Case #1
Case #1

- A 44-year-old Caucasian man is complaining of dizziness and chest discomfort that began about 45 minutes ago.
  - The patient is 5’ 10” tall and weighs 175 pounds.
Case #1

- The patient’s wife states she and her husband had an argument earlier today.
  - Her husband disappeared into the bathroom for about ½ hour.
  - She heard a loud noise and entered to find her husband had fallen and hit his left flank on the bathroom vanity.
  - The patient denies any loss of consciousness.
Case #1

- The patient smokes 2 packs of cigarettes/day.
- No allergies
- No recent history of viral or bacterial illness
- No history of congenital problems
- No history of diabetes or hypertension
- No family history of heart disease or stroke
Case #1

- The patient’s wife says her husband has a history of substance abuse x 35 years.
  - The patient admits to occasional heroin use.
  - While in the bathroom today, he injected approximately 1 g of cocaine intravenously.
  - His current medications include methadone.
Case #1 – Physical Examination

- Awake and oriented to person, place, time, and event
- Skin: warm and dry
- Mucous membranes: pink
- No jugular vein distention
- Breath sounds clear and equal bilaterally
Case #1 –
Physical Examination

- The patient rates his chest discomfort 4/10. He denies shortness of breath.
- Bruising is noted in the right antecubital area.
- An abrasion is noted on his left flank.
Case #1 – Vital Signs

- **Initial:**
  - Blood pressure 162/104
  - Pulse 124
  - Respirations 16
  - SpO2 97% on room air

- **20 minutes later:**
  - Blood pressure 168/100
  - Pulse 110
  - Respirations 18
  - SpO2 99% on 15 L/min O2 by nonrebreather mask
Case #1

- What should be done for this patient?
Case #1 – Interventions

- Continue monitoring the patient's:
  - Airway
  - Breathing
  - Circulation
  - Mental status
  - Temperature

- Seizure precautions
Case #1 – Interventions

- Obtain:
  - Lab specimens, including cardiac enzymes
  - Chest x-ray
  - Toxicology screen
  - 12-lead ECG
Case #1

- If the patient has no evidence of coronary artery disease, emergency care usually includes:
  - Observation
  - Cardiac monitoring
  - Sedation (usually with benzodiazepines) if needed
  - Supportive care
  - Management of complications
Case #1 – Interventions

- If there is evidence of a cocaine-induced acute coronary syndrome:
  - Oxygen
  - Aspirin
  - Nitroglycerin
  - Benzodiazepine

- If the 12-lead ECG shows ST-segment elevation and lab results reveal cardiac enzyme release:
  - Percutaneous transluminal coronary angioplasty (PTCA) is preferred over IV fibrinolytic therapy.
Case #1

- What signs and symptoms should you expect in a patient who has used cocaine?
Case #1

- **Cardiac effects:**
  - Palpitations, chest pain, ischemia, acute myocardial infarction, cardiac dysrhythmias, and/or cardiac arrest

- **Neurologic effects:**
  - Altered mental status, seizures that may progress to status epilepticus, focal neurologic signs, ischemic stroke

- **Behavioral effects:**
  - Suicide attempts, violent behavior
Case #1

- 15 L/min oxygen is being administered by nonrebreather mask.
- Vascular access has been obtained.
- Cardiac monitor applied
- 12-lead ECG obtained
Case #1 – 12-Lead ECG

What does the patient’s 12-lead show?
Case #1 – 12-Lead ECG

- Sinus rhythm at 91 bpm
- PR interval 168 ms
- QRS 96 ms
- QT/QTc 376/457 ms
- P-R-T axes 68 90 40

- Interpretation: Sinus rhythm, rightward axis, borderline ECG
Case #1

- Does cocaine use increase a patient’s risk for myocardial infarction?
Case #1

- Yes. Cocaine:
  - Increases heart rate and blood pressure, resulting in increased myocardial oxygen demand
  - Decreases blood flow through the coronary arteries
  - This may result from either coronary vasospasm or thrombosis.
Case #1

- In a 2003 study, significant coronary artery disease was found in the majority of patients with cocaine-associated MI or elevated troponin.

  - Significant disease was defined as ≥ 50% stenosis of a coronary artery or major branches or bypass graft.

Case #1

- What types of complications are most common in patients who experience a cocaine-induced myocardial infarction?
Case #1

- Complications are infrequent but may include:
  - Bradydysrhythmias, 0.4%
  - Congestive heart failure, 0.4%
  - Supraventricular tachycardia, 1.2%
  - Sustained ventricular tachycardia, 0.8%

Case #1

Should this patient be observed in the emergency department, admitted to the hospital, or discharged home?
Case #1

- It has been estimated that about 6 percent of episodes of cocaine-induced chest pain are due to acute MI.
Case #1

- High-risk patients are those who have:
  - An initial ECG that suggests the presence of ischemia or acute MI
    - ST-segment elevation or depression of 1 mm or more that persists for at least 1 minute
  - Elevated serum cardiac markers
  - Recurrent ischemic chest pain, or
  - Hemodynamic instability

- High-risk patients are usually admitted to the hospital.
Case #1

- Low-to-medium risk patients are usually observed in the emergency department chest pain unit for 12-hours if they have:
  - Symptoms consistent with a low-to-intermediate likelihood of unstable angina
  - Serial troponin I levels that are normal
  - 12-lead ECG that is normal

- If there are no complications during the observation period, the patient is usually discharged home with instructions regarding follow-up care.

Case #2
Case #2

- A 36-year-old man was driving to work and experienced a sudden onset of chest pain.

- He describes the pain as a “crushing” sensation in the center of his chest. It radiates to his left arm and shoulder. He rates it 7/10.
Case #2

- The patient is 5’9” and weighs 160 pounds.

- He believes he is in good health and has no significant past medical history.

- He states he has been under considerable stress lately (divorce plus work-related stress).
Case #2 – Physical Examination

- Awake and oriented to person, place, time, and event
- Skin: pink, warm, and moist
- No jugular vein distention
- Breath sounds clear and equal bilaterally
- Sweat is present on the patient’s face.
Case #2 – Vital Signs

• **Initial:**
  - Blood pressure 152/102
  - Pulse 138
  - Respirations 28
  - SpO2 97% on room air

• **15 minutes later:**
  - Blood pressure 140/96
  - Pulse 118
  - Respirations 24
Case #2

- What immediate interventions should be performed for this patient?
Case #2

- **Initial treatment:**
  - ABCs, oxygen, vascular access
  - Administer aspirin 162 to 325 mg (chewed) if no reason for exclusion
  - Obtain a 12-lead ECG
Case #2

- Supplemental oxygen has been applied.
- Vascular access has been obtained.
- Cardiac monitor applied
- 12-lead ECG obtained
Case #2 – 12-Lead ECG

What does the patient’s 12-lead show?
Case #2

- Sinus tachycardia with occasional supraventricular premature complexes
- Possible acute inferior infarction, possible posterior infarction (prominent R wave in V1/V2)
- Possible lateral infarction
Case #2

- Describe your immediate general treatment for this patient.
- Obtain right-sided 12-lead
  - Evaluate for possible RVI
- Reperfusion therapy checklist
- Lab specimens, portable chest x-ray
- Administer nitroglycerin, morphine
  - Monitor BP closely
- Beta-blocker (if no reason for exclusion)