

SPIN Module curriculum in

# Paediatric Cardiology

**SPIN Version 2**

Approved for use from 1 October 2020

This document outlines the curriculum and Assessment Strategy to be used by Paediatricians completing the RCPCH SPIN module in Paediatric Cardiology.

This is Version 2.0. As the document is updated, version numbers will be changed, and content changes noted in the table below.

Version number	Date issued	Summary of changes
2.0	October 2020	Full redevelopment of the curriculum, moving from knowledge based capabilities to behavioural Learning Outcomes and aligning with RCPCH Progress.

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# Section 1

# Introduction and purpose

# Introduction to SPIN modules

Special Interest (SPIN) modules are the additional training/experience a Paediatrician completes so that they can be the local lead and part of the clinical network, providing for children and young people who need specialist paediatric care. They are designed to meet a specific service need, with possible roles suitable for those who have completed a SPIN module identified within the SPIN purpose statement.

Trainees, Consultants and others providing expert care will be able to seek training in an area of special interest or in aspect(s) of sub-specialty care. This will involve training, assessment and supervised care. It will vary in breadth and depth, depending upon the specific SPIN syllabus. The SPIN can be completed before or after CCT. It should be feasible to complete the SPIN in no more than 12 months full-time training. SPIN training does not have to be completed within one placement or over one continuous period. The assessment of whether the clinician has attained the required Learning Outcomes will only examine evidence relating to a maximum of five calendar years prior to submission.

Please note that SPIN Modules are:

- NOT a route to GMC sub-specialty accreditation;
- NOT required for GMC accreditation in Paediatrics or any of its sub-specialties;
- NOT sub-specialty training and not equivalent to GRID training.

SPINs are undertaken and assessed within the working environment, under the guidance of a designated Supervisor, and recording evidence within ePortfolio. The RCPCH SPIN Lead, usually a member of the relevant College Specialty Advisory Committee (CSAC), is responsible for reviewing completed portfolios and confirming if successful completion of the SPIN is to be awarded.

More information regarding SPIN modules, including how to apply to undertake a SPIN and how to submit evidence against the Learning Outcomes, is contained in the SPIN Module Guidance on the RCPCH SPIN webpages: [www.rcpch.ac.uk/spin](http://www.rcpch.ac.uk/spin).

# Purpose statement

This purpose statement demonstrates the need for clinicians to undertake a SPIN module in Paediatric Cardiology and the benefits to and expectations of a clinician undertaking training in this area.

## **This SPIN module meets the current and future anticipated requirements of the health service, reflecting patient and population needs:**

Paediatricians working in the non-tertiary centres have increasingly become part of wider clinical networks. By supporting General Paediatricians in developing an interest in a specific area of practice, SPINs help facilitate more patients being seen nearer to their home, by a Paediatrician with the expertise to treat certain specific conditions, rather than them having to travel to a major paediatric cardiac unit a greater distance away.

The role of a Paediatrician with Expertise in Cardiology (PEC) is critical to the functioning of the Congenital Heart Network stipulated in the 'Congenital Heart Disease Standards & Specifications' published by NHS England in May 2016, which has prescribed that there is at least one PEC at each Local Children's Cardiology Centre (designated as Level 3 cardiology services). Their specific role is described in Standard B1 of the Level 3 centre NHS England Standards for Paediatric Cardiology. Hence, the training of PECs should equip them to fulfil these roles in Level 3 centres, as well as to understand their pivotal role in ensuring that their Trust and their Network provide the other essential services and staffing to support and enable their role. Increasingly even hospitals with the tertiary Paediatric Cardiology Centres are employing PECs in order to oversight the paediatric issues in cardiac patients and hence, enabling them holistically high-quality services.

This role is envisioned to champion the provision of as much high quality care as possible to children and young people with heart disease, as near to their home as possible and:

- minimises the need for long distance travel for children, young people and their families to attend specialist clinics in tertiary Paediatric Cardiology centres (otherwise some may have to travel 150-200 miles to attend clinics);
- reduces the negative impact on quality of life of parents and siblings, as well as their jobs and schooling;
- enables PECs to develop and maintain skills in diagnosing and managing common Paediatric Cardiology emergencies, initiating treatment for most emergencies and working collaboratively with their specialist centre colleagues;
- reduces costs for families and NHS services;
- provides additional teaching, training and learning opportunities for speciality doctors, as well as non-medical staff, in Paediatric Cardiology related topics in their own units, facilitating wider expertise in the local teams;
- allows local contribution to Network clinical guidelines, pathways and educational events.

The SPIN curriculum for PEC training was initially formalised by 'A framework of competences for the Special Interest Module in Paediatric Cardiology' published by RCPCH in April 2012 and it was endorsed by Paediatricians with Expertise in Cardiology Special Interest Group (PECSIG) and British Congenital Cardiology Association (BCCA). This revised curriculum has been developed to ensure an up-to-date curriculum that meets a clear and evidence-based purpose, aligned with the RCPCH Progress curriculum.

**This SPIN module considers interdependencies across related specialties and disciplines, and has been developed and supported by the relevant key stakeholders:**

This SPIN module has been supported by the Paediatric Cardiology SAC, in conjunction with Paediatricians with Expertise in Cardiology Special Interest Group (PECSIG), Royal College of Paediatrics and Child Health (RCPCH) and General Paediatrics CSAC.

Paediatricians who are completing the SPIN module and gaining expertise in Paediatric Cardiology (PEC) will develop capabilities in delivering care to children and young people with congenital and acquired heart defects independently and in collaboration with specialist Paediatric Cardiology centres, as necessary. They can also support other local Paediatric specialities needing Paediatric Cardiology input, provide paediatric care to local children with cardiac conditions, act as the link and ambassador between their Level 3 and network centres, and facilitate the referral or transfer of patients to and from their specialist Paediatric Cardiology centres.

The PEC SPIN curriculum will be delivered by and within Tertiary Paediatric Cardiology services, although clinicians undergoing this training are likely to be General Paediatricians or Neonatologists. Hence, the curriculum was developed by PECSIG members in collaboration with the Paediatric Cardiology SAC, PECSIG members, PECSIG executive committee, BCCA executive committee and relevant RCPCH Curriculum Specialty Advisory Committees (CSACs) have also been consulted as part of the development.

**The SPIN module supports flexibility and the transferability of learning, and provides a clearly-defined professional role for clinicians who have completed a SPIN. The module sets out what patients and employers can expect from clinicians who have gained the SPIN:**

Following successful completion of this SPIN module and Level 3 Paediatric training, the CCT holder will be capable to take up a post as a Consultant Paediatrician (or Consultant Neonatologist if they have completed training as per the Neonatal GRID training curriculum) with expertise in Paediatric Cardiology.

By the end of training, it is expected that clinicians who have completed this SPIN will have a sound understanding of the pathophysiology and presentations of congenital and acquired heart diseases in children and young people, clinical skills to assess children and young people who are suspected of or at risk of having congenital or acquired heart disease and technical skills to undertake and report transthoracic echocardiography and ECGs in children and young people.

They will also have a good understanding of the indications for other non-invasive investigations. At the end of SPIN training, they should be able to interpret / report other non-invasive investigations such as 12 lead ECG (electrocardiogram) and ambulatory ECG (continuous Holter and event recording). They should be able to recognise normal from abnormal and when to seek further advice from a Paediatric Cardiologist. They should also be able to supervise and report Exercise Tolerance Testing in low risk children and young people.

They should have some understanding of the indications for further imaging, such as cardiac catheterisation, trans-oesophageal echocardiogram, cardiac CT and MRI, although they are not expected to undertake or report on these. They should also have a good understanding of the range of medical, catheter and surgical interventions undertaken in children and young

people with heart diseases, and be able to initiate emergency medical management, such as prostaglandin E1/E2 (prostin) infusion in a neonate with duct dependent defect or diuretics and dietary management in a child with a significant left to right shunt. They will support their General Paediatric and Neonatal colleagues in optimising cardiac support, and escalating the care to the Paediatric Cardiologist at Level 1 Centre or Level 2 Centre. The PECs need to be aware of their own limitations and work closely with Paediatric Cardiologists to manage clinical situations and seek advice, whenever deemed necessary.

