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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 palpitations
  - May vary
Chest Pain or Discomfort

• Common chief complaint in myocardial infarction

• Noncardiac causes of chest pain
  ➢ Pulmonary embolus
  ➢ Pleurisy
  ➢ 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)
The Angina Monologue

Chest tight…
Short of breath…
Sweaty…
Dyspnea

Who are you calling an SOB?!?!
Dyspnea

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

- 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
• 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, lightheaded
- Circumstances: position before event, pain, stress
- Duration of syncopal episode
- Symptoms before syncope
- Other symptoms
- Previous episodes
Palpitations

- Sometimes normal

- May indicate serious dysrhythmia
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
Physical Examination
Physical Examination

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

• Other signs and symptoms
  ➢ Apprehension
  ➢ Diaphoresis
  ➢ Dyspnea
  ➢ Nausea and vomiting
  ➢ Sense of impending doom

• Atypical presentations
Nausea & Vomiting

I AM

INDIFFERENT

TO YOUR SUFFERING

tt2times (Flickr)
Sense of Impending Doom
Initial Assessment

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

Look
Listen
Feel
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
Skin

[Image: Dogbertio 14 (Wikipedia)]
Jugular Vein Distention

Source Undetermined
Jugular Vein Distention
• 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
• 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
Look
Listen

- 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

Gene Hobbs (Wikipedia)
Auscultating Heart Sounds
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
• “Lub” sound
  ➢ Mitral and tricuspid valve closure
  ➢ Beginning of ventricular systole
• Diaphragm of stethoscope at apex of heart
  ➢ 5th intercostal space
• “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
• 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
• 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: 2\textsuperscript{nd} ICS right of sternum
• Pulmonic: 2\textsuperscript{nd} ICS left of sternum
• Tricuspid: 5\textsuperscript{th} ICS left of sternal border
• Mitral: 5\textsuperscript{th} 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
- SHAPE: crescendo, decrescendo, or crescendo-decrescendo
Phonocardiograms from normal and abnormal heart sounds
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
Valves

Aortic → Pulmonary

Tricuspid

Mitral

University of Cape Town (oerafrica)
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
<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very faint</td>
</tr>
<tr>
<td>2</td>
<td>Soft</td>
</tr>
<tr>
<td>3</td>
<td>Heard all over precordium</td>
</tr>
<tr>
<td>4</td>
<td>Loud, with palpable thrill</td>
</tr>
<tr>
<td>5</td>
<td>Very loud, with thrill. Heard when stethoscope partly off chest.</td>
</tr>
<tr>
<td>6</td>
<td>Very loud, with thrill. Heard when stethoscope completely off chest.</td>
</tr>
</tbody>
</table>
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

1. Mitral regurgitation ➔ may indicate blown papillary muscle in acute MI

2. Aortic stenosis in syncope ➔ may determine cause

3. Aortic insufficiency in syncope, chest pain ➔ aortic dissection
Mitral Regurgitation
Aortic Insufficiency
Aortic Stenosis

Aortic Stenosis (Narrow Valve)
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

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