OSCE Stations for Medical Finals
Book 1

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Scenario 1: ‘What a wheeze’

Station 1

History 10-minute station
You are the FY1 doctor on call for the Medical Team in the Emergency Department. Miss Sarah Davis has presented to the hospital with increasing shortness of breath. She is known to have asthma and has been admitted under the Respiratory Team before.

You have been called to the ‘majors’ assessment area of the Emergency Department to take a history of both her present illness and her asthma history and present your history to the Respiratory Registrar on call.

You will be assessed on the following areas, as well as the content and diagnostic reasoning of your history – take them into account in your presentation.

Professionalism

- Professional appearance (NHS dress code) – including general appearance, hair and jewellery
- Maintains patient and personal safety
- Polite introduction; identifies patient or interviewee correctly; confirms patient’s date of birth from name band or other source
- Obtains informal consent; maintains patient’s privacy
- Displays empathetic and caring attitudes and behaviours throughout.

Process

- Good organisation and structure; appropriate use of open and closed questions
- Appropriate fluency/rhythm/pace to the interview – this may change depending on environment and acute nature of the problem
- Appropriate time for the patient to respond/reply to questions
- Appropriate acknowledgement of difficult or emotional areas of the patient’s history.

Communication skills

- Demonstrates caring and sympathetic attitude
- Asks open questions
- Invites patient to ask questions and answers them appropriately
- Addresses patient’s ideas, concerns and expectations.
Station 2

Examination 10-minute station
Miss Davis has an RR of 25 and O₂ sats of 95% on room air. She has had one dose of nebulised salbutamol in the Emergency Department but remains tachypnoeic. She has been transferred to the resuscitation area of the Emergency Department.

- Please perform a focused respiratory examination of Miss Davis and present this to your Registrar.

You will be assessed on the following areas, as well as the content and skills of your examination – take them into account in your presentation.

### Professionalism
- Professional appearance; maintains infection control standards, including hand cleaning and appropriate use of gloves and aprons
- Maintains patient and personal safety
- Polite introduction; identifies patient and confirms date of birth from name band or other source
- Obtains informal consent; maintains patient privacy and dignity
- Displays empathetic and caring attitudes and behaviours throughout.

### Process
- Appropriate fluency/rhythm/pace to the examination – this may change depending on environment and acute nature of the problem
- Good organisation and structure of examination; sensitive and empathetic approach
- Uses appropriate clinical techniques throughout
- Maintains privacy and dignity throughout.

### Clinical communication
- Explains proposed examination/procedure; explains examination/procedure as it proceeds
- Offers information in a clear, structured and fluent manner, avoiding jargon
- Listens to patient and responds appropriately
- Demonstrates appropriate body language.
Please read the information below before presenting this case to the ST3 Medical Registrar as if you were on a busy medical take.

[NB If you have a model do not read this section]

Clinical findings
- Patient appears dyspnoeic at rest, and unable to complete sentences
- RR 24 breaths per minute, $O_2$ sats 95% room air 100% on 15 $O_2$ l/min, BP 130/75
- GCS 15
- PEFR 350 (65% expected)
- Peripheral capillary refill time <2 s; Pulse regular in rhythm; Carotid pulse normal in volume; JVP not elevated; Apex beat not displaced
- CV examinations – heart sounds easily heard, normal
- RS examination – trachea central, no chest scars, chest expansion normal and equal bilaterally, widespread expiratory wheeze throughout both lung fields, normal percussion note throughout and breath sounds audible in all areas.

Station 3

Procedural skills 10-minute station

Procedure
You have moved your patient to the monitored bay of the Medical Admissions Unit and while your nurse colleague is inserting an IV cannula you have been asked to administer a nebulised dose of salbutamol.

Please demonstrate how you would set up and apply the nebuliser to the patient.

Equipment provided
- A selection of oxygen masks and nebulisers
- Oxygen supply with variable delivery
- Patient (either dummy or volunteer)
- Vials of salbutamol for nebulisation
Station 4

Data interpretation 10-minute station

As a training exercise the registrar on the team has asked you to review Miss Davies’s previous lung function tests and compare them to those of some other patients on the respiratory ward.

Patient A
27-year-old woman with rheumatoid arthritis now presenting with a 6-month history of shortness of breath; FEV1: 3.0; O₂ sats on air: 92%; FVC: 3.8; transfer coefficient: grossly reduced.

Patient B
69-year-old man with 2-year history of exertional dyspnoea and an episodic cough; FEV1: 2.5; O₂ sats on air: 89%; FVC: 3.7; transfer coefficient: reduced.

Patient C
22-year-old woman with 2-month history of worsening shortness of breath and fatigue on exertion and repetitive movement; FEV1: 3.7; O₂ sats on air: 95%; FVC: 6; transfer coefficient: normal.

Patient D
23-year-old woman with 18-month history of nocturnal cough and wheeze; FEV1: 3.0; O₂ sats on air: 97%; FVC: 3.5; Transfer coefficient: normal; no increase in FEV1 with nebulised B agonist.

Which of patients A, B, C, D:
1 Demonstrates a restrictive lung defect?
2 Demonstrates an obstructive lung defect?
3 Has type I respiratory failure?
4 Typically demonstrates type II respiratory failure?
5 Should be treated with nebulisers?
6 Is most likely to have a thymoma?
7 Is most likely to have an associated primary lung cancer?
8 Classically worsens their hypoxia with exertion?
9 May benefit from steroid therapy?
10 May derive benefit from other forms of immunosuppression?
Station 5

Prescribing skills 10-minute station
Your registrar has now asked you to prescribe appropriate medications to treat Miss Davis’s asthma exacerbation.