Following completion of CCT, SPIN training will enable clinicians to undertake the following roles:

- Consultant Paediatrician with expertise in Cardiology (PEC);
- Consultant Neonatologist if they have completed training as per neonatal grid training curriculum;
- Key member or lead at the Local Children's Cardiology Centre (Level 3);
- A role in Level 1 or Level 2 centre or within the local network.

During SPIN training, it is recommended that clinicians identify and visit a children and young people's group with relevant experiences. Listening and learning from their experiences and reflecting with their supervisor on how to improve clinical and service practice. The #VoiceMatters section of this document raises the views of children, young people and their families. This can be used to inform practice, discussions with supervisors and colleagues, as well as improving understanding and awareness of patient and family experiences.

To continue their ongoing development following completion of the SPIN, it is recommended that clinicians develop and maintain their skills and expertise by:

- working with a link/named Consultant Paediatric Cardiologist from either the Level 1 or Level 2 Centre;
- undertaking joint clinics;
- having honorary contracts which can enable them to attend CPD sessions and MDT meetings at Level 1 or Level 2 Centre;
- participating in joint MDTs, updates and educational meetings at /with their regional Congenital Heart Disease Networks;
- attending / participating in PECSIG and / or BCCA annual conferences, and other national or international Paediatric Cardiology conferences;
- regular appraisal as per General Medical Council (GMC) recommendations and employing Trust arrangements.



# Requirements to undertake this SPIN module

## Applicant requirements

This SPIN module is available to General Paediatric trainees and post-CCT Paediatricians with an interest in Paediatric Cardiology, who are able to access sufficient training opportunities to meet the requirements of the SPIN curriculum.

Clinicians who are interested in undertaking this SPIN module should approach their Head of Schools and Training Programme Director in the first instance, to confirm if the necessary posts would be available and request support in undertaking this extra training. SPIN applicants are required to demonstrate that they have support of their Training Programme Director and have an appropriate Educational and Clinical Supervisor in place. Further guidance for post-CCT applicants is available on the [RCPCH website](#).

Applicants with relevant recent experience may use some retrospective evidence towards their SPIN module in some cases. Please see the applicant guidance at [www.rcpch.ac.uk/spin](http://www.rcpch.ac.uk/spin) for more details on how to apply to undertake a SPIN module.

## Training duration

SPIN training should be feasible within 12 months for full-time clinicians, or pro-rata for Less Than Full Time (LTFT) clinicians. It is expected that to achieve the necessary Learning Outcomes, a clinician will need to train in the following clinical settings:

- A minimum of 6 months in a Specialist Children's Cardiac Surgical Centre (Level 1);
- A further 6 months in either Level 1 or a Specialist Children's Cardiology Centre (Level 2).

A suitable training centre is one which is currently approved for higher specialist training (see sub-specialist training section of the RCPCH website for more detail).

In order to enhance knowledge and understanding in congenital heart diseases and echocardiography, it is recommended that the clinician should undertake a Paediatric Echocardiography course and a morphology course in congenital heart disease either before or soon after starting the placement for SPIN training programme. It is also expected that during their SPIN training, clinicians should make progress towards obtaining the Congenital Heart Disease (CHD) Echocardiography Certification by the European Association of Cardiovascular Imaging (EACVI) or a recognised equivalent accreditation, and they should be encouraged to complete the certification before starting independent practice in a consultant post.

## Out of Programme (OOP) training

Many trainees will not need to take Out of Programme (OOP) to complete a SPIN module. Undertaking a SPIN will NOT be considered as a basis for an OOP except in exceptional circumstances and where both Deaneries/Local Education Training Boards (LETBs) agree and approve the SPIN module programme. These exceptional circumstances include applications from trainees where approved training in a particular special interest is not available in their current Deanery/LETB. Permitting OOP for these exceptional circumstances provides a positive

contribution to workforce planning in regions where limited approved SPIN modules are available. For example, smaller sub-specialties such as Nephrology, Immunology & Infectious Diseases (IID) or Paediatric Cardiology are only available in a limited number of Deaneries/LETBs. In order for applications utilising OOP to be considered by the RCPCH, both Deaneries/LETBs must agree and approve the SPIN module programme and provide clear justification as to why the module could not be completed in the trainee's current Deanery/LETB.

Cardiology SPIN training is sought after among trainees and quite popular SPIN offered by the RCPCH. However, there are limited places available in Paediatric Cardiology dedicated for Cardiology SPIN training. Some trainees who are interested in Cardiology SPIN are sometimes not able to obtain a training place before finishing their CCT.

RCPCH support Less Than Full Time (LTFT) trainees to undertake SPIN training in Paediatric Cardiology. LTFT trainees will need a longer time in the SPIN training post commiserate with the percentage of whole time equivalent they are doing.

## Post requirements

When applying to undertake a SPIN, applicants must demonstrate that they will be able to access the necessary learning opportunities and placements, and an appropriate named Educational and Clinical Supervisor must be in place at the Cardiac centre, and confirmed in writing by both TPDs. Additional requirements for delivering this SPIN module are provided in the checklist in Appendix B. This addresses any specific requirements; for example, the human or physical resource experiences the clinician will need to be able to access in order for the curriculum to be delivered successfully. Please contact the Paediatric Cardiology SAC Chair or RCPCH Paediatric Cardiology SPIN Lead if further guidance is required.

## Meeting GMC training requirements

All training must comply with the GMC requirements presented in *Promoting excellence: standards for medical education and training* (2017). This stipulates that all training must comply with the following ten standards:

### Theme 1: Learning environment and culture

- S1.1 The learning environment is safe for patients and supportive for learners and educators. The culture is caring, compassionate and provides a good standard of care and experience for patients, carers and families.
- S1.2 The learning environment and organisational culture value and support education and training, so that learners are able to demonstrate what is expected in Good Medical Practice and to achieve the learning outcomes required by their curriculum.

### Theme 2: Educational governance and leadership

- S2.1 The educational governance system continuously improves the quality and outcomes of education and training by measuring performance against the standards, demonstrating accountability and responding when standards are not being met.
- S2.2 The educational and clinical governance systems are integrated, allowing organisations to address concerns about patient safety, the standard of care, and the standard of

education and training.

- S2.3 The educational governance system makes sure that education and training is fair and is based on the principles of equality and diversity.

### **Theme 3: Supporting learners**

- S3.1 Learners receive educational and pastoral support to be able to demonstrate what is expected in Good Medical Practice, and to achieve the learning outcomes required by their curriculum.

### **Theme 4: Supporting educators**

- S4.1 Educators are selected, inducted, trained, and appraised to reflect their education and training responsibilities.
- S4.2 Educators receive the support, resources and time to meet their education and training responsibilities.

### **Theme 5: Developing and implementing curricula and assessments**

- S5.1 Medical school curricula and assessments are developed and implemented so that medical students are able to achieve the learning outcomes required for graduates.
- S5.2 Postgraduate curricula and assessments are implemented so that doctors in training are able to demonstrate what is expected in Good Medical Practice, and to achieve the learning outcomes required by their curriculum.

It is the responsibility of each Deanery/LETB to ensure compliance with these standards for paediatric training, and to notify the RCPCH if further support is required in achieving this. Training delivery must also comply with the requirements of the Conference of Postgraduate Medical Deans' (COPMeD), *The Gold Guide: a reference guide for postgraduate specialty training in the UK* (8th ed.).

# Ensuring fairness and supporting diversity

The RCPCH has a duty under the Equality Act 2010 to ensure that its curriculum and assessments do not discriminate on the grounds of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex or sexual orientation.

Care has been taken when authoring the SPIN module curricula to ensure as far as is reasonable and practicable, that the requirements for those undertaking the module do not unnecessarily discriminate against any person on the basis of these characteristics, in line with the requirements of the Act.

