PAEDS. CARDIOLOGY IN PRIMARY CARE.

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LEARNING OBJECTIVES

- Red-Flag overview
- Syncope/Presyncope
- Murmurs
- Palpitations

- Chest pain

- Paediatric ECGs
- Miscellaneous

DISCLOSURES

- No conflict of interest.

- Stakeholder in care/referral of these patients:
  - Questions welcome.
  - Case based content.
  - Resource sign-posting.

(ANONYMOUS) CONFESSIONS OF A COLLEAGUE(S).

- **Murmurs** – any tips on normal vs abnormal newborn heart sounds?
- **Palpitations** – how do I know my patient is going to arrest 2' to arrythmia?
- **Syncope** – help to reassure parents re vasovagal syncope vs significant heart disease.

RED-FLAG PAEDS. CARDIOLOGY

Concerning clinical features:

- Loud murmur (++ when under 2y, FTT, previously nil).
- ECG – helpful; careful when stating 'normal'.
- Exercise induced symptoms.
- Palpitations with WPW/abnormal ECG

- Rarely significant: presyncopal/chest pain
  Palpitations <5min (++ at night).

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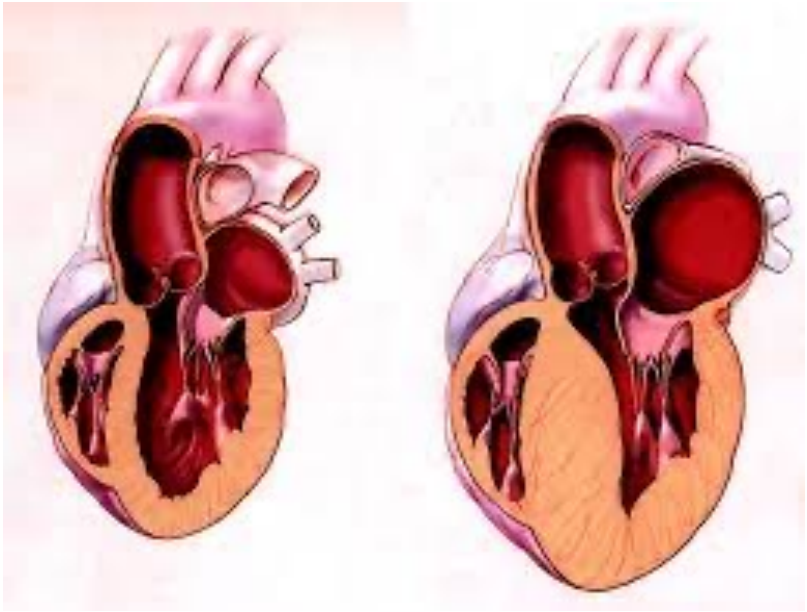
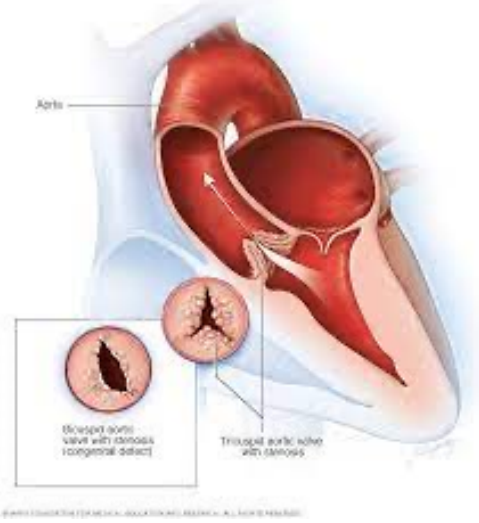
SYNCOPE/PRESYNCOPE

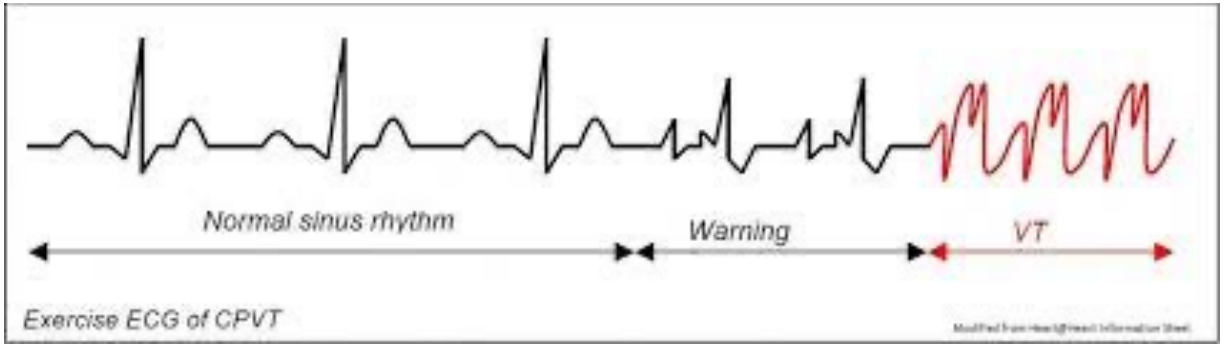
- Common referral.
- Rarely pathological – mostly postural hypoTN

- Cardiac diagnoses to exclude (PEC clinic):
  - Structural cardiac disease
  - Electrical cardiac disease
  - POTS

SYNCOPE/PRESYNCOPE







?VASOVAGAL SYNCOPE

- Case: 14yo girl with recurrent blackouts.
- History key to diagnosis:

- **Pre-event:**
  - Precipitant and context. ?Palpitations. ?Peak-exercise.
  - Oral intake. Intercurrent illness. ?Menstruating.
  - Warning, dizziness, visual/auditory features.
- **Peri-event:**
  - Time, movements, continence, injury, witness.
- **Post-event:**
  - Time to return to normal cognition.

