

Cardiac Problems In Infants & Children – When To Worry & When To Refer

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What Symptom/ Events In Childhood Do We Worry About?

Key Considerations

Sudden death in childhood is extremely rare and is unlikely to be preceded by symptoms or prodromes

Intermittent **chest pain** in children is virtually never cardiac in origin

Most **murmurs** in infants and children are innocent (normal)

Intermittent **cyanosis** in an asymptomatic child is never cardiac in origin

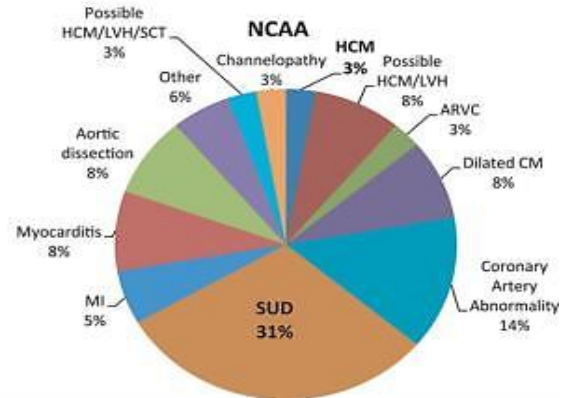
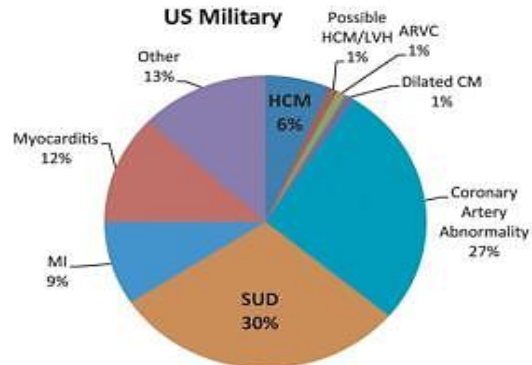
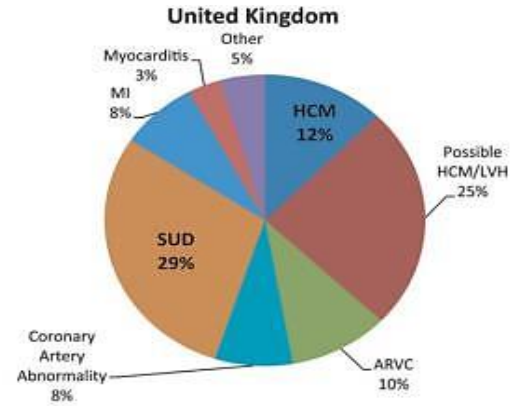
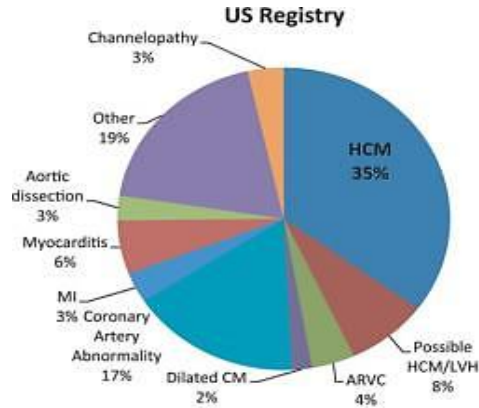
Sudden Death In Children/Teenagers