The RCPCH seeks to address issues of equality, diversity and fairness during the development of SPIN curriculum in a range of ways, including:

- Curriculum content to be authored, implemented and reviewed by a diverse range of individuals. Equality and diversity data is gathered regularly for clinicians involved in the work of the RCPCH Education and Training division.
- Undertaking careful consideration of the Learning Outcomes and Key Capabilities to ensure that there is a clear rationale for any mandatory content, and thus there are no unnecessary barriers to access or achievement. Beyond these mandatory requirements, the assessment tools can be deployed in a more flexible and tailored manner, meeting the requirements of the individual trainee.
- All draft SPIN curricula to be reviewed specifically against the protected characteristics prior to sign-off, identifying any possible barriers and ensuring these are appropriately addressed.
- All SPINs are approved for use by the RCPCH Education and Training Quality Committee (ETQC). As the body responsible for production of the Annual Specialty Report, and receiving summary reports on the National Training Survey from Heads of Schools and other sources, the Committee is well placed to ensure the curriculum meets the needs and addresses any existing concerns of the trainee population.
- All SPIN curriculum documents will be published in font type and size that is appropriate for a wide range of audiences, and optimised for readability. Information regarding the curriculum will be made available through a wide range of media, acknowledging differing learning styles.

The RCPCH is committed to gathering regular feedback from users of its SPIN modules, identifying any areas of bias or discrimination.

Please contact the RCPCH Quality and Standards Manager ([qualityandstandards@rcpch.ac.uk](mailto:qualityandstandards@rcpch.ac.uk)) if you have any concerns regarding equality and diversity in relation to this SPIN module curriculum.

# Quality assurance and continual improvement

## Ensuring quality in delivery

A robust quality assurance and improvement framework is required to support an effective curriculum and Assessment Strategy. The purpose of this is to promote the improving quality of the trainee experience, and to ensure that the curriculum content, delivery, assessment and implementation is monitored and reviewed in a planned, systematic and appropriate manner.

The RCPCH quality infrastructure for training and assessment is based on the Plan, Do, Check, Act (PDCA) cycle, introduced by Deming. In the context of the Programme of Assessment, this means planning for effective assessment processes, executing those processes, review and evaluation, including data analysis and multi-source feedback, and finally implementing any required changes.

The framework to support this curriculum will comprise a number of quality improvement tools and processes that impact on the overarching aspects of assessment. These will include:

1. Effective selection mechanisms. The SPIN application process ensures trainees will have the necessary capacity, supervision, and access to the breadth and depth of experience needed to meet the requirements of the SPIN module.
2. Gathering and responding to feedback. RCPCH gathers feedback in a structured way from SPIN module completers, and uses this and feedback from employers to support the regular review of SPIN modules.
3. Review of attainment and evidence. CSACs (or another designated SPIN Lead) review all completed SPIN portfolios prior to sign-off, ensuring consistency.
4. Quality assurance of assessments. This takes a variety of forms during the development, delivery and monitoring of assessment tools, as outlined in the RCPCH Progress Assessment Strategy.
5. Quality of assessors and supervisors. All SPIN applicants are required to have a suitable Educational Supervisor to support their SPIN training. RCPCH supports this through the Educational Supervisor course and a variety of guidance and resources available on the College website.
6. Scheduled reviews. All SPINs are subject to review every three years, although they may be updated more regularly, where required.

By applying the framework processes outlined above, the College will ensure that SPIN modules are monitored and reviewed in a structured, planned and risk-based manner.

## SPIN governance

The RCPCH's Education and Training Quality Committee (ETQC) has overall responsibility for the RCPCH SPIN curricula, working closely with the SPIN Lead. The ETQC will monitor the performance of the SPIN through the relevant CSAC/SPIN Lead, and receive scheduled reviews of feedback from SPIN users.

## **SPIN module review and revision**

SPINs are reviewed every three years to ensure they remain fit for purpose, meeting the intended service need. Reviews are led by the SPIN Lead (usually the relevant RCPCH CSAC), who will report to the ETQC requesting any changes required. Where necessary, a SPIN can be updated before the three-year review is due, for example to reflect changes in guidelines.

Updated SPIN curricula will be published, making clear what amendments have been made on each occasion, using the version tracking table at the front of each document. Where this amendment relates to a Key (mandatory) Capability, the ETQC will issue guidance for trainees currently undertaking the SPIN module, noting any implications of the amendment and whether they are required to meet the new criteria. Amendments will only be made where a clear rationale exists for doing so, and every effort will be made to minimise any negative impact on the trainee.

# #VoiceMatters

RCPCH &Us is a children, young people and family network, working with over 2000 young patients, their families and friends across the UK each year. Through the work of RCPCH &Us we keep children and young people at the centre of everything we do, supporting their voice to inform, influence and shape the work of RCPCH.

RCPCH is guided by the United Nations Convention on the Rights of the Child, particularly article 12, which encourages children and young people's voice in decision making and article 24, providing them with the best health care possible. You can find out more about the rights of the child, how it relates to your practice and useful resources at [www.rcpch.ac.uk/rightsmatter](http://www.rcpch.ac.uk/rightsmatter).

To support the development of this SPIN, we have reviewed the voice and views of children, young people and their families who have worked with RCPCH &Us over the last 12 months. You can find out more about RCPCH &Us at [www.rcpch.ac.uk/and\\_us](http://www.rcpch.ac.uk/and_us).

## What children, young people and families said

***“The best doctor is someone who can change your feelings of health and can help you on the worst day possible” RCPCH &Us***

It can be hard for us and our families when we are ill. We can be scared, worried, nervous and trying to be strong for everyone else, including you. It helps us when people take time, when they are patient, kind and explain things in different ways for different people in our family, so that we can understand what is going on. Sometimes we need to have conversations and time with you separately from our family members so that we can talk to you about things that we might not want to mention in front of each other.

***“The best doctor is informed about national and local support services for children and young people, signposting and engaging with them” RCPCH &Us***

There is so much to understand when you are ill and when your treatment changes and things for your family to get used to. We wish that we were told sooner about local support groups or services and national charities that can help us to understand things like benefits when you are ill or looking after someone who is ill, or charities that supports families when someone dies, or that you can talk to someone who isn't your doctor to get help understanding things.

***“It can be really hard trying to explain to people in your family why you can't do things because of your heart problem, and it can make you emotional talking about it when they don't get it” RCPCH &Us***

One thing that can be really hard when you have got a condition or illness that people can't see, is that other people around you can forget. It can be really hard on you always having to make them understand, or remember, or having to explain what has happened in the past and why you might have to be extra careful sometimes. It could be that you help us to think about different ways to explain it, and how not to get affected by it when we have to talk about it with others.

The hardest bit is around mental health, which is often worse when you have got a long term medical condition. Having doctors who know how to talk to us about mental health as well as our physical health is important. Talking about how we are coping and feeling should be an everyday

normal conversation, not just something that is mentioned or checked once.

***“Having an appointment with my doctors [children’s] with the one from the new hospital [adults’] helps and we can go on a visit before” RCPCH &Us***

For people with heart conditions, we might be seeing doctors for our whole lives. It can be really scary thinking that the doctor, nurses, receptionists and everyone you have grown up with in your children’s clinic will change when you move to adults. This could be when you are still at school too so it doesn’t always feel like it is time to go to another hospital and be helped by a different doctor or nurse in a new clinic. It would be good to find out different ways to help that move and transition, like lots of appointments with both sets of doctors (old and new), virtual tours, phone calls and visits so you get used to it, and that you start talking about it really early so a few years before you have to move.

It would be great if you find out about your local area or national charities and have this ready to explain to us or our families, and to remind us regularly when you see us as it is easy to forget or lose the information when there are lots of other things going on. Thinking about all of us as needing caring for and helping us to find that care, helps us all to cope with what is going on now.

***“the best doctor is someone like you, kind, funny, happy and listens to me and my family” RCPCH &Us***

Thank you for doing this course to be the best doctor 😊

## **Questions to think about:**

1. What ways will you help everyone to talk with you on their own in the way that is right for them?
2. What local and national charities do you know that help families dealing with heart conditions or mental health?
3. How will you get to know about me and my family and make the space about me, rather than the illness?

