Ashford and St. Peter's Hospitals
NHS Foundation Trust

# Management of Palpitations in Children and Young People

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| Guideline History | | |
|---|---|---|
| **Date** | **Comments** | **Approved By** |
| **16/01/2023** | New guidance approved | Paediatric Guidelines Group |

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# Management of Palpitations in Children and Young People

## Introduction and background

Palpitations are defined as the awareness of the heartbeat and are described by patients as a disagreeable sensation of pulsation or movement in the chest and/or adjacent areas (Brugada P, 1993). The aim of this guideline is to improve assessment and management of children presenting with palpitations.

Between November 2021 and 2022 ASPH emergency department (ED) saw 24 Paediatric presentations which included palpitations in their presenting complaints. Of these, two cases were found to have arrythmias requiring treatment – one SVT and one drug induced. From our data, 8.3% of the palpitation presentations had a true underlying arrythmia. This is comparable to other UK ED data, presented in the BMJ, which found 15% of Paediatric palpitation presentations to have an arrythmia with SVT being the most common (Stredder O, 2016). An Italian children's hospital found 13.5% of palpitation presentations to be true arrythmias requiring treatment (Bobbo, 2019).

The above UK study highlighted some areas for improvement in the assessment of palpitations; finding 59% of cases were not asked about family history of cardiac disease, 30% were not asked about duration of symptoms and 58% were not asked about possible triggers.

The majority of palpitations in young people are due to anxiety and present as extrasystoles/ ectopics because the extra beats are followed by a pause and then a stronger beat, but they may be sinus tachycardia (fever, exercise, anaemia, inappropriate) or arrhythmia (SVT, ectopics, VT).

# History

This is particularly important in picking up the red flags and which child will need further investigations:

Description by the young person may help distinguish the rhythm if they are old enough to describe their palpitations.

Ectopics: ‘my heart skipped a beat’ ‘a jolt or jump in the chest’. Common in periods of stress, high consumption of caffeine, chocolate, or cocaine.

SVT/VT: ‘My heart is beating really fast out of my chest’. If non-verbal, parents may notice the heart racing when they feel the chest. Often sudden onset/offset may present alongside chest pain, dizziness.

Sinus tachycardia: an increased awareness of a fast heartbeat. Common triggers - fever, caffeine, drugs, exercise, pain/stress.

**Key Questions**

· When did they start?

· How long do they last?

· How often are they happening?

· Does anything set them off?

· Does anything make them stop? Valsalva manoeuvres history

· Can you count them?

· Can you beat out the pattern on the table?

· Did you faint?

· Did you feel faint or dizzy or have blurred vision?

**Past history**

· Perinatal history

· Family history 1st degree relatives only

· Concerns re-collapse in young people

# Examination

### General

· Pale/anaemic, goitre/exophthalmos, hyperventilation, signs of anxiety/emotional distress, flushing/sweatiness (phaeochromocytoma)

### CVS

· Feel pulses - Regular or irregular? Good volume?

· Peripheral perfusion

· Cardiovascular examination for structural disease, this is generally rare with rhythm problems

· Pulses including femoral cardiac impulses

· Heart sounds

· Murmurs

· Exclude myocarditis, cardiomyopathy, Ebstein's disease and post-surgical repair

### Respiratory

· Crackles - LRTI or pulmonary congestion in left heart failure

### Abdomen

· Organomegaly - cardiac failure

# Investigations

· Consider bloods if concerns regarding thyroid disease, anaemia, systemic illness

· ECGs required

· 12 lead ECG preferably during event

· ECG trace while giving adenosine if required or while applying vagal manoeuvers if adenosine not required

· 24 hour holter if happening frequently enough to obtain a positive trace. Consider if happening less frequently but sufficient concern to warrant further investigation

# Referrals

Most patients have normal investigations and can be reassured. Holter can be reassuring if the events are frequent and are captured. If the history is very suggestive or there is pre-excitation on the ECG they may need more intensive investigations. Refer significant cases to heart clinic: Dr Groves (Tuesday morning). Unless the circulation is compromised does not necessarily need emergency treatment or referral to Royal Brompton Hospital Dr Jan Till or Dr Leone Wong

**Referral criteria:**

· ECGs showing Tachyarrhythmias e.g Atrial flutter/ SVT/ VT/ Wolff-Parkinson-White Syndrome/ prolonged QTc interval.

