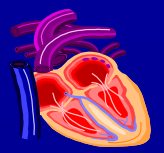
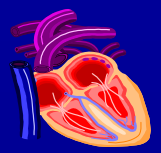


Heart Murmurs in Childhood

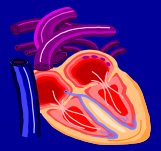
Dr Tom Gentles, FRACP
Paediatric Cardiologist
Starship Children's Hospital
KidsHearts, Auckland Heart Group

Aims



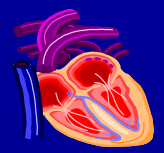
- Identify infants and children with heart disease
- When there is no heart disease, reassure families that the child's heart is normal

Incidence of Murmurs in Childhood



- > 50% of children have a systolic murmur
- >15% have a systolic murmur ≥ 2/6 intensity
- most do not have congenital heart disease
- most do not need further investigation

Young infants (<12 months of age)



- A heart murmur is more likely to be associated with congenital heart disease compared to older children

Features of congestive heart failure
- poor feeding and poor weight gain
- tachypnoea
- hepatomegaly

Cardiovascular examination
- loud murmur
- loud second heart sound
- abnormal brachial and/or femoral pulses

18 months - 3 years

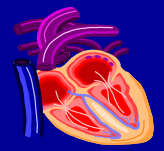
- difficult to examine and investigate




18 months - 3 years

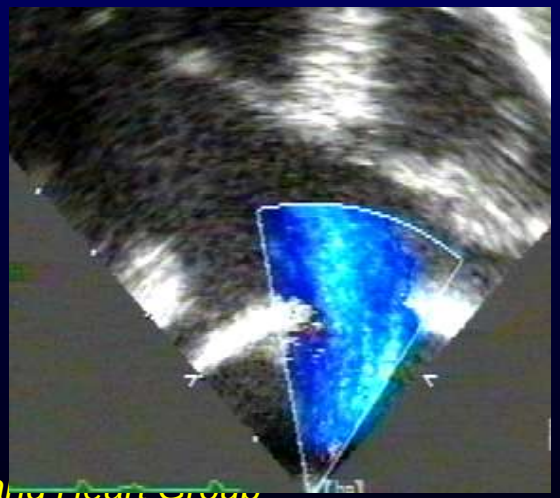
- new murmurs are unlikely to be related to important congenital heart disease
- a delay in diagnosis of an atrial septal defect or minor aortic or pulmonary valve anomalies is rarely of any consequence
- most can wait until 4-5 years of age for a further assessment

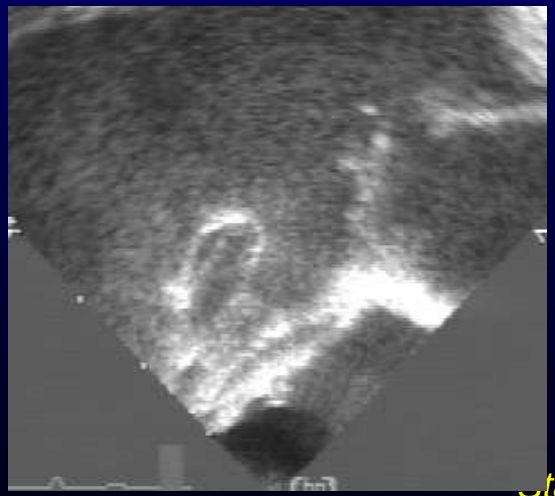
Older children



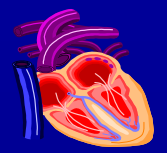
- most murmurs are innocent
- atrial septal defects commonly diagnosed after 3 years of age

hyperdynamic precordium
widely split second sound
systolic flow murmur





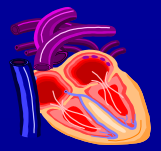
Characteristics of innocent murmurs in older children



