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Author(s): Joe Lex, MD (Temple University School of Medicine)

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Cardiac Evaluation

Joe Lex, MD, FACEP, FAAEM Department of Emergency Medicine Temple University School of Medicine Philadelphia, PA 19140

Assessment of Cardiac Patient

- Chief complaint
- History of event and significant past medical history
- Physical exam

Chief Complaint

- Cardiac disease chief complaints
 Chest pain or discomfort
 - Shoulder, arm, neck, or jaw pain or discomfort
 - ≻Dyspnea
 - ≻Syncope
 - Abnormal heart beat or palpitationsMay vary

Chest Pain or Discomfort

- Common chief complaint in myocardial infarction
- Noncardiac causes of chest pain
 >Pulmonary embolus
 - ≻Pleurisy

C C

- ➢Reflux esophagitis
- History of chest pain is important
 >OPQRST method

Chest Pain or Discomfort

- Onset of the event
- Provocation or Palliation
- Quality of the pain
- Region and Radiation
- Severity
 - Time (history)

Chest Pain or Discomfort



C



<u> JHeuser (Wikipedia)</u>

The Angina Monologue

Chest tight... Short of breath... Sweaty...





Dyspnea

- May occur with ACS
- Symptom of heart failure
- Dyspnea unrelated to heart disease
 Chronic obstructive pulmonary disease
 - ➤Respiratory infection
 - ≻Pulmonary embolus
 - ≻Asthma



- Duration
- Circumstances of onset
- What aggravates or relieves, including medications
- Previous episodes
 - Associated symptoms
 - Orthopnea
 - Prior cardiac problems





Syncope

- Sudden decrease in cerebral perfusion
- Cardiac causes decrease cardiac output
 - >Dysrhythmias

Syncope

- Noncardiac causes of syncope
 Stroke (note I disagree)
 Drug or alcohol intoxication
 Aortic stenosis
 - >Pulmonary embolism
 - >Hypoglycemia (depends on how you define syncope)

Syncope—History

- Aura: nausea, weak, lighthead
- Circumstances: position before event, pain, stress
- Duration of syncopal episode
- Symptoms before syncope
- Other symptoms

SYNCOPE

Previous episodes

Palpitations

Sometimes normal

May indicate serious dysrhythmia



PALPITATIONS

Palpitations

- History and physical exam
 ≻Pulse rate (if obtained)
 - Regular versus irregular rhythm
 - ➤Circumstances
 - >Duration
 - Chest pain, diaphoresis, syncope, confusion, dyspnea
 - ➢Previous episodes
 - Medications

Significant Past Medical History

- Is the patient taking prescription meds, particularly cardiac meds?
 >Digoxin
 - ≻Furosemide or other diuretic
 - >Nitroglycerin
 - >Beta blockers
- Is the patient being treated for any other illness?

Significant Past Medical History

- ACS or angina
- CABG or PCI
- Implanted pacemaker or ICD
- Heart failure
- Hypertension
 - Diabetes
 - Chronic lung disease

Significant Past Medical History

- Allergies
- Other risk factors for cardiac event





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 Classic presentation of myocardial infarction: pain or discomfort behind sternum for more than 15 minutes



- Other signs and symptoms
 Apprehension
 Diaphoresis
 Dyspnea
 Nausea and vomiting
 - ➤Nausea and vomiting
 - Sense of impending doom
- Atypical presentations

Nausea & Vomiting



Sense of Impending Doom



Initial Assessment

- Level of consciousness
- Respirations
- Pulse (rate, regularity)
- Blood pressure
- Skin

LOOK Listen Fee

Look

- Skin color, capillary refill, skin moisture
 - >Oxygenation: pulse oximetry
 - Cardiac function: peripheral perfusion
- Jugular vein distention (JVD)
 - ➤Evaluate with head elevated to 45°
 - Difficult to assess in obese patients





Dogbertio 14 (Wikipedia)





Jugular Vein Distention



Jugular Vein Distention



Look

- Peripheral and presacral edema
 Back-pressure in venous circulation
 Obvious in dependent areas
 Nonpitting: minimal depression of tissue after removal of finger pressure
 - Pitting: depression of tissue remains after removal of finger pressure



LOOK

Look

 Indicators of cardiac disease >Nitroglycerin patch Midsternal scar from CABG >Implanted pacemaker or automatic implantable cardioverter-defibrillator (left upper chest; abdominal wall) ➤Medic alert information

