# OSCEs at a Glance

## Second Edition

Adrian Blundell
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with online checklists

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# OSCEs at a Glance

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# OSCEs at a Glance


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# Contents

## Companion website

A companion website is available at:
**www.ataglanceseries.com/osces**
featuring downloadable OSCE station checklists.

# Preface

The OSCE remains the most common type of clinical examination at medical school and continues to increase in popularity and versatility. We have fully revised this second edition and taken into consideration the feedback received following the first edition. The emphasis remains on the stations being realistic OSCE scenarios that a student will encounter. We have added 31 new stations and attempted to set out the book in an even more logical way. The other addition is that of a website companion that has example mark sheets to accompany many of the stations – we hope you feel these are a useful addition. As always, good luck with your studies.

AB
RH

# Preface to the first edition

Clinical examinations put fear into the hearts of many medical students. During a written exam, the mistakes can be 'private' whereas for clinical assessments there is always the danger of the hypothetical 'hole' being dug by the nervous student. Knowledge itself is only one requisite for becoming a competent doctor and, although important for clinical examinations, it is also essential to demonstrate the adequate skills and attitudes appropriate for a future doctor. There is still a tendency for students to focus too much of their work in the library rather than utilising the plethora of clinical signs and medical histories available on the wards. Facts alone will not permit success in clinical examinations and there is no substitute for perfecting your communication, history, examination and practical skills with a wide range of patients.

There are multiple OSCE books available but many substitute 'written' questions for true OSCE clinical stations. The other potential drawback is that many of them only cover one subject. This text presents potential OSCE stations from all the clinical subjects taught at medical school. We have used a case by case approach with the idea that the student should try to picture him/herself as they enter the station and are presented with the instruction and introduced to the patient or task. Each station consists of an example instruction with appropriate history or examination hints relevant to the case. Examiner questions are incorporated as discussion points. Where possible the answers to these viva topics have been given but, as a revision aid, this text needs to be used in combination with more comprehensive texts in each of the subjects. In addition to standard text books, useful information can be found on the websites of the National Institute for Health and Clinical Excellence and also the Royal College websites where multiple guidelines are written for use in clinical practice.

After our own personal experience of sitting OSCE style assessments, preparing students for them, and also as examiners, we feel this book uses a realistic approach to the OSCE exam and will help prepare students for the clinical exams throughout their medical school life.

Good luck.

Adrian Blundell
Richard Harrison

# Acknowledgements

Many people have assisted in the development of this book. We are extremely grateful that they found time during their busy schedules to read various sections at various stages in order to make suggestions and corrections. While we have attempted to acknowledge those individuals as listed, there is one large group that also deserves a special mention – all the medical students and junior doctors in Nottingham, Oxford, London and Sydney that we have had the pleasure of teaching over the last few years and whose enthusiasm and ideas have helped form this revision guide.

We would also like to thank the following individuals: Naomi Bullen, Ashleigh Chalder and Asheeta Patel for their assistance with the setting up of the photographs; Pete Thurley for supplying some of the radiology images; Nicola Sherrington for the development of some of the mnemonics; and to the various development and production editors at Wiley-Blackwell for their support throughout the project.

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## Figures

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# Selected list of abbreviations

| | |
|---|---|
| **AAA** | abdominal aortic aneurysm |
| **ABG** | arterial blood gas |
| **ACE** | angiotensin-converting enzyme |
| **ACL** | anterior cruciate ligament |
| **ACS** | acute coronary syndrome |
| **ACTH** | adrenocorticotrophic hormone |
| **ADL** | activity of daily living |
| **A&E** | accident and emergency |
| **AF** | atrial fibrillation |
| **AIDS** | acquired immune deficiency syndrome |
| **ANA** | antinuclear antibody |
| **AP** | anteroposterior |
| **ASA** | acetylsalicylic acid |
| **AV** | atrioventricular |
| **AXR** | abdominal X-ray |
| **BCG** | bacillus Calmette–Guérin |
| **β-HCG** | beta-human chorionic gonadotrophin |
| **BMI** | body mass index |
| **BNF** | *British National Formulary* |
| **BP** | blood pressure |
| **BPH** | benign prostatic hypertrophy |
| **BSL** | blood sugar level |
| **Ca** | calcium |
| **CCU** | cardiac care unit |
| **CK** | creatine kinase |
| **CMV** | cytomegalovirus |
| **CNS** | central nervous system |
| **$CO_2$** | carbon dioxide |
| **COPD** | chronic obstructive pulmonary disease |
| **CPR** | cardiopulmonary resuscitation |
| **CRP** | C-reactive protein |
| **CSF** | cerebrospinal fluid |
| **CT** | computerised tomography |
| **CVP** | central venous pressure |
| **CVS** | cardiovascular system |
| **CXR** | chest X-ray |
| **Δ** | diagnosis |
| **D&C** | dilation and curettage |
| **ΔΔ** | differential diagnoses |
| **DH** | drug history |
| **DIP** | distal interphalangeal |
| **DNAR** | do not attempt resuscitation |
| **DOB** | date of birth |
| **DRE** | digital rectal examination |
| **DVLA** | Driver and Vehicle Licensing Agency |
| **DVT** | deep vein thrombosis |
| **EBV** | Epstein–Barr virus |
| **ECG** | electrocardiogram |
| **ENT** | ear, nose and throat |
| **ERCP** | endoscopic retrograde cholangiopancreatography |
| **ESR** | erythrocyte sedimentation rate |
| **ET** | essential thrombocythaemia |
| **FBC** | full blood count |
| **$FEV_1$** | forced expiratory volume in 1 second |
| **FH** | family history |
| **FSH** | follicle-stimulating hormone |
| **FTT** | failure to thrive |
| **FVC** | force vital capacity |
| **GALS** | gait, arms, legs and spine |
| **GCS** | Glasgow Coma Scale |
| **GH** | growth hormone |
| **GI** | gastrointestinal |
| **Glc** | glucose |
| **GMC** | General Medical Council |
| **GP** | general practitioner |
| **G&S** | group and save |
| **Hb** | haemoglobin |
| **HDU** | high dependency unit |
| **HIV** | human immunodeficiency virus |
| **HPC** | history of presenting complaint |
| **HR** | heart rate |
| **HRT** | hormone replacement therapy |
| **IBD** | inflammatory bowel disease |
| **IBS** | irritable bowel syndrome |
| **IM** | intramuscular |
| **INR** | international normalised ratio |
| **ITU** | intensive therapy unit |
| **IUCD** | intrauterine contraceptive device |
| **IUGR** | intrauterine growth retardation |
| **IV** | intravenous |
| **IVF** | in vitro fertilisation |
| **Ix** | investigation/s |
| **JVP** | jugular venous pressure |
| **LBBB** | left bundle branch block |
| **LDH** | lactate dehydrogenase |
| **LFT** | liver function test |
| **LIF** | left iliac fossa |
| **LH** | luteinising hormone |
| **LMN** | lower motor neurone |
| **LMP** | last menstrual period |
| **LUQ** | left upper quadrant |
| **LV** | left ventricle |
| **LVF** | left ventricular failure |
| **MCP** | metacarpophalangeal |
| **MC&S** | microscopy, culture and sensitivity |
| **MDT** | multidisciplinary team |
| **Mg** | magnesium |
| **MI** | myocardial infarction |
| **MMR** | measles, mumps and rubella |
| **MMSE** | mini mental state examination |
| **MRC** | Medical Research Council |
| **MRCP** | magnetic resonance cholangiopancreatography |
| **MRI** | magnetic resonance imaging |
| **MS** | multiple sclerosis |
| **MSK** | musculoskeletal |
| **MTP** | metatarsophalangeal |
| **Mx** | management plan |
| **NBM** | nil by mouth |
| **NSAID** | non-steroidal anti-inflammatory drug |
| **$O_2$** | oxygen |

