgery or catheter intervention where necessary
- Counsel parents/carers about the underlying cause of the cardiac failure, give appropriate advice to parents/carers where cardiac failure is anticipated and give a realistic prognosis
- Outline a treatment plan in terms understood by the parents/carers
- Provide advice to referring paediatricians managing children with cardiac failure
- Consider the interaction of symptoms with the child's lifestyle and offer advice and support in terms of schooling and sporting activity
- Plan and participate in outpatient follow-up

ASSESSMENT & LEARNING METHODS

- Trainer's review of triage criteria for Telephone or Emergency Department referral
- Mini-CEX
 - Transfer management
 - Assessment on arrival
 - History taking
 - Clinical examination
- DOPS
 - Echocardiography
 - Balloon septostomy
- CBD
 - Review of OPD echo
 - Management plan
 - Medical/surgical and other interventions
- Study day – neonatal cardiac emergencies

Cyanosis in the Newborn Period

Objective: To be able to carry out specialist assessment and treatment of cyanotic newborn infants and plan surgery or other intervention when necessary

KNOWLEDGE

- Physiology of cyanosis :
 - Right heart obstruction with right to left shunting
 - Parallel circulation
 - Common mixing lesions
- Physiology of duct dependent pulmonary circulation
- Cardiac and non-cardiac causes of cyanosis in the newborn period
- Indications, limitations and risks of invasive and non-invasive investigation in newborns with cyanotic congenital heart disease
- Angiographic and haemodynamic findings at cardiac catheterisation in congenital heart disease that presents with cyanosis in the newborn period
- Indications and risks of catheter intervention and surgery in congenital heart disease that presents with cyanosis in the newborn period

SKILLS

- Interpret invasive and non invasive investigations and appreciate their importance and limitations in reaching a diagnosis
- Use echocardiography to accurately diagnose abnormalities in cardiac structure or function
- Make an accurate anatomical and physiological diagnosis on the basis of the clinical information and investigations
- Initiate prostaglandin E where appropriate and know how to monitor its effect and when to alter the dose administered
- Plan and coordinate surgery or catheter intervention where necessary
- Provide advice to referring paediatricians in respect of emergency management before transfer to the cardiac centre
- Plan and participate in outpatient follow-up

ASSESSMENT & LEARNING METHODS

- CBD
 - Triage criteria cardiac
 - Triage criteria non-cardiac
 - Pre transfer management
 - Initial assessment
 - Management plan
- DOPS
 - Echocardiography
 - Balloon septostomy

Cyanosis beyond the Newborn Period

Objective: To be able to carry out specialist assessment and treatment of cyanotic children presenting after the newborn period and plan surgical or other intervention where necessary

KNOWLEDGE

- Cardiac and non-cardiac causes of cyanosis beyond the newborn period
- Indications, limitations and risks of invasive and non-invasive investigation of congenital heart disease presenting with cyanosis after the newborn period
- Angiographic and haemodynamic findings at cardiac catheterisation in congenital heart disease that presents with cyanosis after the newborn period
- Indications and risks of catheter intervention and surgery in congenital heart disease that presents with cyanosis after the newborn period

SKILLS

- Interpret ECG, CXR and blood results and appreciate their importance and limitations in reaching a diagnosis
- Use echocardiography to accurately diagnose abnormalities in cardiac structure or function
- Identify where information is incomplete and plan further investigation either by non-invasive imaging or cardiac catheterisation
- Make an accurate anatomical and physiological diagnosis on the basis of the clinical information and investigations
- Identify when there is cyanosis coupled with cardiac failure and initiate medical treatment when necessary
- Plan and coordinate surgery or catheter intervention where necessary
- Counsel parents/carers and give a realistic prognosis
- Outline a treatment plan in terms understood by the parents/carers
- Provide advice to referring paediatricians in respect of management of children with cyanosis
- Offer advice and support in respect of schooling and sporting activity
- Plan and participate in outpatient follow-up

ASSESSMENT & LEARNING METHODS

- Self-directed learning
- OPD prioritisation
- CBD
 - History
 - Clinical examination
 - Management plan
- DOPS
 - Echocardiography
- Study days – lesion specific e.g.
 - TGA
 - Fallot
 - Ebstein's
 - Pulmonary atresia
- Departmental weekly lectures

Evaluation of an Infant/Child with a Cardiac Murmur

Objective: To be able to carry out specialist assessment and treatment of children with cardiac murmurs

KNOWLEDGE

- Characteristic clinical features of all congenital cardiac defects
- Characteristic features of innocent murmurs

SKILLS

- Discriminate innocent from pathological murmurs on examination
- Make a logical provisional diagnosis on the basis of physical examination
- Refine the diagnosis using ECG and CXR where appropriate
- Use echocardiography to accurately define cardiac structure and function
- Complete the assessment quickly in an outpatient setting
- Be able to confidently diagnose normality and explain the meaning of an innocent murmur

ASSESSMENT & LEARNING METHODS

- CBD
 - Clinical examination
 - History taking
 - ECG criteria without Echo
- Mini CEX
 - ECG
 - Echo
- Out-patient clinic experience
- Study days – murmurs

Evaluation of Children and Adolescents with Chest Pain, Palpitations or Syncope

Objective: To be able to carry out specialist assessment and treatment of children and adolescents with chest pain, palpitations, presyncope or syncope