***Thank you to children, young people and families from the RCPCH &Us network for sharing their ideas and views used in this section.***



## **Section 2**

# **Paediatric Cardiology Care**

# How to use the RCPCH SPIN curriculum

This curriculum provides a framework for training, articulating the standard required to achieve the SPIN module and progress as indicated within the purpose statement. The curriculum ensures the quality and consistency of training and assessment, and encourages the pursuit of excellence in all aspects of clinical and wider practice. It must be referred to throughout training, as the clinician records evidence demonstrating their developing skills and knowledge.

The curriculum should be used to help design training programmes locally, that ensure all clinicians undertaking SPIN training can develop the necessary skills and knowledge, in a variety of settings and situations. The curriculum is designed to ensure it can be applied in a flexible manner, meeting service needs as well as supporting each trainee's own tailored Learning and Development Plan.

The curriculum comprises a number of Learning Outcomes, which specify the standard that clinicians must demonstrate to attain this SPIN module. They are encouraged to consider innovative ways of demonstrating how they have met the Learning Outcome.

Clinicians should record evidence against the Learning Outcomes throughout their SPIN training, including engaging in active reflective practice to support their own development. Their supervisor will review whether they are on target to achieve or have achieved the Learning Outcome(s), and will suggest specific areas of focus to ensure that the trainee achieves the Learning Outcome(s) by the end of their SPIN training period. The Illustrations may be a useful prompt for this.

## Components of the SPIN curriculum

The **Learning Outcomes** are the outcomes which the clinician must demonstrate they have met to be awarded this SPIN module. Progress towards achievement of the Learning Outcomes is reviewed at regular meetings with a designated supervisor. Learning Outcomes are mapped to the GMC's Generic Professional Capabilities (GPCs) framework.

The **Key Capabilities** are linked to specific Learning Outcomes, and are mandatory capabilities which must be evidenced by the clinician, in their ePortfolio, to meet the Learning Outcome.

The **Illustrations** are examples of evidence and give the range of clinical contexts that the clinician may use to support their achievement of the Key Capabilities. These are intended to provide a prompt to the SPIN clinician and trainer as to how the overall outcomes might be achieved. They are not intended to be exhaustive, and excellent trainees may produce a broader portfolio or include evidence that demonstrates deeper learning. It is not expected that clinicians provide ePortfolio evidence against every individual illustration (or a set quota); the aim of assessment is to provide evidence against every Key Capability.

The **Assessment Grid** indicates suggested assessment methods, which may be used to demonstrate the Key Capabilities. Clinicians may use differing assessment methods to demonstrate each capability (as indicated in each Assessment Grid), but there must be evidence of having achieved all Key Capabilities and the overarching Learning Outcomes.

# SPIN Learning Outcomes

This table contains the generic Learning Outcomes required for all clinicians undertaking the RCPCH SPIN in Paediatric Cardiology. Within the curriculum and throughout the syllabi, the Learning Outcomes are mapped to the GMC's GPCs. More information on the GPC framework is available from the GMC website: <https://www.gmc-uk.org/education/postgraduate/GPC.asp>.

Please note, trainees will also be required to complete their Paediatric generic and General Paediatric Level 3 Learning Outcomes in order to gain their Certificate of Completion of Training (CCT). Consultants undertaking a SPIN will already have demonstrated the required generic skills, knowledge and behaviours prior to having obtained their CCT.

This SPIN curriculum only defines the specific Learning Outcomes for the stated focus, purpose and extent of remit stated for this SPIN module, and cannot be used to indicate competence in any other aspect of Paediatrics.

SPIN Learning Outcome		GPCs
<b>1</b>	Assesses children of all ages who are suspected of or at higher risk of having a congenital heart condition by reviewing symptoms/signs, family history or an underlying syndrome. Diagnoses or excludes most cardiac conditions by basic transthoracic echocardiogram and/or other non-invasive investigations, initiates emergency management and refers to the Paediatric Cardiologist, as necessary.	2, 3, 4, 5, 6, 8
<b>2</b>	Monitors children and young people with a congenital heart disease, including post intervention and post-surgery in collaboration with the Paediatric Cardiologist, for the progression of the disease or development of complications and initiates medical management, as necessary.	2, 3, 4, 5
<b>3</b>	Diagnoses a range of acquired cardiac conditions in children and young people with clinical assessment and basic non-invasive cardiac investigations, such as echocardiography, 12 lead ECG, ambulatory ECG, and exercise testing. Initiates management for acquired heart conditions and escalates, as necessary.	2, 3, 4
<b>4</b>	Undertakes, interprets and reports on a range of basic non-invasive cardiac investigations in neonates, children and young people, including basic transthoracic echocardiogram, 12 lead ECG, Holter ECG and exercise tolerance testing.	2, 3, 4, 5
<b>5</b>	Assesses and manages children and young people with palpitations, chest pain, syncope, POTS or vasovagal and symptoms; undertakes appropriate investigations, as necessary, to diagnose or exclude an underlying cardiac condition and provides appropriate support.	2, 3, 4, 5, 6, 8
<b>6</b>	Leads in providing and co-ordinating care for children and young people with heart conditions with other professionals, such as Paediatric Cardiologists, General Practitioners, Community Paediatricians, Neonatal and Paediatric Intensivists, Paediatric sub-specialists, fetal medicine team, Clinical Psychologists and Allied Health Care Professionals (e.g. dietician, physiotherapist, occupational therapist, etc) to provide care, near to their home.	2, 3, 4, 5, 6, 8

The syllabus supporting these Learning Outcomes is provided on the following pages.

## SPIN Learning Outcome 1

Assesses children of all ages who are suspected of or at higher risk of having a congenital heart condition by reviewing symptoms/signs, family history or an underlying syndrome. Diagnoses or excludes most cardiac conditions by basic transthoracic echocardiogram and/or other non-invasive investigations, initiates emergency management and refers to the Paediatric Cardiologist, as necessary.	GPC 2, 3, 4, 5, 6, 8
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## Key Capabilities

Undertakes assessment of children and young people, including neonates, who are suspected to have a congenital heart condition by clinical presentation.	GPC 2, 3, 4, 5, 8
Recognises or excludes a cardiac condition in most situations by transthoracic echocardiography and/or 12 lead ECG and takes a lead in the initial discussion of the diagnosis with the parents or carers, including the child or young person, if appropriate, using the available parent information resources.	GPC 2, 3, 4, 5, 8
Initiates and advises on emergency management of an infant with a suspected or confirmed duct dependent congenital heart condition; recognises the need for escalation to a specialist paediatric cardiac centre and liaises with Paediatric Cardiologist, Anaesthetist, paediatric intensive care and transport colleagues, as necessary.	GPC 2, 3, 4, 5, 8
Recognises when there is a necessity to seek advice or for escalation of care when not feasible in Level 2 or Level 3 units and facilitates discussion with Level 1 units, where there is a need for surgical or interventional procedure for the cardiac condition.	GPC 3, 5, 6, 8
Ensures that there is clear handover between teams.	GPC 5, 6, 8
Initiates appropriate medical management for a child and young person with significant left to right shunt, including diuretics and dietary management, liaising with dietitian and community services for initiation and maintenance of high calorie and/or nasogastric tube feeds, if necessary.	GPC 2, 3, 4
Recognises that certain congenital heart conditions cannot always be excluded by transthoracic echocardiogram and depending on clinical presentation/suspicion seeks advice from/refers such a child and young person to Paediatric Cardiologist for further assessment or investigations, such as trans-oesophageal echocardiogram or CT angiogram.	GPC 3, 5, 6, 8
Recognises and assesses children and young people with infective endocarditis and provides advice regarding prevention of infective endocarditis.	GPC 2, 3, 4, 6, 8
Carries out cardiac evaluation in children and young people with features of a genetic condition/syndrome.	GPC 2, 3, 8

