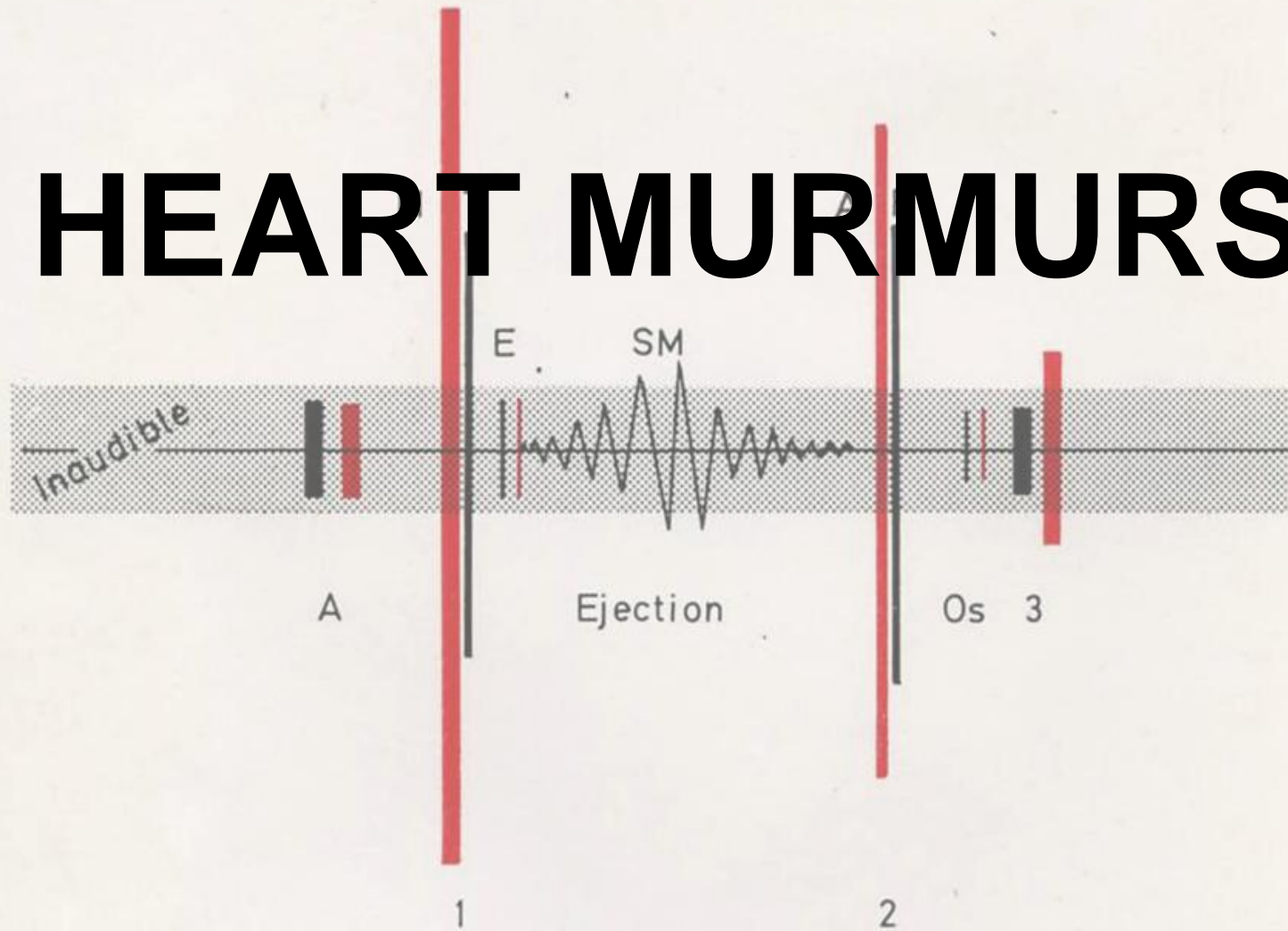


# HEART MURMURS



Ivor Gerber and Arthur Coverdale

# Cardiac auscultation skills

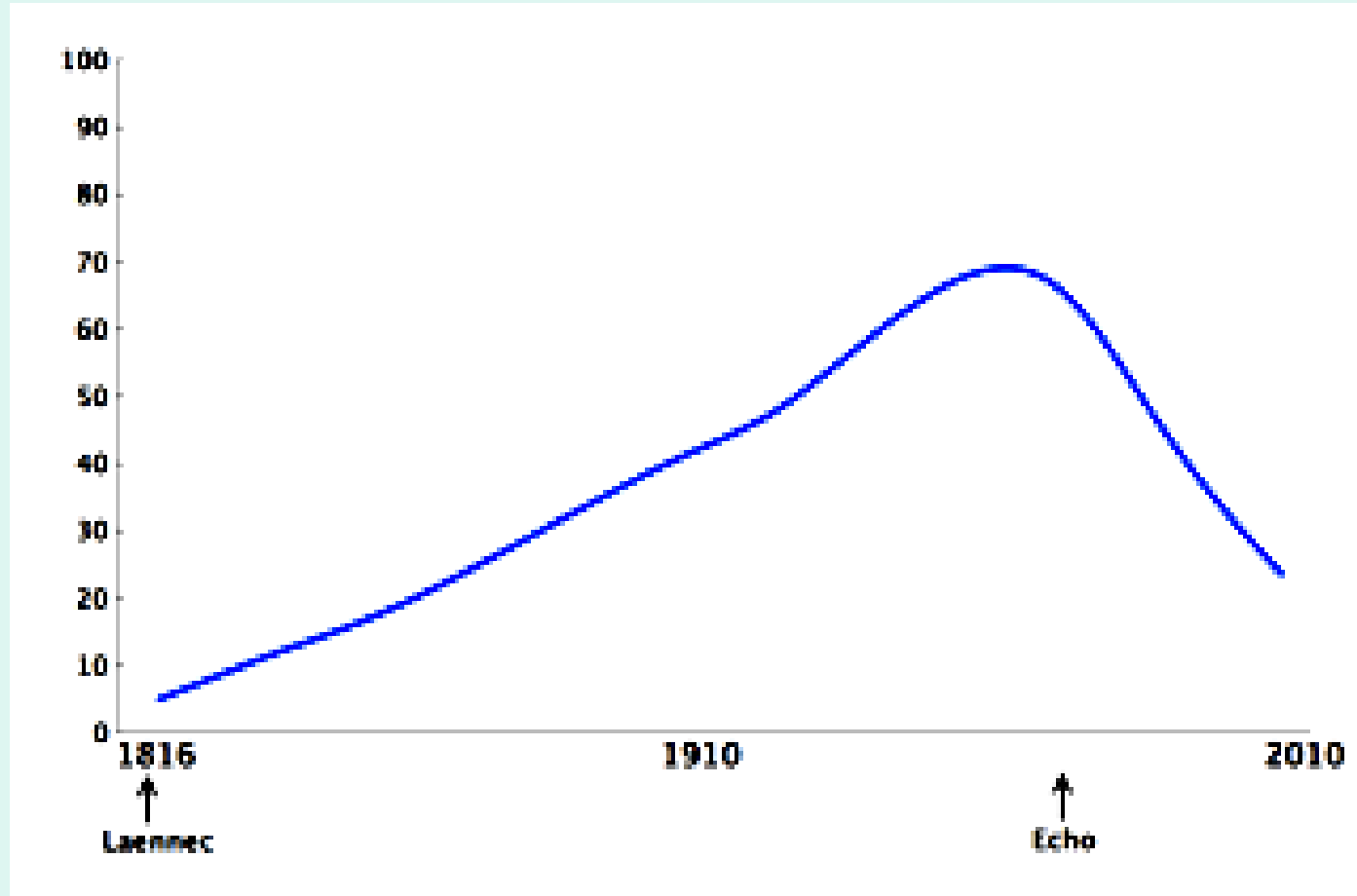
- Medical students and residents generally have poor skills (20% accuracy)

Mangione et al. Ann Intern Med 1993

- Phonocardiography no longer funded by insurance companies in USA (since late 70's)
- Use of echocardiography (since early 80's)
- Demise of bedside examination skills for physician certification (USA)