KNOWLEDGE

- Cardiac and non-cardiac causes of loss of consciousness
- Clinical features that discriminate between arrhythmias, vasovagal syncope and seizures in children/adolescents with loss of consciousness
- Clinical features of arrhythmia in children/adolescents with palpitations
- Causes and clinical features of chest pain in childhood
- Types of structural heart disease that present with chest pain, palpitations or syncope
- Indications for an exercise test, ambulatory ECG, cardiac event recorder and tilt-table test in the investigation of these conditions

SKILLS

- Perform and interpret lead ECG that suggest the substrate for an arrhythmia
- Use ECG evidence of ischaemic heart disease and ventricular hypertrophy
- Use echocardiography to accurately define cardiac structure and function
- Make an appropriate plan for further investigation and follow-up
- Perform exercise test, ambulatory ECG, cardiac event recorder and tilt-table test
- Institute and monitor appropriate treatment for arrhythmias and vasovagal syncope
- Explain the plan for further investigation and the reasons for this line of investigation in terms understandable to the child/adolescent and parents/carers
- Explain the likely diagnosis and its impact on lifestyle
- Provide reassurance to children/adolescents and parents/carers where there is no organic cause for symptoms
- Refer appropriately to other specialties when a non-cardiac cause is likely
- Facilitate the involvement of adolescents in decision making

ASSESSMENT & LEARNING METHODS

- OPD
- Lectures and study days – SCDY (Sudden Cardiac Death in the Young)
- CBD
 - History taking
 - Echo
 - ECG
 - Examination
- Mini CEX

Acyanotic Congenital Heart Disease

Objective: To be able to carry out specialist assessment and treatment of children and adolescents with acyanotic congenital heart disease and plan surgical intervention where necessary

KNOWLEDGE

- Embryology, detailed anatomy, physiology, epidemiology, natural history and genetic implications of all acyanotic congenital heart defects including:
 - Atrial septal defect
 - Ventricular septal defect
 - Atrioventricular septal defect
 - Patent arterial duct
 - Aortopulmonary septal defect
 - Coronary artery fistula
 - Pulmonary stenosis
 - Aortic stenosis
 - Coarctation of the aorta
 - Interrupted aortic arch
 - Hypoplastic left heart syndrome
- Impact of left to right shunts on pulmonary vascular resistance
- Clinical presentation and ongoing pathophysiological changes of all acyanotic congenital heart defects
- Surgical and catheter intervention treatment options for each lesion and the relative advantages and disadvantages of each approach, their success rates and complications
- Normal course of postoperative recovery after surgery for each type of acyanotic cardiac defect

SKILLS

- Make a provisional diagnosis and discriminate between the various acyanotic defects on the basis of presentation, clinical findings, ECG and CXR
- Accurately diagnose all acyanotic defects using echocardiography and use echocardiography to define the detailed anatomy and physiological characteristics of the defect
- Perform TOE to define the anatomical and physiological details of acyanotic defects
- Identify where information is incomplete and plan further investigation either by non-invasive imaging or cardiac catheterisation
- Make an accurate anatomical and physiological diagnosis on the basis of the clinical information and investigations
- Stabilise infants with prostaglandin E2 in duct dependent lesions
- Plan and coordinate appropriate medical management, catheter intervention and referral to surgery when necessary

ASSESSMENT & LEARNING METHODS

- CBD and Mini CEX
 - History
 - Examination
 - Chest X-ray
 - ECG
 - Echo
- Joint cardiac conference presentations to surgeons and cardiac team
- Study day – lesions as above

Cyanotic Congenital Heart Disease

Objective: To be able to carry out specialist assessment and treatment of children, adolescents and adults with cyanotic congenital heart disease and plan surgical intervention where necessary

KNOWLEDGE

- Embryology, detailed anatomy, physiology, epidemiology, natural history and genetic implications of all cyanotic congenital heart defects including:
 - Pulmonary atresia with intact ventricular septum
 - Pulmonary atresia with ventricular septal defect
 - Critical pulmonary stenosis
 - Tetralogy of Fallot
 - Absent pulmonary valve syndrome
 - Transposition of the great arteries with intact ventricular septum
 - Transposition of the great arteries with ventricular septal defect
 - Double outlet right ventricle
 - Common arterial trunk
 - Total anomalous pulmonary venous connection
 - Univentricular atrioventricular connection
 - Complex congenital heart disease associated with abnormalities of cardiac position and situs
- Clinical presentation all cyanotic congenital heart defects and the long term complications of cyanosis
- Surgical and catheter intervention treatment options, success rates and complications for each lesion and the relative advantages and disadvantages of each approach
- Normal course of postoperative recovery after surgery for each type of cyanotic cardiac defect

SKILLS

- Make an accurate anatomical and physiological diagnosis on the basis of the clinical information and investigations and discriminate between the various cyanotic defects on the basis of presentation, clinical findings, ECG
- Use echocardiography to accurately diagnose cyanotic defects and to define the detailed anatomy and physiological characteristics of the defect
- Perform TOE to define the anatomical and physiological details of cyanotic defects
- Identify where information is incomplete and plan further investigation either by non-invasive imaging or cardiac catheterisation
- Provide emergency treatment for cyanotic spells
- Stabilise infants with prostaglandin E in duct dependent lesions
- Plan and coordinate appropriate medical management, catheter intervention and surgery when necessary
- Counsel parents/carers when cyanotic congenital heart disease has been diagnosed, explaining the anatomy, giving a realistic prognosis, explaining likely symptoms and outlining a management plan
- Offer advice and support in respect of schooling and sporting activity
- Communicate effectively with paediatric cardiology nursing staff, physiotherapists, dieticians, intensivists, surgeons and anaesthetists in coordinating management
- Plan and participate in outpatient follow-up
- Recognise the wider management issues in children with complex cyanotic defects or syndromes and cooperate with other specialties