## Illustrations

1. Manages a child with cardiovascular collapse in neonates and infants, differentiating from cardiac and non-cardiac causes based on timing of presentation and identifying duct dependent cardiac disease and initiation of Prostaglandin E treatment. Appropriately escalates or refers to a Paediatric Cardiologist for further intervention or evaluation. Demonstrates awareness of the limitations of echocardiography.
2. Manages/supports management of a cyanotic infant by undertaking clinical assessment and transthoracic echocardiogram to diagnose or rule out a duct dependent congenital heart condition and appropriately refers to Paediatric Cardiologists, if there is a need for intervention/surgery.
3. Manages neonates with PPHN (Persistent Pulmonary Hypertension of the newborn) and advises the Paediatric/Neonatal team, assesses the differential diagnoses, considers cardiac and non-cardiac causes and escalates treatment after discussion with the specialists.
4. Manages children and young people who are critically ill with haemodynamic disturbance and differentiating non-cardiac causes such as sepsis, hypovolaemia or cardiac causes secondary to cardiac failure, cardiac tamponade and hypotension caused by cardiac arrhythmia.
5. Undertakes clinical assessment and transthoracic echocardiogram in a child or young person with heart murmur, including a neonate, diagnosing or ruling out a congenital heart condition.
6. Undertakes clinical assessment and transthoracic echocardiogram in a child or young person with weak femoral pulses or high blood pressure, diagnosing or ruling out a congenital heart condition.
7. Undertakes clinical assessment and transthoracic echocardiogram in a child or young person with symptoms and signs of "heart failure".
8. Diagnoses a child or young person with a significant left to right shunt lesion by clinical assessment and transthoracic echocardiogram and manages the patient until further assessment by a Paediatric Cardiologist, including initiation of diuretics and dietary management.
9. Undertakes clinical assessment, transthoracic echocardiogram and management of a newborn with suspicion of congenital heart defect on antenatal scans.
10. Undertakes clinical assessment and transthoracic echocardiogram on a child or young person who is at high risk of having congenital heart defect because of an underlying genetic or chromosomal condition or family history.
11. Recognises and assesses various cardiac and non-cardiac causes of stridor in infants and children and appropriately refers to the specialist cardiac centre for further evaluation or treatment. Demonstrates awareness of the limitations of echocardiography and selects patients who merit referral to a specialist cardiac centre for further investigation by advanced echocardiography, bronchoscopy, CT, angiography or MRI.
12. Manages children and young people with cardiac diagnoses in genetic disorders and syndromes in liaison with the specialist centre team.

## SPIN Learning Outcome 2

Monitors children and young people with a congenital heart disease, including post intervention and post-surgery in collaboration with the Paediatric Cardiologist, for the progression of the disease or development of complications and initiates medical management, as necessary.	GPC 2, 3, 4, 5, 8
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## Key Capabilities

Monitors an infant, child or young person diagnosed with a left to right shunt lesion for development of heart failure, initiating medical management and escalates care to the Paediatric Cardiologist, as necessary.	GPC 2, 3, 8
Monitors an infant, child or young person diagnosed with cyanotic congenital heart disease for development or worsening of cyanosis, initiating medical management and escalates care to the Paediatric Cardiologist, as necessary.	GPC 2, 3
Monitors a child or young person with congenital heart disease for development of arrhythmias, pre or post intervention; recognises that some congenital heart diseases are more prone for development of arrhythmias and escalates care to the Paediatric Cardiologist, as necessary.	GPC 2, 3, 4
Monitors a child or young person with congenital heart disease for progression of disease and escalates care to the Paediatric Cardiologist, as necessary.	GPC 2, 3, 4
Monitors a child or young person with congenital heart disease post-surgery or intervention, as agreed with Paediatric Cardiologist and undertakes clinical assessment and/or non-invasive investigations, demonstrating a good understanding of the parameters needed to be monitored and the possible complications to look out for.	GPC 2, 3
Investigates and manages a child or young person with suspected infective endocarditis, with or without underlying congenital heart condition, understanding the limitations of transthoracic echocardiogram and escalates care to the Paediatric Cardiologist, as necessary.	GPC 2, 3

## Illustrations

1. Monitors and manages an infant with a significant ventricular or atrioventricular septal defect, until reviewed by the Paediatric Cardiologist.
2. Monitors and manages an infant or child with a significant atrial septal defect, until reviewed by the Paediatric Cardiologist.
3. Monitors and manages an infant or child with patent ductus arteriosus, including advises neonatal colleagues on medical management of premature infant with PDA and escalates care to the Paediatric Cardiologist/Cardiac Surgeon, if necessary as per locally agreed pathway.
4. Monitors an infant with cyanotic congenital heart disease, such as tetralogy of Fallot for development worsening of cyanosis in conjunction with specialist centre.

5. Monitors a child or young person with congenital heart disease for development of arrhythmias with necessary non-invasive investigations, such as 24 hour Holter ECG, event recorder etc.
6. Monitors milder obstructive lesions, such as pulmonary stenosis, aortic stenosis for worsening of obstruction and escalates care to the Paediatric Cardiologist, when necessary.
7. Monitors patients with a perimembranous/subaortic VSD for development of subaortic obstruction or aortic regurgitation, if agreed with the Paediatric Cardiologist, in between reviews by the specialist.
8. Monitors post device closure of ASD/PDA for development of complications, if agreed with the Paediatric Cardiologist, in between reviews by the specialist.
9. Monitors certain post-operative patients for development of complications, if agreed with the Paediatric Cardiologist, in between reviews by the specialist.
10. Manages children and young people with infective endocarditis under direction from specialist paediatric cardiac centre, according to their recommendations on antibiotics. Provides advice on prophylaxis, including prevention of endocarditis and also supports colleagues and juniors in investigation of pyrexia of unknown origin.

## SPIN Learning Outcome 3

Diagnoses a range of acquired cardiac conditions in children and young people with clinical assessment and basic non-invasive cardiac investigations, such as echocardiography, 12 lead ECG, ambulatory ECG, and exercise testing. Initiates management for acquired heart conditions and escalates, as necessary.	GPC 2, 3, 4
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## Key Capabilities

Recognises common arrhythmias in children and young people, undertakes basic non-invasive cardiac investigations and initiates/advises colleagues on emergency treatment as well as prophylactic treatment; escalates care to the Paediatric Cardiologist for further investigation and management.	GPC 2, 3, 4
Recognises common types of cardiomyopathy in children and young people with clinical assessment and transthoracic echocardiogram; initiates emergency management and escalates care to the Paediatric Cardiologist for further management.	GPC 2, 3
Diagnoses and manages Kawasaki disease with clinical assessment and transthoracic echocardiogram, advises and supports colleagues, including follow up and escalates care to the Paediatric Cardiologist and/or Rheumatologist), as necessary.	GPC 2, 3
Undertakes assessment of cardiac function with clinical review and transthoracic echocardiogram in children and young people with primary non-cardiac conditions and advises colleagues on management.	GPC 2, 3

## Illustrations

1. Diagnoses and manages a neonate or infant with supraventricular tachycardia, including medical or electrical cardioversion and long term medical management.
2. Diagnoses and manages an older child with supraventricular tachycardia, including recognising Wolf-Parkinson-White syndrome, with medical or electrical cardioversion and escalates care to the Paediatric Cardiologist for further investigation and management.
3. Diagnoses and manages an infant or child with atrial flutter; undertaking electrical cardioversion as per APLS/NLS guidelines and discuss with Paediatric Cardiologist, as necessary.
4. Recognises broad complex tachycardia in a child or young person (on 12 lead ECG, ECG monitor or Holter/event recorder), initiates emergency management based on clinical picture and ECG findings and escalates care to the Paediatric Cardiologists, as necessary.
5. Recognises different degrees of heart block in an infant or a child, undertakes basic investigations and escalates care to the Paediatric Cardiologist, as necessary.
6. Diagnoses dilated cardiomyopathy with clinical assessment and transthoracic echocardiogram in a child and initiates/supports emergency management with input from



specialists, including Paediatric Cardiologist, Paediatric Intensive Care and Anaesthetic colleagues.