Details
Miss Sarah Davis; DOB: 24/11/1988; No known allergies; Weight: 64 kg; Ward: MAU; Consultant: Dr Beadle

Blood results
FBC: Hb 14.4 g/dl, MCV 90 fl, WCC 13.9 × 10^9/l, neutrophils 12.4 × 10^9/l, platelets 122 × 10^9/l
U&Es: Na+ 139 mmol/l, K+ 3.4 mmol/l, urea 4.6 mmol/l, creatinine 73 μmol/l
RBG: 5.2 mmol/l
CCa2+ 2.23 mol/l, PO4- 0.78 mmol/l, Mg 1.02 mmol/l
CXR: no pneumothorax, no focal consolidation.
ECG sinus tachycardia

Management – prescribing task
Please prescribe the following therapeutic interventions using the charts (page 368) and the BNF provided
- Oxygen
- Nebulisers
- Steroids
- Antibiotics
- Fluids

Remember: DRUG DRs Don’t Forget Signing Off (page 373)

Station 6

Communication skills 10-minute station
Miss Davis has been on inhaled therapy on the ward for 24 hours and her PEFR is now 500 l/min (best 550). Your consultant has asked you to have a discussion with her about her asthma control. Discuss any changes in her lifestyle that may help with her control.
Answers

Station 1 – History

Patient script

You are 23 years old and have been asthmatic since the age of 14. Your asthma is not well controlled and have had at least one to two admissions a year since then. The last admission was 3 months ago, when you were ventilated in intensive care. You have been previously ventilated three times. You are a current smoker of five to ten cigarettes a day and have to use inhalers three to four times a day. Your current medication is beclometasone and salbutamol inhalers. You have had six courses of steroids in the last 12 months.

You take inhalers when you are wheezy rather than every morning and night. Your normal PEFR when well is 550 l/min. You regularly wake up coughing during the night and have often missed days at work because you are very wheezy; you gave up your job in a supermarket after your last admission.

The present illness started 5 days ago with a slight head cold followed by a cough productive of green sputum and you are short of breath and wheezy, particularly at night. You feel exhausted, like before you were ventilated the last time. You have had a fever but have not noticed any blood in your sputum or chest pain.

You have no pets and do not know of anything specifically that exacerbates your asthma. You did not have hay fever or eczema as a child and you don’t know any other family members who have eczema, asthma or hay fever. You live in a flat with your four siblings and your parents.

You are worried because you do not want to be admitted and would rather go home. You are very scared of being ventilated again.
Identifies key information
- Presence of wheeze, increased shortness of breath and decreased exercise tolerance
- Presence of infective symptoms – fever, coryza, thick green sputum

Identifies key information from rest of history

History of chronic asthma
- Time of diagnosis
- Current treatment regime – inhaled steroid and PRN β2-agonist
- Peak flow at best
- Current control – any interference with sleep, frequency of exacerbations
- Previous admissions to hospital; exacerbation requiring high dependency or intensive care – intubated 3 months ago

Includes important negatives including systemic enquiry
- Absence of chest pain and haemoptysis

Relevant factors from employment, housing, social support
- Unable to work due to poor control, lives in a small flat with a number of family members
- No environmental triggers identified

Previous medical history
- Atopy history – no eczema, no hay fever or allergic rhinitis

Social and occupational history
- Smoker, 5–10 per day
- No pets

Drug and allergic history
- Inhalers (as above), no allergies

No relevant family history
- No family history of asthma or eczema

Summarises important areas of the history back to the patient

Invites patient to ask questions and deals with them appropriately

Establishes patient’s ideas, concerns and expectations
- Identifies that patient is concerned about being admitted to hospital and is worried that she may be admitted to intensive care once again

 Appropriately explains to patient that she is likely to be admitted to the hospital and reassures her that treatment of her exacerbation is the priority
Please present your history

Candidate offers a logical, well-structured account of the history

- **What is your diagnosis?**
  - Candidate offers the correct diagnosis and appropriate differentials
  - Diagnosis: this an exacerbation of asthma with a probable infective trigger, as the patient's symptoms include a cough productive of green sputum and fever.

- **How would you describe her current control of her chronic asthma?**
  - This patient obviously has very poor control of her asthma with frequent severe exacerbations. Previous admission to intensive care requiring intubation and ventilation is a key point to elicit from the history, as this will guide you to treat and monitor this patient very closely.

- **What are the key aspects to obtain in any chronic disease history?**
  - Time of diagnosis
  - Current treatment regime and contact with specialist services
  - Frequency of admissions and severity of exacerbations
  - Functional ability at best and at worst
  - Interference with activities of daily living (and sleep in the case of asthma, as nocturnal cough can be extremely disruptive)
  - Patient’s understanding of her diagnosis.

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GLOBAL HISTORY MARK

A B C D E
Station 2 – Examination

Patient script

If you are an actor/patient, read the patient history and physical signs fully – when the candidate comes to an abnormal site in their examination, act-out tenderness and/or volunteer the relevant physical sign.

**CONTENT**

- **Exposes and positions patient correctly and maintains comfort**
  - Exposes chest and ensures monitoring and oxygen are applied

- **Comments on wellbeing of patient**
  - Patient appears short of breath at rest
  - Only able to complete short sentences
  - Not using accessory muscle of respiration

- **Asks for appropriate relevant clinical observations**
  - Tachypnoeic at 24 breaths per minute, O₂ sats 95% room air 100% on 15 l/min O₂
  - BP 130/75, capillary refill <2 s, GCS 15

- **Focused examination**
  - Inspection – no scars on chest
  - Palpation – chest expansion normal and equal bilaterally; trachea central
  - Percussion – normal percussion note in all zones
  - Auscultation – polyphonic expiratory wheeze throughout both lung fields

- **Completes examination by identifying relevant additional clinical signs**

- **Completes examination by assessing PEFR: 350 (65% best)**

- **Thanks patient, offers assistance, maintains patient’s dignity and privacy until they are dressed**
IDENTIFIES CORRECT PHYSICAL SIGNS, INCLUDING IMPORTANT NEGATIVE FINDINGS; DOES NOT IDENTIFY SIGNS THAT ARE NOT PRESENT.

DEMONSTRATES A SAFE AND SENSIBLE MANAGEMENT PLAN.
- Place patient in an area where they can be monitored closely
- Apply oxygen via a reservoir mask at 15 l oxygen per minute
- Give nebulised B-agonist (salbutamol)
- Establish IV access.

GLOBAL EXAMINATION MARK

Station 3 – Procedural skills

NEBULISER ADMINISTRATION

EXPOSES AND POSITIONS PATIENT CORRECTLY AND MAINTAINS COMFORT
- Patient sat up at >45 degrees to optimised inhaled therapy

WASHES HANDS BEFORE GIVING MEDICATION

PERFORMS THE PROCEDURE CORRECTLY
- Selects correct mask and nebuliser chamber
- Selects correct dose of salbutamol (2.5 or 5 mg), checks dose, medication and date of expiry with colleague
- Removes lid from nebuliser chamber
- Pours liquid into bottom of chamber
- Reassembles chamber and attaches to oxygen mask
- Attaches to oxygen tubing
- Places facemask over patient’s nose and mouth and secures
- Starts oxygen at 4–6 l/min
- Documents administration in drug chart
- Advises patient that it will take 5–7 min to complete nebuliser.