**OA** osteoarthritis
**OCP** oral contraceptive pill
**OD** once daily
**OGD** oesophagogastroduodenoscopy
**OSCE** objective structured clinical examination
**OTC** over-the-counter
**PA** posteroanterior
**PC** presenting complaint
**PCOS** polycystic ovarian syndrome
**PE** pulmonary embolus
**PET** positron emission tomography
**PID** pelvic inflammatory disease
**PIP** proximal interphalangeal
**PMH** past medical history
**PO** per oral
**PR** per rectum
**prn** as required
**PV** per vagina
**RA** rheumatoid arthritis
**RF** risk factors
**RIF** right iliac fossa
**ROM** range of motion
**RR** respiratory rate
**RUQ** right upper quadrant
**Rx** treatment
**SAH** subarachnoid haemorrhage
**sats** oxygen saturations
**SFJ** saphenofemoral junction
**SH** social history
**SLE** systemic lupus erythematosus
**SOB** shortness of breath
**SOL** space occupying lesion
**SPECT** single photon emission computed tomography
**SpR** specialist registrar
**SR** systems review
**STD** sexually transmitted disease
**StR** specialty registrar
**Sx** symptoms/signs
**TB** tuberculosis
**TFT** thyroid function test
**TIA** transient ischaemic attack
**TNF** tumour necrosis factor
**TSH** thyroid-stimulating hormone
**U&E** urea and electrolytes
**UMN** upper motor neurone
**URTI** upper respiratory tract infection
**US** ultrasound
**UTI** urinary tract infection
**UV** ultraviolet
**VF** ventricular fibrillation
**VT** ventricular tachycardia
**WCC** white cell count

# 1 The OSCE examination

## Types of station

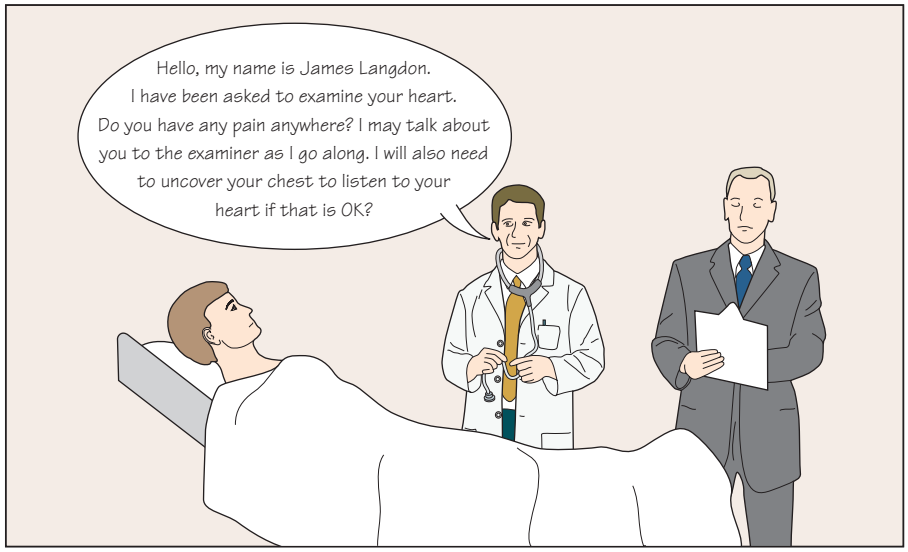
History taking
Communication skills
Patient examination
Practical skills/procedures
Data interpretation
Combination station
(e.g. history & examination)

## ESSENTIALS CHECKLIST

- Dress appropriately (local hospital policy)
- Wear name badge
- Be polite and considerate
- Read/listen to instructions carefully
- Use alcohol hand rub/wash hands
- Introduce yourself to examiners and patients
- Explain intentions and gain consent
- Treat simulated patients as if they were actual patients
- Obtain correct positioning and exposure of patient
- Maintain dignity of patient
- Ask about the presence of pain/ensure patient comfort
- Develop a rapport/treat patient with respect
- Explain your actions to the patient while examining
- Look at the examiners when presenting
- Speak clearly and confidently
- Maintain a logical approach when answering questions
- Thank the patient and examiner on completion

Essentials checklist mnemonic – WINCER

**W - Wash hands**
**I - Introduce**
**N - Notice (i.e. be observant)**
**C - Consent**
**E - Expose**
**R - Reposition**




## POTENTIAL PITFALLS

Forgetting elements of the ESSENTIALS CHECKLIST but in particular:

- Arriving late/dressing inappropriately
- Displaying inappropriate habits (e.g. sniffing, chewing gum, yawning)
- Forgetting about introductions and consent
- Forgetting about the importance of hand hygiene and (where appropriate) adequate sharps safety
- Not listening to or reading the instructions carefully and hence needing correction from the examiners
- Being rude, heavy handed or inconsiderate to the patient (or examiner!)
- Examining the patient from the left hand side of the bed
- Examining the patient in the wrong position
- Inadequately exposing the patient
- Looking at the patient while presenting rather than the examiner
- Fidgeting or fiddling with your hands while presenting
- Stating answers to questions without thinking adequately, and therefore not presenting answers in a logical order
- Looking like you have never performed a blood pressure measurement before (or other practical skill)
- Perfecting slick examination routines on 'normal' patients, but having seen few 'real' patients to then be able to pick up the abnormal signs
- Looking for clinical signs but not registering them
- Adequately covering 'textbook' revision but not examining enough patients or practising clinical skills

The OSCE has been increasingly used over the last 15 years, although one of the first descriptions was way back in 1979 by Harden and Gleeson [1]. This form of examination is now used extensively in medical schools in the UK. The main advantage is that it can be used to examine many different clinical skills with all students performing the same tasks, marked against explicit criteria by the same examiners.

## Set up

An OSCE consists of a series of timed stations that each student rotates through. Each station involves a candidate carrying out a well-defined task. The time allocated for each station will vary with the required task, but in general each station lasts 5–10 minutes. The majority of stations have an examiner (or pair of examiners) who will assess the candidate's performance using a structured marking sheet. If the station is purely data interpretation, then it is not always necessary to have an examiner present and the candidate will be required to complete a written task.

Each station will have an accompanying instruction for the candidate to follow. The instructions can be presented in different ways:

- The examiner may ask the student to carry out a task
- The instructions may be posted at the station (e.g. on a poster near the patient)
- The candidate may receive the instructions prior to entering the station
- A rest station could be used to read through material relevant to the next station

OSCEs can be used at any stage during medical school. The exams in the earlier years concentrate on assessing the basic clinical skills and the emphasis is on the demonstration of correct technique, rather than interpreting the signs. This usually involves simulation-based cases rather than 'real' patient contact.