Adolf. Chest 1998

# Proficiency in auscultation



# Dr Aubrey Leatham's phonocardiograph

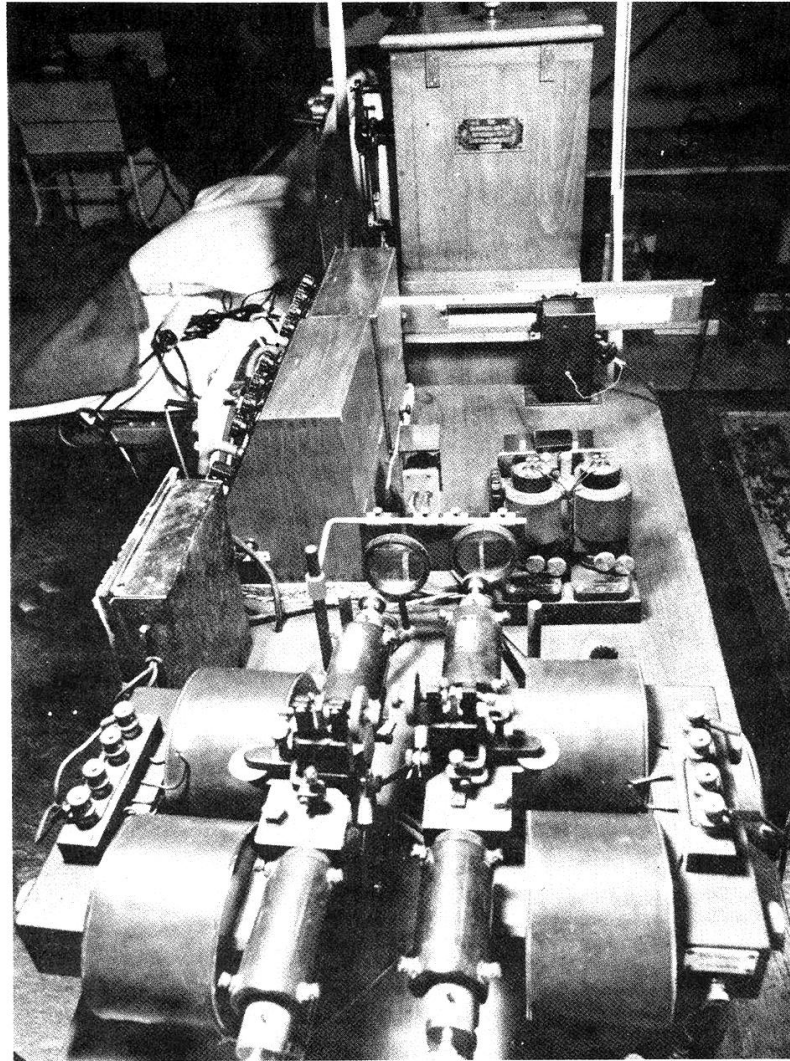


Fig. 1.5 High definition phonocardiograph. The difficulties of obtaining a suitable commercial recorder were illustrated by the need to construct this recorder consisting of two Cambridge string and two mirror galvanometers. Most of the recordings illustrating this book were made with this instrument but it is now housed in the Wellcome Museum.

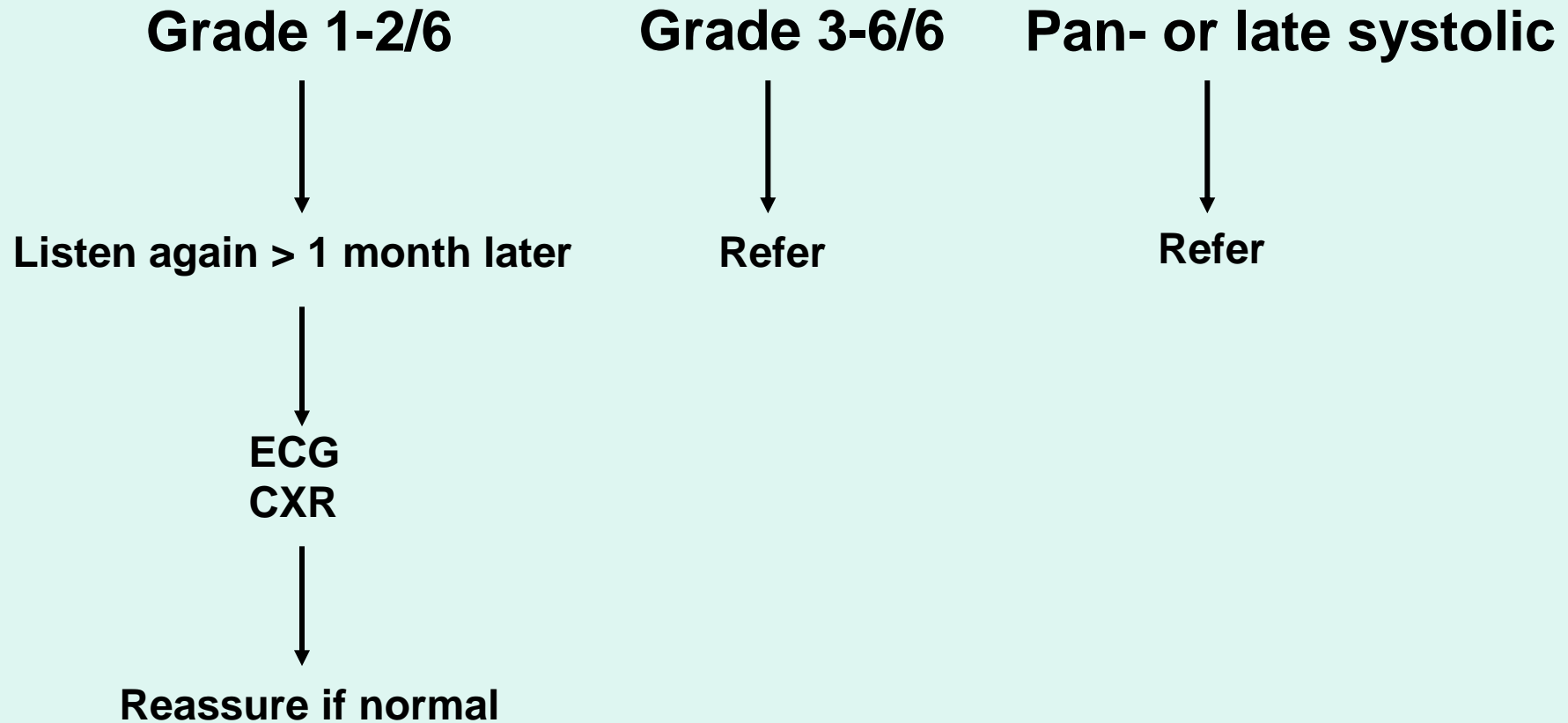
# **In asymptomatic adults -**

1. Are systolic murmurs in asymptomatic adults important?
2. If not, are there exceptions?
3. When is referral necessary?
4. Is echocardiography usually appropriate?
5. Are prophylactic antibiotics required for dental procedures?