GLOBAL PROCEDURAL MARK
Station 4– Data interpretation

DATA INTERPRETATION

1. A
2. B and C
3. A
4. B and C
5. B and D
6. C
7. B
8. A
9. B, C and D
10. A and C

Patient (A) – demonstrates a restrictive lung defect with resting hypoxia and reduced transfer coefficient. In view of the history of rheumatoid arthritis, this picture would fit with fibrosing alveolitis. These patients have type I respiratory failure and classically the hypoxia worsens with exercise.

Patient (B) – the history and lung function tests suggest underlying obstructive airways disease. The reduced transfer coefficient suggests probable emphysema and excludes late-onset asthma. The data do not indicate whether there is any reversibility. This is demonstrated by repeating the FEV1 and FVC tests pre- and post-nebuliser. Demonstration of reversibility is important, as it indicates whether inhaled steroid therapy may be useful.

Patient (C) – this history is suggestive of myasthenia gravis. These patients get an obstructive lung defect, as they are unable to move their chest wall due to the neuromuscular defect. The transfer coefficient is normal, as there is no alveolar problem.

Patient (D) – this is the history and lung function test for Miss Davis. This shows a normal lung function test with symptoms suggestive of intermittent wheeze. Young patients with asthma usually have normal spirometry between exacerbations. If asthma control remains poor, then some element of chronic obstruction may develop.

GLOBAL DATA INTERPRETATION MARK

A B C D E
## Station 5– Prescribing skills

### Check: DRUG DRs Don’t Forget Signing Off (page 373)

**Allergies, sensitivities and adverse drug reactions**

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<thead>
<tr>
<th>Allergies</th>
<th>Sensitivities</th>
<th>Adverse Drug Reactions</th>
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<th>Drug/Substance</th>
<th>Reaction &amp; Severity</th>
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<table>
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<th><strong>Patient details/addressograph</strong></th>
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<th><strong>IN-PATIENT MEDICATION PRESCRIPTION AND ADMINISTRATION RECORD</strong></th>
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<td><strong>Consultant</strong></td>
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<td><strong>Date of admission</strong></td>
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<td><strong>Estimated date of discharge</strong></td>
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<tr>
<th><strong>Epidural/PCA</strong></th>
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<th><strong>TPN</strong></th>
<th><strong>Chemotherapy</strong></th>
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<table>
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<th><strong>Date Time to be given</strong></th>
<th><strong>Medicine (approved name)</strong></th>
<th><strong>Dose</strong></th>
<th><strong>Route</strong></th>
<th><strong>Sign and Bleep no.</strong></th>
<th><strong>Pharmacy</strong></th>
<th><strong>Time given</strong></th>
<th><strong>Given by</strong></th>
<th><strong>Checked by</strong></th>
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<td><strong>Dose</strong></td>
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<td><strong>Signature</strong></td>
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<td><strong>Pharmacy Start</strong></td>
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**WHAT A WHEEZE**
### As required prescriptions

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<tbody>
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#### Frequency
- Max Dose/24 hrs: 6 HR

#### Indication

#### Signature
- Pharmacy: MIA 224

**Start Date:** 13.01

*IF FURTHER NEEDED PLEASE CALL DOCTOR*

---

### Thromboprophylaxis

Please prescribe treatment regimens in the regular medications section.

**Choice of mechanical prophylaxis and leg(s) to be applied to**

<table>
<thead>
<tr>
<th>Graduated elastic compression stockings</th>
<th>Intermittent pneumatic compression device (IPC)</th>
<th>Leg</th>
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<tbody>
<tr>
<td></td>
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**Start Date:** 13.02

**Start Date:**
- **End Date:**

**Signature and Bleep No.:**
- **Left:**
- **Right:**
- **Both:**

---

### Medication

**CLEXANE**

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**Date:** 13.01.12

**Route:** SC

**Signature:** MIA 224

**Instructions**

---

### Oxygen

**Target Saturation:**
- 88-92%
- 94/98%

**Other specify:**

*Device: N= nasal cannula, SM = simple face mask, V = venturi, H = humidified, RM = reservoir mask, OTHER = other eg. NCPAP/NIPPV

**Target Saturation not applicable**

#### Infusion prescriptions continued

**Date & time**

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**Scenario 1**

**Regular prescriptions continued**

**Anti-infectives prescription**  
Prescribe long term prophylaxis and anti-tuberculosis medications in regular medications section

For 5 Days

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**Date** 13/01

**Medication** AMOXYCILLIN

**Indication** LRTI

**Signature and bleep no.** MIA 224

**Medication** CLARITHROMYCIN

**Indication** LRTI

**Signature and bleep no.** MIA 224

**Regular medications**

**Dose**

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**Date** 13.01

**Medication** PREDNISOLONE

**Instructions** 5/7 ONLY

**Signature and bleep no.** MIA 224

**Medication** SALBUTAMOL

**Instructions**

**Signature and bleep no.** MIA 224
**Regular prescriptions continued**

### Regular medications

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<table>
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</tr>
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</table>

**GLOBAL PRESCRIBING MARK**

A | B | C | D | E
Station 6 – Communication skills

Patient script

You are a 23-year-old woman with asthma who was diagnosed at age 14 after having increasing wheeze, especially on exertion. You have been admitted to hospital at least six times, including an admission to the intensive care unit 3 months ago. You use both of your inhalers at least three or four times a day.

You have had to leave your university course because of frequent absences and you have become frustrated with your asthma preventing you from having a normal life. You smoke five to ten cigarettes a day and know this doesn’t help your asthma, but it helps when you feel ‘stressed’.

You do not know anyone with asthma and feel that no one understands how difficult it is for you. You do not visit your GP, as he just ‘lectures’ you about taking your inhalers. You have never had an asthma action plan and feel hopeless to prevent further exacerbations, so there is no point taking regular inhalers. You are not keen on your steroid inhalers, as you know that steroids make you fat.

