# Referral Pathway for Paediatric Cardiology Services at the Royal London Hospital

**Purpose of this guideline:**  To give clinicians a clear understanding of the referral pathway for children to the paediatric cardiology services at the Royal London Hospital

**Paediatric Cardiology Service Provision:** Paediatric cardiology services in England are provided by a hub and spoke model. In our area the provision of paediatric cardiology services fall under the One Heart Network hosted by Great Ormond Street Hospital, the level 1 Specialist Children’s Surgical Centre.

Previously the bulk of the paediatric cardiology workload at the Royal London Hospital has been undertaken within outreach clinics by the visiting Paediatric Cardiologist from Great Ormond Street Hospital. The presence of a paediatrician with interest in cardiology (PEC) and joint cardiac clinics will allow more efficient use of time and allow the Paediatric Cardiologist to focus on the most needy patients and facilitate an improved pathway for patients in their journey between the local cardiology centre (RLH) and the specialist centre (Great Ormond Street Hospital).

**Referral pathways:**

The anticipated referral pathways for children presenting to the Royal London Hospital are as follows.

1. **Antenatal diagnosis** (maternal indications, familial indications and fetal indications)

Will be referred to the fetal cardiology team via obstetric teams/antenatal ultrasonographers.

1. **Emergency**

In hours advice and support may be given by the paediatrician with expertise in cardiology. Otherwise a referral should be made to the on-call cardiology team at Great Ormond Street Hospital.

1. **Acute / Inpatient referrals**

In hours a referral can be made by discussion with the paediatrician with expertise in cardiology and completing the attached referral form. Out of hours a referral should be made to the on-call cardiology team at Great Ormond Street Hospital.

1. **Routine / Outpatient referrals**

A referral can be made by completing the attached referral form.

**Care Pathway Flowcharts**

**1. Antenatal diagnosis**

Fetal Cardiology

If critical condition expected, referred to Level 1 cardiac centre

Planned delivery at Royal London Hospital

Refer to paediatric cardiology services at Royal London Hospital

**2. Emergency presentation e.g. collapsed child**

Refer to level 1 centre (Great Ormond Street Hospital)

In hours advice and support from paediatrician with expertise in cardiology

**3. Acute / Inpatient referral e.g. Kawasaki disease**

F/U with general/speciality paediatrician

F/U in joint cardiac clinic

F/U in PEC clinic

No F/U required

In hours discuss and refer to paediatrician with interest in cardiology for inpatient assessment. Out of hours refer directly to level 1 centre (Great Ormond Street Hospital)

**4. Routine referral e.g. Heart murmur**

Refer to paediatrician with expertise in cardiology

Refer to level 1 centre (Great Ormond Street Hospital)

**Referral Categories:**

Please note that this list is not exhaustive.