EXERCISE + SYNCOPE

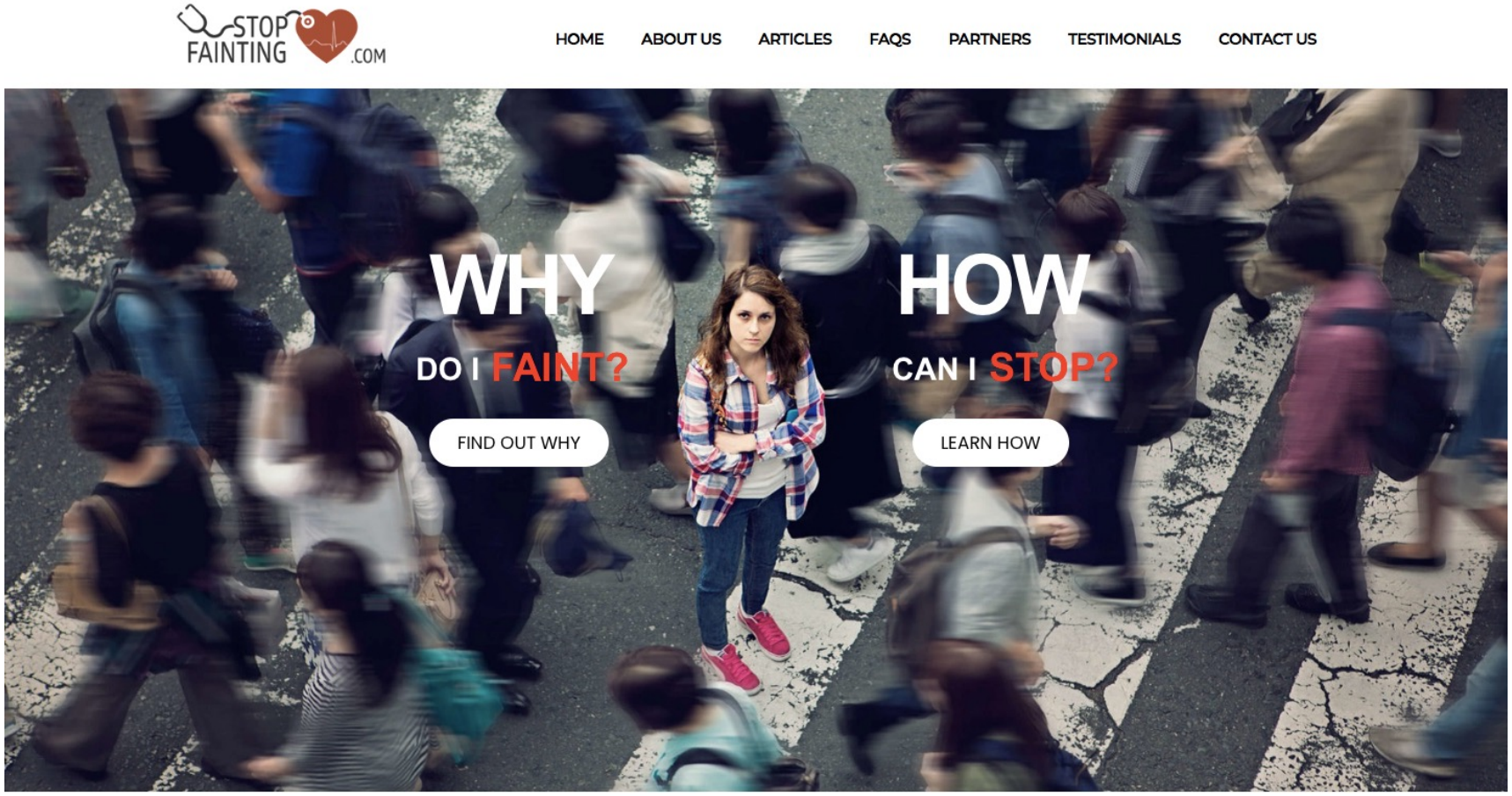
?VASOVAGAL SYNCOPE

- Referral to secondary care:

- ECG
- Lying/standing BP
- FBP, Fe, B12, Folate, TFT, U+E.

- Management:
  - Fluid and salt intake
  - Pre-episode advice. Exercise restriction? See later.
  - Advice – stopfainting.com