Reviews patient’s current understanding of clinical situation and summarises what has happened so far

- Establishes current control of asthma
- Establishes events of this admission
- Identifies current issues regarding control
- Smoking, irregular use of inhalers, frequent admissions

Establishes patient’s ideas, concerns and expectations

- Establishes patients beliefs that she is unable to control asthma
- Understanding of stepwise treatment

Explains the key important information; invites patient to ask questions and is able to deal with them appropriately

- Addresses importance of smoking cessation
- Explains escalation of stepwise therapy (and de-escalation when control is adequate)
- Explains asthma action plan and areas of support
- Deals with concern regarding inhaled steroids
Scenario 1: Reflection and consolidation

History

Miss Davis is a 23-year-old patient with chronic asthma since the age of 14. Her control is very poor, she has been ventilated in ICU three times. The last time was 3 months ago. She uses her reliever on a daily basis. She is prescribed regular inhaled steroids but does not take them regularly. She sleeps poorly and has had multiple admissions and courses of oral steroids. She is a current smoker. She has not been able to work because of her frequent exacerbations. Her current illness started 5 days ago. She has had a cough productive of green sputum and a fever. She has been increasingly wheezy and it is not responsive to her inhaled β2-agonist. She has no chest pain or haemoptysis. She came to hospital as she feels exhausted and is very worried that she may need ventilation once again.

Examination

Miss Davis is a young lady who, on examination, is short of breath at rest and only able to complete short sentences. She has oxygen sats of 95% in room air. She is tachypnoeic at 24 resps per minute. She is tachycardic at rest with a pulse of 102 and BP 130/75. On examination of the chest she has no evidence of pneumothorax but has widespread expiratory polyphonic wheeze.

The purpose of the examination of any patient with an acute exacerbation of asthma is to assess the severity of the exacerbation in order to ensure that appropriate treatment and escalation is provided in a timely way. Every junior doctor should be able to perform this clinical examination and stratify an exacerbation.

The assessment is based on:

- Ability to speak in full/short sentences or not at all
- RR and respiratory effort
- Oxygen saturations
- PEFR as a percentage of either best (if known) or expected
- A normal or rising pCO₂ (a sign of tiring of respiratory effort).

The exacerbation is then classified as mild, moderate, severe or life-threatening.
What a Wheeze

Investigations
The diagnosis of chronic asthma is based on history and a clinical probability of more than one of the following symptoms:
- wheeze
- breathlessness
- chest tightness
- cough
particularly if:
- symptoms worse at night and in the early morning
- symptoms occur in response to exercise, allergen exposure, cold air and after taking aspirin or beta blockers.
If the diagnosis of chronic asthma is most likely, a trial of inhaled β2-agonist should be started.
The ability to instruct in the technique and subsequently obtain accurate PEFR in all patients presenting with wheeze and dyspnoea is a core skill for all foundation year doctors.

Management
The management of any chronic condition can be extremely challenging to both the patient and junior doctor. The key is to control symptoms with a stepwise escalation of therapy. Good control is that which enables patients with asthma to complete ADLs without interruption and to require rescue therapy only up to once per week.
Liaison with primary care and asthma specialist nurses and personalised asthma action plans facilitate patient-led therapy.

Further reading and web links
BTS/SIGN guidelines for both diagnosis, acute and chronic management of asthma:
www.brit-thoracic.org.uk/guidelines/asthma-guidelines.aspx
Scenario 2: ‘Heartache’

Station 1

History 10-minute station
You are the FY1 attached to a GP surgery. The next patient is Mr James Wright, who has made an urgent appointment to see the doctor. He has agreed to see you before seeing the GP.

Please take a focused history from the patient with a view to presenting the history and likely diagnosis to the GP.

You will be assessed on the following areas, as well as the content and diagnostic reasoning of your history – take them into account in your presentation.

Professionalism
- Professional appearance (NHS dress code) – including general appearance, hair and jewellery; maintains patient and personal safety
- Polite introduction; identifies patient or interviewee correctly; confirms patient’s date of birth from name band or other source
- Obtains informal consent; maintains patient’s privacy
- Displays empathetic and caring attitudes and behaviours throughout.

Process
- Good organisation and structure; appropriate use of open and closed questions
- Appropriate fluency/rhythm/pace to the interview – this may change depending on environment and acute nature of the problem
- Appropriate time for the patient to respond/reply to questions
- Appropriate acknowledgement of difficult or emotional areas of the patient’s history.

Communication skills
- Demonstrates caring and sympathetic attitude
- Asks open questions
- Invites patient to ask questions and answers them appropriately
- Addresses patient’s ideas, concerns and expectations.
Station 2

Examination 10-minute station

After completing and presenting the history, the GP asks you to perform a focused/appropriate examination of the patient. Mr Wright was also seen this morning by the Practice Nurse, who performed a series of clinical observations and tests on him. You may ask for these during your assessment.

You should present the relevant findings (given within the station) to the GP in an appropriate manner for a busy GP surgery.

You will be assessed on the following areas, as well as the content and skills of your examination – take them into account in your presentation.

**Professionalism**

- Professional appearance; maintains infection control standards, including hand cleaning and appropriate use of gloves and aprons
- Maintains patient and personal safety
- Polite introduction; identifies patient and confirms date of birth from name band or other source
- Obtains informal consent; maintains patient privacy and dignity
- Displays empathetic and caring attitudes and behaviours throughout.

**Process**

- Appropriate fluency/rhythm/pace to the examination – this may change depending on environment and acute nature of problem
- Good organisation and structure of examination; sensitive and empathetic approach
- Uses appropriate clinical techniques throughout
- Maintains privacy and dignity throughout.

**Clinical communication**

- Explains proposed examination/procedure; explains examination/procedure as it proceeds
- Offers information in a clear, structured and fluent manner, avoiding jargon
- Listens to patient and responds appropriately
- Demonstrates appropriate body language.
Clinical findings

- Patient looks well
- Feet to face: peri-orbital xanthelasma; no other obvious stigmata of CV disease
- HR 88 bpm, BP 164/98 mmHg, RR 14 bpm, O₂ sats 97% on air, temperature 36.5 °C CBG 6.8 mmol/l
- Height 1.80 m, weight 98 kg, BMI 98/(1.8)^2 = 30.3 kg/m²; urinalysis – WCC nil, protein negative, blood negative, nitrites negative, glucose +
- General examination – fingers of right hand heavily tar stained; no anaemia, no tendon xanthoma
- RS and CV examinations – no abnormal chest signs, no features of arrhythmia, cardiac valvular dysfunction, or features of heart failure.