## Types of station

The possibilities for individual OSCE stations are huge but generally they are divided into clinical, practical and data interpretation:

**1** ***Clinical stations:*** These involve various aspects of communication or examination:

- Obtaining and presenting medical histories
- Performing a physical examination
- Communication skills
- Combination stations (e.g. history and examination)

These usually involve interaction with a patient who may be real or simulated (e.g. a student/actor/the examiner). The simulated patients rarely have abnormal clinical signs.

**2** *Practical stations*:

- Clinical skills (e.g. resuscitation, blood pressure measurement)
- Procedural skills (e.g. cannula insertion, urethral catheterisation)

Mannequins or anatomical models are often substituted for the patient. The student may be required to explain and perform the procedure, gain consent or act on a result.

**3** ***Data interpretation stations:*** These involve written or verbal discussion of a variety of results:

- Examiner-led structured viva (e.g. discussion of laboratory results, interpretation of radiographs or electrocardiograms (ECGs))
- Written station (e.g. 'Please interpret the following full blood count and answer the attached questions')

With the advent of improved information technology facilities, this type of knowledge can be adequately assessed during written exams, although some medical schools still include them in OSCEs.

## The instructions

- Written or verbal instructions will be given to each candidate at the beginning of the station
- The patient, where necessary, will have had a chance to study written instructions summarising their condition (this is essential for simulated patients but real patients may just give their own history)
- Examiners will have instructions outlining the purpose of the station and the task to be carried out
- The examiners will also have read the student and patient instructions

## The marks

Marking sheets will vary depending on the type of station and skill being assessed, but each task will be marked against explicit criteria. This will be in the format of a checklist of actions the student needs to perform. Patients may be asked their opinion of the candidate and it would be taken very seriously if the patient felt the student was rude or rough. Students may be examined by an individual or pair of examiners (who should mark independently). Once the station is completed an individual mark can be scored following agreement by the examiners and a statement as to the student's global performance is often included.

## Preparation

There is increasing emphasis from the General Medical Council (GMC) that the clinical competence of medical students needs to be assessed and recorded. OSCE-type stations, using either 'real' or simulated patients, are ideal for this purpose. Clinical competence is a combination of three domains – knowledge, skills and attitudes.

There are several documents published by the GMC that describe the attitudes and behaviour expected of future doctors; these behaviours need to be developed during university along with clinical competence and will be assessed in the OSCE examinations [2–4]. Students often underestimate the need to practise their clinical skills and bury their heads in the books until nearing the practical assessment, when there is a mad rush to the clinical skills laboratory to run through examination routines and a mad dash to the wards to see as many patients as possible. This behaviour remains common despite repeatedly reminding students of the practical nature of being a doctor and one of the main recommendations of *Tomorrow's Doctors 2003* stating 'factual information must be kept to the essential minimum that students need at this stage of medical education' [2]. Start practising your clinical skills as early as possible, preferably with an 'OSCE buddy' or even 'OSCE group'. The skills tested in the OSCE and also the skills necessary to embark on life as a Foundation doctor are best learnt in the clinical environment and not the library.


1 Harden RM, Gleeson FA. *Assessment of Medical Competence. Using an objective structured clinical examination (OSCE)*. ASME Medical Education Booklet No. 8. Association for the Study of Medical Education (ASME), Edinburgh, 1979.

2 General Medical Council. *Tomorrow's Doctors*. General Medical Council, London, 2009. Available at www.gmc-uk.org.

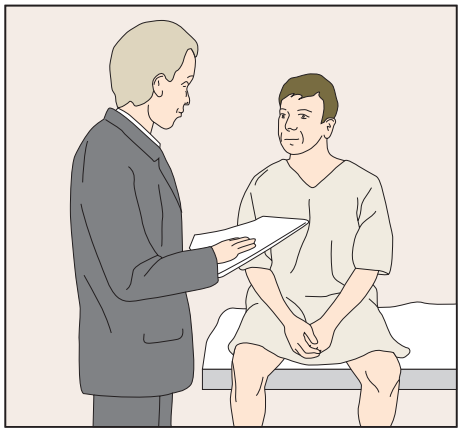
3 General Medical Council. *Medical students: professional values and fitness to practise*. General Medical Council, London, 2009. Available at www.gmc-uk.org.

4 General Medical Council. *Good Medical Practice*. General Medical Council, London, 2006. Available at www.gmc-uk.org.

# 2 The stable patient

## Logical approach for a stable patient

History
Examination
Summary
Differential diagnoses
Problem list
Management plan



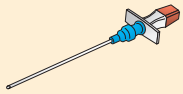
## Management plan

### Investigations
See algorithm below

### Treatment
Medical

Surgical

### Procedures

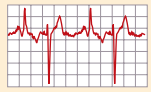


Cannula
Fluid aspirate
Lumbar puncture
Urinary catheter
Drain insertion

### Location
Intensive care
Coronary care
General ward
Specialist ward

H
A & E

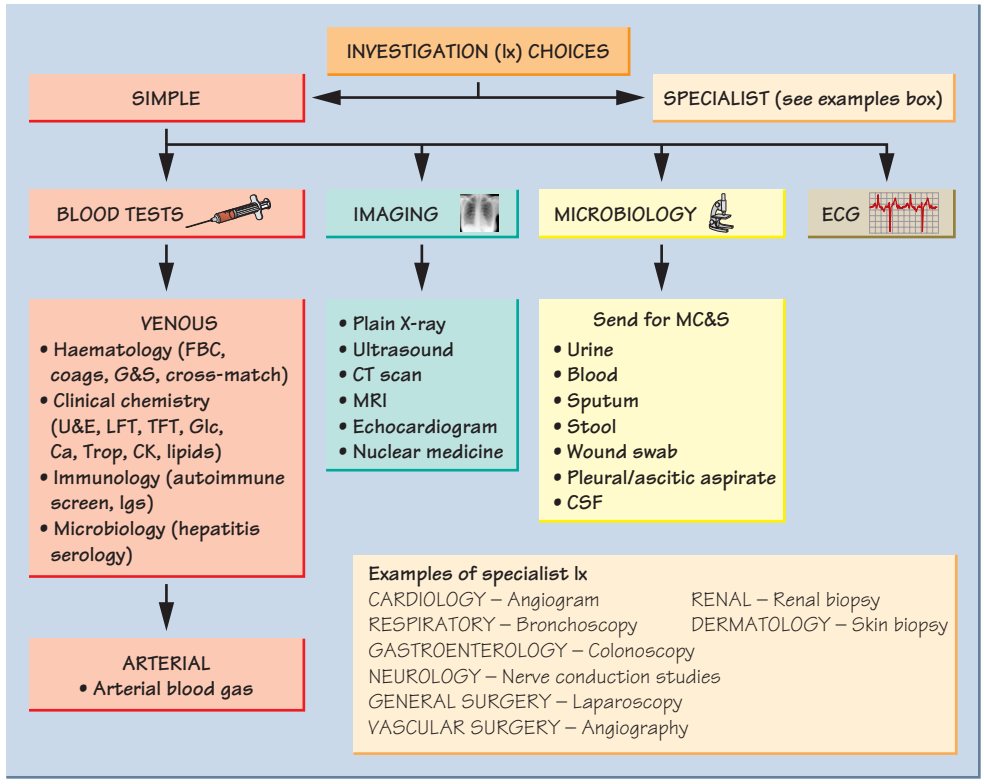
### Monitoring
Chasing results
Reviewing the patient
Frequency of observations
Invasive monitoring, e.g. CVP



### Multidisciplinary team
Physiotherapy
Occupational health
Dietitian/speech therapy
Social work

### Specialist review
Specialist opinion
(doctor or nurse)
Further investigation
or procedure

### Patient education
Patient leaflets
Specialist opinions
Clear explanations
Support groups



Patients seen in medical student exams are not acutely unwell and so can be assessed in a logical manner in order to determine a diagnosis and management plan. The approach is summarised opposite. This system helps a clinician make a diagnosis no matter what the presenting problem might be. This approach is also utilised in real life on the wards, although the process is dynamic, and the different areas can overlap, for example practical procedures can be performed while taking parts of the history.