VASOVAGAL SYNCOPE: STOPFAINTING.COM



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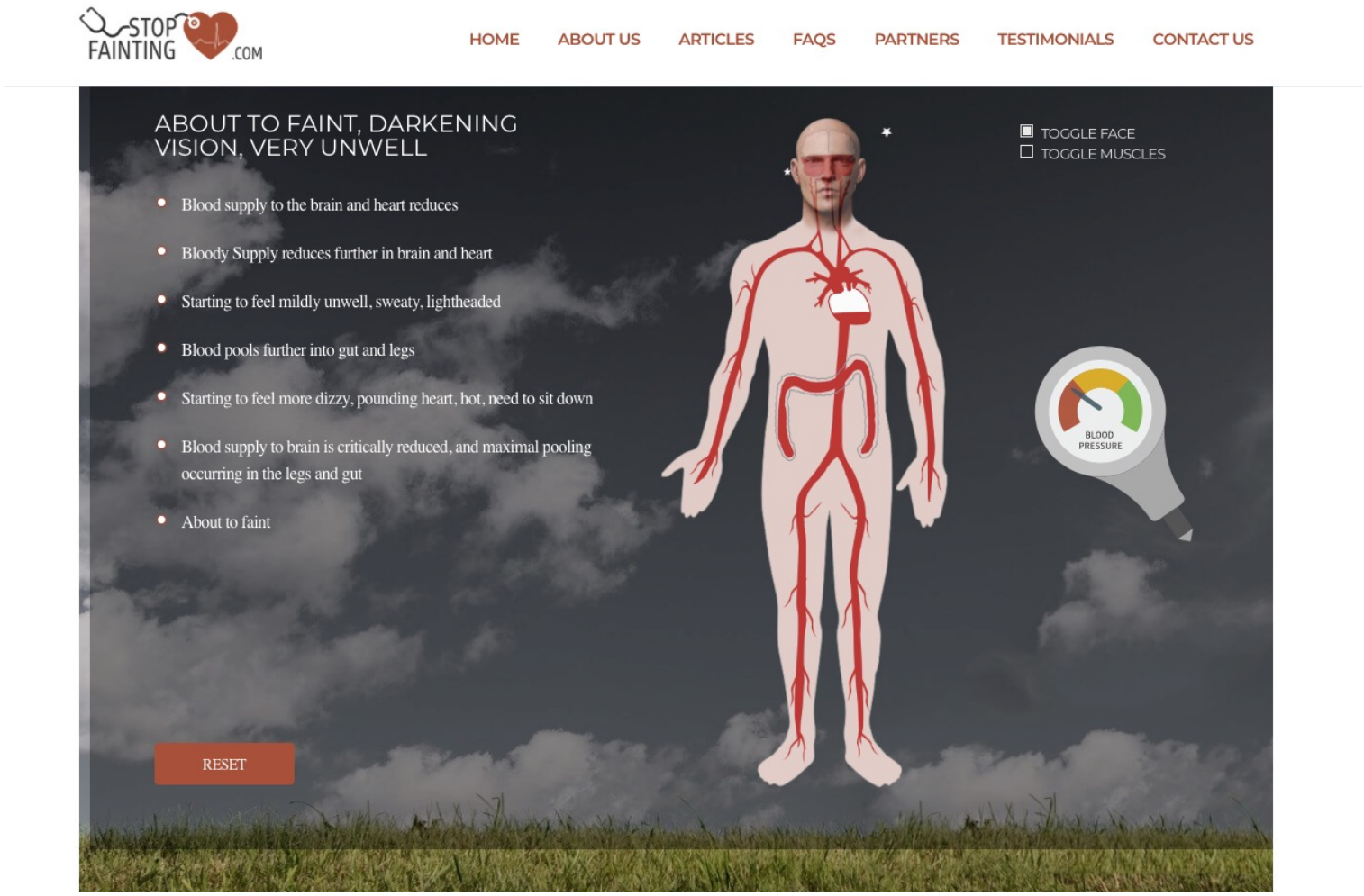

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PALPITATIONS

- Dysrhythmia vs non-organic
- Case: 15yo, previously well, 7 episodes 10min, HR 180bpm.

- **Non-organic:**
  - Length of time.
  - Infrequent
  - Associated chest pain
  - Mostly at night pre-sleep
  - No association with exercise or syncope
  - No family history
  - Normal resting ECG.

PALPITATIONS

- **Red-Flags** for dysrhythmia:
  - Associated syncope/**Syncope at peak-exercise**
  - Associated **symptoms** – sweating, pallor, 'unwell'.
  - Predictable **precipitant** eg. exercise (case – CPVT).
  - **Family history**
    - Sudden/unaccounted death
    - LQTS. Brugada. WPW.
  - Length of time
  - Resolved with **vagal-maneuvers.**

WHAT IS NORMAL HEART RATE?

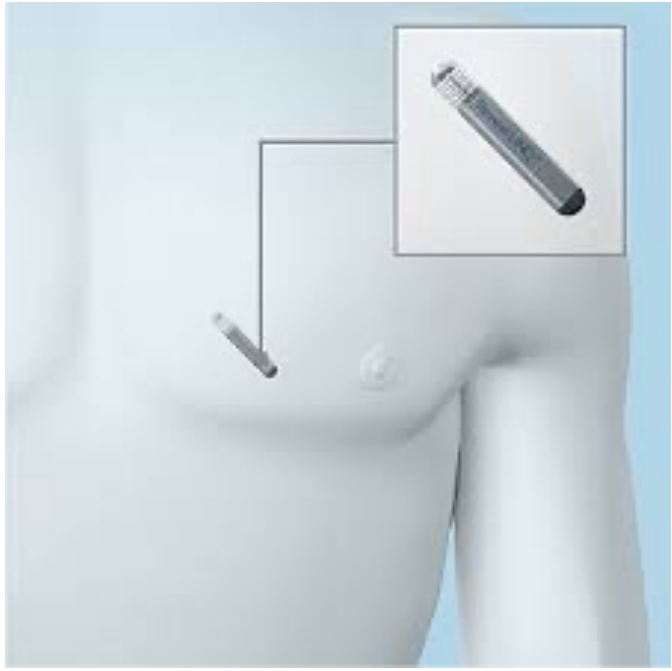
Normal values at different ages (APLS, Edition 5)

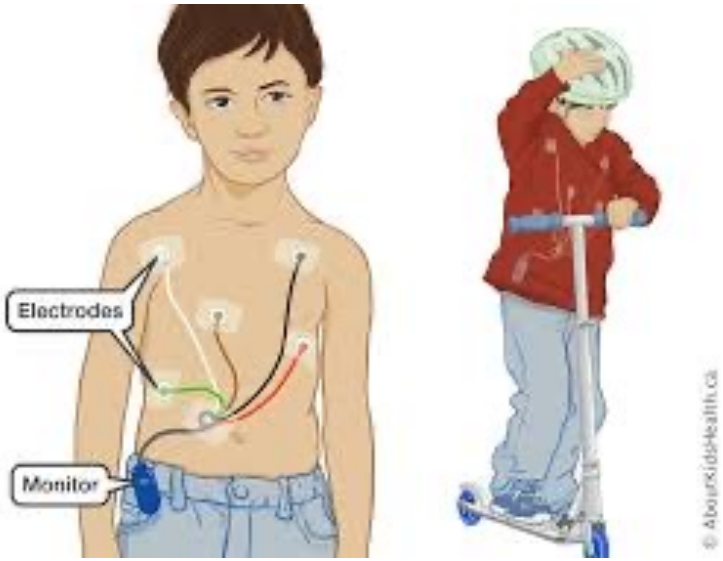
Age of child (years)	Under 1	1–2	2–5	5–12	Over 12
Respiratory rate	30–40	25–35	25–30	20–25	15–20
Heart rate	110–160	100–150	95–140	80–120	60–100
Systolic blood pressure	80–90	85–95	85–100	90–110	100–120

ARE SYMPTOMS DUE TO SVT?