# Innocent murmurs in adults

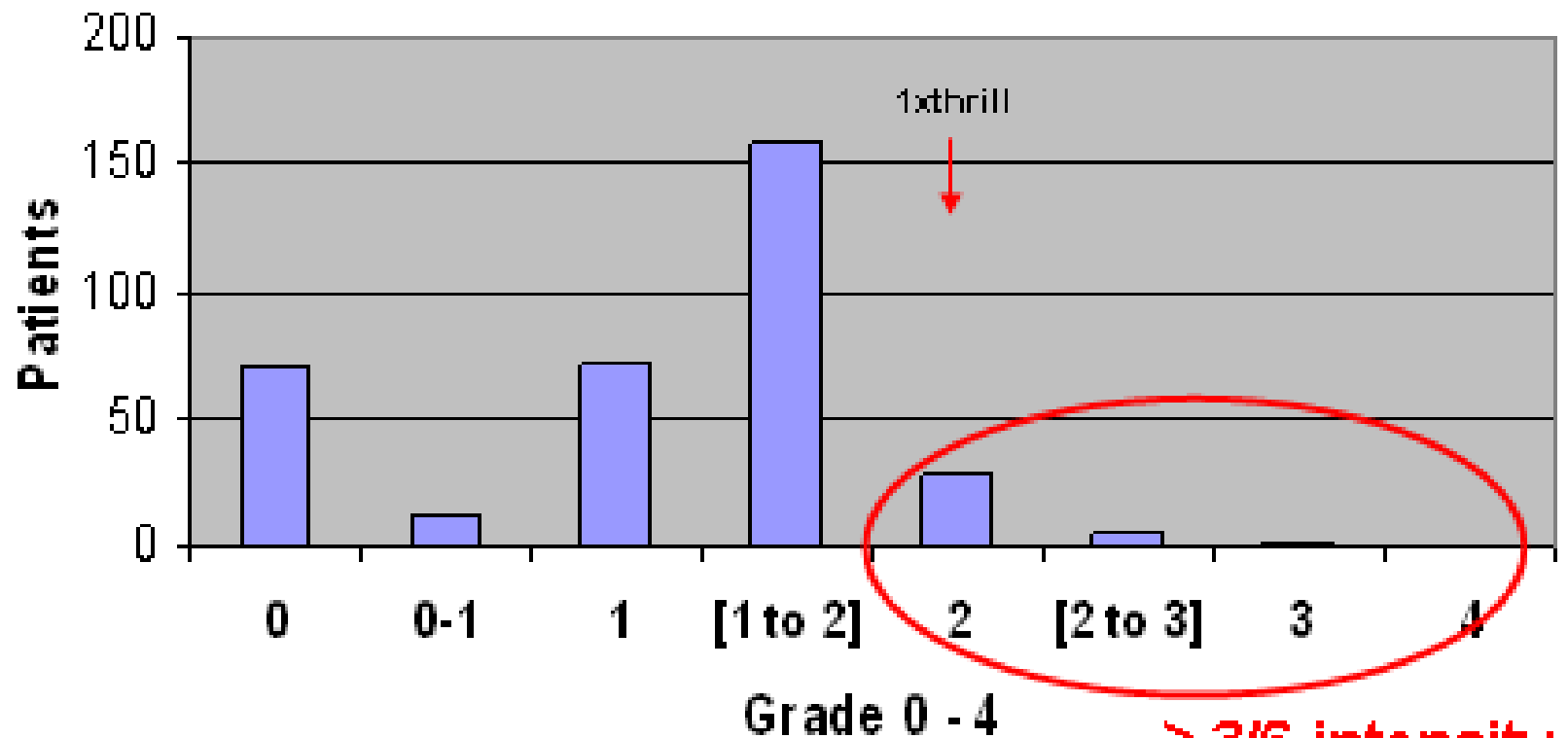
- Not uncommon
- Usually younger adults
- Usually Grade 1-2 /6
- Low-medium pitched
- Relatively short
- Mid systolic, ends before late systole
- Heard at base but can radiate

# National Guidelines for systolic murmurs in asymptomatic patients - 2004



# 345 asymptomatic patients

## Intensity of murmur



Includes EDM – 2 patients

≥ 3/6 intensity

# ANTIBIOTIC PROPHYLAXIS FOR (invasive) DENTAL PROCEDURES

## **BSAC guidelines 2006**

- previous IE
- prosthetic valves
- surgically constructed shunts/conduits

## **ACC/AHA guidelines 2008**

- prosthetic valves (or prosthetic material for valve repair)
- congenital heart disease (qualifications)
- HTX with valve regurgitation 2 °structurally abnormal valve

## **NICE guidelines 2008**

not recommended (but accept that certain groups at increased risk – e.g. acquired valve disease, prosthetic valves, CHD, previous IE, HCM)

## **NHF/CSANZ NZ guidelines 2008**

- prosthetic valves
- rheumatic valve disease
- previous IE
- unrepaired cyanotic CHD
- surgical or catheter repair of CHD  
(within 6/12)

# Antibiotic prophylaxis for dental procedures

NHF / CSANZ Guidelines 2008

- Prosthetic valves
- Rheumatic valve disease
- Previous IE
- Unrepaired cyanotic CHD
- Surgical or catheter repair of CHD  
(within 6/12)

# Murmurs of lesions that can be confused with innocent murmurs

- ASD (~0.1%)
- Hypertrophic cardiomyopathy (~0.1%)
- Bicuspid aortic valve (1 - 2%, M>F)
- Aortic sclerosis (25% > 65yrs)
- Mild AS (>1% after age 65)
- Murmur of moderate or severe AS can be softer than expected (with low stroke volume, etc)