ASSESSMENT & LEARNING METHODS

- CBD and Mini CEX
 - History
 - Examination
 - Chest X-ray
 - ECG
 - Echo
- Joint cardiac conference presentations to surgeons and multidisciplinary team
- Study day – lesions as above

Pulmonary Hypertension (Optional)

Objective: To diagnose pulmonary hypertension (PH) and to understand management of PH

KNOWLEDGE

- Physical signs
- Basic electrocardiography
- Principles of cardiovascular physiology
- Significance of PH in context of CHD, and in its absence
- Current therapies including lung transplantation

SKILLS

- Make a competent physical examination
- Interpret ECG to diagnose PH
- Interpret echocardiogram to diagnose PH
- Interpret cardiac catheterisation data to diagnose PH
- Be capable of integrating information from various investigations

ASSESSMENT & LEARNING METHODS

- CBD
 - History taking
 - Clinical examination
 - Chest X ray
 - ECG
 - Echo
- Mini CEX
 - CXR
 - ECG
 - Echo
- Study day – pulmonary hypertension

Cardiovascular Abnormalities in Neonatal Intensive Care

Objective: To be able to carry out specialist assessment and advise on the treatment of cardiovascular problems commonly arising in the context of neonatal intensive care

KNOWLEDGE

- Physiology of transitional circulation
- Pathophysiology, clinical manifestations, echocardiographic features and treatment of persistent pulmonary hypertension of the newborn
- Pathophysiology, clinical manifestations and echocardiographic features of patent arterial duct in the preterm child
- Indications and contraindications for medical and surgical treatment of patent arterial duct in the preterm child

SKILLS

- Differentiate PPHN from congenital heart disease using echocardiography
- Use echocardiography to exclude duct dependent systemic and pulmonary circulation when assessing an infant with a patent arterial duct
- Identify congenital heart disease in premature and low birth weight infants and make a management plan, including appropriate timing of surgery
- Identify basic neonatal care and how sepsis, lung disease, neurological problems and genetic issues influence cardiac management

ASSESSMENT & LEARNING METHODS

- Rounds in NNICU with cardiologist
- Mini CEX
- CBD
- DOPS

Cardiovascular Evaluation of Children with Genetic Disorders and Syndromes

Objective: To be able to carry out specialist cardiac assessment and treatment of children and adolescents with genetic disorders and syndromes

KNOWLEDGE

- Cardiac abnormalities found in common genetic disorders and syndromes including:
 - Down's syndrome
 - Trisomy 18
 - Trisomy 13
 - 22q11 deletion (DiGeorge)
 - Turner's syndrome
 - Noonan's syndrome
 - William's syndrome
 - Alagille's syndrome
 - Marfan's syndrome
 - CHARGE association
 - VACTERL association
 - Storage diseases
 - Neuromuscular diseases
 - Mitochondrial cytopathies
 - Hyperlipidaemias
 - Long QT syndrome/Brugada/CPVT
- Prognosis of genetic syndromes and their associated cardiac disorders
- When the need to offer fetal cardiology review for future pregnancies

SKILLS

- Recognise the importance of the genetics and paediatric team in coordinating overall management
- Recognise the impact of other features of the genetic disorder or syndrome on cardiac management
- Be willing to discuss the possibility of recurrence of the cardiac disorder in subsequent children but recognise the boundaries of expertise in paediatric cardiology
- Discuss wider issues involving genetics with sensitivity when planning intervention or surgery for congenital heart disease with parents/carers

ASSESSMENT & LEARNING METHODS

- CBD
 - History taking
 - Clinical examination
 - Chest X ray
 - ECG
 - Echo
- Mini CEX
 - CXR
 - ECG
 - Echo
- Cardiac genetics specialty OPD

Fontan Circulation

Objective: To be able to carry out specialist assessment, treatment and surgical referral of children, adolescents and adults who require or have a cavopulmonary circulation

KNOWLEDGE

- Physiology of the Fontan circulation
- Anatomical and physiological requirements necessary for a child to tolerate a cavopulmonary circulation
- Various surgical procedures used to create a Fontan
- Complications of a Fontan circulation
- How to manage a Fontan circulation in the postoperative period

SKILLS

- Recognise when a biventricular repair cannot be achieved and palliation with a cavopulmonary circulation is appropriate
- Interpret clinical information and the results of non-invasive and invasive investigations to determine whether a cavopulmonary circulation is possible and the appropriate timing of surgery
- Recognise a failing Fontan circulation
- Evaluate the cause of inappropriately low oxygen saturation after a cavopulmonary circulation
- Recognise the additional stress on parents/carers where their child cannot undergo corrective surgery
- Appreciate the need for continuity of care

ASSESSMENT & LEARNING METHODS

- CBD
 - History taking
 - Clinical examination
 - MRI
 - ECG
 - Echo
- DOPS
 - Catheter
 - MRI
 - ECG
 - Echo
- Study day – Fontan circulation