- History key.
- Capture episode palpitations.

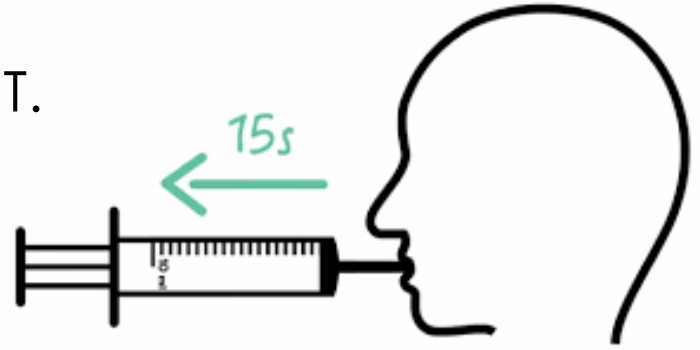
- Holter monitor. Reveal device.





PALPITATIONS

- Referral to secondary care:
  - Investigate – ECG, 24 hour tape, EST.
  - Red-flag advice.
  - Educate re counting HR.
    - Pulse site, normal ranges, ?smart-watch
  - Educate re Valsalva maneuvers.
    - Syringe, headstand, ice-cold drink.

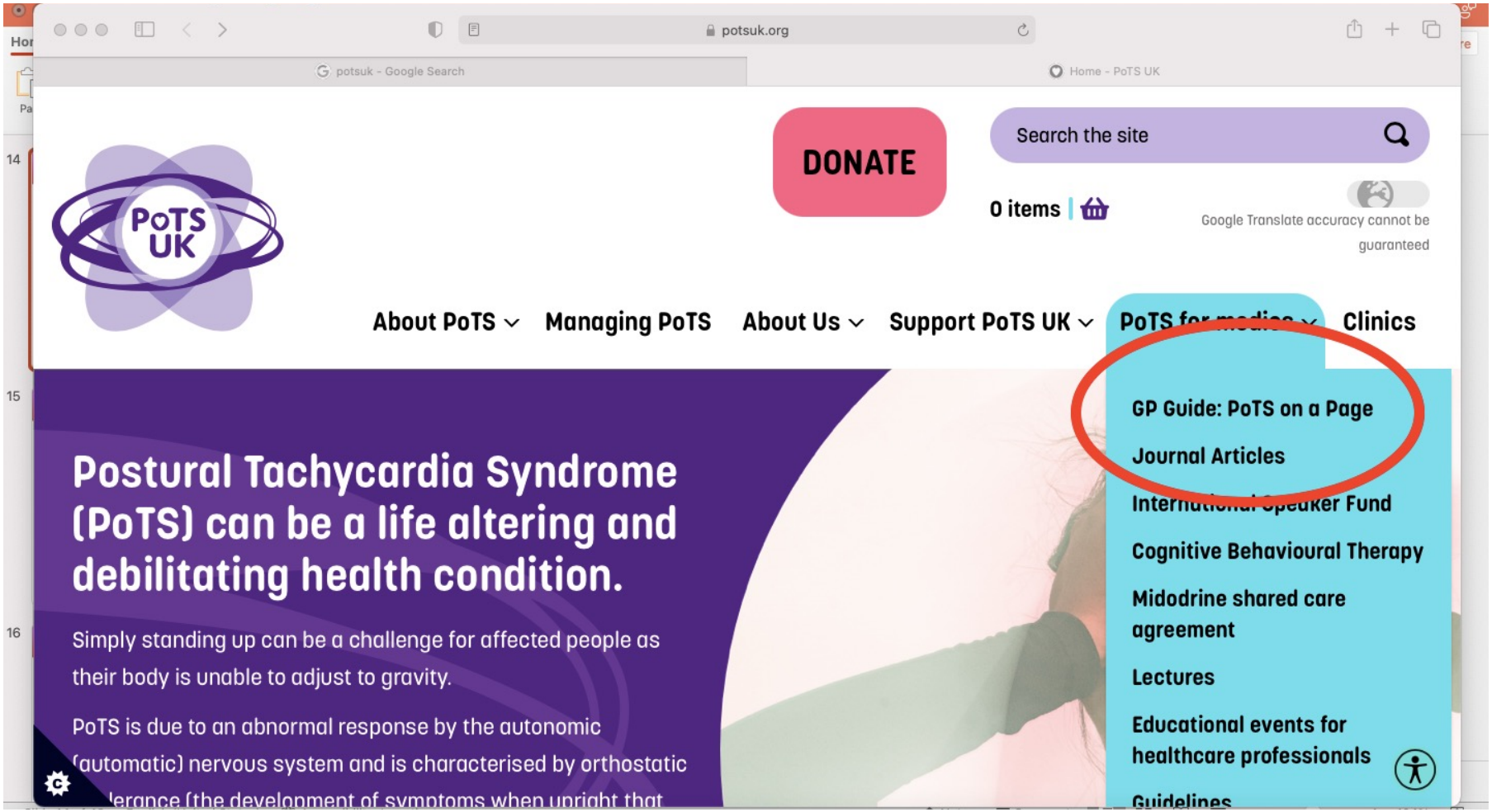


POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME (POTS)

- Abnormal autonomic NS response
- Orthostatic intolerance
- Symptoms:
  - Palp, dizziness, fatigue, headache
  - Syncope, nausea.