· Ventricular ectopics if frequent and symptomatic

· Family history of sudden cardiac death/ channelopathy/ cardiomyopathy

· Associated features in the history, e.g.: Syncope or pre-syncope/Onset during exercise/ History of known cardiac disease

· Sudden onset/offset

**Admit the patient for observation in the following situations:**

· Haemodynamically unstable

· Ingestion (if observation recommended by ToxBase)

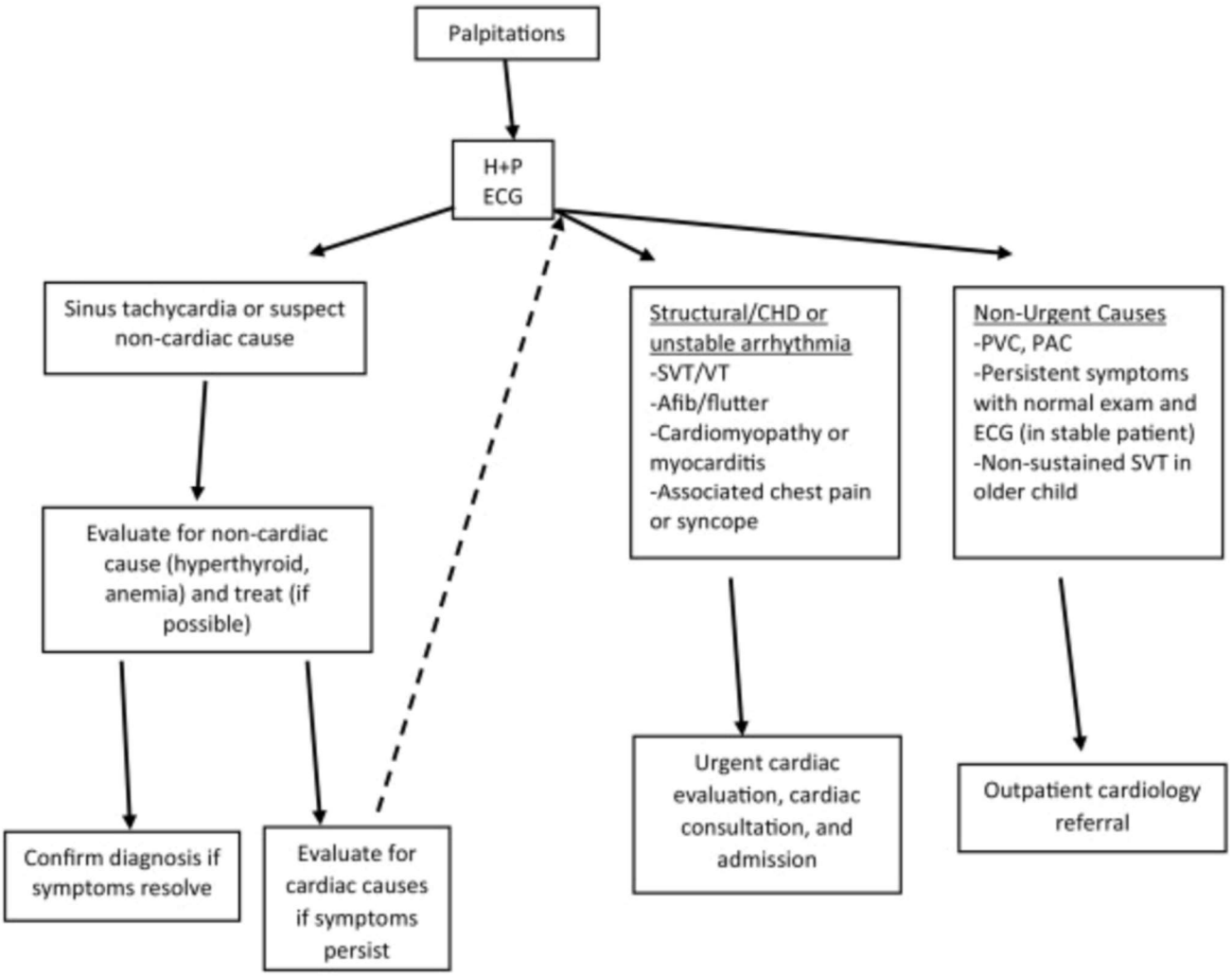
· Sinus tachycardia due to a systemic cause requiring inpatient treatment (e.g. severe anaemia, sepsis, thyrotoxicosis)