## History and examination: hints and tips

See Chapter 4.

## Differential diagnoses, problem lists and management plans: hints and tips

When assessing a patient, try and formulate a list of differential diagnoses (ΔΔ). Next organise your thoughts into a problem list, taking into account other aspects of the history and examination rather than just the presenting complaint (e.g. non-urgent referrals, possible future investigations, impact of the illness on the patient and relatives, social problems, patient education). From the problem list it will be possible to determine a management plan (Mx). The main aspects of a management plan are described opposite.

### Example

A 72-year-old female patient (weight 48 kg) with a known history of chronic obstructive pulmonary disease (COPD) is admitted to hospital with increasing shortness of breath (SOB) and a productive cough. Her blood tests have shown a ↑ white cell count and her chest radiograph shows consolidation in the right lower lobe. She has been on long-term steroids which cannot be weaned. She has had six admissions in the last 4 months but continues to smoke five cigarettes a day. She has rheumatoid arthritis which in addition to her COPD means she is limited in performing her activities of daily living. Her husband is fit and can help her but is due to be admitted for a hip replacement in 2 weeks' time. On previous admissions the doctors have felt that she might benefit from home oxygen therapy.

A possible problem list for this example would include:

- Infective exacerbation of COPD – needs treatment and monitoring
- Frequent admissions to hospital with exacerbations of COPD – optimise her treatment including a COPD nurse review in the community
- On long-term steroids – need to assess for side effects and consider osteoporosis prophylaxis
- Continues to smoke – offer smoking cessation advice as she cannot have home oxygen until she stops
- Discharge planning – husband due to be admitted to hospital in 2 weeks – will she be able to manage at home?
- Review inhalers and check technique – may have problems using some inhalers due to rheumatoid arthritis affecting her hands
- Currently on more than five medications = *polypharmacy*; admission is a perfect chance to carry out a full medication review
- Her weight is only 48 kg – consider nutritional assessment

### Hints for problem lists

- Optimise medical conditions by considering further investigations or treatment
- Highlight new symptoms that have become apparent following the systems review and propose management for these
- Optimise risk factors
- Consider nutrition
- Show awareness of the complications of diseases and medications and look out for and treat these complications, e.g. osteoporosis prophylaxis for a patient on long-term steroids
- Involve other health care professionals, e.g. GPs, hospital specialists, nurse specialists, occupational therapists, physiotherapists
- Arrange adequate follow-up and monitoring of conditions
- Patient education
- Medication review

## Investigation choices: hints and tips

Examiners will frequently ask about investigation (Ix) choices. Choose the simple ones first (unless asked for a definitive investigation), e.g. a patient who is admitted to hospital with a bleeding gastric ulcer may well need a gastroscopy at some point, but this is not the first test that would be carried out. Put yourself in your future shoes as the FY1 doctor and think what investigations you will be requesting. Remember the examiners are assessing your ability to become a safe foundation doctor; they are not assessing your ability to become a consultant.

An algorithm for investigation choices is summarised opposite. The heading 'imaging' is used instead of radiology to avoid missing out procedures carried out in other departments, e.g. echocardiogram.

State your investigations in the actual order you would request them, e.g. blood tests would nearly always come before imaging. It is also essential to understand the difference between an investigation and a routine part of the examination, e.g. think of blood pressure measurement as part of the cardiovascular examination, peak flow measurement part of the respiratory examination and urinalysis as part of the abdominal examination.

The only time not to start with the simple investigations is if the examiner asks for the definitive investigation, e.g. to confirm a patient has had a stroke, they need a computerised tomography (CT) scan of the head.

# 3 Presenting

## How to use this book: work in groups of 2 or 3 and rotate the roles

| | |
|---|---|
| *History and communication stations* | Use the information given for each character (student, patient or examiner). Role play the scenario with the examiner marking off points raised in the hints and tips checklist |
| *Examination routines* | The examiner should choose an example instruction to give to the candidate and then mark off the points raised in the hints and tips checklists. Real or simulated patients can be used |
| *Cases* | With real patients, the examiner should choose an instruction to give to the candidate and observe their performance. If no patient is available, the examiner should ask the candidate to present the expected findings in an 'imaginary' patient with the condition, e.g. 'you have just seen a patient with mitral regurgitation, please present the possible findings'<br>Ask relevant questions from the case as suggested |
| *Data interpretation* | The examiner can show the relevant information to the student and ask questions |
| *Practical procedures* | The examiner can ask the student to perform the various tasks and assess them using the checklist provided |

## Surgical sieve

**V**ascular
**I**nflammatory/**i**nfective
**T**raumatic
**A**utoimmune/**a**llergic
**M**etabolic
**I**diopathic/**i**atrogenic
**N**eoplastic
**S**ubstance abuse

**C**ongenital
**D**ysplastic
**E**ndocrine
**F**unctional
**G**enetic
**H**ysterical

## OSCE presentation skills: hints and tips

Maintain eye contact with the examiner; avoid staring at the patient when presenting
Clasp hands behind your back to prevent fiddling
Speak clearly
Try to prepare your opening sentence in your head so as to start in a confident manner – first impressions are important
e.g. History station: 'Mrs X is a 56-year-old married woman who works as a receptionist …'
e.g. Examination station: 'On examination Mr X is comfortable with no signs in the hands of cardiovascular disease, his pulse is …'
e.g. Cases: 'The causes of a pleural effusion can be classified into transudates and exudates …'
'The causes of mitral regurgitation include …'
Structure your findings logically; do not waffle
Present positive findings and relevant negative ones (e.g. no weight loss would be an important negative finding in a patient with dysphagia)
Try to present your differential diagnosis and problem list as a continuation of your findings, rather than waiting to be prompted
Although in common usage, try and avoid abbreviations
Do not be afraid of silences to collect your thoughts – it is better to think through an answer before rushing to the wrong conclusions
If you begin to start digging a hole, try to stop, apologise and ask to collect your thoughts and start again (if allowed)
Never use the terms cancer or malignancy when discussing differential diagnoses in the presence of patients

**REMEMBER** : THE ELEMENTS OF THE ESSENTIALS CHECKLIST (CHAPTER 1) FOR ALL OSCE STATIONS.
MISSING THESE WILL LEAD TO LOSS OF EASY MARKS

## Guide to the book

This book can be used alone or equally well (if not better) with two or three friends. Take it in turns being the candidate, the patient and the examiner. Example student instructions for each station have been given and where possible the patient information has also been included, although for some stations improvisation will be necessary. Part of the skill is to realise the importance of inspection and piecing together the information obtained to come to a diagnosis. The diagnosis is often apparent from the end of the bed. The chapters in this book will act as aide-memoires. Remember to consider the patient 'as a whole' rather than focusing on one system or organ.