Inflammatory Cardiovascular Disease

Objective: To be able to carry out specialist assessment and treatment of children with rheumatic fever, rheumatic heart disease, Kawasaki disease and other inflammatory diseases affecting the cardiovascular system

KNOWLEDGE

- Pathology and natural history of rheumatic fever, Kawasaki disease and collagen vascular disease affecting the cardiovascular system
- Cardiac and non-cardiac manifestations of these disorders
- Echocardiographic features of these disorders
- Current recommendations:
 - for investigation and treatment of acute and chronic Kawasaki disease
 - for drug therapy for acute rheumatic fever and the long term sequelae of acute rheumatic fever

SKILLS

- Recognise the clinical features of Kawasaki disease and carry out echocardiographic examination of the coronary arteries
- Advise on acute and long-term treatment for Kawasaki disease and arrange an appropriate programme of follow up
- Consider the indications and contraindications to performing coronary angiography in children
- Advise on acute treatment for rheumatic fever and recognise the indications for surgery or intervention in rheumatic heart disease
- Be able to identify the presence and severity of rheumatic heart disease on echocardiography
- Advise on and implement primary and secondary prevention measures in rheumatic fever
- Cooperate with other specialties in investigating collagen vascular diseases with cardiovascular involvement
- Coordinate joint care with the general paediatric team

ASSESSMENT & LEARNING METHODS

- CBD
 - History taking
 - Clinical examination
- DOPS
 - Echo
- Lectures and study day – Kawasaki

Cardiomyopathy and Myocarditis

Objective: To be able to carry out specialist assessment and treatment of children and adolescents with cardiomyopathy and myocarditis

KNOWLEDGE

- Physiology, pathology, natural history, prognosis and clinical features of dilated, hypertrophic and restrictive cardiomyopathy
- Physiology, pathology, natural history, prognosis and clinical features of myocarditis
- Genetics of hypertrophic cardiomyopathy
- Indications for medical and surgical treatment in cardiomyopathy
- Forms of circulatory support (LVAD, ECMO)
- Role of cardiac transplantation in end-stage cardiomyopathy

SKILLS

- Recognise features in a history that suggest myocarditis
- Echocardiographic evaluation of a child with myocarditis or cardiomyopathy, including an assessment of the coronary arteries
- Manage cardiac failure and low cardiac output caused by myocarditis or cardiomyopathy
- Involve the genetics team where appropriate
- Involve parents/carers in decision making in planning management for end-stage cardiomyopathy
- Provide the family with a realistic prognosis
- Consider other aspects of disorders underlying the cardiomyopathy or other organs affected in planning for treatment in end-stage cardiomyopathy

ASSESSMENT & LEARNING METHODS

- CBD
 - History taking
 - Clinical examination
 - MRI
 - ECG
 - Echo
- Mini CEX
- Study day – cardiomyopathy and myocarditis

Prevention and Management of Infective Endocarditis

Objective: To be able to carry out specialist assessment and treatment of children with infective endocarditis and to be able to provide advice in respect of prevention of endocarditis

KNOWLEDGE

- Epidemiology, pathophysiology, clinical manifestations, anatomical features, course and prognosis of various types of infective endocarditis
- Cardiac lesions with the the highest risk of endocarditis
- Diagnosing infective endocarditis: blood cultures, inflammatory markers, transthoracic and transoesophageal echocardiography
- Antibiotic regimes for endocarditis treatment in children
- Alterations in the advice on endocarditis prophylaxis and the evidence behind this practice

SKILLS

- Identify the extracardiac manifestations of endocarditis
- Interpret blood results and recognise echocardiographic manifestations of endocarditis and appreciate their importance and limitations in reaching a diagnosis
- Integrate clinical and laboratory findings to plan appropriate management
- Plan surgical management in children with acute valvar insufficiency secondary to endocarditis
- Provide children education in respect of antibiotic prophylaxis
- Provide support to paediatricians investigating pyrexia of unknown origin

ASSESSMENT & LEARNING METHODS

- CBD with ID specialty
- CBD with dental specialty

Immunisation and Immunity

Objectives: To understand, practice and support accepted measures to prevent or minimise severity of infection in children with cardiac conditions

KNOWLEDGE

- The indications for and timing of active and passive immunisation for children with cardiac conditions (and their families where applicable) in addition to the routine immunisation schedule
- Indications for prophylactic measures to minimise severe illness following infective exposures
- The implications of primary and secondary immunodeficiency associated with cardiac conditions or their treatment, and the potential impact on transfusion, immunisation, and other prevention strategies

SKILLS

- Recognise which patients should receive additional immunisation and refer or organise this appropriately
- Screen for primary immune deficiency and refer patients for immunology assessment and advice when appropriate
- Advise patients, parents and other health professionals about the therapeutic and lifestyle implications and risks of primary and secondary immune dysfunction
- Offer sound advice to patients and their families regarding the secondary effect of cardiac therapies on immunity and immunisation

ASSESSMENT & LEARNING METHODS

- Case Based Discussion
- Record of 5 immunizations for immune deficient asplenic/22q11 patients

Cardiac Evaluation of a Child with Stridor

Objective: To be able to carry out specialist cardiac assessment of children with stridor and referral for cardiac surgery where necessary

KNOWLEDGE

- Embryology, anatomy and natural history of vascular rings and slings and their association with lung pathology
- Signs of vascular rings and slings:
 - on CXR and barium swallow
 - on angiographic and MRI
- Surgical options for release of rings and slings
- The need to cooperate with thoracic surgeons in children with associated lung abnormalities

