

## MD 2 ED and ambulatory care scenario

### Learning Objectives:

After their recent tutorial, and after today's session, students will have had an opportunity to:  
Practice the recognition and early stabilisation of a patient with cardiac chest pain  
Practiced the ALS algorithm in pairs

### Case overview

Youngish patient presents with chest pain and flu – like symptoms. He is having a STEMI which they can start to treat with basic management then has a cardiac arrest and requires 3 shocks to get him back. He comes back into a Sinus Tachycardia with hypotension. He stabilises and then arrests again and comes back ok

### Cardiac arrest

David Murray is a 57 yo man who has presented at the ED c/o chest pain (dull, crushing). He has had it on and off for 2 days and feels “flu-like”. He is sweaty, tired and nauseated.

If asked – pain is 8 or 9/10 but hard to judge as its “not a sharp pain like a twisted ankle”. Has not taken Viagra in last 48 hours

Feels lousy – sweaty like the flu and feels like vomiting. He thought it was indigestion for the first day but now feels much worse

**Allergies:** nil

**Meds:** Lipitor 80mg / Coversyl for blood pressure/ Nexium/ Low dose Aspirin (coz he thinks it might prevent heart attack). Takes an over-the-counter multi vitamin

**PH:** No chest pain before. Knee scope 5 years ago. GORD

**Lifestyle:** Works as a building contractor

Doesn't smoke but is sl overweight and has a sedentary job now he is in the office most of the day. Drinks a couple of light stubbies a day.

Mother died of AMI aged 42. Mother's 2 siblings also died young of cardiac disease

**Event:** Indigestion-like discomfort started after dinner 2 nights ago and didn't resolve despite antacids and an extra Nexium. Slept semi-upright. Went to work yesterday but went home early as he felt like he was getting the flu. Now feels worse and has nausea.

### Console:

HR 100 – ST with ST elevation

Waiting rhythm: VF – 3 shocks and back, then arrest again after 5 minutes

BP 165/100

RR 28

Sat 94%

### Desired student actions:

Call for help

Oxygen

Aspirin

Cannula – morphine 2.5 increments

This project was possible due to funding made available by Health Workforce Australia

Bloods

GTN

12 lead ECG

### Outcomes

Once oxygen is on sat comes up to 96%

Pain is 8/10 – can come down to 6/10 with morphine & GTN (no lower)

GTN drops BP to 145/95

Once they have taken blood and done a 12 lead, he can groan and arrest in VF

ALS protocol – 3 shocks and he's back: HR 80 / BP 110/65 / RR 6 / Sat 88%

Able to talk etc but quite drowsy.

After 5 minutes arrests again and back in good shape after one shock

### Teaching points

15-30% present without chest pain (silent ischaemia)

But have other symptoms: nausea / vomiting, epigastric pain, dyspnoea, syncope, sweating, arrhythmias and these are more frequent in: older patients, females, diabetics, previous heart failure, previous CVA

Always repeat ECG if suspicious – after 30 minutes if no chest pain / 15 minutes if ongoing / if pain returns / if condition worsens

### **ST elevation: (resolves over days to weeks)**

Caused by:

rapid repolarisation of the infarcted area causing the membrane potential to be greater

delayed depolarisation which causes infarcted area to be positive relative to normal tissue in early repolarisation

decline in resting membrane potential which occurs during diastole

- Hyperacute (peaked) T waves in II, III and aVF with relative loss of R wave height.
- Early ST elevation and Q-wave formation in lead III.
- Reciprocal ST depression and T wave inversion in aVL.
- ST elevation in lead III > lead II suggests an RCA occlusion; the subtle ST elevation in V4R would be consistent with this.

*Note how the ST segment morphology in aVL is an exact mirror image of lead III. This reciprocal change occurs because these two leads are approximately opposite to one another (150 degrees apart).*

The concept of reciprocal change can be further highlighted by taking lead aVL and inverting it... see how the ST morphology now looks identical to lead III.

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