The hints and tips checklists are based on the areas for each case where marks will be awarded. In addition to these, there are also marking guides available for some of the stations on line. The discussion points are example questions that could be asked around each case.

## Technique

Technique does play a part in passing an OSCE. It is obvious which candidates have not practised their clinical skills sufficiently or who may have rehearsed routines on friends but have seen few abnormal physical signs. Emphasis is also on appropriate communication skills, which are essential for *all* OSCE stations, not just the history and communication ones. This can be especially difficult if English is not a candidate's first language. Make sure that you have plenty of practice in 'presenting patients' before the exam day so you are used to hearing your own voice. When asked questions, try to present the answers in a logical order rather than blurting out the first (and often the most obscure) answer. Try to avoid suggesting senior help immediately – the examiners want to know you are a safe clinician but you should be able to initially offer some sensible discussion. This book will introduce methods of being logical when presenting and answering questions. Remember, the more you are talking the less time the examiners will have to ask tricky questions; you must, however, be talking sensibly!

## Possible viva questions

Many of the OSCE stations will involve some form of discussion around the problem presented. Most of the types of question will be centred on the following checklist:

- Aetiology
- Pathophysiology
- Symptoms
- Signs
- Common investigations
- Specialist investigations
- Poor prognostic features
- Treatment options
- Management
- Complications

## Answering technique: hints and tips

Keep to a logical structure. Start broad and become more specific (e.g. 'the causes of a pleural effusion can be initially divided into exudates and transudates; exudates include . . .'). Use some form of *classification* in your answer rather than blurting answers out wildly. The best method to use is a systems-based approach but another one commonly in use is the surgical sieve (although the problem with mnemonics is remembering them!).

### Example presentations

- The causes of *x* can be classified into cardiovascular, respiratory, endocrine . . . , e.g. the causes of atrial fibrillation can be divided into: cardiovascular causes such as, valvular heart disease, hypertensive heart disease and ischaemic heart disease; infective causes such as pneumonia; endocrine causes such as hyperthyroidism; drugs such as alcohol and metabolic causes such as electrolyte imbalances
- The causes of *y* can be classified into vascular, infective, neoplastic . . . , e.g. the causes of diarrhoea can be divided into vascular (e.g. ischaemic bowel), infective (e.g. bacterial, viral), neoplastic (e.g. colonic neoplasm), inflammatory (e.g. ulcerative colitis), drugs (e.g. laxatives), etc.
- Treatment can be divided into medical, surgical or multidisciplinary, e.g. the treatment of rheumatoid arthritis can be divided into medical (e.g. simple analgesics, anti-inflammatory drugs, disease modifying drugs), surgical (e.g. joint fusion or joint replacement), multidisciplinary team (MDT) (e.g. physio and occupational therapy)
- Treatment can be divided into acute, subacute or chronic (or early and late)
- Postoperative complications can be divided into early and late

Remember to give examples in each category.

If unsure of the aetiology of a diagnosis then remember the mnemonic VITAMINS CDEFGH

## Further resources

It is impossible in a textbook covering so many topics to provide detailed knowledge on each of the subject areas. Each of the main sections has a companion *At a Glance* publication which will have further detail on each of the subject areas.

Other useful resources include:

National Institute for Health and Clinical Excellence (NICE) guidelines available at www.nice.org.uk

Scottish Intercollegiate Guidelines Network (SIGN) guidelines available at www.sign.ac.uk

British/European/US specialist society websites, e.g. British Thoracic Society available at www.brit-thoracic.org.uk

# 4 History and examination

## History stations: hints and tips

**Background**
Summarise serious medical conditions in the opening sentence

**Systems review**
Systemic symptoms
Cardiovascular
Respiratory
Gastrointestinal
Neurological
Genitourinary
Musculoskeletal
*Consider more specialist histories if relevant, e.g. obstetric*

**Risk factors**
Summarise important risk factors as a separate section

**Drug history**
Prescription medication
Pills/inhalers/injections
Over-the-counter drugs
Homeopathic medicines
Allergy and adverse reactions
Compliance
Does the patient know what the drugs are for?

**Family history**
Ask about parents' illnesses and ages
Ask about children
Family history of diseases

**Name, age, occupation**

**Relevant medical background (BKG)**

**Presenting complaint (PC)**

**History of presenting complaint (HPC)**

**Systems review (SR)**

**Risk factors (RF)**

**Past medical history (PMH)**

**Drug history (DH)**

**Family history (FH)**

**Social history (SH)**

**Presenting complaint**
The problem in the patient's own words

**History of presenting complaint**
Mnemonic for symptom questions (particularly for pain): SOCRATES
Site
Onset
Character
Radiation/Relieving factors
Associated symptoms
Timing
Exacerbating factors
Severity

**Past medical history** (screening questions)
Previous medical problems
Previous operations/anaesthetics
Hospital admissions
Ask about: Heart problems, ↑ BP, stroke, rheumatic fever, asthma, COPD TB, diabetes mellitus, jaundice, epilepsy, kidney problems

**Social history**
Impact of the illness on the patient and their relatives
Functional enquiry
Patient's mood and outlook
Smoking/alcohol/recreational drugs

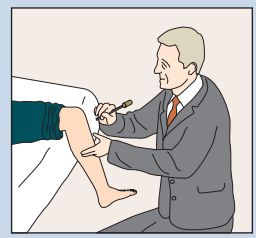
## Examination stations: hints and tips

### Generic examination

Essentials checklist: WINCER
General inspection/observation ± screening test
System-specific inspection
Palpation
Percussion
Auscultation
Completion

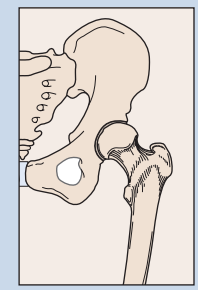
### Generic neurological examination

Essentials checklist: WINCER
General inspection/observation ± screening test
System-specific inspection
Tone
Power
Reflexes
Coordination
Sensation
Completion



### Generic musculoskeletal examination

Essentials checklist: WINCER
General inspection/ observation ± screening test (function)
System-specific inspection (look)
Palpation (feel)
Move – active and passive
Measure
Special tests
Completion



## History stations

The general system for a *medical* history is outlined opposite. The other specialties use histories based around this structure but require more system-specific questions to be asked; these are summarised in the relevant chapters.

Taking a comprehensive history in an OSCE can only be expected if the station is of sufficient duration. A candidate would not be expected to do this in 5 minutes. In the shorter stations it is essential to listen carefully to the instruction, which will often guide a student towards appropriate questioning. Remain focused on the facts and relevant issues. A logical approach is essential, as is the skill of realising the pertinent questions to ask given a particular history, e.g. the importance of occupa-tional history in someone with haemoptysis.