7. Diagnoses hypertrophic cardiomyopathy on clinical and echocardiography assessment, initiates emergency management, including provides advice on exercise/activity and escalates to the Paediatric Cardiologist for further investigations and management.
8. Recognises abnormal findings that may indicate restrictive cardiomyopathy on transthoracic echocardiogram and escalates to the Paediatric Cardiologist.
9. Manages/supports immediate and long term management of a child or young person with Kawasaki disease, including clinical, ECG and transthoracic echocardiographic assessment of cardiac function, coronary and ischaemic consequences; escalates to the Paediatric Cardiologist, as necessary.
10. Undertakes assessment of cardiac function in a child and young person with sepsis and advises on management with fluid and/or inotropes.
11. Undertakes assessment of cardiac function in a child and young person with hypertension due to renal or other causes and advises on management.

## SPIN Learning Outcome 4

Undertakes, interprets and reports on a range of basic non-invasive cardiac investigations in neonates, children and young people, including basic transthoracic echocardiogram, 12 lead ECG, Holter ECG and exercise tolerance testing.	GPC 2, 3, 4, 5
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### Key Capabilities

Undertakes and reports basic transthoracic echocardiogram on children and young people, with sequential segmental analysis of the cardiac structures, diagnoses or rules out most congenital and acquired heart conditions in the context of clinical presentation and assessment, escalates care to the Paediatric Cardiologist, as necessary.	GPC 3, 5, 6, 7
Understands the limitations of basic transthoracic echocardiogram and recognises that some children and young people may need further cardiac imaging investigations (eg bubble contrast echocardiogram, trans-oesophageal echocardiogram, dynamic cardiac investigations, CT or MRI) and liaises with a Paediatric Cardiologist.	GPC 2, 3
Recognises the indication for and undertakes/reports on 12 lead ECG in children and young people, differentiates normal from abnormal at various ages and undertakes/advises further investigations, as necessary, in the context of clinical presentation.	GPC 3, 6
Recognises the indication for and reports on 24 hour or longer Holter ECG in children and young people, differentiates normal from abnormal and undertakes/advises further investigations or escalates care to the Paediatric Cardiologist, as necessary, in the context of clinical presentation.	GPC 6
Recognises the indication for and reports on ECG event recordings in children and young people, differentiates normal from abnormal and undertakes/advises further investigations or escalates care to the Paediatric Cardiologist, as necessary, in the context of clinical presentation.	GPC 3, 6
Recognises the indication for and supervises/reports on basic exercise tolerance test in children and young people, including 6-minute walk test, differentiates normal from abnormal and undertakes/advises further investigations or escalates care to the Paediatric Cardiologist, as necessary, in the context of clinical presentation.	GPC 2, 3

### Illustrations

1. Undertakes and reports transthoracic echocardiogram on an infant, including neonate diagnosing or ruling out a congenital heart defect, in the context of clinical presentation and physiological changes occurring.
2. Undertakes and reports transthoracic echocardiogram in a child or a young person up to the age of 16 years, diagnosing or ruling out a congenital or acquired cardiac condition.

3. Recognises normal from abnormal finding on 12 lead ECG in a child or young person according to the age and clinical presentation, and advises/organises further investigation, if necessary.
4. Recognises abnormal findings on ECG that increases the risk of developing arrhythmia in a child or young person, including pre-excitation, long QTc and Brugada syndrome and arranges further investigation/escalates care to the Paediatric Cardiologist, as necessary.
5. Undertakes/reports on 24 hour Holter on a child or young person with heart block and escalates care to the Paediatric Cardiologist, as necessary.
6. Undertakes or reports on 24 hour Holter on a child or young person to diagnose or rule out a tachyarrhythmia, understanding the limitation of this in picking up episodic events.
7. Undertakes/reports on a ECG event recording of a child or young person to diagnose or rule out a tachyarrhythmia, understanding the limitation of this in picking up episodic events.
8. Supervises/reports a formal exercise tolerance test (eg with Bruce or modified Bruce protocol) on a child or young person.
9. Supervises/reports on a 6-minute walk test on a child or young person with an underlying congenital or acquired cardiac condition.

## SPIN Learning Outcome 5

Assesses and manages children and young people with palpitations, chest pain, syncope, POTS or vasovagal and symptoms; undertakes appropriate investigations, as necessary, to diagnose or exclude an underlying cardiac condition and provides appropriate support.	GPC 2, 3, 4, 5, 6, 8
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### Key Capabilities

Assesses and manages children and young people with palpitations, undertaking appropriate investigations to diagnose or exclude a cardiac condition or arrhythmia; advises appropriately on management of individual episodes based on associated symptoms and most likely underlying cause.	GPC 2, 3, 8
Assesses and manages children and young people with syncope, undertaking appropriate investigations, if necessary, including conducting a tilt test and demonstrating understanding of its limitations.	GPC 2, 3, 8
Assesses and manages children and young people with chest pains, undertaking appropriate investigations, if necessary, based on any associated symptoms and signs.	GPC 2, 3, 8

### Illustrations

1. Manages a child or young person with acute onset palpitations, undertaking appropriate investigations to diagnose or rule out a cardiac arrhythmia; escalates care to the Paediatric Cardiologist, as necessary.
2. Manages a child or young person with recurrent palpitations, undertaking appropriate investigations to diagnose or rule out a cardiac arrhythmia, escalates care to the Paediatric Cardiologist, as necessary.
3. Manages a child or young person with vasovagal syncope, advising patient and/or carer on prevention and management of the episodes.
4. Recognises a child or young person with syncope due to cardiac cause and escalates care to the Paediatric Cardiologist, as necessary.
5. Assesses and diagnoses or rules out a cardiac cause in a child or young person with acute onset chest pain with clinical review and ECG +/- transthoracic echocardiogram.
6. Manages a child or young person with recurrent chest pains, including due to musculoskeletal cause, escalates care to the Paediatric Cardiologist if a cardiac cause is found.

# SPIN Learning Outcome 6

Leads in providing and co-ordinating care for children and young people with heart conditions with other professionals, such as Paediatric Cardiologists, General Practitioners, Community Paediatricians, Neonatal and Paediatric Intensivists, Paediatric sub-specialists, fetal medicine team, Clinical Psychologists and Allied Health Care Professionals (e.g. dietician, physiotherapist, occupational therapist, etc) to provide care, near to their home.	GPC 2, 3, 4, 5, 6, 8
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## Key Capabilities

Provides appropriate advice to children and young people with congenital heart disease and/or their parents/carers on other relevant aspects of their health and lifestyle, including transitioning to adult congenital cardiology services.	GPC 2, 3, 4
Provides advice to acute paediatric staff, A&E colleagues, neonatal and paediatric intensivists, paediatric sub-specialists, and community paediatric colleagues about children and young people with an underlying cardiac condition.	GPC 2, 3, 8
Provides basic advice to surgical and dental colleagues, undertaking non-cardiac intervention in children and young people with an underlying cardiac condition.	GPC 2, 3, 8
Provides support to fetal medicine team when congenital heart defect is suspected on antenatal scans and provides antenatal counselling from a 'paediatrician with expertise' perspective when appropriate; collaborates with fetal cardiologist and obstetrician to put perinatal management plan in place for antenatally diagnosed complex cases.	GPC 2, 3, 5, 6, 8

## Illustrations

1. Demonstrates a good understanding of the risk of and current guidelines on body art, such as tattoo and piercing in a young person with congenital heart disease and advises them and/or parents/carers accordingly.
2. Advises a child or young person with congenital heart disease on other aspects of health, such as dental care, sports/exercise, safe sex/contraception etc.
3. Advises colleagues in acute paediatrics, A&E or community paediatrics or other specialities on management of non-cardiac conditions in children with a cardiac condition.

## **Section 3**

# **Assessment Strategy**

# How to assess the Paediatric Cardiology SPIN

The Assessment Strategy for this SPIN module is aligned with the RCPCH Progress Programme of Assessment, utilising a range of different formative and summative assessment tools.

The Programme of Assessment comprises a wide range of assessment tools which must be used in conjunction with the Blueprint to develop skills and assess capability. The assessments are knowledge, skills and capability-based, capturing a wide range of evidence which can be integrated to reach a judgement as to the clinician's achievement of the SPIN module Learning Outcomes. The assessments also provide clinicians with the opportunity to obtain developmental feedback. Further information on all assessment instruments can be found within the RCPCH Progress Programme of Assessment.