Look











Robert the Noid (Flickr)



- Lung sounds
 ≻Equality
 - Adventitious sounds: may indicate
 - pulmonary congestion or edema
- Heart sounds

≻Gallops

Heart Sounds

Auscultate for:
Frequency (pitch)
Intensity (loudness)
Duration
Timing in the cardiac cycle

Auscultating Heart Sounds



Auscultating Heart Sounds



Auscultating Heart Sounds



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Point of Maximal Impulse (PMI)

- Apical impulse
 - ≻Visible and palpable
 - Produced by contraction of left ventricle
- Pulse deficits noted by palpating or auscultating apical impulse and carotid pulse simultaneously

<mark>S1</mark>

- "Lub" sound
 >Mitral and tricuspid valve closure
 >Beginning of ventricular systole
 Diophrograph of stathogona, at one
- Diaphragm of stethoscope at apex of heart
 - >5th intercostal space

<mark>S2</mark>

- "Dub" sound
 Aortic and pulmonic valve closure
 End of ventricular systole
- Use diaphragm of stethoscope at 2nd intercostal space to right and left of the sternum

≻Aortic and pulmonic areas





- Extra heart sound
 ≻Rapid ventricular filling
- Common in children, athletes, and young adults
- Solution Abnormal in persons >30 y/o
 - Use bell of stethoscope at apex





Sounds like "Ken-Tuck-Y" >Emphasis on "Tuck" >"Ken" = S1, "Tuck" = S2, "Y" = S3

Warning sign of congestive heart failure

S4



- Last of ventricular filling
- Tensing of atrioventricular valves
- Atrial contraction
- Just before S1
- Heard at apex with stethoscope bell
 - Sounds like "Ten-nes-see"
 - ≻Emphasis on "Ten"

≻"Ten" = S4, "Nes" = S1, "See" = S2

Heart Sounds

- Aortic: 2nd ICS right of sternum
- Pulmonic: 2nd ICS left of sternum
- Tricuspid: 5th ICS left of sternal border
- Mitral: 5th ICS medial to left midclavicular line → over left ventricle

Murmurs

- Murmurs classified by seven different characteristics: timing, shape, location, radiation, intensity, pitch and quality
- TIMING: systolic or diastolic

VALVES

SHAPE: crescendo, decrescendo, or crescendo-decrescendo



Phonocardiograms from normal Madhero88 (Wikipedia) and abnormal heart sounds

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Murmurs

- LOCATION: 6 places on anterior chest to listen for heart murmurs
 - Five of six adjacent to sternum; each roughly corresponds to specific part of the heart
 - Four places usually more than adequate



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Murmurs

- RADIATION: to where does the sound of the murmur radiate?
 - Rule of thumb: sound radiates in direction of blood flow
- INTENSITY: loudness of murmur,

>Graded on scale from 0 – 6 / 6

Grade Description

- 1 Very faint
- 2 Soft
- 3 Heard all over precordium
- 4 Loud, with palpable thrill
- 5 Very loud, with thrill. Heard when
- stethoscope partly off chest.
- 6 Very loud, with thrill. Heard when stethoscope completely off chest.

Murmurs

• PITCH: low, medium or high

Determined by whether it can be auscultated best with bell or diaphragm of stethoscope

 QUALITY: blowing, harsh, honking, rumbling, musical

Murmurs

Three important murmurs in EM

- Mitral regurgitation → may indicate blown papillary muscle in acute MI
- Aortic stenosis in syncope → may determine cause

VALVE

3. Aortic insufficiency in syncope, chest pain \rightarrow aortic dissection



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Mitral Regurgitation





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Aortic Insufficiency



Aortic Regurgitation



BruceBlaus (Wikipedia)

Aortic Stenosis









Feel

- Peripheral or presacral edema
- Pulse
 - ≻Rate
 - ≻Regularity
 - ≻Equality
 - >Pulse deficit
 - ≻Pulsus paradoxus
 - ≻Pulsus alternans

Feel

Skin

➢Diaphoretic, pale skin

- Peripheral vasoconstriction
- Sympathetic stimulation
- ≻Cyanosis
 - Poor oxygenation
- ≻Fever
 - Infection



Putting It All Together

PRO-1-EMS CENTER FOR MEDICES

Patient Assessment: Detailed Cardiac Examination



Conclusions

- Chief complaint
- Brief history
- Physical exam: look, listen, feel
- Think binary: murmur, yes or no; abnormal breath sounds, yes or no