Station 3

Data interpretation 10-minute station

The GP prescribes Mr Wright aspirin 75 mg od, bisoprolol 5 mg od and glyceryl trinitrate (GTN) spray 2 puffs PRN. However, Mr Wright fails to collect his prescription and 10 days later is admitted to the local hospital with a diagnosis of acute coronary syndrome (ACS).

The on-call cardiology ST4 presents you with a number of statements concerning the admission ECG and chest radiograph of Mr Wright. Please indicate whether the statements are TRUE (T) or FALSE (F).

Figure 2.1 Mr Wright’s ECG
1 The rhythm is consistent with sinus bradycardia.
2 The P wave indicates that there is right atrial hypertrophy.
3 The PR interval indicates that there is first-degree heart block.
4 The axis is deviated to the right.
5 There is evidence of a left bundle branch block pattern.
6 There is evidence of an old inferior MI.
7 There is evidence of acute septolateral ischaemia.
8 There is abnormal R wave progression.
9 There are changes consistent with the voltage criteria of left ventricular hypertrophy.
10 If the patient’s 12-hour troponin was 0.96 iu/l, this would indicate that he had suffered an acute non-STEMI.

Figure 2.2 Mr Wright’s chest radiograph
1. There is evidence of left atrial hypertrophy.
2. The cardiothoracic ratio is increased.
3. There is calcification of the aortic valve.
4. There is evidence of a right pleural effusion.
5. The left hilum is abnormal.
6. The thoracic aorta is ‘unfolded’.
7. There is fluid in the horizontal fissure.
8. There are multiple Kerley B lines.
9. There is evidence of asbestos exposure.
10. This chest radiograph is consistent with biventricular failure.

**Station 4**

**Prescribing skills 10-minute station**

Mr Wright is admitted to the CCU awaiting his 12-hour troponin. Using the charts and the BNF provided please write up Mr Wright’s regular medications and the hospital ACS protocol.

**Details**

Mr James Wright; DOB: 14/04/1964; Ward: CCU; Consultant: Dr Agrawal; Hospital No.: 6172099; Weight: 98 kg; U&Es: normal; RBG: 6.7 mmol/; Total cholesterol: 8.9 mmol/l

**Regular medications**

Aspirin 75 mg od; Bisoprolol 5 mg od; GTN spray 2 puffs PRN

**ACS protocol**

IV access
Cardiac monitor
Oxygen via nasal cannulae or mask (maintain sats at 96–98%)

To be given after ECG confirmation of diagnosis:

Aspirin 300 mg stat (in this case already given); followed by aspirin 75 mg od (lifelong)
Clopidogrel 300 mg (in this case already given); followed by clopidogrel 75 mg od (1 year)
Fondaparinux 2.5 mg sc – stat; followed by fondaparinux 2.5 mg od for 48 hours
Lansoprazole 30 mg od
Lipids: total cholesterol >6.0 mmol/l; atorvastatin 20 mg od
Blood glucose: start insulin sliding scale if RBG >11 mmol/l

If ongoing or severe pain:
Diamorphine 2.5–5 mg IV with metoclopramide 10 mg IV – stat
Consider addition of enoxaparin, bivalirudin or glycoprotein inhibitor
Discuss with cardiologist regarding transfer for PCI

To write up on PRN side
Diamorphine 2.5–5 mg IV (only)
Metoclopramide 10 mg IV (only)
GTN spray 2 puffs sl
Paracetamol 1 g max (po) qds

Remember: DRUG DRs Don’t Forget Signing Off (page 373)

Station 5

Communication skills 10-minute station
You are the FY1 on the cardiology firm under which Mr Wright has been admitted. The Nursing Sister on the CCU is concerned that Mr Wright shows little or no understanding of his medications and condition. She asks you to explain these issues to him. Investigations have confirmed a troponin <0.05 iu/l, total cholesterol 8.9 mmol/l, RBG 6.7 mmol/l and BMI 31.6. Please explain the diagnosis, possible further management and the medications that have been prescribed.
Answers

Station 1 – History

Patient script

You are Mr James Wright, 47 years old, DOB 14 April 1964. You have been previously fit and well but ‘never see a doctor and don’t really look after yourself’. Over the past 3–4 months you have been suffering with increasingly frequent and severe episodes of chest pain. Initially you thought the pains were ‘muscle strains’ but they have got slowly worse. Initially the pains lasted less than 20–30 seconds at a time and came on once or twice a week. They would take your breath away sometimes but were never prolonged and were always when you were exerting yourself, eg lifting heavy boxes in the factory. More recently the pains have been lasting for up to 2–3 minutes and come on when you are walking in the park with your dog. They have never come on at rest and have never been prolonged. You get pains nearly every day – hence the urgent appointment that your wife made for you today.

You have never had any nausea, vomiting, sweats, clamminess, loss of consciousness or dizziness, but the pains often make you feel ‘unwell’ and you have to sit on a park bench or a low wall for a few minutes until they go away.

Cardiovascular risk factors: your grandfather and father both died in their 60s of ‘heart problems’, and your older brother had a ‘heart by-pass’ operation last year aged 49 years. You smoke 40–50 cigarettes a day and have done so for many years. You often drink 15–20 pints at the weekend but little during the week. You had a blood pressure check several years ago at a local supermarket health promotion day; you were told it was 150 over something but never got it checked again. You do not know about your cholesterol and have never had symptoms suggestive of a stroke, peripheral vascular disease or ischaemic heart disease (IHD).

Medications: you take ‘handfuls’ of indigestion tablets, including Zantac®, and occasional paracetamol but no other regular medications; you have no known allergies.

SHx: you are married with three children, aged 7, 11 and 14 years. You are the foreman in a large textile factory and are responsible for the day-to-day running of the entire shop floor. This is very stressful. You bought a large house at the end of 2008, but have subsequently had to take a pay cut and have been left with mounting debts.
Ideas and concerns: you think you may have heart problems, as these are the same symptoms as your father and brother described in the past. You hope you have not had a heart attack over the last few weeks.