The key aspect of the Assessment Strategy for this SPIN module is the blueprint, on the following page. This grid indicates the assessment requirements to support and demonstrate achievement of the Learning Outcomes and where appropriate, the minimum number of assessments required. Please note, not all assessments are mandated or their use prescribed, such that clinicians may use other assessment types from the list within the Programme of Assessment, where they and their supervisors feel this is appropriate. These assessments are aimed at evaluating the clinician that by end of their SPIN placement they achieve capability in working independently and taking PEC responsibilities in a Level 3 Paediatric Cardiology service.

The mandatory assessments are:

1. Paediatric case based discussion (eCBD) to demonstrate capability, progression and understanding of the management of a child or young person with heart murmur / suspected congenital heart defect
2. Paediatric case based discussion (eCBD) to demonstrate capability, progression and understanding of the management of an infant or child with congenital heart defects.
3. Paediatric case based discussion (eCBD) to demonstrate capability, progression and understanding of the management in duct dependent congenital heart defects.
4. Paediatric case based discussion (eCBD) to demonstrate capability, progression and understanding of the management of a child or young people with heart failure.
5. Paediatric case based discussion (eCBD) to demonstrate capability, progression and understanding of the management of Kawasaki disease, myocarditis and cardiomyopathies.
6. Paediatric case based discussion (eCBD) to demonstrate capability, progression and understanding of the management of a child and young person with cardiac tachy-arrhythmia, brady-arrhythmia and heart block.
7. At least 10 Direct Observation of Procedural Skills (DOPS) in echocardiography for various pathologies and normal anatomy and show progression in skills during their training.

8. Acute Care Assessment Tool (ACAT) in children or young people with CHDs.
9. Hand-over tool in Paediatric Cardiology (HAT).
10. Paediatric Mini Clinical Evaluation Exercise (Mini-CEX) for ward rounds, explaining heart condition to parents / carers.
11. Paediatric Mini Clinical Evaluation Exercise (Mini-CEX) or DOPS in supervising exercise tolerance testing.
12. Paediatric Mini Clinical Evaluation Exercise (Mini-CEX) or DOPS in reporting ambulatory / Holter ECG.
13. Paediatric Multi-Source Feedback (ePaedsMSF), including from at least three Paediatric Cardiology consultants as per recommendations during their Paediatric Cardiology placements.



# Assessment blueprint

This table suggests assessment tools which may be used to assess the Key Capabilities for these Learning Outcomes.

This is not an exhaustive list, and clinicians are permitted to use other methods within the RCPCH Assessment Strategy to demonstrate achievement of the Learning Outcome, where they can demonstrate these are suitable.

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion (ePaed Cbd)	Directly Observed Procedure / Assessment of Performance (DOP/AOP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Undertakes assessment of children and young people, including neonates, who are suspected to have a congenital heart condition by clinical presentation.		✓	✓					✓		
Recognises or excludes a cardiac condition in most situations by transthoracic echocardiography and/or 12 lead ECG, and takes a lead in the initial discussion of the diagnosis with the parents or carers, including the child or young person if appropriate, using the available parent information resources.		✓	✓					✓		
Initiates and advises on emergency management of an infant with a suspected or confirmed duct dependent congenital heart condition; recognises the need for escalation to a specialist paediatric cardiac centre and liaises with Paediatric Cardiologist, Anaesthetist, paediatric intensive care and transport colleagues, as necessary.	✓	✓		✓						
Recognises when there is a necessity to seek advice or for escalation of care when not feasible in Level 2 or Level 3 units and facilitates discussion with Level 1 units, where there is a need for surgical or interventional procedure for the cardiac condition.		✓		✓						
Ensures that there is clear handover between teams.							✓			
Initiates appropriate medical management for a child and young person with significant left to right shunt, including diuretics and dietary management, liaising with dietitian and community services for initiation and maintenance of high calorie and/or nasogastric tube feeds, if necessary.	✓	✓								

Key Capabilities	Assessment / Supervised Learning Event suggestions								
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion (ePaed Cbd)	Directly Observed Procedure / Assessment of Performance (DOP/AOP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Careers for Children Feedback (Paed CCF)
									Other
Recognises that certain congenital heart conditions cannot always be excluded by transthoracic echocardiogram and depending on clinical presentation/suspicion seeks advice from/refers such a child and young person to Paediatric Cardiologist for further assessment or investigations, such as trans-oesophageal echocardiogram or CT angiogram.		✓							
Recognises and assesses children and young people with infective endocarditis and provide advice regarding prevention of infective endocarditis.	✓	✓							
Carries out cardiac evaluation in children and young people with features of a genetic condition/ syndrome.		✓							
Monitors an infant, child or young person diagnosed with a left to right shunt lesion for development of heart failure, initiating medical management and escalating care to the Paediatric Cardiologist, as necessary.	✓	✓		✓					
Monitors an infant, child or young person diagnosed with cyanotic congenital heart disease for development or worsening of cyanosis, initiating medical management and escalating care to the Paediatric Cardiologist, as necessary.	✓	✓		✓					
Monitors a child or young person with congenital heart disease for development of arrhythmias, pre or post intervention; recognises that some congenital heart diseases are more prone for development of arrhythmias and escalates care to the Paediatric Cardiologist, as necessary.		✓					✓		
Monitors a child or young person with congenital heart disease for progression of disease and escalates care to the Paediatric Cardiologist, as necessary.		✓							
Monitors a child or young person with congenital heart disease post-surgery or intervention, as agreed with Paediatric Cardiologist and undertakes clinical assessment and/or non-invasive investigations, demonstrating a good understanding of the parameters needed to be monitored and the possible complications to look out for.		✓		✓			✓		

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion(ePaed Cbd)	Directly Observed Procedure / Assessment of Performance (DOP/Aop)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Investigates and manages a child or young person with suspected infective endocarditis, with or without underlying congenital heart condition, understanding the limitations of transthoracic echocardiogram and escalates care to the Paediatric Cardiologist, as necessary.	✓	✓								
Recognises common arrhythmias in children and young people, undertakes basic non-invasive cardiac investigations and initiates/advises colleagues on emergency treatment as well as prophylactic treatment; escalates care to the Paediatric Cardiologist for further investigation and management.	✓	✓		✓						
Recognises common types of cardiomyopathy in children and young people with clinical assessment and transthoracic echocardiogram; initiates emergency management and escalates care to the Paediatric Cardiologist for further management.		✓	✓							
Diagnoses and manages Kawasaki disease with clinical assessment and transthoracic echocardiogram, advises and supports colleague, including follow up and escalates care to the Paediatric Cardiologist and/or Rheumatologist, as necessary.		✓				✓	✓			
Undertakes assessment of cardiac function with clinical review and transthoracic echocardiogram in children and young people with non-cardiac conditions and advises colleagues on management.	✓		✓		✓					
Undertakes and reports basic transthoracic echocardiogram on children and young people, with sequential segmental analysis of the cardiac structures, diagnoses or rules out most congenital and acquired heart conditions in the context of clinical presentation and assessment, escalates care to the Paediatric Cardiologist, as necessary.	✓				✓			✓		
Understands the limitations of basic transthoracic echocardiogram and recognises that some children and young people may need further cardiac imaging investigations (e.g. bubble contrast echocardiogram, trans-oesophageal echocardiogram, dynamic cardiac investigations, CT or MRI) and liaises with a Paediatric Cardiologist.		✓						✓		
Recognises the indication for and undertakes/ reports on 12 lead ECG in children and young people, differentiates normal from abnormal at various ages and undertakes/advises further investigations, as necessary, in the context of clinical presentation.	✓			✓				✓		