SKILLS

- Perform echocardiography to identify the presence of vascular rings and slings and know its limitations
- Refer for additional testing such as bronchoscopy or MRI and interpret the results of these investigations
- Plan appropriate surgery for release of vascular rings or slings
- Discuss the causes of stridor with parents/carers, offering reassurance where appropriate

ASSESSMENT & LEARNING METHODS

- DOPS
 - History taking
 - Clinical examination
 - CXR
 - MRI/CT
 - Barium swallow
- CBD – airway management with thoracic surgeon
- Attend and present at MDTs

Cardiac Evaluation of a Child with Systemic Hypertension

Objective: To be able to carry out preliminary specialist cardiac assessment of children with hypertension

KNOWLEDGE

- The physiology of blood pressure control and mechanisms of systemic hypertension
- The methods of single non-invasive and invasive blood pressure evaluation, their pitfalls and limitations and the role of ambulatory blood pressure monitoring
- The references for normal ranges of blood pressure throughout childhood
- The clinical presentations of systemic hypertension including cardiac and extra-cardiac symptoms and signs
- The therapeutic strategies for hypertension, their indications, advantages and disadvantages
- The importance of multidisciplinary team working (e.g. nephrology, ophthalmology, neurology) liaison and the scope of cardiology within this team

SKILLS

- Perform accurate non-invasive blood pressure measurement
- Identify and monitor the cardiac causes and consequences of systemic hypertension using electrocardiography (ECG) and transthoracic echocardiography
- Refer to other specialists for expert diagnosis and management in cases of systemic hypertension
- Request additional non-cardiovascular investigations appropriately in the investigation of systemic hypertension

ASSESSMENT & LEARNING METHODS

- MiniCex

Detection and Management of Foetal Cardiac Abnormalities (Optional)

Objective: To be able to advise on appropriate referral for foetal cardiac evaluation and to be able to advise parents/carers on the timing and the limitations of antenatal diagnosis

KNOWLEDGE

- Indications and limitations of foetal cardiac assessment
- Associations between foetal cardiac abnormality and genetic abnormalities

SKILLS

- Identify common congenital heart defects and abnormal cardiac function in the foetus
- Recognise fetal tachyarrhythmias and foetal heart block using M mode or Doppler echocardiography
- Appreciate the importance of providing a realistic view of outcome when helping parents/carers to make decisions in respect of the pregnancy

ASSESSMENT & LEARNING METHODS

- Foetal clinics
- DOPS – echo
- Study day – foetal cardiac abnormalities

Adolescent Congenital Heart Disease

Objective: To be able to carry out basic assessment and treatment of adolescents with congenital heart disease

KNOWLEDGE

- Natural history of congenital heart disease into adolescence
- Problems associated with un-operated and the long-term sequelae of surgery for congenital heart disease
- Implications of operated and un-operated congenital heart disease for contraception and pregnancy
- Cardiovascular contraindications to pregnancy
- The common rhythm disturbances in adult congenital heart disease and the treatment options

SKILLS

- Carry out transthoracic and transoesophageal echocardiography in adolescent patients The indications for non-invasive and invasive investigation in the adolescent age group
- Arrange for a smooth transition from the paediatric to the adult congenital service
- Philosophy of transition and distinguish it from transfer and the key components of a transitional care programme and the differences between the cultures of paediatric and adult healthcare services including the role of the adult physician

ASSESSMENT & LEARNING METHODS

- CBD
 - History taking
 - Examinations
 - Echo
 - ECG
 - MRI
- OPD attendance

Arrhythmias

Objective: To be able to carry out assessment and treatment of children and adolescent congenital heart disease patients with arrhythmias

KNOWLEDGE

- Natural history of types of arrhythmia found in foetal life, infancy, childhood and in adolescence with congenital heart disease
- Mechanisms involved in the genesis of cardiac arrhythmias
- Structural heart disease and types of cardiac surgery associated with abnormalities in cardiac rhythm
- Genetic disorders associated with cardiac rhythm disturbance
- Causes, natural history and management of atrioventricular block
- Characteristic ECG findings in all forms of tachyarrhythmia and bradyarrhythmia
- Classification, mechanism of action, interactions, side effects, contraindications and clinical use of antiarrhythmic drugs in paediatric patients
- Indications for permanent pacing, the types of cardiac pacing and the indications for each type of pacing in paediatric patients
- Indications for DC cardioversion
- Indications, limitations and risks of an invasive electrophysiology study and radiofrequency ablation

SKILLS

- Take a history in a child/adolescent with palpitations and decide whether an arrhythmia is likely
- Form an appropriate plan of further investigation in a child/adolescent with suspected arrhythmias
- Recognise and manage SVT from foetal to adult life
- Identify the type of arrhythmia present from an event captured on ECG
- The indications for exercise testing, ambulatory monitoring, cardiac event recorders, implantable loop recorders, invasive electrophysiology study, radiofrequency ablation and implantable cardiac defibrillators
- Process 24 hour tapes, including review and interpretation of the full record
- Carry out exercise tests and interpret the results
- Perform and interpret an ECG taken during an adenosine challenge
- Perform and interpret an ECG from atrial epicardial wires in the postoperative child/adolescent
- Interpret the results from cardiac event recorders, implantable loop recorders and pacemaker telemetry
- Manage temporary pacing, including the use of epicardial wires in the postoperative cardiac child/adolescent
- Select appropriate drug treatment for tachyarrhythmias
- Perform vagal manoeuvres, overdrive pacing and DC cardioversion in the treatment of tachyarrhythmias
- Explain arrhythmias and their associated risks to children and adolescents and their parents/carers
- Offer appropriate management options to the child/adolescent and family
- Provide advice in respect of sports and exercise