# 345 asymptomatic patients referred with murmur

- No murmur heard 20%
- Innocent or assumed trivial 47%
- Aortic sclerosis 14%
- Significant lesion 20%

# Significant lesions

- Mitral regurgitation (6%) 4 moderate or severe
- Aortic stenosis (6%) ~ 5 moderate or severe
- ASD, VSD, miscellaneous (8%)

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- almost no patients required antibiotics for dental prophylaxis, according to guidelines

# Heart Murmurs Sights and Sounds



Ivor Gerber  
Arthur Coverdale

# Assessment of a murmur

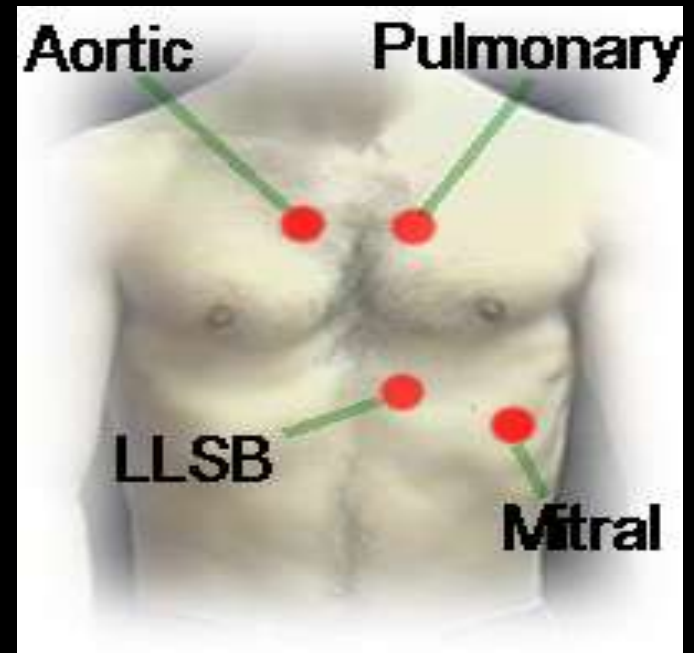
Auscultation



Imaging



# Auscultation



# When in Rome.....



# Assessment of a systolic murmur

## Auscultation



- Grade 1/6
- Grade 2/6
- Grade 3/6
- Grade 4/6
- Grade 5/6
- Grade 6/6



# Referral

- “Please review Mr R, a pleasant man who is a restaurateur, aged 66, who presented with an asymptomatic soft systolic murmur at the left sternal edge detected on routine examination. Mr R was concerned about the murmur and requested an assessment.”



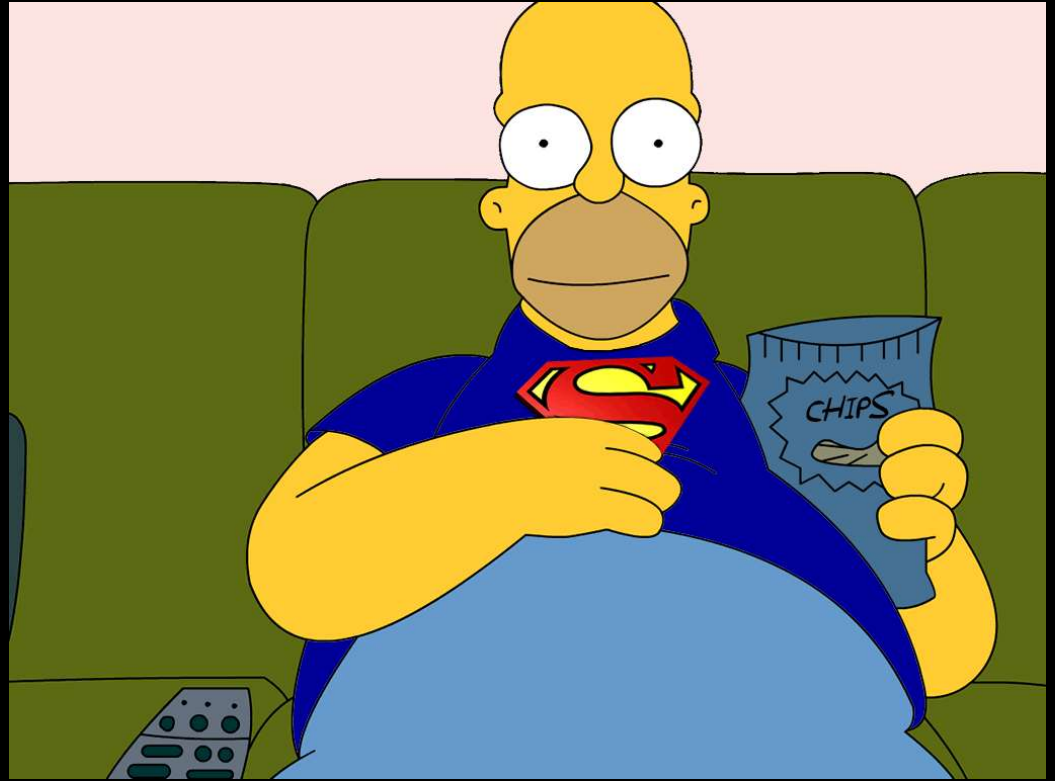
# Symptoms



# ECG

- Should this be routine?
- What if normal?
- How abnormal is abnormal
  - – axis, LVH, RVE, LAE, RAE
- Who interprets – GP, computer, friendly cardiologist