Family/Medical/Societal Nightmare

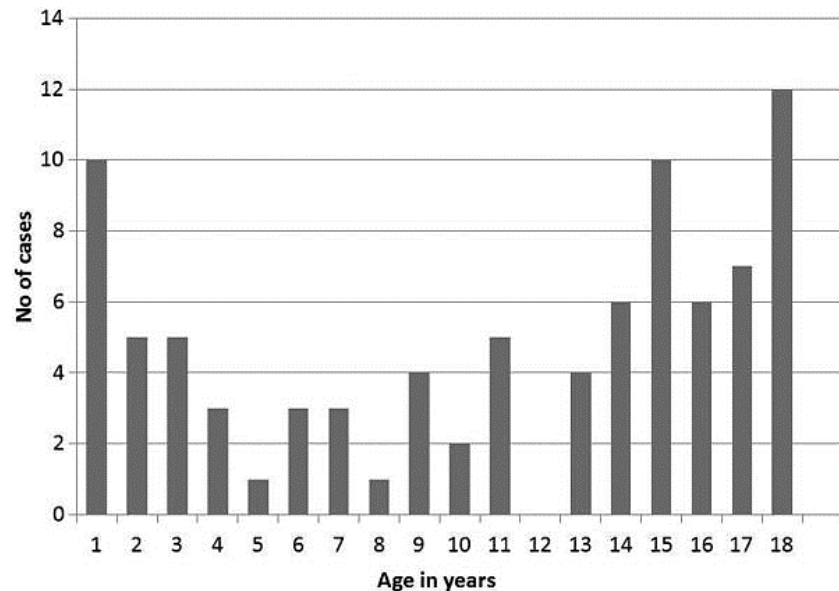
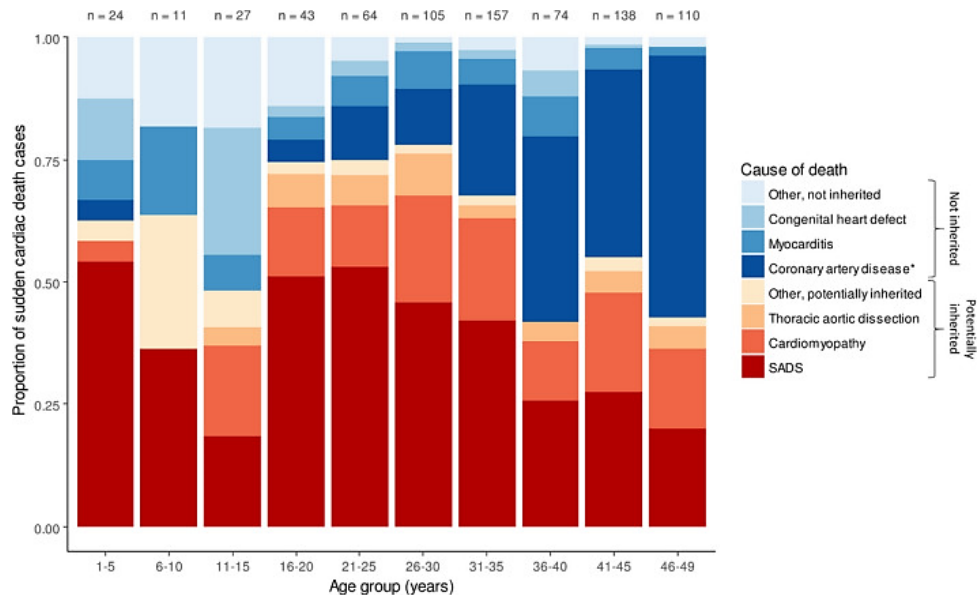


- Can it be prevented?
- Screening tests?
- Genetics?
- Target population?

Sudden Cardiac Death In Children: What Do We Know?



Sudden Cardiac Death In Children: What Do We Know?



Screening For Causes Of Sudden Cardiac Death

Who?

- First degree relatives of:
SCD, known LQTc, HOCM
- Collapse with injury
- Collapse/seizure *during* exercise

Often - but no proof of benefit

- High performance athlete
- ADHD pre treatment

What ?