Each history station in this book has a list of hints and tips suggesting the information a candidate should be gathering. In general terms:

- *Remember the essentials checklist* (see Chapter 1)
- Ask some demographics, i.e. patient's name, age, occupation and marital status
- Determine the reason for the consultation, i.e. ascertain the patient's prior knowledge (e.g. if they have seen a doctor before, what information has already been given)
- If possible it is useful to ask a patient early in the consultation to list their serious medical or surgical conditions. In this way you already have a feel for their co-morbidities (i.e. background medical problems (BKG))
- Presenting complaint (PC) and history of presenting complaint (HPC): determine the symptomatology and associated features (i.e. SOCRATES)
- Systems review (SR): enquire about symptoms from other organ systems not already noted in the HPC
- Past medical history (PMH): include all serious medical and surgical problems in chronological order. Ask some disease screening questions as summarised opposite
- Further information should be obtained for major medical problems (e.g. stating that a patient has asthma means little on its own). Consider:
  - date of diagnosis
  - who made the diagnosis, e.g. GP, hospital doctor
  - why the diagnosis was made, i.e. what symptoms did they have at the time
  - how the diagnosis was made, e.g. biopsy, scan, laboratory test
  - what treatments the patient has had
  - frequency of hospital admissions
  - monitoring, e.g. investigations, hospital outpatients, GP visits
  - effect on life
- Drug history (DH) including allergies *and* adverse reactions:
  - compare the DH to the PMH; does the list make sense bearing in mind the PMH?
  - ask about over-the-counter (OTC) preparations
- Family history (FH):
  - ask about first-degree relatives (parents, children, siblings): are parents alive? If not what was their age and cause of death? Are there any diseases that run in the family?
  - ask about second-degree relatives (grandparents, uncles, etc.)
- Social history (SH): get a feel for the impact of the illness on the patient's and relatives' lives
- Consider summarising risk factors (e.g. cardiovascular) if appropriate
- Elicit and address any concerns the patient may have (e.g. 'do you have any other information that might be helpful, that we have not covered yet?')
- Verify what is concerning the patient the most

NB. This scheme is to be used as a guide and further avenues of questioning may need to be pursued depending on the individual patient, e.g. sexual, drug, travel and occupational histories.

## Examination stations

- *Remember the essentials checklist* (see Chapter 1)
- Start in a confident manner (even if you are not) – first impressions are important
- Listen carefully to the instruction, e.g. 'please examine this man's praecordium' does not mean start by examining his hands
- Avoid having name badges and other objects dangling around your neck
- Hold your stethoscope or place it in your white coat pocket between stations. Do not have it placed around your neck!
- Examine from the right-hand side of the bed
- Take a physical step back and *inspect* from the end of the bed, observing the patient and surroundings
- Ask the patient to perform a *screening* movement if appropriate (e.g. take a deep breath for respiratory examination)
- Only talk through your routine if asked to, but make sure you guide the patient through each step (imagine they have never been examined before and so do not know what to expect) and be conscientious of their comfort at all times
- Treat the exam in a similar way to your driving test, i.e. make it clear to the examiners what you are looking for
- If you forget part of the routine, do not emphasise the fact by telling the examiners but fit it in at the next appropriate moment
- Follow the standard traditional routines shown opposite and summarised in more detail in each relevant chapter
- When you are looking for signs *actually look for them* and remember to comment on them when presenting
- State to the examiner what else you would like to examine in order to *complete* your assessment, e.g. blood pressure (BP) in a patient who you have found on neurological examination to have had a stroke
- Present exact facts rather than sitting on the fence, e.g. 'the conjunctiva are pale' rather than 'the eyes were possibly a little pale'
- Present accurate findings and summaries, e.g. 'these findings would be consistent with a right-sided pleural effusion' rather than just 'the patient probably has an effusion' or 'there is no evidence of scars on the anterior abdominal wall' rather than 'the patient has no scars' (the patient may have had a hip replacement!)
- Present positive findings and try and avoid too many negatives
- Try to summarise negative findings, e.g. 'there are no signs of chronic liver disease' rather than listing individually
- Present your findings in a logical order, i.e. the order you per-formed the examination, mentioning general observations and vital signs first
- Look at the examiner rather than the patient when presenting
- Avoid using potentially rude or distressing terminology, e.g. use the term mitotic lesion or neoplasia rather than cancer or malignancy and use the term increased body mass index (BMI) rather than fat
- After presenting the findings try and piece the information together into a diagnosis and, if possible, start suggesting investigations as part of a management plan

In essence *practise your routines until they are second nature* so you develop a confident, slick approach and develop an understanding of normal before abnormal.

# 5 Practical stations 1

## Practical skills: hints and tips

Performing procedural skills competently is not just about the manual dexterity required
These stations test all three domains of learning (knowledge, skills and attitudes)
Types of station might include performing a procedure …

- on an anatomical model or mannequin, e.g. cannula insertion (explanations given to the examiner)
- on a simulated or real patient, e.g. ECG recording
- on an anatomical model or mannequin but in the presence of a simulated patient, in order to explain the procedure and gain consent, e.g. diagnostic pleural aspiration

Remember:

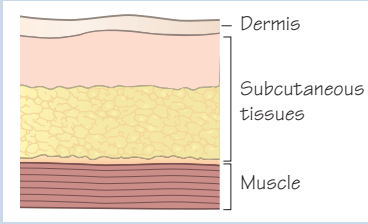
- the importance of explaining the procedure to the patient and gaining consent (communication, attitude)
- the importance of knowing the indications, relevant anatomy and complications (knowledge)
- the ability to interpret results from performing the procedure, e.g. blood tests, peak flow rate (knowledge)
- the dexterity to perform the procedure (skill, knowledge)

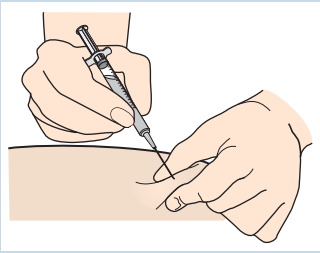
The examiner can ask the student to perform the various tasks and assess them using the checklist provided

## Practical procedures for graduates

- Measuring body temperature
- Measuring heart rate and blood pressure
- Measuring oxygen saturation
- Venepuncture
- Managing blood samples
- Taking blood cultures
- Measuring blood glucose
- Managing an ECG monitor
- Performing an ECG
- Basic respiratory function tests
- Urine dipstick analysis
- Advising a patient on mid-stream urine (MSU) collection
- Taking nose, throat and skin swabs
- Nutritional assessment
- Pregnancy testing
- Administering oxygen
- Cannulation and set up of infusion
- Preparing drugs for parenteral administration
- Dosage and administration of insulin and sliding scales
- Subcutaneous and intramuscular injections
- Blood transfusion
- Male and female urinary catheterisation
- Instructing patients in the use of inhalers
- Use of local anaesthetics
- Skin suturing
- Wound care and basic wound dressing
- Correct techniques for 'moving and handling', including patients
- Obtaining and recording consent
- Hand washing (surgical scrub)
- Use of personal protective equipment
- Infection control in relation to procedures
- Safe disposal of clinical waste, needles and other 'sharps'

## Station 1: Subcutaneous injection



## Station 2: Blood transfusions


- Complications of blood transfusion
- Volume overload
- Anaphylaxis
- Transfusion-related acute lung injury
- Non-haemolytic febrile reactions
- ABO incompatability (wrong patient)
- Metabolic issues (low Ca, high K)
- Infection

## Practical skills

The GMC [1] provides guidance in relation to medical student practical procedure competency. These are listed opposite.

Remember the importance of knowledge and attitudes when thinking about practical procedures; the station does not merely test the actual clinical skill.