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion (ePaed Cbd)	Directly Observed Procedure / Assessment of Performance (DOP/AOP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Recognises the indication for and reports on 24 hour or longer Holter ECG in children and young people, differentiates normal from abnormal and undertakes/advises further investigations or escalates care to the Paediatric Cardiologist, as necessary, in the context of clinical presentation.	✓		✓							
Recognises the indication for and reports on ECG event recordings in children and young people, differentiates normal from abnormal and undertakes/advises further investigations or escalates care to the Paediatric Cardiologist, as necessary, in the context of clinical presentation.		✓	✓							
Recognises the indication for and supervises/ reports on basic exercise tolerance test in children and young people, including 6-minute walk test, differentiates normal from abnormal and undertakes/advises further investigations or escalates to the Paediatric Cardiologist, as necessary, in the context of clinical presentation.		✓	✓							
Assesses and manages children and young people with palpitations, undertaking appropriate investigations to diagnose or exclude a cardiac condition or arrhythmia; advises appropriately on management of individual episodes based on associated symptoms and most likely underlying cause.	✓	✓						✓		✓
Assesses and manages children and young people with syncope, undertaking appropriate investigations, if necessary, including conducting a tilt test and demonstrating understanding of its limitations.	✓	✓						✓		✓
Assesses and manages children and young people with chest pains, undertaking appropriate investigations, if necessary, based on any associated symptoms and signs.	✓	✓						✓		✓
Provides appropriate advice to children and young people with congenital heart disease and/or their parents/carers on other relevant aspects of their health and lifestyle, including transitioning to adult congenital cardiology services.	✓	✓						✓		✓
Provides advice to acute paediatric staff, A&E colleagues, neonatal and paediatric intensivists, paediatric sub-specialists, and community paediatric colleagues about children and young people with an underlying cardiac condition.				✓		✓		✓		
Provides basic advice to surgical and dental colleagues, undertaking non-cardiac intervention in children and young people with an underlying cardiac condition.						✓		✓		

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (ePaed Mini-CEX)	Paediatric Case-based Discussion(ePaed Cbd)	Directly Observed Procedure / Assessment of Performance (DOP/AOP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (ePaed MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Provides support to fetal medicine team when congenital heart defect is suspected on antenatal scans and provides antenatal counselling from a 'paediatrician with expertise' perspective when appropriate; collaborates with fetal cardiologist and obstetrician to put perinatal management plan in place for antenatally diagnosed complex cases.		✓			✓			✓		

# Appendices

# Appendix A: Further guidance and resources

Doctors completing this SPIN module may find the following resources useful to support their training. Please note, there is no mandatory requirement to use any or all of these resources, and RCPCH cannot be held responsible for the quality or content of any external materials.

## Assessment

RCPCH Assessment web pages [www.rcpch.ac.uk/assessment](http://www.rcpch.ac.uk/assessment)  
 RCPCH Assessment Strategy [www.rcpch.ac.uk/progress](http://www.rcpch.ac.uk/progress)

## Recommended reading

1. Park's Paediatric Cardiology for practitioners
2. Echocardiography in Pediatric and Congenital Heart Disease: From Fetus to Adult, Second Edition by Wyman W. Lai, Luc L. Mertens, Meryl S. Cohen, Tal Geva
3. ASE's Comprehensive Echocardiography, 3rd Edition by Steven A Goldstein, Itzhak Kronzon, Bijoy K Khandheria, and Victor Mor-Avi
4. How to read pediatric ECGs by Myung K. Park and Warren G Guntheroth
5. Congenital Heart Disease Echocardiography (CHD) Certification: Certification organised by the European Association of Cardiovascular Imaging (EACVI); website for further information: <https://www.esccardio.org/Education/Career-Development/Certification/Congenital-Heart-Disease-Echo>
6. Training in Intensive Care and Neonatal EchoCardiology (TINEC): excellent collection of echocardiography papers free to download from website: <https://www.frontiersin.org/research-topics/4682/training-in-intensive-care-and-neonatal-echocardiography-tinec#articles>
7. Echocardiography for the Neonatologist by Jonathan Skinner, Dale Alverson, Susan M Hunter

## Training events or courses

1. BCCA –PECSIG annual conference
2. PECSIG annual summer conference
3. RCPCH annual conference – PECSIG session
4. Association for European Paediatric and Congenital Cardiology (AEPC) annual conference
5. Royal Brompton Morphology course
6. Echocardiography course (various echo courses in the UK)

## For more information

More information regarding SPIN modules, and all current SPIN curricula and supporting forms, can be found at [www.rcpch.ac.uk/spin](http://www.rcpch.ac.uk/spin)

For general queries regarding SPIN modules, including eligibility to undertake a SPIN or how to apply, please contact [spin@rcpch.ac.uk](mailto:spin@rcpch.ac.uk). For queries relating to the SPIN curriculum, please contact [qualityandstandards@rcpch.ac.uk](mailto:qualityandstandards@rcpch.ac.uk)

The SPIN Lead is a member of the Paediatric Cardiology SAC. Please contact the RCPCH Training Services team ([training.services@rcpch.ac.uk](mailto:training.services@rcpch.ac.uk)) in the first instance for any queries regarding this SPIN module.

## Appendix B: Criteria for SPIN delivery

The following requirements should be met when designing a training programme for a SPIN module. Adherence to these criteria will help ensure the clinician will have the necessary support and access to experiences which they will require in order to successfully complete this SPIN module. These criteria are framed against the standards set out in Excellence by Design: standards for post graduate curricula (GMC 2017).

Purpose	
<ul style="list-style-type: none"> <li>• Access to regular supervised clinics</li> <li>• Service specific requirements to enable achievement of the curriculum e.g. Day case facilities, imaging.</li> <li>• Opportunities to work with shared care networks in primary and secondary care.</li> <li>• Opportunities to work with shared care clinical guidelines and protocols.</li> <li>• The learning environment is safe for patients and supportive for learners and educators. The culture is caring, compassionate and provides a good standard of care and experience for patients, carers and families. (Taken from GMC Promoting Excellence).</li> </ul>	<p><b>CSAC specific requirements:</b></p> <ul style="list-style-type: none"> <li>• 6 months in a Specialist Children's Cardiac Surgical Centre (level 1) with a further 6 months in either level 1 or a Specialist Children's Cardiology Centre (level 2). Or</li> <li>• 12 months in a Specialist Children's Cardiac Surgical Centre (level 1).</li> <li>• Achievement of all mandatory capabilities on completion of SPIN module training.</li> </ul>
Governance and strategic support	
<ul style="list-style-type: none"> <li>• The Site must ensure that Supervisors and trainers can effectively deliver the RCPCH Assessment Strategy.</li> <li>• The trainee will be able to participate in leadership and management activities.</li> </ul>	<p><b>CSAC specific requirements:</b></p> <ul style="list-style-type: none"> <li>• Opportunities to lead clinical management of cases with suspected or confirmed congenital heart defects under supervision.</li> </ul>
Programme of learning	
<ul style="list-style-type: none"> <li>• Specific requirements for structured learning opportunities.</li> <li>• Exposure within the clinical environment will provide sufficient learning opportunities to meet the requirements of the curriculum.</li> <li>• Access to multidisciplinary teams consisting of a minimum of nurses, physiotherapists, occupational therapists.</li> <li>• The post should provide a training experience that enables completion of the trainees' PDP.</li> </ul>	<p><b>CSAC specific requirements:</b></p> <ul style="list-style-type: none"> <li>• Access to facilities to develop capabilities specified in the learning outcomes.</li> </ul>



<b>Programme of assessment</b>	
<ul style="list-style-type: none"> <li>• The site has adequate levels of Educational Supervisors. Consultants with either General Paediatric or Sub Specialty expertise can be matched to the requirements of the trainee. It is important that Educational supervisors can provide supervision and have the required remission to facilitate this, i.e. 1 PA per week per 4 trainees.</li> <li>• Supervision must ensure patient safety. Support for trainers and supervisors must be available within the Trust.</li> </ul>	<p><b>CSAC specific requirements:</b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Quality assurance and improvement</b>	
<ul style="list-style-type: none"> <li>• The post will allow the trainee to participate in audits and clinical improvement projects</li> <li>• The post will allow the trainee to actively engage with the teaching, assessing and appraising of junior staff</li> <li>• The post will allow opportunity for the trainee to engage in research activities.</li> </ul>	<p><b>CSAC specific requirements:</b></p> <ul style="list-style-type: none"> <li>• Opportunities to complete a clinical audit or service evaluation and participate in the research project if possible.</li> </ul>