Expectations: you are hoping the doctor can confirm or refute your worries and if it is a heart problem ‘start you on the right medicines’. You suppose you’ll have to lose some weight and stop smoking as well.

**CONTENT**

**Identifies key information**
- Pain – chronological progression, onset, frequency, duration, character, radiation, relieving and exacerbating factors
- Associated features – shortness of breath, nausea and vomiting, dizziness, presyncope and syncope, feeling unwell, washed out, palpitations

**Identifies important negatives, including systemic enquiry**
- No radiation to the back (thoracic aortic aneurysm)
- No features of heart failure – peripheral oedema, orthopnoea, PND, shortness of breath, wheeze, dry cough, frothy white sputum
- No features suggestive of gastrointestinal or hepatobiliary disease
- Excludes other systemic symptoms

**Identifies key information from rest of the history**
- Cardiovascular risk – FHx, known IHD, stroke or PVD, diabetes mellitus, hypertension, smoking, alcohol, others
- Relevant facts about employment, housing, social support, life stressors

**Completing the patient history**
- Drug and allergic history: Zantac and indigestion tablets, occasional paracetamol
- Allergies: NKDA
- Previous medical history: nil known
- Social and occupational history: as above

**Summarises important areas of the history back to the patient**

**Invites patient to ask questions and is able to deal with them appropriately**

**Establishes patient’s ideas, concerns and expectations**
Please present your history
- Candidate offers a logical, well-structured account of the history

What is your diagnosis?
- Candidate offers the correct diagnosis and appropriate differentials
- Diagnosis: unstable angina/IHD – the patient has not suffered a prolonged or severe episode in recent days, excluding a diagnosis of ACS or MI
- Differentials: although the usual differentials may be offered, they are unlikely in this very clear-cut history, eg basal pneumonia, upper abdominal causes (gallstones, peptic ulcer disease)

If you were the GP what immediate therapeutic management would you initiate?
- Include aspirin, GTN spray, anti-anginal, eg β blocker

What lifestyle changes would you recommend?
- Weight loss, exercise, smoking cessation, reduced alcohol intake, address life stressors (job, money worries)

What other interventions might you consider?
- Referral for further investigation, lipids assessment

Demonstrates safe, sensible and appropriate management plan

Demonstrates clear and logical diagnostic reasoning

Station 2– Examination

Patient script
If you are an actor/patient, read the patient history and physical signs fully – when the candidate comes to an abnormal site in their examination, act out tenderness and/or volunteer the relevant physical sign.
Exposes and positions patient correctly and maintains comfort

Comments on wellbeing of patient, ie well or unwell

‘Feet to face’
- Observes, and comments on patient and surroundings from foot of bed – evidence of previous cardiac surgery, eg sternotomy, JVP, anaemia, colour/perfusion.

Asks for appropriate/relevant clinical observations
- BP 164/98 mmHg, RR 14 bpm, \( \text{O}_2 \) sats 97% on air, temperature 36.5 °C, CBG 6.8 mmol/l,
- Urinalysis: WCC nil, protein negative, blood negative, nitrites negative, glucose +
- Height 1.80 m, weight 98 kg, BMI 98/(1.8)^2 = 30.3 kg/m^2.

General/systemic examination
- Hands and upper limbs: tar staining, perfusion of hands, anaemia, stigmata of hyperlipidaemia; comments on general signs, eg clubbing, leukonychia
- Face and neck: including signs of anaemia, peri-orbital xanthelasma, central cyanosis.

Focused examination
- Inspection:
  - Sternotomy scar, JVP – makes appropriate assessment including correct positioning of patient, correct technique; comments correctly on JVP.
- Palpation:
  - Carotid pulse – comments on character and presence of bruits
  - Apex beat – position and character
  - Assesses and comments on heaves and thrills
- Auscultation: listens in correct areas, assesses for radiation, manoeuvres patient correctly, appropriate use of stethoscope – bell and diaphragm.

Completes examination by identifying relevant additional clinical signs and formally completing assessment
- Signs of left and right heart failure, including bibasal crackles, pleural effusions, peripheral oedema; hepatomegaly/ascites
- Signs of PVD and generalised atherosclerosis, including AAA, peripheral pulses and abdominal bruits.

Thanks patient, offers assistance, maintains patient’s dignity and privacy until they are dressed
Correctly identifies the relevant physical signs, including important negative findings

Demonstrates safe, sensible and appropriate management plan, including
- Anti-platelet treatment
- Anti-anginals
- Lipid-lowering agents, primarily statins
- Anti-hypertensives: given his age, race and new-onset IHD, ACEI or β blockade should be considered
- Nicotine replacement therapy.

Demonstrates clear and logical diagnostic reasoning

Station 3 – Data interpretation

1  TRUE – the rate is 300/6 = 50 bpm
2  FALSE – the P wave is slightly notched but is less than 3 mm broad; this is more suggestive of left atrial compared with right atrial enlargement; if broader this would be consistent with P mitrale
3  TRUE – the PR interval is 5 mm; borderline first-degree heart block
4  FALSE – there is marked left axis deviation (LAD); lead I is positive, lead II is isoelectric, lead III is negative (ie leads I and III are pointing away from one another = ‘leaving’ one another = LAD)
5  FALSE – the QRS complex has a normal width (<3 mm) and does not demonstrate any features suggestive of LBBB
6  FALSE – there are no features suggestive of an old MI, eg Q waves
7  TRUE – there are inverted Q waves from V2 to V6, extending up to a VL
8  TRUE – the R wave should be small in amplitude in V1 and increase in size across the chest leads to V4 or V5, then drop away slightly to V6; there are relatively tall R waves from V2 to V5, with equal amplitude
9  FALSE – there are no voltage criteria suggestive of the LVH
10 TRUE – patients presenting with features of ACS are divided first by their ECG findings STEMI vs non-STEMI or unstable angina; non-STEMI and unstable angina are subsequently subdivided by the 12-hour troponin level; a positive result (in context) is suggestive of a non-STEMI; cardiac (tachyarrhythmias) and non-cardiac pathologies (chronic renal impairment or PE) may also increase the troponin level
Figure 2.2 is a normal CXT

When assessing a CXR, as with all images, it is important to have a structured approach, considering each aspect in turn, and to know the normal appearance. Always start by checking that the patient details are correct for your patient. Is it PA (posteroroanterior – X-ray plate against the chest) or AP – in the latter the heart appears magnified, and technically, one should not comment on the cardiac size. Is there any rotation – in a well-centred film the clavicles are horizontal, directly opposing one another, clearly seen along their entire length, and equally placed on either side of the vertebral column, which should be perpendicular to them. If the film is under-penetrated (the focus of the X-rays is in front of the plate), the heart and lung markings appear very dense and the vertebrae are not seen. In over-penetrated views (X rays focussed behind the plate), lung markings and vertebrae become very prominent (occasionally, used to give lesions in the lung more definition).