ASSESSMENT & LEARNING METHODS

- History taking
- Clinical examination
- ECG
- Echo
- CBD
- Mini CEX
- Study days and lectures

Nutrition and Growth in Congenital Heart Disease

Objective: To recognise when heart or heart-lung transplantation is indicated, to refer appropriately to a transplant centre and to provide local follow-up after transplantation

KNOWLEDGE

- Causes of growth failure in congenital heart disease
- Indications for parenteral nutrition
- How to reintroduce feeds after necrotising enterocolitis or other bowel damage
- Causes of chylothorax and when to introduce a medium chain triglyceride diet

SKILLS

- Recognise failure to thrive and be able to identify cardiac and non-cardiac causes
- Manage fluid and caloric intake in children with cardiovascular disease and after cardiac surgery
- Identify iron deficiency in children and adolescents with cyanotic congenital heart disease
- Identify when failure to thrive has not responded to optimising nutrition and decide on appropriate timing for surgical intervention in congenital heart disease children and adolescents
- Be aware of the complications of parenteral nutrition
- Provide information to parents/carers about feeding regimes

ASSESSMENT & LEARNING METHODS

- CBD
 - OPD assessment
 - Ward management
 - Liaisons with CNS and dietician
- Study day – nutrition

Assessment of Children Prior to Cardiac Surgery

Objective: To be able to carry out specialist assessment of children requiring cardiac surgery and to plan the nature and timing of cardiac surgery in conjunction with the paediatric cardiac surgery team

KNOWLEDGE

- Principles of cardiopulmonary bypass and the risks involved
- Risks and benefits of various types of pump and non-pump surgery
- Factors that place a child at increased risk from cardiac surgery
- Role of play specialists and psychologists in preparing children for cardiac surgery
- Technical limitations of surgery

SKILLS

- Take account of the cardiac status and non-cardiac pathology in selecting the most appropriate timing for surgery
- Present relevant details of the cardiac condition and the results of investigations to the cardiac surgeons to reach a joint plan on surgery

ASSESSMENT & LEARNING METHODS

- Present at JCC
- Study day – surgical presentations

Assessment of Children with Cardiac Disease Prior to Non-Cardiac surgery

Objective: To be able to carry out specialist assessment of children with cardiac disease prior to non-cardiac surgery. Advise on fitness for such surgery and any precautions or cardiac treatment required

KNOWLEDGE

- Cardiac disorders associated with a higher risk for general anaesthesia
- Role of play specialists and psychologists in preparing children for surgery
- When the need to inform the anaesthetist and surgeon of the cardiac status and any particular precautions required
- Importance of chronic antibiotic therapy in selecting appropriate antibiotic prophylaxis

SKILLS

- Take relevant history and perform an appropriate examination, noting in particular any change in cardiac status
- Select children who require further investigation by ECG, CXR or echocardiography
- Determine the physiology of the cardiac abnormality and the cardiac reserve using ECG, CXR and echocardiography
- Identify children who are at increased risk from anaesthesia and recommend appropriate precautions
- Recommend an appropriate fluid regime and how cardiac drugs are to be administered in the perioperative period
- Answer questions from children and their parents/carers about the impact of their cardiac condition on the safety of anaesthesia and surgery

ASSESSMENT & LEARNING METHODS

- OPD assessments
 - History
 - Examinations
 - ECG
 - Echo
- CBD
- Study days

Management of Critically Ill Children with Cardiovascular Compromise

Objective: To be able to carry out assessment and treatment of children who are critically ill with severe haemodynamic disturbance

KNOWLEDGE

- The principles of oxygen supply and demand
- The factors controlling cardiac output
- Compensatory mechanisms maintaining cardiovascular homeostasis
- Common causes of haemodynamic instability during childhood and know how to differentiate sepsis, hypovolaemia, cardiac failure, cardiac tamponade and hypotension secondary to cardiac rhythm disturbances

SKILLS

- Recognise the clinical signs of low cardiac output and the clinical signs of progression to shock
- Recognise the biochemical markers of low cardiac output
- Use echocardiography to assist in determining the cause of haemodynamic instability
- Appropriately use fluid administration and inotropic support to optimise cardiac output and tissue oxygen delivery
- Initiate intensive care support for children with haemodynamic instability

ASSESSMENT & LEARNING METHODS

- ICU rounds including ICU team and cardiology
- Study days

Investigations and Procedures

Objective: To be able to carry out and interpret these investigations and procedures

KNOWLEDGE

ECG

- Age-related changes in ECG wave forms
- Rhythm
- Hypertrophy
- Ischaemic injury and infarction on ECG
- Ambulatory ECG
- Exercise Testing and Cardiac Event Recording
- Adenosine ECG taken during an challenge
- Diagnose the mechanism of an arrhythmia based on the result of the adenosine challenge

Chest X-Ray

- Principles of radiation protection
- Classical abnormalities in cardiac silhouette produced by congenital heart defects
- The characteristic CXR appearances of high and low pulmonary blood flow (oedema, vascular, hypertension)