## Station 1: Subcutaneous injection

• *Mrs Jackson is currently an inpatient on the acute medical ward. She has been admitted with pneumonia. She requires her prophylactic enoxaparin injection and her nurse has asked if you can undertake the procedure*

### Hints and tips

• Introduction/check correct patient/gain consent
• Explanation of procedure and reason for carrying it out (ask if patient has had it before, any reactions, explain that skin is pinched and patient will feel sharp scratch into the abdomen into fat, under skin.
• Collect equipment: two needles 21 gauge needle for drawing up the drug and a 25 gauge blue needle for injection, syringe, alcohol, swab, gloves, sterets
• Check the prescription chart for the proposed medication including allergy status, date, dose, route, frequency, date, time and correctly prescribed
• Wash hands and put on the gloves
• Appropriately expose the necessary body part, e.g. the abdomen
• Check to see the correct drug, its dose and expiry date with another health care professional
• Draw up the drug with a 21 gauge needle, remove air
• Change the needle to 25 gauge needle
• Clean the skin with an alcohol swab, allowing it to dry
• Pinch the skin, warn patient of sharp scratch and introduce needle at 90 degree angle in quick, firm motion, leaving about 3 mm outside the skin
• Withdraw slightly to check not in a vein and inject drug slowly
• Remove the needle quickly afterwards
• Discard the needle in sharps bin and apply a swab
• Make sure the patient is comfortable
• Ask them if they have any questions or concerns
• Clear equipment and sign the drug chart

### Discussion points

• What drugs can be given subcutaneously?
• What are the potential complications of administering SC medication?

## Station 2: Blood transfusion

• *Mr Jahwari is a 82-year-old man with transfusion-dependent myelodysplastic syndrome. His latest Hb is 7.0 g/L and he has been admitted to the day case unit for 3 units of blood. He has a cannula in situ and the nurse has asked if you can put up his transfusion as the blood has arrived from the blood bank*

### Hints and tips

This station can take several forms; it could require the whole process from taking the blood sample (see Station 3), through cannulation (see Station 5) to commencing the transfusion. More commonly one aspect of the procedure will be required. For the purpose of this station, the cross-match sample has already correctly been processed and a cannula is *in situ*.

• Introduction/check correct patient/gain consent
• Explanation of procedure and reason for carrying it out; discuss benefit versus risk
• Document consent
• Check that the blood product has been prescribed correctly and that the transfusion duration is <4 hours
• Once ready to proceed, verify the identity of the patient (two people must do this). Check the identity with the patient, their ID band, lab report and blood product
• Check the product type, the donation number and expiry date
• Blood must be infused through a blood giving set; these have a special filter
• Perform a baseline set of observations and check temp and heart rate at 15 min, 30 min and hourly
• Complete the paperwork and sign

### Discussion point

• What are the complications of blood transfusion?

1 General Medical Council. *Tomorrow's Doctors*. General Medical Council, London, 2009. Available at www.gmc-uk.org.

# 6 Practical stations 2

## Station 3: Venepuncture


## Station 4: Blood culture collection

## Station 5: Cannula insertion

## Station 6: Administering an IV injection

## Station 3: Venepuncture

• *Mrs BP is attending a pre-op clinic prior to a right hemi-colectomy. Please take FBC, U&E, clotting and G&S blood samples using the mannequin's arm and prepare the samples for the lab*

### Hints and tips

• Introduction/check correct patient/gain consent
• Explanation of procedure and reason for carrying it out
• Collect equipment (see opposite)
• Wash hands/wear gloves/apply tourniquet
• Select an appropriate vein by visualising and palpating
• Clean antecubital fossa (or alternate site) with alcohol wipe (allow this to evaporate)
• Attach needle to Vacutainer® holder
• Warn patient they will feel a sharp scratch
• Insert needle into the vein using an appropriate technique
• Once the needle has entered the vein, attach the Vacutainer® tubes one at a time – do not let the needle move once in the vein
• After removing the last of the tubes, release the tourniquet and then remove the needle
• Press with cotton wool over the puncture site (could ask patient to do this), keeping the arm straight to minimise bruising
• Dispose of sharps safely
• Tape cotton wool in place or use plaster (if no allergies)
• Label tubes, complete appropriate forms (including clinical information)
• Document which bloods have been taken
• Answer any questions the patient may have

### Discussion points

• Please explain which blood bottles are used for each of the samples you have taken
• Do you know what additives are in the bottles and therefore which order they should be filled?

## Station 4: Blood culture collection

• *Mr TG has a temperature of 38.2°C. You are his FY1 doctor and need to take blood cultures. Please explain this procedure to him and then demonstrate the technique using the mannequin*

### Hints and tips

• Introduction/check correct patient/gain consent
• Explanation of procedure and reason for carrying it out
• Collect equipment (butterfly needle and Vacutainer® holder – see opposite)
• Wash hands/wear gloves/apply tourniquet and select vein as above
• Clean site with alcohol wipe (let dry)
• Once the site is clean, do not palpate the vein
• Warn patient they will feel a sharp scratch
• Insert butterfly needle and watch for the flashback
• Insert blood culture bottles into the Vacutainer® holder
• Allow ≈ 6 ml blood into each bottle
• Release the tourniquet/dispose of sharps safely
• Press with cotton wool over the puncture site as above
• Label the bottles correctly
• Complete the request form with appropriate clinical information
• Document the procedure in the patient's notes

### Discussion points

• How would you investigate a patient with suspected bacterial endocarditis?

## Station 5: Cannula insertion

• *Mr OS is a 50-year-old man, a known alcoholic, who has been admitted with haematemesis. Please demonstrate intravenous cannulation using the mannequin's arm*

### Hints and tips

• Introduction/check correct patient/gain consent
• Explanation of procedure and reason for carrying it out
• Collect equipment (see opposite) – choose large-bore cannula and explain the rationale for this
• Wash hands/wear gloves/apply tourniquet
• Select an appropriate vein by visualising and palpating
• Clean the site with alcohol wipes
• Warn patient they will feel a sharp scratch
• Insert cannula using an appropriate technique
• Release the tourniquet
• Place an appropriate bung on the cannula
• Place a clear dressing, e.g. Tegaderm®, over the cannula
• Flush the cannula using 10 ml of normal saline
• Dispose of sharps safely

NB. If unsuccessful, remove the tourniquet and withdraw the cannula. Take a new cannula and commence the procedure again.

### Discussion points

• What potential complications can occur from cannula insertion?
• For fluid resuscitation, which is better, a large-bore cannula or central venous catheter (central line)?

## Station 6: Administering an IV injection

• *Mr JB has a $K^+$ of 7.8 with associated ECG changes. He needs 10 ml of 10% calcium gluconate and the nurse has asked you to administer it. A cannula is in situ*

### Hints and tips

• Introduction/check correct patient/consent
• Explain your intention
• Prescribe drug correctly on the drug card
• Check for allergies and interactions with other drugs the patient is taking
• If unfamiliar with this drug then refer to the *British National Formulary*
• Check vial for correct drug, dose and date of expiry
• Double check this information with colleague
• Flush the cannula with saline to check patency
• Attach needle to syringe
• Break the glass vial safely and draw up the drug
• Clean the injection portal
• Inject the calcium gluconate slowly
• Dispose of all needles and ampoules safely (*do not recap needles*)
• Document the time of administration on the drug card

NB. Some drugs need to be reconstituted using a correct volume of diluent. Some drugs need to be infused slowly. The BNF has all the necessary information.

### Discussion points

• What are the causes of a raised potassium?
• If a patient had an anaphylactic reaction to a drug you had just administered, what management would you instigate?