- healthy child
- no signs of heart failure or cyanosis
- normal precordium
- murmur intensity varies with posture, increases with fever
- normal second heart sound

pathological murmurs are almost never intermittent

Vibratory murmur



- Still's murmur

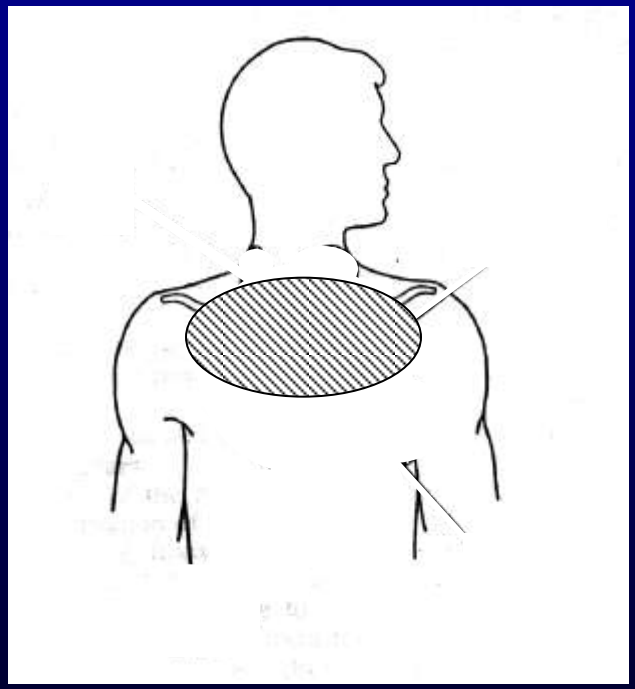
"a twanging sound, very like that made by twanging a piece of tense string" *George F Still 1909*

- aortic leaflet vibration

almost disappears with sitting

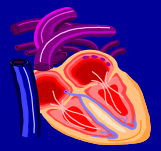
Venous hum

- continuous murmur
- accentuated in diastole

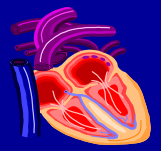


- varies with posture, head movement

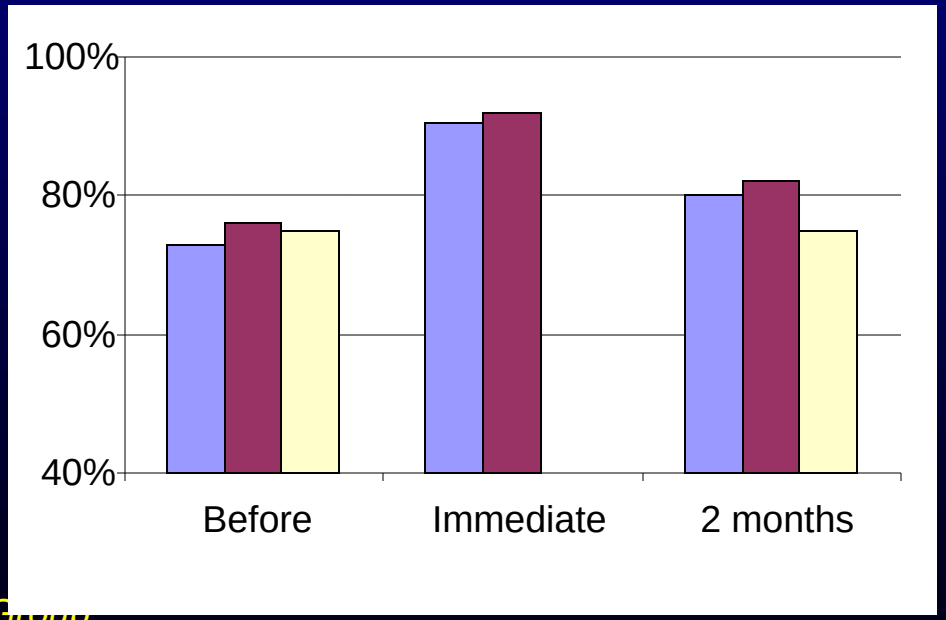
How do you KNOW??

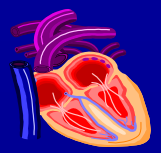


- "New auditory training programme"
  - Halifax, Canada
  - 20 nonmedical students
  - 120 senior medical students
- Pre test
  - 20 random heart murmur recordings
- One hour auditory training
  - increasing "difficulty" with requirement for 6 consecutively correct answers before proceeding to the next level



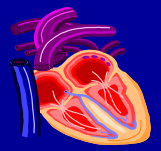
- Post test
  - Immediately after training and again 2 months later
- Control group – 42 medical students
  - No training between the pre test and the 2 month post test





- Teaches students to distinguish innocent and pathological murmurs with 90% accuracy
- Medical training not necessary
- *Reinforcement teaching will probably be necessary*