- Heart rate increase; without BP decrease.
- 10 minute standing test.
- Lifestyle measures and some (limited) role for meds.

WWW.POTSUK.ORG



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MURMURS

- Case: 8 week old, term infant, asymptomatic, murmur.

- History:
  - Feeding - ?breathless
  - Weight gain and centile chart
  - Sweating
  - CCF symptoms – presenting at 3 months not 3 days.

- Examination:
  - Murmur – present/absent
  - Femoral pulses – present/absent

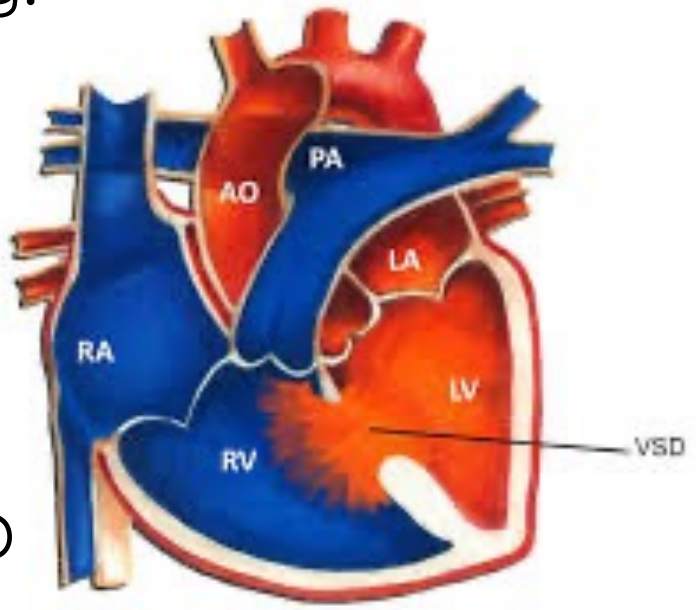
MURMUR

- Referral to secondary care:

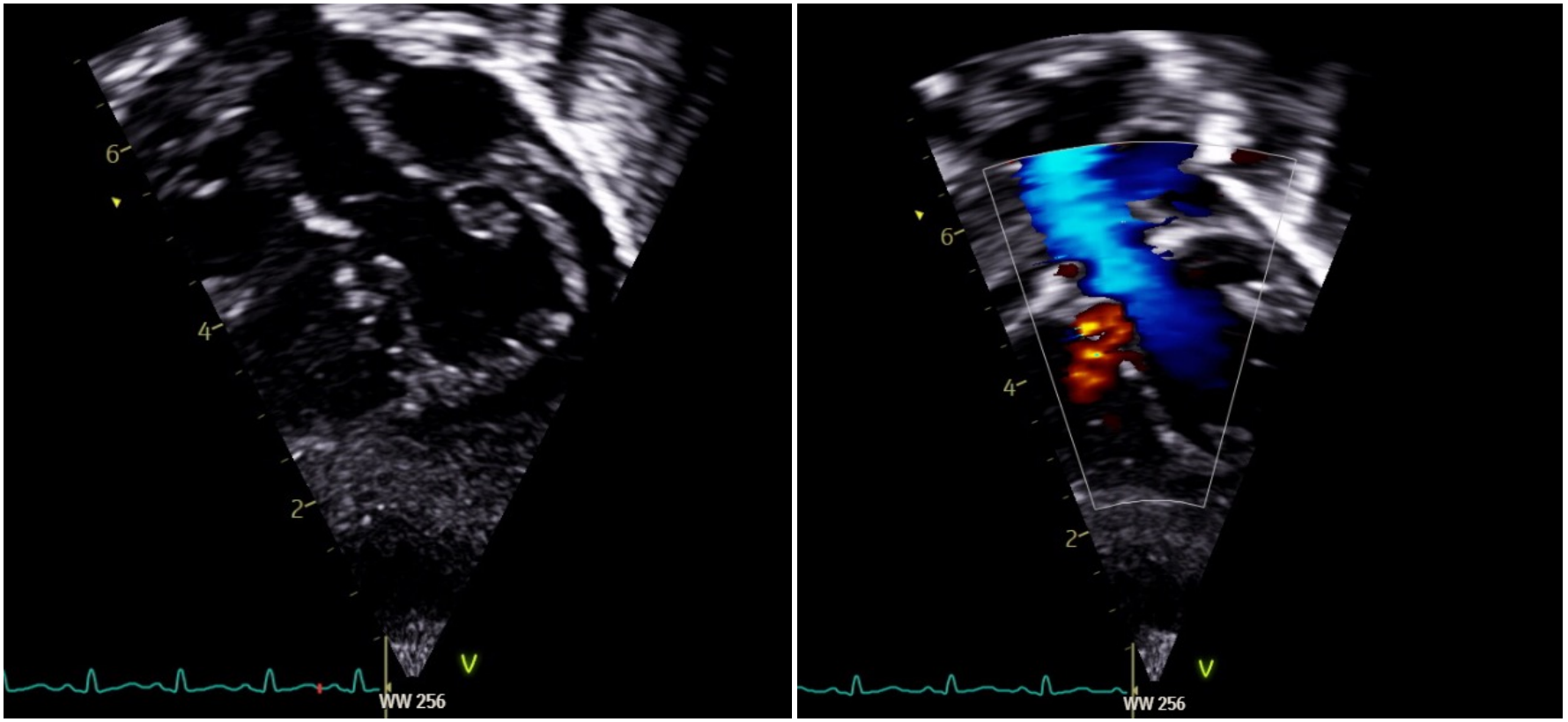
- Maternal concern in absence of murmur?
- Feeding. Weight gain. WOB. Sweating.

- SaO2. ECG. CXR.
- Murmur characteristics.
- ?Echo.