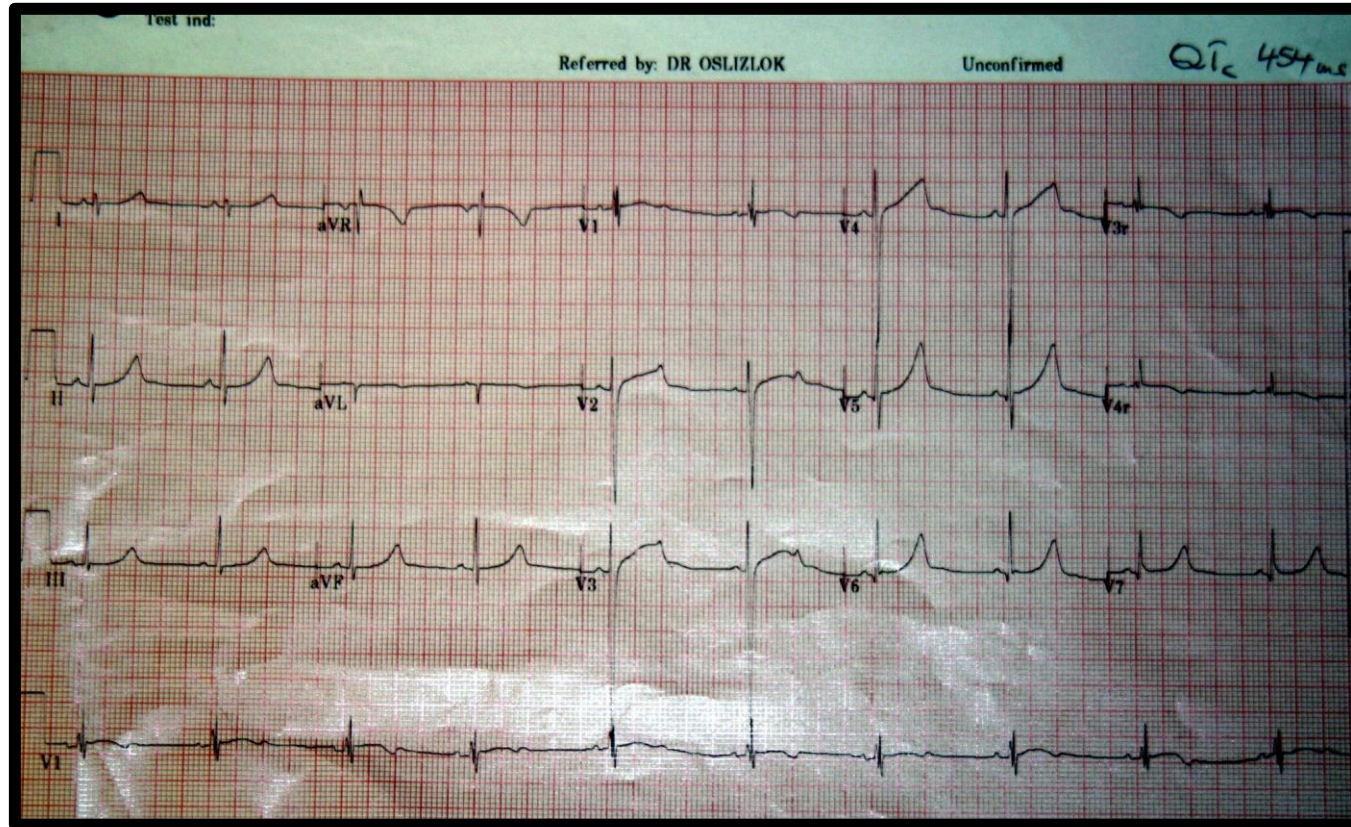
- Paediatric cardiology referral
- ECG
- Echocardiography
- Exercise stress test
- **Genetic Testing** +/- Geneticist referral