FR 50Hz

14cm

M4

2D

51%

C 49

P Low

HGen



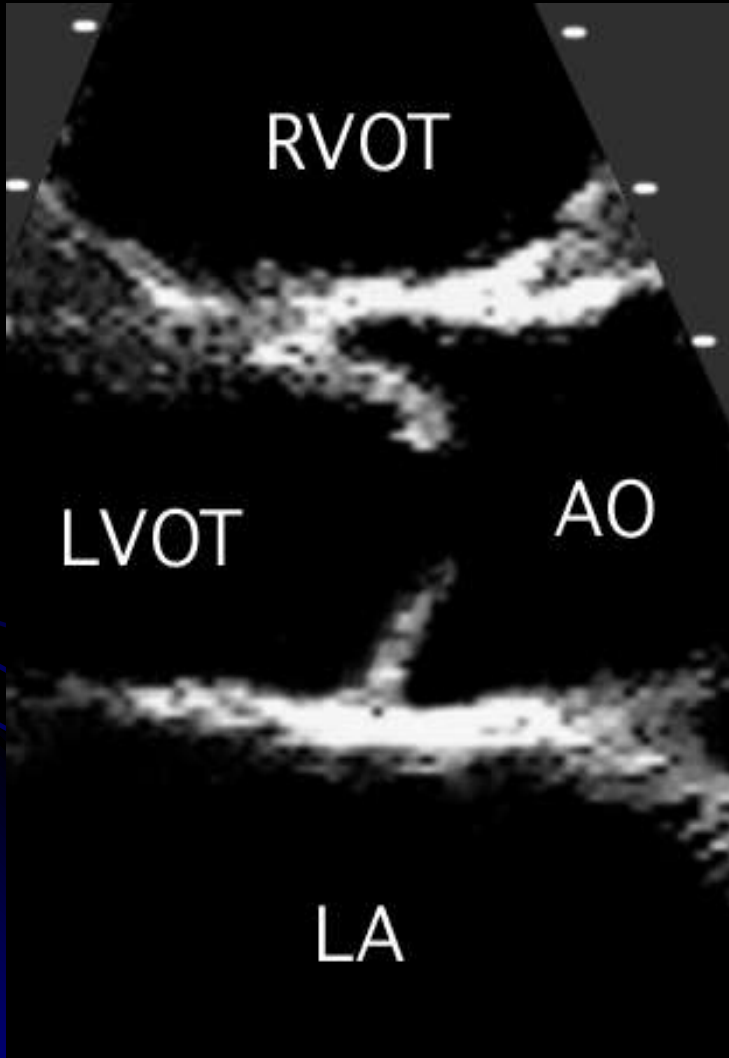
P



JPEG

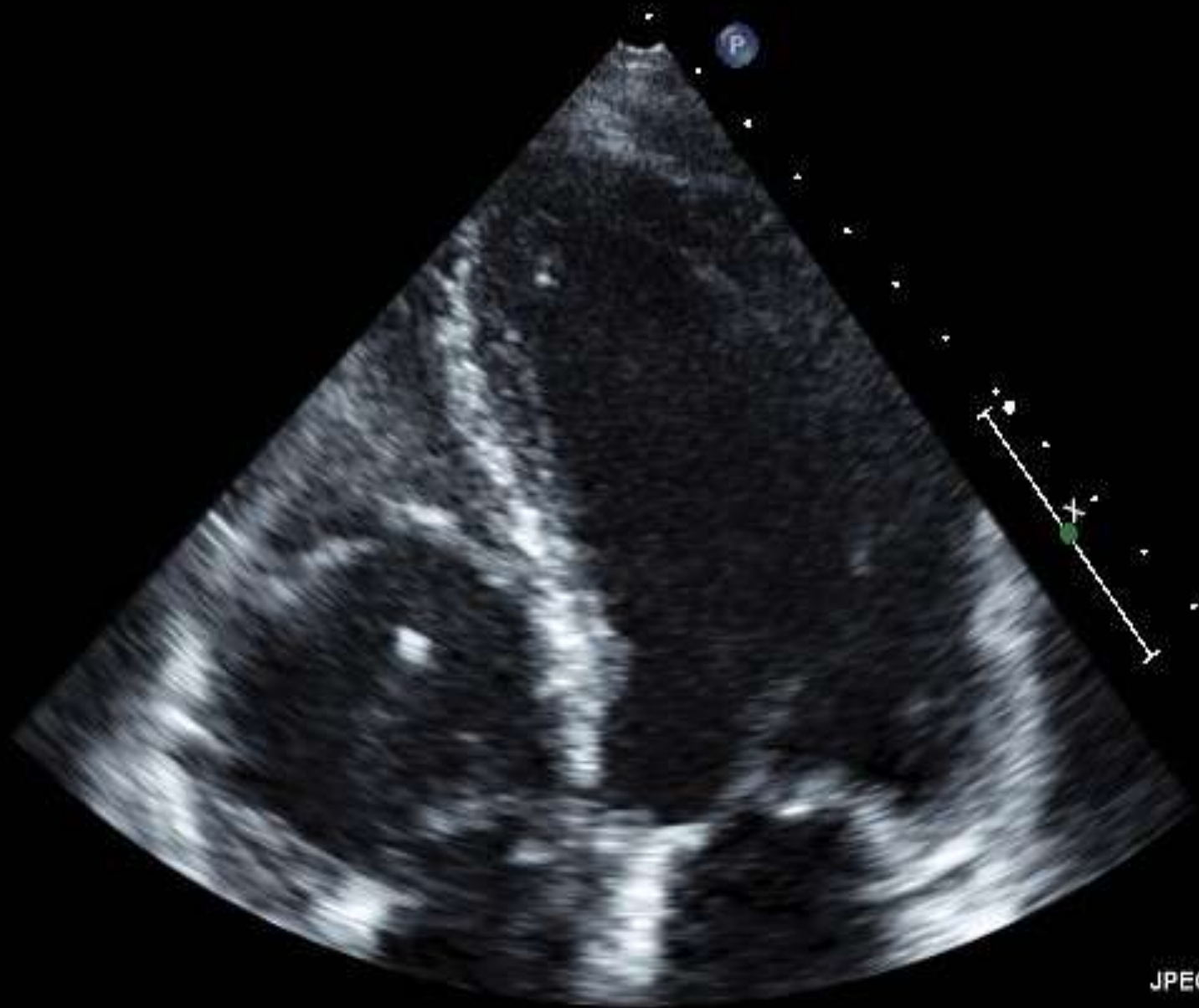
64 bpm

# Bicuspid aortic valve



FR 61Hz  
13cm

2D  
65%  
C 52  
P Low  
HGen



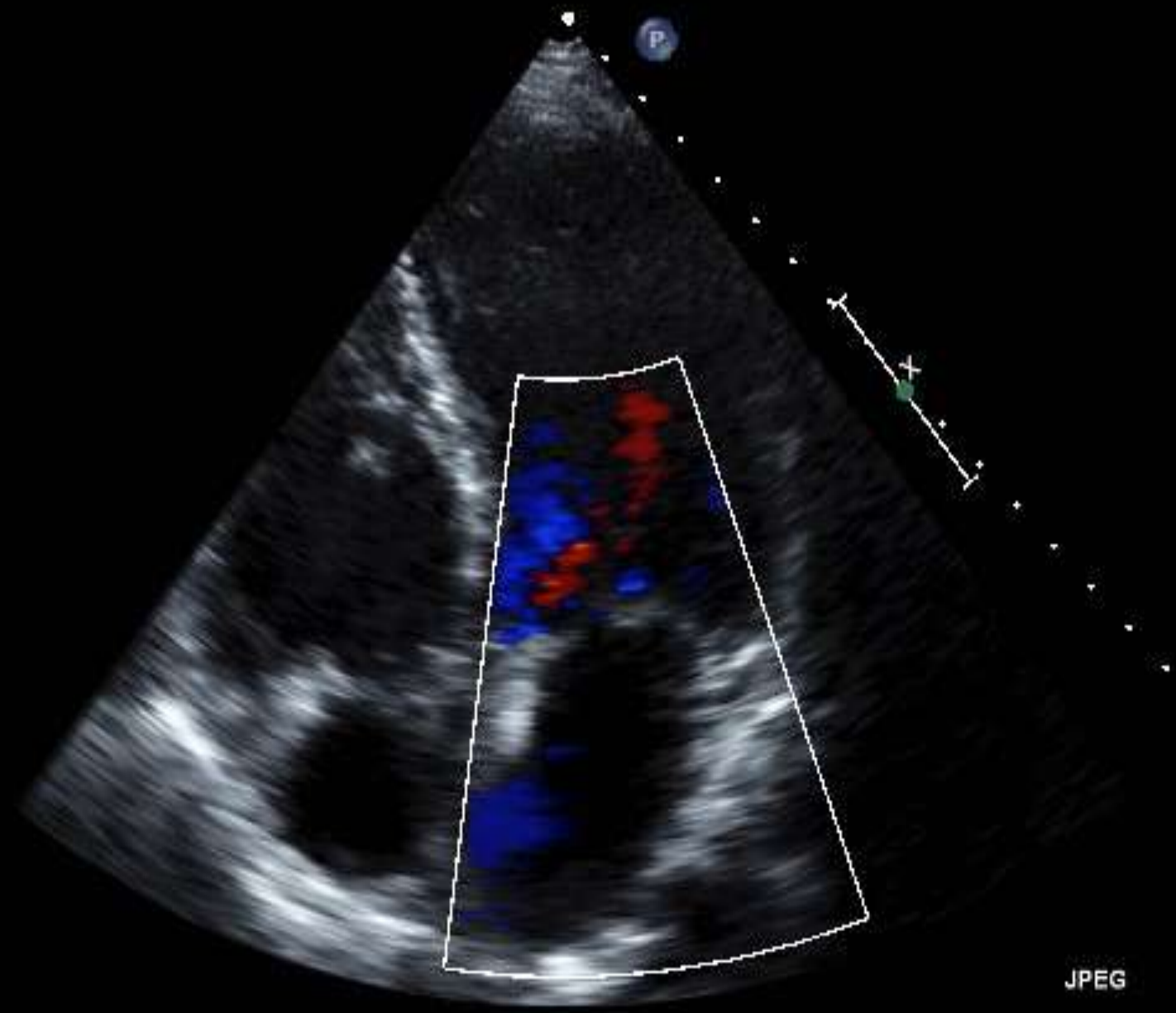
JPEG

64 bpm

FR 19Hz  
17cm

2D  
65%  
C 52  
P Low  