- Diagnoses: Innocent vs PDA/VSD/ASD

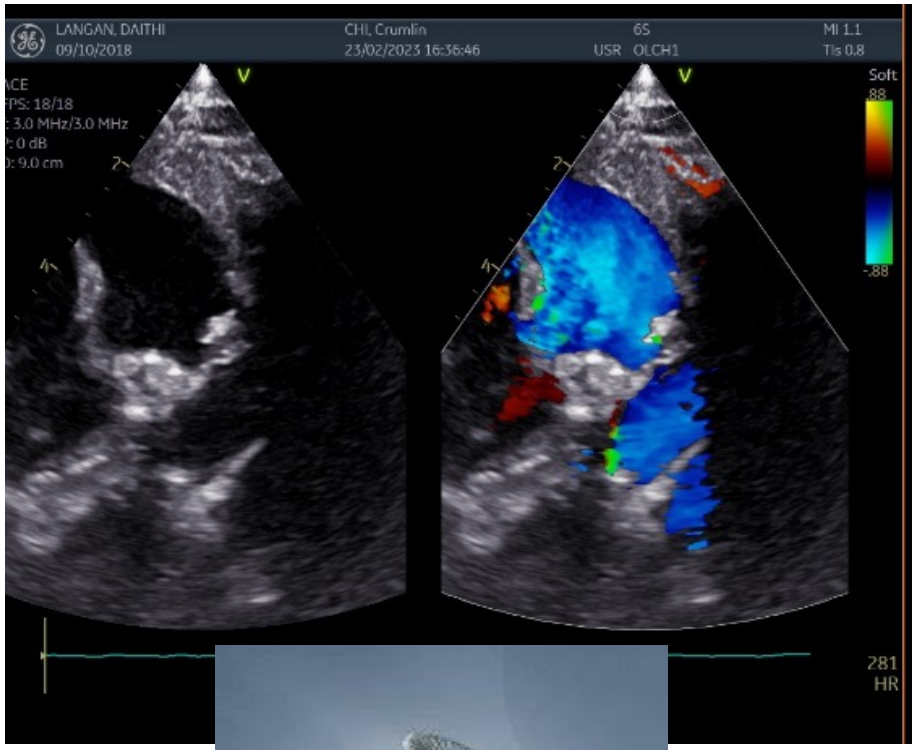


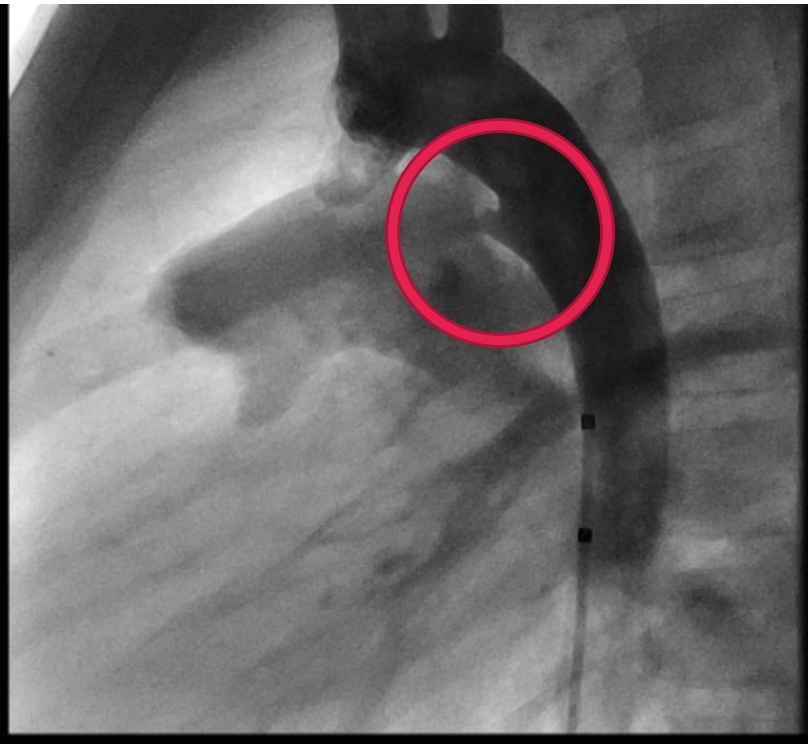
MURMUR – 8 WEEK OLD.



I wonder if you would be able to see Daithi who has a persistent heart murmur. I am not entirely sure that this is an innocent murmur.

Daithi is just over two. He was referred up to me just after a year of age by his GP with a heart murmur that had been heard on routine examination by his GP.