“Screening” is not (yet) sensitive or specific enough

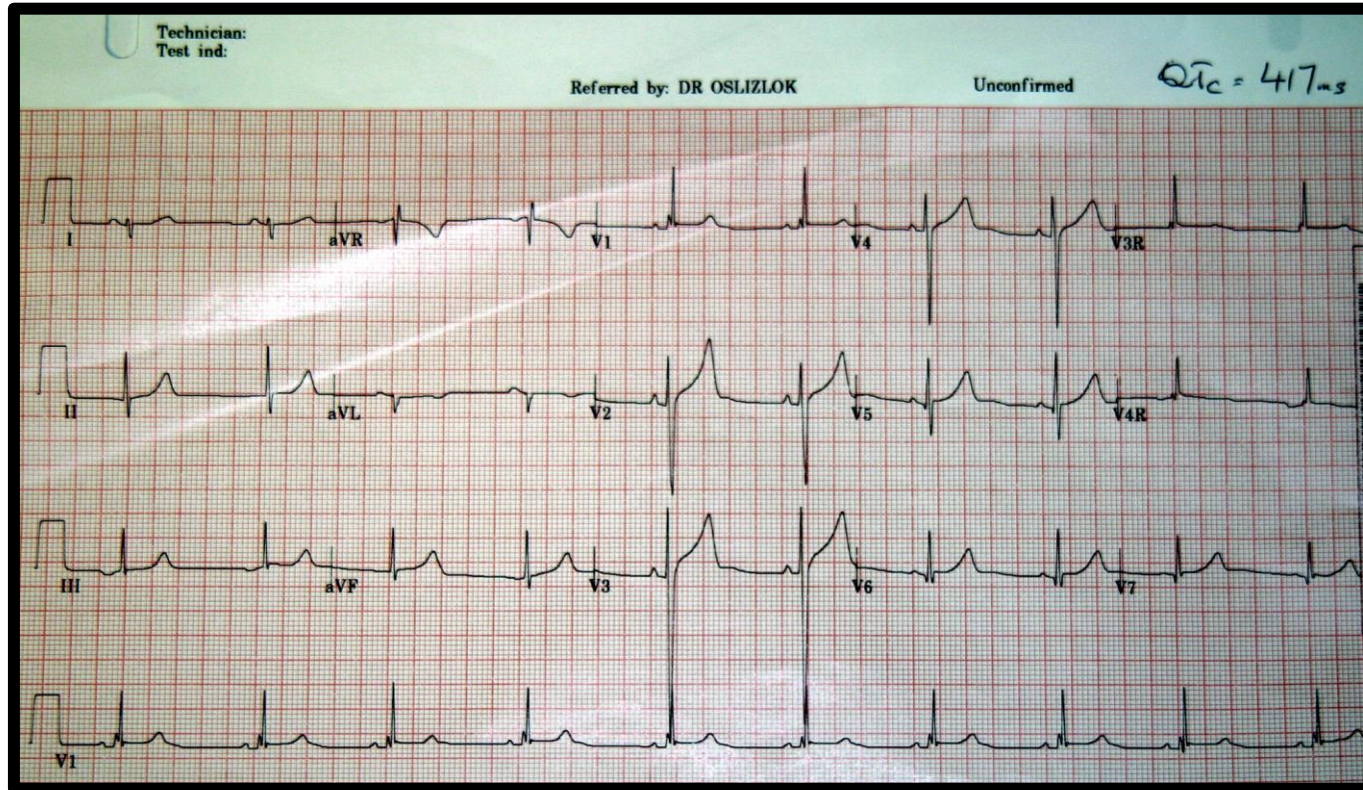
ECG as Screening Tool?



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ECG as Screening Tool?



Recurrent Chest Pain in Childhood



Causes of Chest Pain in Children

Cardiac

Coronary Artery

- Anomalous coronary artery origin
- Coronary arteritis (Kawasaki Disease)
- Diabetes Mellitus (long-standing)

Arrhythmias

- Supraventricular Tachycardia
- Ventricular Tachycardia

Structural

- Aortic Stenosis
- HOCM
- Pulmonary Stenosis
- Mitral Valve Prolapse (MVP)

Infection

- Pericarditis
- Myocarditis

Non-Cardiac

Musculoskeletal

- Chest wall strain
- Direct trauma
- Rib fracture
- Costo-chondritis

Respiratory

- Pneumonia
- Severe cough
- Asthma
- Pneumothorax
- Pulmonary embolism
- Pleurisy (Coxsackie)