The left heart border is made up (from superior to inferior) of the aortic knuckle, the left pulmonary artery, the left atrial appendage and the left ventricle. It is intimately related to the lingual lobe, a part of the upper lobe, of the left lung - with consolidation of the lingual lobe, the left heart border becomes hazy and difficult to define. The right heart border is made up of the superior vena cava and the right atrium. It is intimately related to the right middle lobe and consolidation within this lobe causes loss of definition of this border. The heart size on a PA film should be less than half of the thoracic cavity at its widest point, ie this cardiothoracic ratio (CTR) should be < 0.50.

The upper lobe of the left lung (incorporating the lingual lobe) lies anteriorly and the lower lobe posteriorly. The right lung has upper, middle and lower lobes; the horizontal fissure becomes visible on X-ray when fluid filled. The lungs are both divided radiologically into the upper zone (incorporates the apices and extends from the apex to the 2nd anterior rib), midzone (extends from the 2nd to 4th anterior ribs) and lower zone (extends from the 4th to the 6th anterior ribs).

Both costodiaphragmatic angles must be included on a CXR: if not, it should be repeated before commenting on the lungs. The right hemidiaphragm should lie 1–2 cm higher than the left. Blunting or loss of an angle implies an effusion. The left hemidiaphragm usually has an underlying gastric bubble: do not confuse this with a pneumoperitoneum caused by perforation of a viscus.

Two features must be present to diagnose hyperexpansion of the lung fields: (a) there should be no more than six anterior ribs seen on a PA film (unless a deep inspiration has been taken). The ribs, in a hyperextended view, often look ‘flattened’ or very horizontal, as do the hemidiaphragms, (b) the precise way of establishing hyperexpansion is to draw a line between the costodiaphragmatic angle and the cardiodiaphragmatic angle. In the normal CXR, a perpendicular drawn from the mid-point of the hemidiaphragm to the original line should be 1.0 cm or more: if less, the hemidiaphragms are ‘flattened’ and the lung fields hyperexpanded.

Comment on whether the ribs and other bones look normal or osteopenic, and whether there is evidence of arthritis, fractures or other abnormality. The rib spacing is greatly reduced with underlying lung collapse and is termed ‘crowding’. Check the soft tissues for the breast, and other shadows, air (surgical emphysema) and calcification.
Station 4 – Prescribing skills

Check: DRUG DRs Don’t Forget Signing Off (page 373)

Allergies, sensitivities and adverse drug reactions | Patient details/addressograph
--- | ---
No known allergies | Initials AF 007
Not possible to ascertain | Gender M F
Medicine/substance | Weight (kg) Date
Reaction & Severity | 98
Initials & Date | Surname: WRIGHT

Height | 1.80m
First name: JAMES

Date of birth: 14.04.64

IN-PATIENT MEDICATION PRESCRIPTION AND ADMINISTRATION RECORD

Consultant | Date of admission
AGRAWAL | 21.11.11
Trainee Dr. Name and Bleep no. | Date chart reboarded
FEATHER 007 | Estimated date of discharge

This chart is no. | Ward
.......................... of ................................ | HDU
Transcribing Check by Pharmacy | 1. .................................. 2. ..................................
Sign | Date

Supplementary Medication charts in use: Other (please specify): 1 .................................. 2 ..................................

Epidural/PCA | Syringe driver | TPN | Chemotherapy | Insulin sliding scale

Once only medications – loading doses, pre-medication, PGDs or surgical antibiotic prophylaxis

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### Regular prescriptions continued

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### Oral anticoagulation follow the anticoagulation guidelines available on the intranet

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* A follow-up appointment must be booked with the anticoagulant clinic or enhanced provider of primary care services. If not, the TTA will not be dispensed

**Initiating warfarin**
- Perform baseline coagulation screen, LFTs, U&Es and FBC
- Prescribe initiation dose as per guidelines
- CHECK INR ON DAY 3
- FOLLOW DOSING ALGORITHM IN GUIDELINE

**Continuing warfarin**
- Maintenance therapy
- FOLLOW MAINTENANCE DOSING ALGORITHM IN GUIDELINE

Do not use the initiation protocol for patients already on warfarin. More frequent INR monitoring may be required for patients on interacting drug(s)

### Day One Two Three Four and above

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<th>&gt;4.5</th>
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<tbody>
<tr>
<td>Dose mg</td>
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<td>10 5</td>
<td>10 5</td>
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</tbody>
</table>

**Initiating warfarin – Reduced dosing regimen in red. Refer to anticoagulation policy**
**Thromboprophylaxis** please prescribe treatment regimens in the regular medications section.

<table>
<thead>
<tr>
<th>Choice of mechanical prophylaxis and leg(s) to be applied to</th>
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<th>Enter details below</th>
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</thead>
<tbody>
<tr>
<td>Graduated elastic compression stockings</td>
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<td></td>
</tr>
<tr>
<td>Intermittent pneumatic compression device (IPC)</td>
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<td></td>
</tr>
<tr>
<td>Leg</td>
<td>Left</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td></td>
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</tbody>
</table>

**Start Date:**

**End Date:**

**Signature and Bleep No.:**

---

**Medication**

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<th>Dose</th>
<th>Dose Change</th>
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<th>Enter details below</th>
</tr>
</thead>
</table>

**Please ensure you have completed the VTE risk assessment form**

**Date**

**Route**

**Signature**

**Bleep no.:**

---

**ON ACS PROTOCOL**

**Name:**

**Address:**

**TODAY’S DATE:**

---

**Oxygen**

**Target Saturation:**

88-92%  
94-98%

If oxygen saturation falls below target range on prescribed oxygen, patient needs urgent clinical review.