· Persistent tachyarrhythmias (SVT/VT)

Many young people and parents are worried about the well publicised events on sports fields. This is 1:1000,000 event and usually results from extreme physical activity. The CRY group at SGH will review young people who have a family history of sudden cardiac death.

# Diagnostic Algorithm

Below outlines a simple algorithm outlining the approach for a child or teenager presenting with palpitations to the emergency department. Beginning with detailed history, and physical examination with an ECG. (shown as 'H+P' in the algorithm below) **(Sheetal Patel, 2018)**



# Treatment / Management

The management of a child with palpitations will vary depending on the history, examination and investigation findings.

If the patient is hemodynamically stable but in tachycardia the following measures can be taken to try to cardiovert **(Lead by Senior Paediatrician):**

- Ensure an ECG is running throughout to capture offset of tachycardia
- Submersion in ice cold water for babies/ infants
- Ice to the face
- Valsalva manoeuvres e.g. Blowing through a syringe, forced exhalation with nose blocked
- IV Adenosine
    - Large cannula in large vein
    - Three way tap with large saline flush attached (2 people to administer quickly)
    - Start with at least 150 micrograms/kg

## 2. Supporting References

Bobbo, M. e. (2019). Retrospective study showed that palpitations with tachycardia on admission to a paediatric emergency department were related to cardiac arrhythmias. *Acta paediatrica, vol. 108*(2), 328-332.

Brugada P, G. S. (1993). Investigation of palpitations. *Lancet, 341*, 1254-8.

*Clinical Knowledge Summaries - Palpitations*. (Last revised in April 2020). Retrieved from NICE: https://cks.nice.org.uk/palpitations

Sheetal Patel, F. S.-Y. (2018, February 28). Management of Pediatric Chest Pain, Palpitations, Syncope, and Murmur Presenting to the Emergency Department. *Clinical Pediatric Emergency Medicine, Volume 19*(Issue 4), Pages 328-339. Retrieved from UpToDate: https://www.uptodate.com/contents/approach-to-the-child-with-palpitations

Stredder O, F. J. (2016). FG165(P) Palpitations – a cause for concern? *Archives of Disease in Childhood, 101*, A86-A87.

Wolff A, C. C. (2009). 10 steps before you refer for palpitations. *British Journal of Cardiology, 16*(06), 182-6.

## 3. Supporting relevant trust guidelines

## 2. Guideline Governance

### a. Scope

This guideline is relevant to all staff caring for all children from 0-18 years old across the emergency department, inpatient ward and outpatient department.

### b. Purpose

i. This guidelines aims to facilitate a common approach to the management of children. At times deviation from the guideline may be necessary, this should be documented and is the responsibility of the attending consultant.

ii. This guideline is subject to regular review to ensure ongoing evidence based practice.

### c. Duties and Responsibilities

All healthcare professionals responsible for the care of all children 0-18years should be aware of practice according to this guideline.

### d. Approval and Ratification

This guideline will be approved and ratified by the Paediatric Guidelines Group.

### e. Dissemination and Implementation

i. This guideline will be uploaded to the trust intranet 'Paediatric Guidelines' page and thus available for common use.
ii. This guideline will be shared as part of ongoing education within the Paediatric Department for both medical and nursing staff.
iii. All members of staff are invited to attend and give comments on the guideline as part of the ratification process.