Psychological

- Stress-related pain

Gastro-intestinal

- Reflux
- Oesophageal foreign body

Miscellaneous

- Shingles
- Marfan's Syndrome (Aortic aneurysm)
- Sickle Cell crisis

Idiopathic

Non-Specific Chest Wall Pain ←

Recurrent Non-Specific Chest Wall Pain in Childhood

Sharp, localised

Left sided or Central Chest

Short-lived

Not exclusively exercise-related

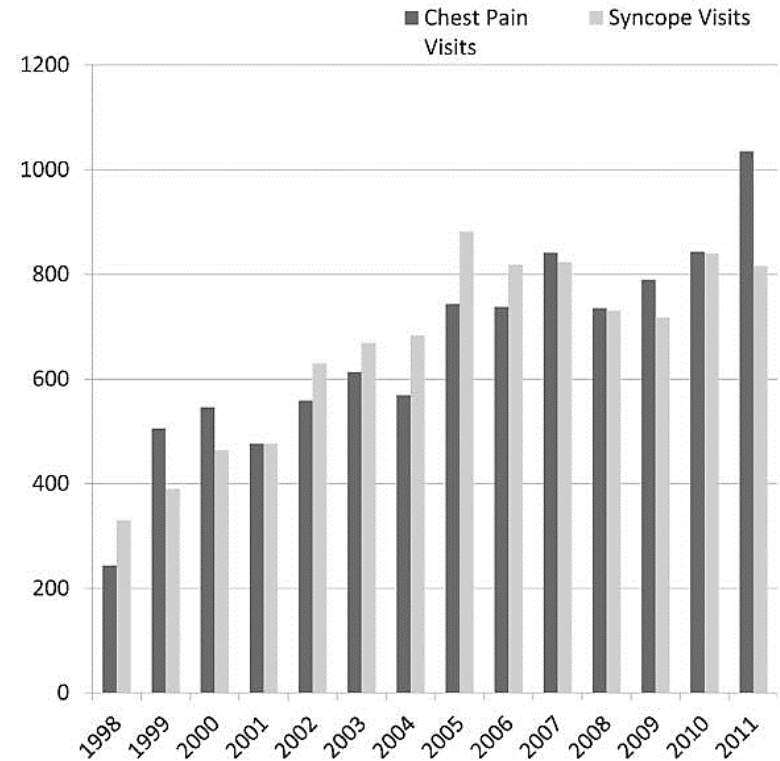
No associated nausea, vomiting, syncope

Normal cardiac exam

Normal ECG

Benign!

No association with Sudden Cardiac Death



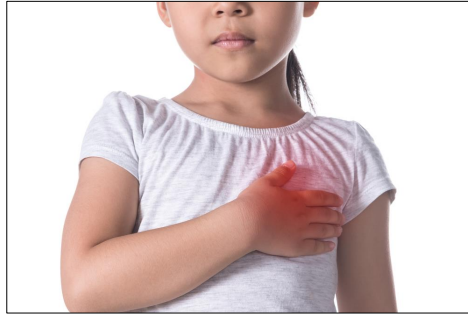
Recurrent Chest Pain In Childhood: Who To Refer?

- Persistent (hours/days) – consider pericarditis/myocarditis
- Associated with irritability, fever, perioral rash, skin peeling (Kawasaki Ds)
- Associated with abnormal cardiac exam (SVT, HOCM, AS)

Very Rarely

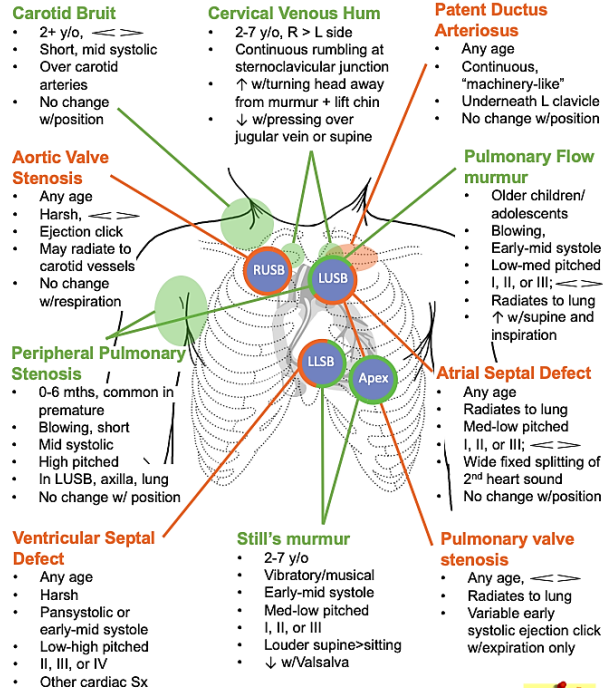
- Exclusively with strenuous exercise (coronary artery anomalies, myocardial bridging)
- Associated with nausea/vomiting/syncope (coronary artery abnormalities)