If oxygen saturation is above target range on prescribed oxygen, ask for review.

**Other specify:**

*Device: N= nasal cannula, SM = simple face mask, V = venturi, H = humidified, RM = reservoir mask, OTHER = other eg. NCPAP/NIPPV*

**Target Saturation not applicable**

---

**As required medications**

**Medication:** MORPHINE

**Date**

**Indication**

**Time**

**Dose:** 25-50mg

**Route:** IV

**Maximum frequency / dose:** as req’d

**Start date:** 21/11

**Dose**

**Stop date:**

**Route**

**Signature:**

**Bleep no.:**

**Given:**

---

**Additional instructions:** IV ONLY
### As required medications

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<th>Date</th>
<th>Indication</th>
<th>Time</th>
<th>Dose</th>
<th>Route</th>
<th>Maximum frequency / dose</th>
<th>Start date</th>
<th>Stop date</th>
<th>Route</th>
<th>Dose</th>
<th>Stop date</th>
<th>Signature</th>
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<td>AF</td>
<td>007</td>
<td></td>
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</tbody>
</table>
Station 5 – Communication skills

Investigates patient’s present level of understanding of scenario
Asks what, and how much, information they would like to be told
Summarises and confirms what has happened so far (may be covered above)
- Patient went to the GP and was told he had a heart disease; he was prescribed medicines but didn’t pick them up (may challenge patient as to why)
- Admitted a few hours ago from the Emergency Department after prolonged period of chest pain
- Tests have shown that cholesterol is raised but heart muscle test (troponin) is negative; ECG abnormal but no acute changes suggesting a heart attack.

Establishes patient’s ideas, concerns and expectations
Explains key important information
Medications: actions, frequency, side-effects
- Aspirin and clopidogrel – anti-platelet; stop blood clots forming in the blood vessels of the heart; take one each daily; SEs – indigestion, abdominal pain and bruising or bleeding
- Bisoprolol – β blocker – helps the heart pump and lowers the blood pressure; take one daily; may cause low blood pressure and dizziness, erectile impotence, slow heart beat
- GTN spray – to spray under the tongue when get pain; SEs – headache and dizziness
- Atorvastatin – lowers blood cholesterol; SEs – jaundice and liver problems, muscle aches and pains
- Lansoprazole – proton pump inhibitor; stops acid secretion in the stomach, which in turn stops ulcers and inflammation in the stomach and small bowel; SEs – may cause upper and lower GI disturbance.

Lifestyle changes
- Weight loss – will need to see dietitian; low-fat/low-salt diet
- Smoking cessation – can be booked into hospital or community programmes; may involve nicotine replacement therapy
- Alcohol – cut down to safe limits (21 units per week)
- Help with money issues and stress
- Further investigations
- ‘Treadmill’ test today; explains procedure and potential outcomes
- If inconclusive – may have other test, eg MRA or thallium scan
- Potential may require PCI – explains purpose, process and potential outcomes, eg angioplasty, stenting and possible CABG.

Invites patient to ask questions as they proceed through the consultation and is able to deal with them appropriately
Summarises important areas of the consultation back to the patient
Formally ends the consultation and ensures appropriate follow-up has been discussed
Scenario 2: Reflection and consolidation

History

Mr Wright is a 46-year-old man who presents today with features suggestive of unstable angina. Of note he is a life-long smoker, has untreated hypertension and has a very strong family history of IHD and premature death. He now presents with a 3- to 4-month history of angina-like chest pain. Initially the pains lasted 20–30 seconds and came on once or twice a week. They were always associated with exertion such as lifting heavy objects at work, but the pains were never at rest or prolonged and there were no associated features of note. More recently the pains have become more frequent – now once a day – and last for a few minutes. They often come on when he is walking his dog in the park but are always relieved with sitting and resting. No other significant cardiovascular (eg suggestive of heart failure), respiratory or systemic symptoms. The patient’s cardiovascular risk factors include:

- His brother has just had CABG surgery aged 49 years and his father and grandfather died in their 60s of IHD.
- He is a known heavy smoker – 40–50 cigarettes per day for many years.
- He has hypertension – his blood pressure was measured at 150/something at a local health promotion day, 2 years ago, but he never sought treatment.
- He has a very stressful job, and has significant financial worries at the present time.

Other risk factors are negative or unknown.
Examination

On examination of this middle-aged gentleman, who presented with unstable chest pain, he looked well. The general examination was remarkable only for heavily-tar-stained fingers of the right hand and peri-orbital xanthelasma. There were no other stigmata of generalised systemic or cardiovascular disease. His pulse was 88 regular and his BP was 164/98 mmHg. His RR, and his O₂ sats and CBG was 6.8 mmol/l were normal. His height is 1.80 m, weight 98 kg and BMI 98/(1.8)^2 = 30.3 kg/m². His urinalysis was remarkable only for 1+ of glycosuria. Cardiovascular and respiratory examinations were essentially otherwise normal with no features of heart failure or valvular dysfunction.

Data interpretation

In a patient presenting with ACS, the following routine investigations should be checked:

- Bloods: FBC, U&Es, RBG, cholesterol, 12-hour troponin
- Chest X-ray: need to ensure there are no features of heart failure, calcified valves or cardiomegaly, or respiratory disease, eg features of COPD (chronic smoker)
- ECG: checking for signs of hypertensive and/or IHD, eg arrhythmia, heart block, left axis deviation, ST segment and T wave changes, left bundle branch block; voltage criteria of LVH.

Management

Before prescribing the medications of an ACS protocol, important factors to consider include:

- Patient’s haemodynamic status: BP, HR
- Renal function and urine output
- Bleeding risk (consider CRUSADE score)
- Risk of further ischaemia and complications (GRACE or similar score) – consider acute transfer for PCI.

Acute ACS protocol, including fondaparinux or low molecular weight heparin, aspirin and clopidogrel, anti-anginals (β blockers, nitrates)
Secondary prophylaxis: statins, anti-platelets, anti-hypertensives
Further investigations according to GRACE or similar score – may need inpatient MRA, ETT, PCI.

Further reading and web links

www.sign.ac.uk/pdf/sign93.pdf
www.nice.org.uk/nicemedia/live/12949/47924/47924.pdf