HGen

CF  
74%  
2.5MHz  
WF High  
Med



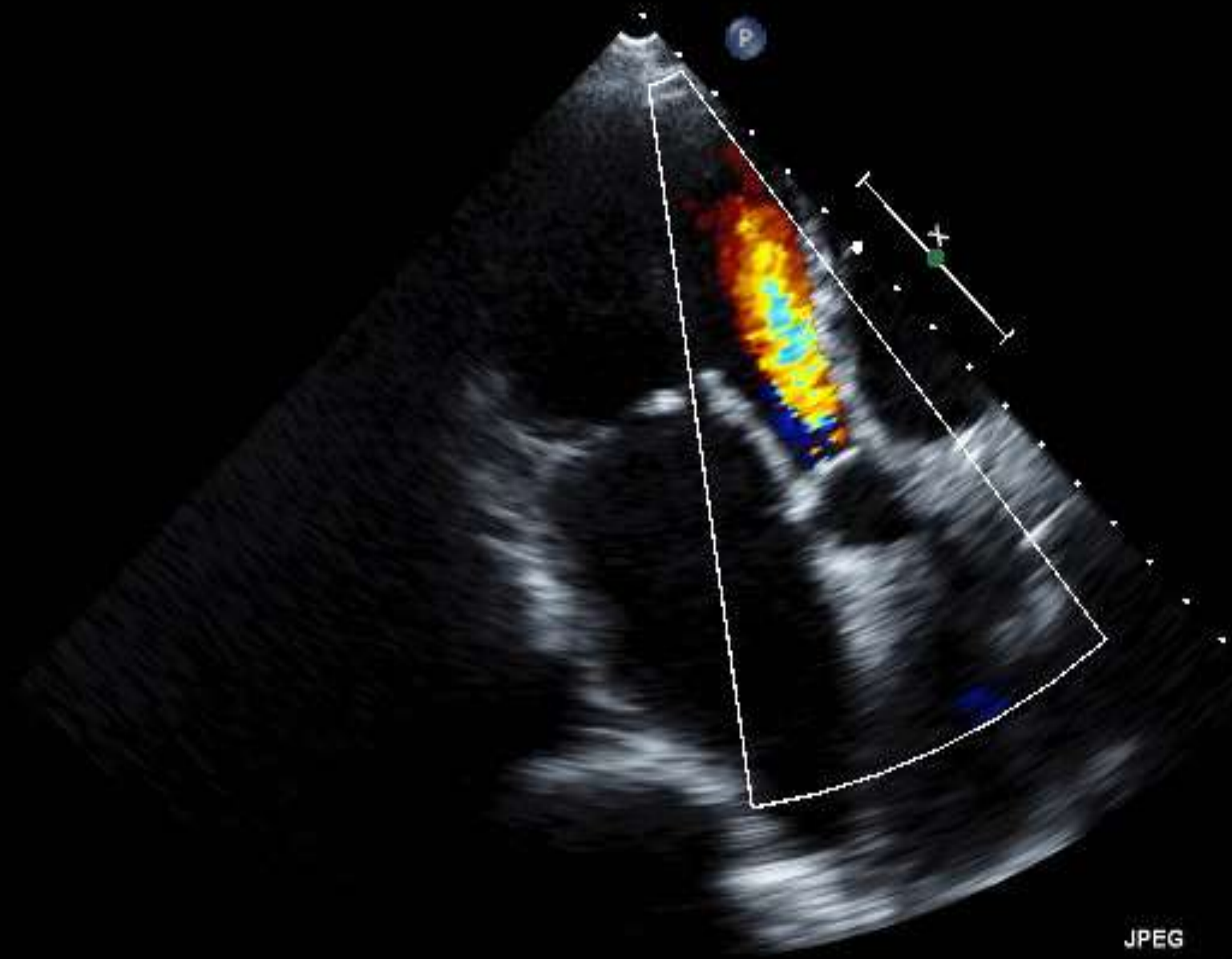
JPEG

63 bpm

FR 17Hz  
17cm

2D  
66%  
C 52  
P Low  
HGen

CF  
74%  
2.5MHz  
WF High  
Med



JPEG

54 bpm

FR 53Hz

14cm

2D

55%

C 52

P Low

HGen

P



JPEG

62 bpm

# Murmurs

- **Systolic murmurs:**

- Physiologic
- Mitral regurgitation
- Tricuspid regurgitation
- Aortic stenosis
- Pulmonary stenosis
- Ventricular septal defect
- Atrial septal defect

- **Diastolic murmurs**

- Aortic regurgitation
- Pulmonary regurgitation
- Mitral stenosis

- **Other**

- Patent ductus arteriosus
- Pericardial rub
- Extra heart sounds
- Split heart sounds