Murmurs In Infants And Children



Murmurs in Childhood: Benign v Pathologic

EXAMPLES OF INNOCENT AND PATHOLOGIC MURMURS



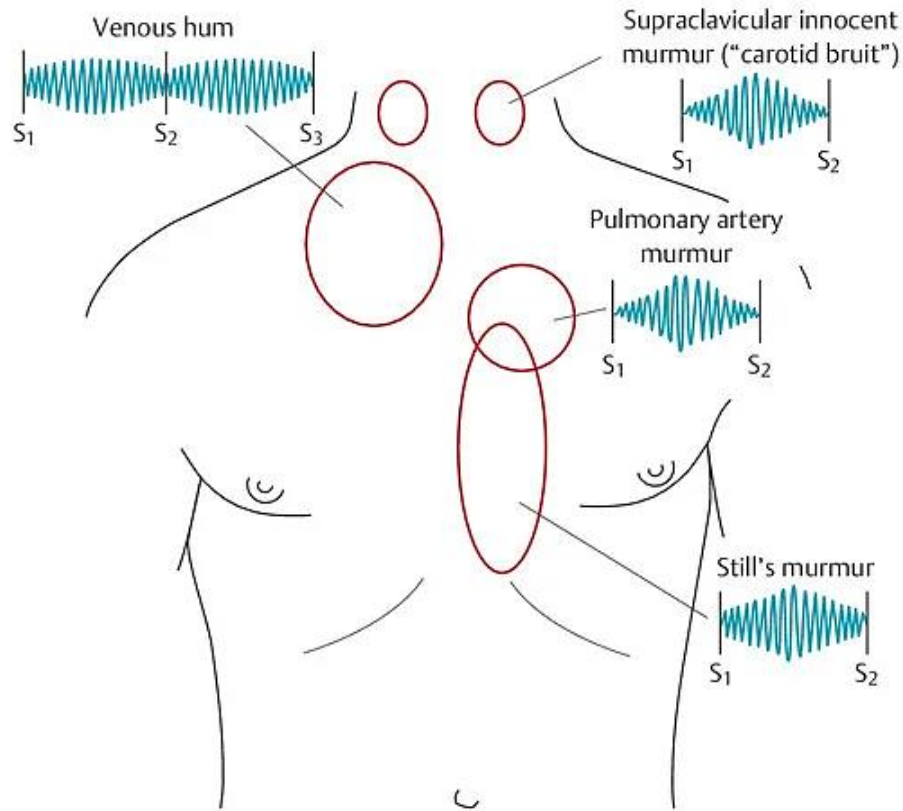
Murmurs in Infancy and Childhood

Very common finding (60-70% at some stage in childhood)

Usually innocent

- Well nourished
- Pink, non-dysmorphic
- Systolic
- Soft/Musical
- Localised – no significant radiation
- Otherwise normal cardiac exam
- Normal brachial and femoral pulses
- If febrile, listen again when afebrile

Innocent Murmurs In Infancy And Childhood



Murmurs In Infancy And Childhood: Who To Refer?

Any infant or child
who doesn't
comfortably fit the
"Innocent" profile

Any **symptomatic
infant** (tachypnoea,
poor feeding, poor
weight gain) with a
murmur

Any **symptomatic
older child** (esp SOB)
with a murmur

Parental concern!

Cyanotic Episodes in Infants and Small Children



Cardiac cyanosis (central):

- persistent (asymptomatic “happy blue”),
- intermittent (distressed, gasping, prominent murmur – “tet spell”)

Respiratory cyanosis (central):

- always extreme distress, dyspnoea

To Conclude

Sudden death in childhood is extremely rare and is unlikely to be preceded by symptoms or prodromes

Screening tests are indicated in selected circumstances

Intermittent chest pain in children is virtually never cardiac in origin

Paed cardiology referral if chest pain is atypical

Most murmurs in infants and children are innocent (normal)

Paed cardiology referral if any doubt or parental concern

Intermittent cyanosis in an asymptomatic child is never cardiac in origin

Paed cardiology referral may be indicated if associated with significant symptoms or syncope

Thank You