* Antenatal diagnosis of congenital heart disease
* Most patients should have a documented plan from the fetal cardiology team
* Neonates and infants with a heart murmur
* Neonates discharged following delivery with a heart murmur should be referred for a cardiac assessment unless an assessment has been performed prior to discharge.
* If the murmur is suspected to be pathological with any of: diastolic murmur, loud systolic murmur (grade 3/6 or above) this should be discussed with an experienced neonatologist or Paediatrician with expertise in cardiology prior to discharge for either inpatient assessment or urgent outpatient follow up within 2 weeks.
* Older children with a murmur
* A clinically innocent murmur (soft, systolic, varies with posture, no sign of systemic disease) can be seen non-urgently in the outpatient setting.
* A clinically innocent sounding murmur heard during intercurrent illness that subsequently disappears on re-evaluation when well does not require follow up.
* Cyanosis that is unexplained or thought to be cardiac in nature
* Palpitations
* An ECG is an essential investigation prior to referral.
* Palpitations associated with an abnormal ECG, syncope, exercise or a family history of inherited cardiac conditions, sudden death or recurrent collapse warrants inpatient/urgent referral.
* Chest Pain
* Chest pain in children is relatively common and rarely cardiac in nature.
* Careful assessment and examination is required to rule out costochondritis, gastrointestinal and respiratory disorders.
* Particular note should be paid to chest pain associated with exertion, syncope, a history of congenital heart disease or Kawasaki disease – this may warrant inpatient/urgent referral.
* Syncope
* Syncope in young children (under the age of 5) is uncommon and usually associated with breath holding, seizures or cardiac arrhythmia. These children will all need a 12 lead ECG as a minimum, if the diagnosis is in doubt a cardiac referral is indicated.
* In older children and adolescents syncope is common and is commonly due to vasovagal mechanisms. If vasovagal syncope is diagnosed based on the history and examination a cardiac referral is not indicated.
* Red flags include: syncope on exertion, family history of sudden cardiac death, pacemaker or ICD insertion at a young age, triggered by fright, surprise, loud noises, whilst swimming or whilst supine etc. These warrant discussion prior to discharge.
* Family history of heart disease
* In most cases a family history of congenital heart disease does not warrant a postnatal cardiac assessment unless there has been significant mobility/mortality associated with a missed diagnosis of congenital heart disease
* 1st degree family history of complex congenital heart disease, significant ASD or bicuspid aortic valve warrants assessment. The bulk of these assessments are likely to be performed antenatally.
* 1st degree family history of Inherited Cardiac Conditions such as Long QT syndrome, Brugada syndrome, Catecholaminergic polymorphic ventricular tachycardia, Arrhythmogenic right ventricular cardiomyopathy, hypertrophic cardiomyopathy, dilated cardiomyopathy, Inherited aortopathy (Marfan syndrome, Loeys-Dietz syndome, Classical/Cardiac-valvular/Vascular Ehlers Danlos syndrome
* The current agreement is that patients with hypertrophic cardiomyopathy or inherited arrhythmias will be referred directly to the Inherited Cardiovascular Diseases team at GOSH.
* Screening in genetic conditions – Trisomy 21 (Down syndrome), Trisomy 18 (Edward syndrome), Trisomy 13 (Patau syndrome), 22q11 deletion (DiGeorge syndrome), Rasopathy syndromes (Noonans, Leopard, etc.), Williams syndrome, Turners syndrome, CHARGE syndrome, VACTERL association etc.
* Screening with other congenital abnormalities – Congenital diaphragmatic hernia, exomphalos, gastroschisis, ano-rectal malformations, tracheo-oesophageal fistula, laterality disturbance
* Screening in neuromuscular conditions – Duchenne muscular dystrophy, Myotonic dystrophy and other neuromuscular disorders known to have cardiac involvement.
* Strong clinical suspicion of infective endocarditis
* A single positive blood culture does not indicate echocardiography unless there are other risk factors.
* High risk patients would include those with known congenital heart disease, previous history of endocarditis, stigmata of infective endocarditis (Janeway lesions, Roth spots, embolic phenomena), immunosuppression etc.
* Ischaemic stroke
* Sickle cell disease if chronic sickle lung disease or chronic unexplained hypertension.
* Kawasaki disease/PIMS-TS/rheumatic fever
* Cases of suspected Kawasaki disease, rheumatic fever and PIMS-TS should be discussed for inpatient cardiac assessment.
* Respiratory disease
* Underlying congenital heart disease may present with recurrent lower respiratory tract infections.
* In some instances a vascular ring may be suspected in children who present with feeding difficulties, recurrent croup or noisy breathing.
* Chronic lung disease of prematurity – cardiac follow up may be appropriate if there is a degree of pulmonary hypertension that has required treatment with pulmonary vasodilators (eg. Sildenafil).
* Obstructive sleep apnoea does not warrant an echocardiogram unless there is clinical evidence of pulmonary hypertension such as right ventricular hypertrophy on ECG.
* Hypertension – Hypertension in children is rarely cardiac in nature in the absence of congenital heart disease. Children with idiopathic hypertension may require a cardiac assessment to rule out coarctation of the aorta.

**Paediatric Cardiology Referral Form**

Please email completed form via NHS.net email to joseph.wacher@nhs.net

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|  |  | Date | Click here to enter a date. |
| Patient Details |
| Name | Click here to enter text. | **MRN** | Click here to enter text. |
| DOB | Click here to enter a date. |  |  |
| Referrers Details |
| Name of referring consultant | Click here to enter text. | **Name of person completing this form** | Click here to enter text. |
| Email of referrer | Click here to enter text. | **Contact no. /bleep for referrer** | Click here to enter text. |
| Referral Information |
| Is this referral for inpatient or outpatient assessment? | Choose an item. |
| Reason for referral(Please refer to referral categories) | Click here to enter text. |
| Question you would like to have answered | Click here to enter text. |
| Relevant past medical history | Click here to enter text. |
| Medication | Click here to enter text. |
| Previous Investigations and results(ECG, Echo etc.) | Click here to enter text. |

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| **Administrative** |
| Referral accepted | Yes[ ]  | No[ ]  |
| Clinic | JW [ ]  | FK [ ]  | Inpatient [ ]  |
| Timeframe | Click here to enter text. | Overbook | Yes [ ]  | No [ ]  |