Tilt Testing

- Principles of tilt testing
- Indications for tilt testing and methodology

DC Cardioversion

- Indications for synchronised and unsynchronised DC cardioversion
- Safety precautions necessary for protection of children/adolescents and staff during DC cardioversion

Basic Cardiac Pacing

- Electrophysiology and cardiac anatomy relevant to pacing
- Principles of monitoring, interrogating and programming pacemakers

Pericardiocentesis

- Indications for pericardiocentesis

Transthoracic Echocardiography

- The physics of echocardiography, colour Doppler and spectral Doppler
- Factors determining image quality and resolution
- Echocardiographic characteristics of all congenital heart defects

Transoesophageal Echocardiography

- Indications for and risks of Transoesophageal Echocardiography
- Appearance of congenital cardiac defects

Cardiac Catheterisation

- Indications for diagnostic cardiac catheterisation
- Indications for occlusion of patent arterial duct, balloon pulmonary valvoplasty, balloon aortic valvoplasty, pulmonary artery angioplasty, recoarctation angioplasty

Cardiac MRI and Thoracic CT

- Indications and contraindications for cardiac MRI and CT of the thorax

- Fundamentals and limitations of MR image acquisition
- Limitations of non-invasive imaging

Radiation Use and Safety

- Define the physics and hazards of ionising radiation to child/adolescents and staff
- Factors that affect radiation exposure

SKILLS

- Carry out and interpret a 12 lead ECG in all age groups
- Interpret a CXR to assist diagnosis and assessment of cardiac disease at all ages including using information on the CXR to assist in making an anatomical and physiological diagnosis in congenital heart disease
- Interpret tilt table tests in evaluating children/adolescents with syncope including resuscitating a child during a tilt table test
- Perform elective and emergency DC cardioversion including selecting an appropriate energy for DC cardioversion for different arrhythmias at different ages. Carry out DC cardioversion as part of emergency resuscitation
- Select an appropriate energy for DC cardioversion for different arrhythmias at different ages
- Carry out DC cardioversion as part of emergency resuscitation
- Perform independently all of the above procedures and investigations
- Perform temporary pacing and acquire basic skills in pacemaker monitoring. Carry out single and dual chamber pacing using epicardial wires in postoperative patients
- Carry out overdrive pacing to treat tachyarrhythmias
- Perform pericardiocentesis safely and effectively
- Assist in balloon atrial septostomy safely and effectively including performing transthoracic echocardiography to guide balloon atrial septostomy
- Perform echocardiography in all ages from newborn to adult to diagnose and assess all forms of congenital and acquired heart disease including the echocardiographic characteristics of all congenital heart defects and how to assess the physiology of shunting defects Interpret the results of diagnostic cardiac catheterisation in children and adults with cardiac disease
- Perform echocardiography in all ages from newborn to adult to diagnose and assess all forms of congenital and acquired heart disease including the echocardiographic characteristics of all congenital heart defects and how to assess the physiology of shunting defects Interpret the results of diagnostic cardiac catheterisation in children and adults with cardiac disease
- Interpret clinical information and the results of non-invasive investigations to decide what information must be acquired by cardiac catheterisation
- Interpret basic MR and CT images of the heart and great vessels, recognising when expert help is required
- Use radiation equipment appropriately and safely for the diagnosis, assessment and treatment of children/adolescents with cardiac disease according to the national radiation protection guidelines
- Be able to operate radiation equipment safely and effectively including having successfully completed a period of practical supervised training in the use of radiation equipment

ASSESSMENT & LEARNING METHODS

- DOPS for all relevant procedures/investigations
- Mini CEX

Minimum Requirements for Training

- These are minimum **tracking** requirements. This generally means that in practice, trainees will perform above the stated requirements; however, for record tracking purpose, the following figures have been allocated.
- Where the minimum requirement state “1”, there is no allocated minimum – eLogbook will automatically default to “1”

Curriculum Requirement	Required/Desirable	Minimum Requirement	Reporting Period	Form Name
Section 1 - Training Plan				
Personal Goals Plan (Copy of agreed Training Plan for your current training year signed by both Trainee & Trainer)	Required	1	Training Post	Form 052
Weekly Timetable (Sample Weekly Timetable for Post/Clinical Attachment)	Required	1	Training Post	Form 045
On Call Rota	Required	1	Training Post	Form 064
Section 2 - Training Activities				
Outpatient Clinics				
Paediatric cardiology clinics (minimum 1 per week)	Required	40	Year of Training	Form 001
Specialty Clinics:	Required	1	Year of Training	Form 001
CMP	Required	6	Year of Training	Form 001
Adult congenital cardiology	Required	20	Year of Training	Form 001
Transplant clinic	Required	6	Year of Training	Form 001
PHT	Required	2	Year of Training	Form 001
ACHD	Required	20	Year of Training	Form 001
Genetics (SCDY)	Required	6	Year of Training	Form 001
NNICU visits	Required	20	Year of Training	Form 001
Fetal clinics	Required	20	Year of Training	Form 001