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CHEST PAIN

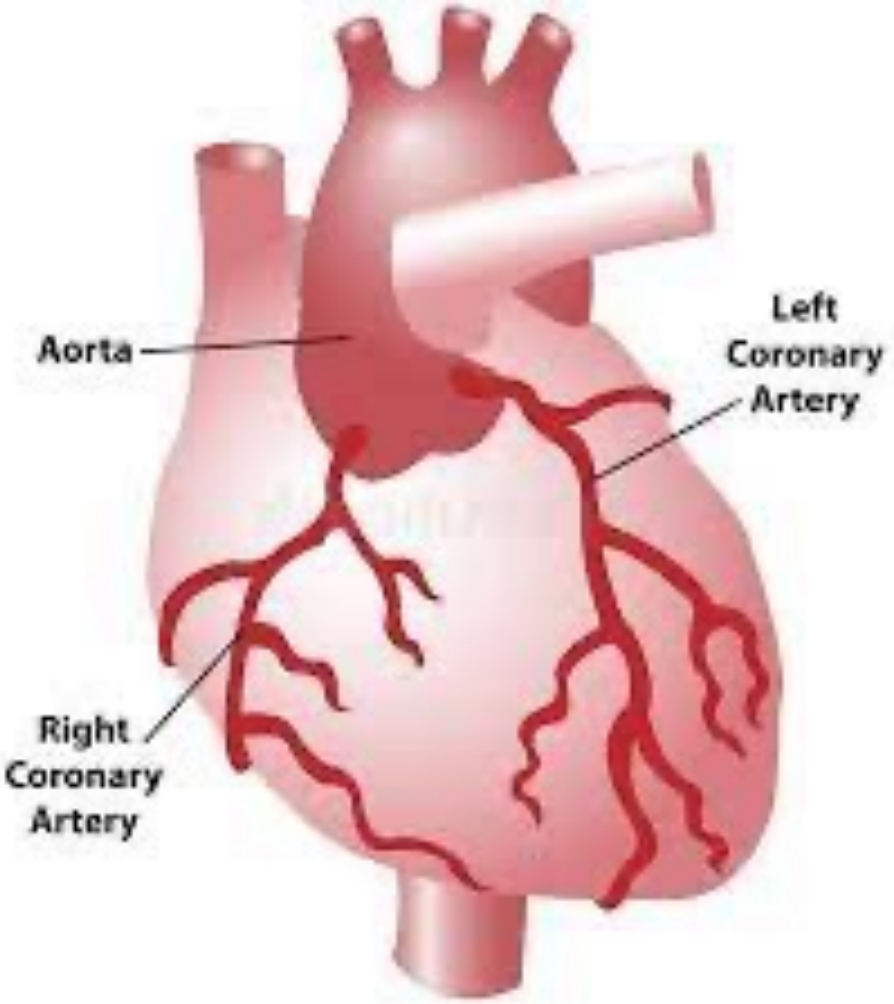
- Case: 10yo central CP, missing school, mum worried.

- **Almost never pathological.**
- **"CHD = paeds. IHD = adults."**

- Co-morbidities to consider:
  - PMHx: Previous Kawasaki's disease, CHD, Duchenne's muscular dystrophy (steroid induced septal hypertrophy).
  - FHx: unaccounted deaths, cardiomyopathy

  - Exam: Aortic valve disease (murmur). Dysmorphic – William's syndrome.

CHEST PAIN



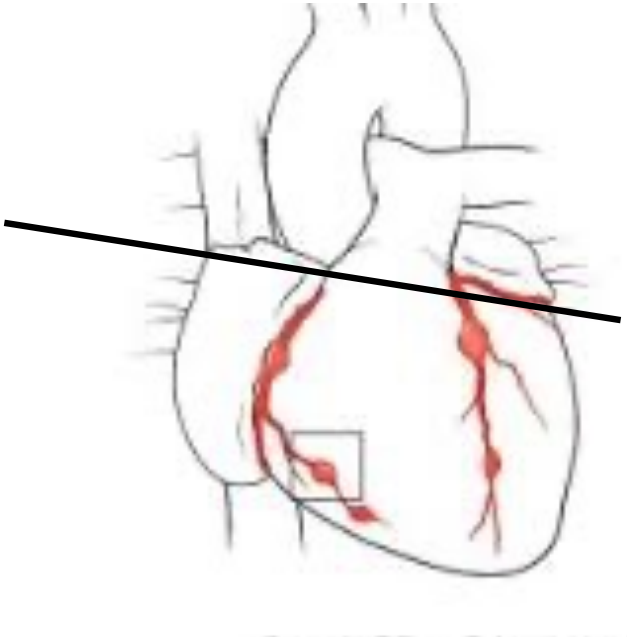
- Kawasaki's D.
- AoV disease
- William's syndrome
- CHD (eg. TGA)
- LVOTO

KAWASAKI'S DISEASE

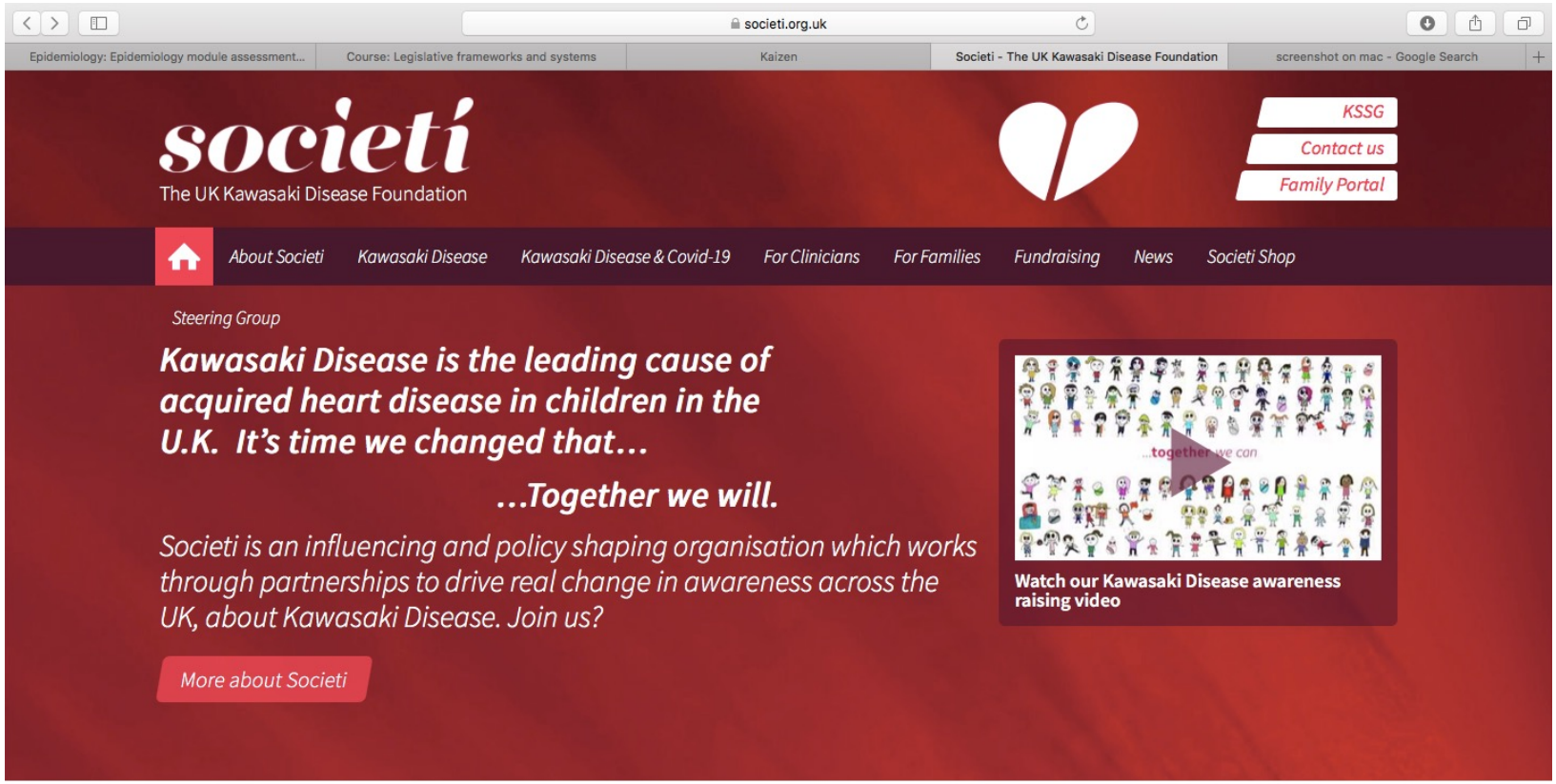
- Case: 4yo, temps. 5 days, Amoxil day 3, rash.