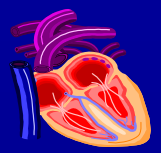
How can you learn



- Variety of web based demonstrations

http://depts.washington.edu/physdx/heart/demo.html

Echocardiography



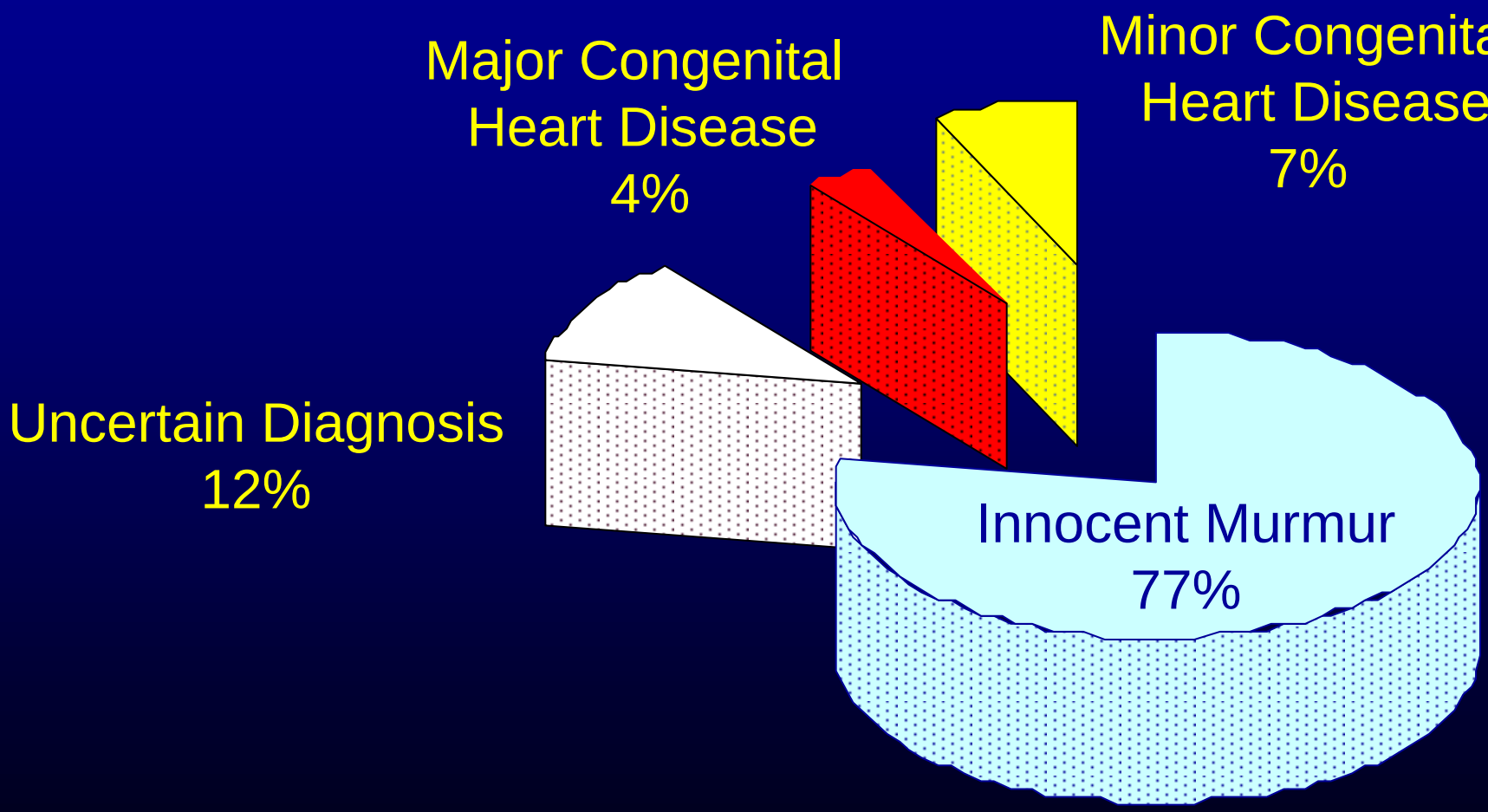
- Diagnostic imaging technique of choice

But….