Ward Rounds/Consultations				
Consultant led (minimum 1 per week)	Required	40	Year of Training	Form 002
SpR led (1 per week)	Required	40	Year of Training	Form 002
Consultations	Required	40	Year of Training	Form 002
Emergencies/Complicated Cases	Desirable	6	Year of Training	Form 003
Procedures/Practical Skills/Surgical Skills				
12 Lead ECG	Required	50	Year of Training	Form 004
Ambulatory ECG, Exercise Testing and Cardiac Event Recording	Required	30	Year of Training	Form 004
ECG with Adenosine Challenge	Required	50	Year of Training	Form 004
Chest X-Ray	Required	30	Year of Training	Form 004
Tilt Testing	Required	1	Year of Training	Form 004
DC Cardioversion	Required	50	Year of Training	Form 004
Basic Cardiac Pacing	Required	5	Year of Training	Form 004
Pericardiocentesis	Required	5	Year of Training	Form 004
Balloon Atrial Septostomy	Required	1	Year of Training	Form 004
Transthoracic Echocardiography	Required	300	Year of Training	Form 004
Transoesophageal Echocardiography	Required	50	Year of Training	Form 004
Cardiac Catheterisation	Required	30	Year of Training	Form 004
Cardiac MRI and Thoracic CT	Required	30	Year of Training	Form 004
Fetal Cardiology	Required	20	Year of Training	Form 004
Specialist Imaging	Required	20	Year of Training	Form 004
Cardiac Pacing and Electrophysiology	Required	10	Year of Training	Form 004

Immunisation for immune deficient asplenic/22q11 patients	Required	5	Training Programme	Form 004
Additional/Special Experience Gained (sub-specialty experience)	Desirable	1	Training Programme	Form 005
Relatively Unusual Cases	Desirable	20	Training Programme	Form 019
ICU	Required	30	Training Programme	Form 090
Chronic Cases/Long term care	Desirable	5	Training Programme	Form 066
Management Experience	Desirable	1	Training Programme	Form 110
Section 3 - Educational Activities				
Mandatory Courses				
Mastering Communications (Year 1)	Required	1	Training Programme	Form 006
Audit	Required	1	Training Programme	Form 006
HST Leadership in Clinical Practice	Required	1	Training Programme	Form 006
Ethics I: Professionalism	Required	1	Training Programme	Form 006
Ethics II: Ethics & Law	Required	1	Training Programme	Form 006
Ethics III: Research	Required	1	Training Programme	Form 006
Ethics IV: End of Life	Required	1	Training Programme	Form 006
APLS	Required	1	Training Programme	Form 006
NRP Neonatal Resuscitation Course	Required	1	Training Programme	Form 006
Childhood Development Disorders	Required	1	Training Programme	Form 006
Informing families of their child's disability (online)	Required	1	Training Programme	Form 006
STABLE	Required	1	Training Programme	Form 006
ECHO course (EAE)	Required	1	Training Programme	Form 006
ECG course	Required	1	Training Programme	Form 006

Non – Mandatory Courses	Desirable	1	Training Programme	Form 007
Study days (attend minimum of 6 per year)	Required	6	Year of Training	Form 008
In-house activities				
Grand Rounds (minimum 1 per month)	Required	10	Year of Training	Form 011
Journal Clubs (minimum 1 per month)	Required	10	Year of Training	Form 011
MDT meetings (minimum 1 per month)	Required	30	Year of Training	Form 011
Seminar	Required	1	Year of Training	Form 011
Lecture	Required	1	Year of Training	Form 011
Formal Teaching Activity (minimum of 1 formal teaching session per month)				
Lecture	Required	4	Year of Training	Form 013
Tutorial	Required	4	Year of Training	Form 013
Bedside teaching	Required	4	Year of Training	Form 013
Research	Desirable	1	Training Programme	Form 014
Audit activities and Reporting (1 per year either to start or complete, Quality Improvement (QI) projects can be uploaded against audit)	Required	1	Year of Training	F135/F152
Publications	Desirable	1	Year of Training	Form 016
Presentations (minimum of 1 oral or poster presentation per year)	Required	1	Year of Training	Form 017
National/International meetings (minimum attend 1 per year)	Required	1	Year of Training	Form 010
Additional Qualifications	Desirable	1	Training Programme	Form 065
Committee Attendance	Desirable	1	Training Programme	Form 063
Section 4 - Assessments				
DOPS				

Ambulatory ECG, Exercise Testing and Cardiac Event Recording	Required	1	Year of Training	Form 021
ECG with Adenosine Challenge	Required	1	Year of Training	Form 021
Chest X-Ray	Required	1	Year of Training	Form 021
Tilt Testing	Required	1	Year of Training	Form 021
DC Cardioversion	Required	1	Year of Training	Form 021
Basic Cardiac Pacing	Required	1	Year of Training	Form 021
Pericardiocentesis	Required	1	Year of Training	Form 021
Balloon Atrial Septostomy	Required	1	Year of Training	Form 021
Transthoracic Echocardiography	Required	1	Year of Training	Form 021
Transoesophageal Echocardiography	Required	1	Year of Training	Form 021
Cardiac Catheterisation	Required	1	Year of Training	Form 021
Cardiac MRI and Thoracic CT	Required	1	Year of Training	Form 021
Specialist Imaging	Required	1	Year of Training	Form 021
Cardiac Pacing and Electrophysiology	Required	1	Year of Training	Form 021
Fluid and electrolyte balance	Required	1	Training Programme	Form 021
Defibrillation	Required	1	Training Programme	Form 021
CBD	Required	4	Year of Training	Form 020
Mini-CEX	Required	2	Year of Training	Form 023