### f. Review and Revision Arrangements

a. This policy will be reviewed on a 3 yearly basis by the appropriate persons.
b. If new information comes to light prior to the review date, an earlier review will be prompted.
c. Amendments to the document shall be clearly marked on the document control sheet and the updated version uploaded to the intranet. Minor amendments will be ratified through the Paediatric Guidelines Group. A minor amendment would consist of no major change in process, and includes but is not limited to, amendments to documents within the appendices.

## g. Equality Impact Assessment

| |
|---|
| **Background**<br><br>• Who was involved in the Equality Impact Assessment |
| Author and the supervising consultants. |
| **Methodology**<br><br>• A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age)<br>• The data sources and any other information used<br>• The consultation that was carried out (who, why and how?) |
| All groups of staff and patients were taken into consideration and there is no bias towards or against any particular group. |
| **Key Findings**<br><br>• Describe the results of the assessment<br>• Identify if there is adverse or a potentially adverse impacts for any equalities groups |
| There is no evidence of discrimination. |
| **Conclusion**<br><br>• Provide a summary of the overall conclusions |
| There is no evidence of discrimination. |
| **Recommendations**<br><br>• State recommended changes to the proposed policy as a result of the impact assessment<br>• Where it has not been possible to amend the policy, provide the detail of any actions that have been identified<br>• Describe the plans for reviewing the assessment |
| This guideline is appropriate for use. |

## h. Document Checklist

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

**Title of the document: Management of palpitations in children and young people**

**Policy (document) Author: Dr A. Groves, Dr O. Robins**

**Executive Director: N/A**

| | | Yes/No/ Unsure/NA | Comments |
|---|---|---|---|
| **1.** | **Title** | | |
| | Is the title clear and unambiguous? | **Y** | |
| | Is it clear whether the document is a guideline, policy, protocol or standard? | **Y** | |
| **2.** | **Scope/Purpose** | | |
| | Is the target population clear and unambiguous? | **Y** | |
| | Is the purpose of the document clear? | **Y** | |
| | Are the intended outcomes described? | **Y** | |
| | Are the statements clear and unambiguous? | **Y** | |
| **3.** | **Development Process** | | |
| | Is there evidence of engagement with stakeholders and users? | **N** | |
| | Who was engaged in a review of the document (list committees/ individuals)? | | **Paediatric Guideline Group** |
| | Has the policy template been followed (i.e. is the format correct)? | **Y** | |
| **4.** | **Evidence Base** | | |
| | Is the type of evidence to support the document identified explicitly? | **Y** | |

| | | Yes/No/ Unsure/NA | Comments |
|---|---|---|---|
| | Are local/organisational supporting documents referenced? | **Y** | |
| **5.** | **Approval** | | |
| | Does the document identify which committee/group will approve/ratify it? | **Y** | |
| | If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document? | **N/A** | |
| **6.** | **Dissemination and Implementation** | | |
| | Is there an outline/plan to identify how this will be done? | **Y** | |
| | Does the plan include the necessary training/support to ensure compliance? | **Y** | |
| **7.** | **Process for Monitoring Compliance** | | |
| | Are there measurable standards or KPIs to support monitoring compliance of the document? | **N** | |
| **8.** | **Review Date** | | |
| | Is the review date identified and is this acceptable? | **Y** | |
| **9.** | **Overall Responsibility for the Document** | | |
| | Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation? | **Y** | |
| **10.** | **Equality Impact Assessment (EIA)** | | |
| | Has a suitable EIA been completed? | Y | |

| **Committee Approval (Paediatric Guidelines Group)** | | | |
|---|---|---|---|
| If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner | | | |
| **Name of Chair** | **Dr Claire Mitchell** | **Date** | **26/05/2023** |
| **Ratification by Management Executive (if appropriate)** | | | |
| If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner | | | |
| **Date: n/a** | | | |