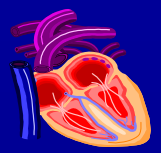
- physical examination by an experienced examiner is a very effective screening technique; specialist referral more cost-effective strategy than direct referral for echocardiography
- “false positive” heart disease (PFO, trivial mitral regurgitation etc)
- frequent need for sedation in infants

Primary care referrals with murmurs in Auckland

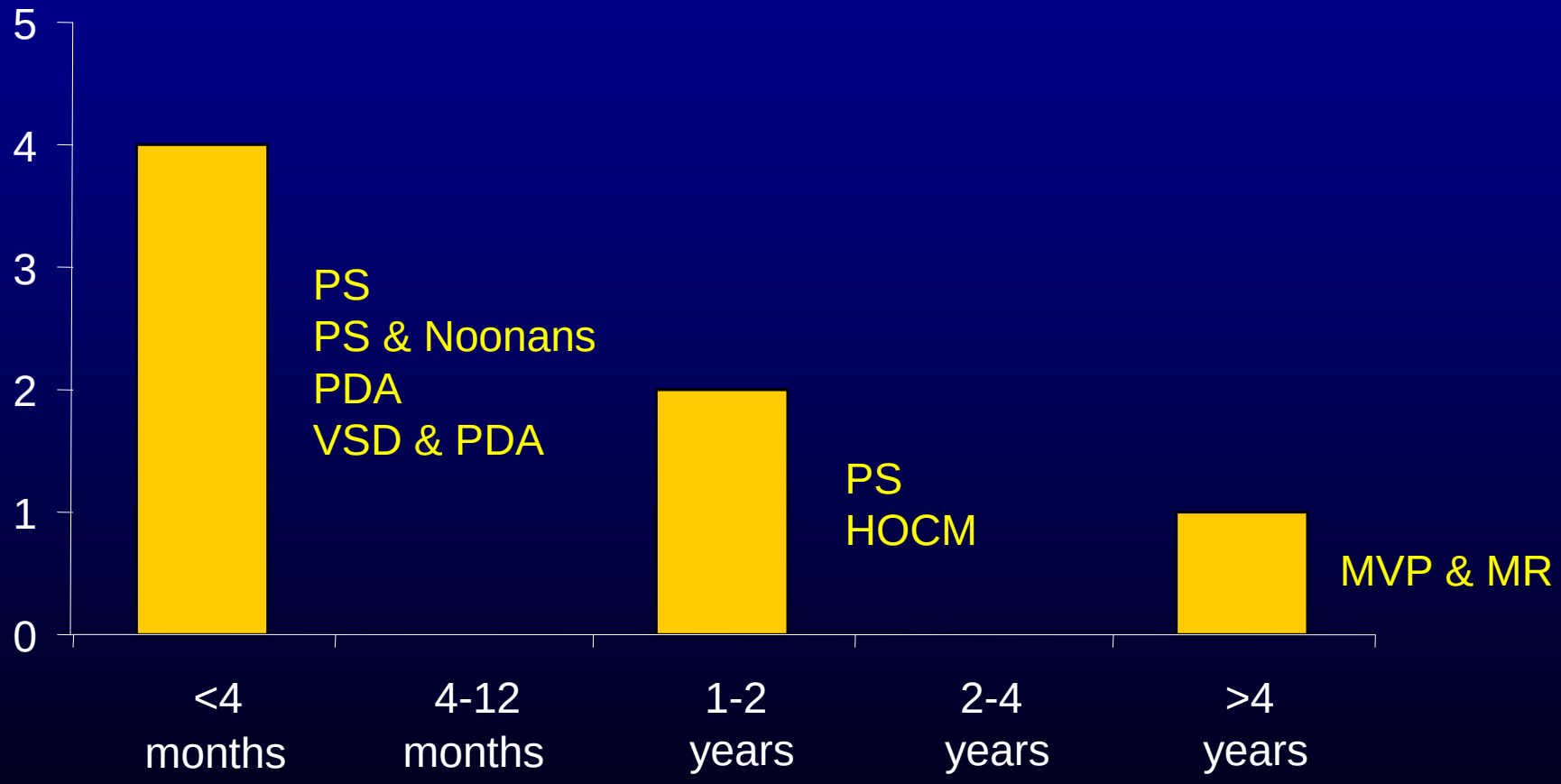
- 191 patients



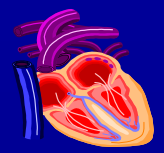
Major Congenital Heart Disease



- 7 of 191 (4%) patients

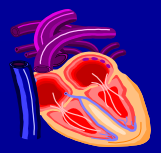


Older children



- Innocent murmurs
  - history
    - exclude exercise intolerance
    - recurrent respiratory tract infections
  - examination
    - exclude tachypnoea
    - no cyanosis
    - normal cardiac impulse
    - no palpable thrill
    - normal brachial and femoral pulses

Summary



- heart murmurs are common, significant congenital heart disease is not

- consider referral to paediatrician or cardiologist if
  - associated features on history or examination
  - young infant
  - unusual murmur
  - there is a high level of anxiety within the family