- **T** – temperatures (x5 consecutive days)
- **E** – erythematous hands/feet with swelling/peeling
- **M** – mouth – reddened lips
- **P** – Pace (treat early)
- **E** – eyes – non-purulent conjunctivitis
- **R** – rash
- **S** – swollen glands (can be unilateral).

KAWASAKI'S DISEASE



KAWASAKI'S DISEASE



SOCIETI.ORG.UK

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Kawasaki Disease is predominantly a childhood illness though it can affect people of any age. Its cause is unknown. **Kawasaki Disease is the leading cause of acquired heart disease in children**. Awareness of Kawasaki Disease is currently low and it is often mistaken for other common childhood illnesses, leading to misdiagnosis and delayed treatment. Children who go untreated or who are treated later face higher risks of developing complications including life long heart damage.

Early diagnosis and treatment are key to better outcomes

...for our children

societi
The UK Foundation for Kawasaki Disease
www.justgiving.com/societi

societi.org.uk

Kawasaki Disease?
Remember TEMPERS
Children with **Kawasaki Disease** *are characteristically irritable!*

Temperature – **Persistent high fever**

Erythema – reddened hands and feet with swelling

Mouth – dry, sore mouth, cracked lips, 'strawberry tongue'

Pace – **Treat early** to reduce potential heart damage

Eyes – bloodshot, non-sticky conjunctivitis

Rash

Swollen glands in neck, often just one side

If a child has a **PERSISTENT FEVER** *and two or more of these symptoms* **THINK KAWASAKI DISEASE!**

5 days of fever?
THINK Kawasaki Disease

Kawasaki Disease
is the **#1** *cause of acquired heart disease in children in the UK...*

...help us change this.

Kawasaki Disease – who does it affect?
It is mostly a childhood illness with over 75% of those affected being under 5 years old but it affects older children too.

Kawasaki Disease – what's the issue?
In the UK awareness of Kawasaki Disease is low. Currently UK diagnosis and treatment times are too slow. **39%** of babies (under one year) treated for Kawasaki Disease develop serious heart problems. **28%** of diagnosed children experience heart complications. Overall, **19%** of children treated develop serious heart damage. For a few children every year Kawasaki Disease is fatal ...help us change this. We need everyone to know Kawasaki Disease as early diagnosis and treatment can prevent heart damage. (Data from BPSU Study, Kawasaki Disease UK & Ireland 2013-2015)

Kawasaki Disease – how common is it?
Hospital admissions in England for Kawasaki Disease have increased fourfold in the last ten years. It's more common than some types of meningitis. About 1 in 10,000 children are currently diagnosed each year and very poor levels of awareness mean many more children may be affected.

Kawasaki Disease – what can I do?
Know the symptoms and remember, symptoms may not appear all at once. Not all children present with all symptoms so – if a child has a **PERSISTENT FEVER** for 5 DAYS or more with 2 or more of the symptoms overleaf THINK Kawasaki Disease and seek URGENT medical advice. **You** could save a child's heart.

Kawasaki Disease is serious! Awareness is urgent!
Today, most people haven't heard of Kawasaki Disease. That's one of the biggest challenges we face. Help us get it known because Kawasaki Disease is increasingly common in the UK. Too many children and young people today have lifetime heart damage because of Kawasaki Disease ...help us change this.
For more information visit societi.org.uk

Endorsed by RCPCH Royal College of Paediatrics and Child Health

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PAEDIATRIC ECG

- Useful in Primary care.
- Beware when telling parents ‘ECG normal’.
- ‘No obvious abnormality’ - more accurate.
- QRS axis, modified Bazette’s formula.

- www.litfl.org ECG library/resource.

COMMON PITFALLS.

- Exercise restriction – specific reasons; urgent patients only.
- ‘Referred for Echo’.

- Beware Long QT medications

ALL ISLAND CHD NETWORK

- www.potsuk.org - POTS
- www.society.org.uk – Kawasaki's Disease
- www.stopfainting.com – Vasovagal syncope
- www.litfl.com – ECG library
- www.crediblemeds.org – meds to avoid in Long QT

QUESTIONS?