# 7 Practical stations 3

## Station 7: Arterial blood gas collection

## Station 8: Arterial blood gas interpretation

**Common acid–base disorders**

Respiratory acidosis
- Ventilatory failure
- Obstructive airways disease
- Respiratory muscle disease
- Head trauma

Metabolic acidosis (raised anion gap)
- Renal failure
- Lactic acidosis (types A and B)
- Ketoacidosis
- Exogenous acid (e.g. salicylate)

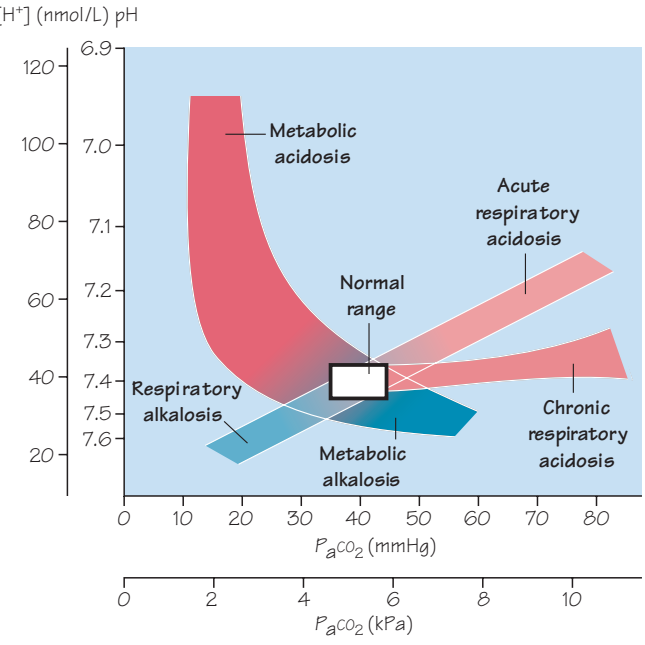
Metabolic acidosis (normal anion gap)
- Increased GI bicarb loss (e.g. diarrhoea, ileostomy)
- Renal issues (e.g. renal tubular acidosis)

Respiratory alkalosis
- Hyperventilation (e.g. primary lung problem (e.g. pulmonary embolus), pain, excess mechanical ventilation or anxiety)
- Altitude

Metabolic alkalosis
- Extracellular volume depletion
- Potassium deficiency
- Diuretics (thiazide and loop)
- Vomiting
- Excess mineralocorticoids

Anion gap: $(Na + K) - (Cl + HCO_3)$

**Flenley acid–base nomogram**




## Station 9: Confirming and certifying death

**Documenting confirmation of death**

NAME, DATE, TIME and GRADE of DOCTOR as per all medical note entries
Asked to confirm death
Pupils fixed and dilated
No respiratory effort
No palpable pulse
No heart sounds
} for 1 minute
Death confirmed at time and date
Rest in peace
Signature

**Coroner referrals**

Deaths within 24 hours of admission to hospital
Deaths where the deceased has not been seen by a medical practitioner
Unknown cause of death
Sudden, suspicious, unexpected or violent deaths
Deaths related to surgery or anaesthetic
Deaths due to alcohol or drugs
Deaths occurring in custody
Deaths related to industrial disease or accidents
Deaths occurring through neglect
Suicide

## Station 10: Nasogastric tube insertion

## Station 7: Arterial blood gas collection

• *An 84-year-old man with known COPD has been admitted to hospital. Please take an arterial blood gas sample from his radial artery*

### Hints and tips

• Introduction/check correct patient/consent
• Explanation of the procedure including the clinical reasons
• Preparation of equipment (see opposite)
• State to the examiner that you would perform Allen's test to ensure collateral blood supply via the ulnar artery
• Wash hands and put on gloves
• Attach needle to syringe and expel the heparin
• Position patient's arm with the wrist extended
• Locate the radial artery with the index and middle fingers of your left hand and clean the site with an alcohol swab
• Explain to patient that they will feel a sharp scratch
• Insert the needle (bevel upwards) at 60–90° to the skin towards the pulsation; advance slowly until arterial blood pulses into the syringe; collect approx. 2 ml
• Withdraw the needle and syringe and apply pressure for a few minutes over the puncture site with the swab
• Discard the needle in the sharps bin
• Expel air from the syringe, cap it and state you would take it to blood gas analyser, noting the $FiO_2$ and temperature of the patient

### Discussion point

• What are the potential complications of radial artery blood sampling?

## Station 8: Arterial blood gas interpretation

### Hints and tips

Know the clinical picture
Know the inspired oxygen concentration
Work your way through the ABG report in a stepwise manner

**1** What is the pH (normal = 7.35–7.45)
Low pH = acidaemia
High pH = alkalaemia

**2** Look at the $PaCO_2$ and bicarb to determine the primary acid base disorder
Acidosis = high $PaCO_2$ (respiratory) or low bicarbonate (metabolic)
Alkalosis = low $PaCO_2$ (respiratory) or high bicarbonate (metabolic)

**3** Check if appropriate compensation occurring and if respiratory disturbance is it acute or chronic

**4** Look at the $PaO_2$ to determine oxygenation (consider calculating the A–a gradient)

**5** Review the other results on the ABG in turn (e.g. electrolytes, glucose, Hb, lactate)

**6** If metabolic acidosis, calculate anion gap

## Station 8a

• *Mr RH is a 62-year-old man with COPD. You are the FY1 on the medical admissions ward and a colleague has handed the patient and his ABG result over to you at change of shift. The StR on call wants to know the result. Please telephone her and explain your findings. The blood gas was taken on air:*

*pH 7.25, $PaO_2$ 8.2 kPa, $PaCO_2$ 8.9 kPa, standard bicarbonate 32 mmol/l, base excess (BE) +4*

### Hints and tips

↓ pH = acidaemia
↑ $PaCO_2$ = primary respiratory acidosis
Appropriate small rise in bicarb as compensation

Management of this patient will commence with ABCDE and include optimisation of his respiratory function which may include non-invasive ventilation if no improvement.

## Station 8b

• *Mrs PC is a 34-year-old woman with epilepsy. She has arrived in A&E by ambulance fitting. You are the FY1 in A&E and have just taken a blood gas. The patient has a GCS of 9 and is receiving oxygen via a reservoir bag mask:*

*pH 7.18, $PaO_2$ 24 kPa, $PaCO_2$ 9.2, standard bicarb 14, BE – 8.0, Na 141 mmol/l, K 3.8 mmol/l, chloride 98 mmol/l*

### Hints and tips

↓pH = acidaemia
↑ $PaCO_2$ = respiratory acidosis
↓Bicarb = metabolic acidosis
Anion gap = (141 + 3.8) – (98 + 14) = 32.8 (raised anion gap)

This ABG represents a mixed metabolic and respiratory acidaemia with the respiratory acidosis due to respiratory depression following the administration of IV diazepam and a lactic acidosis due to fitting. (You would need to check for other causes of the acidosis, e.g salicylate overdose.) Management would commence with ABCDE and include supportive measures that might include intubation and ventilation if necessary, especially if GCS <9.

## Station 9: Confirming and certifying death

• *Mr ES, one of your patients, has died. He was admitted with pneumonia 3 days previously and also had a history of heart disease. Please demonstrate the procedure of confirming death using this mannequin and then complete the paperwork provided*

### Hints and tips

• Confirm identity of patient with wrist band
• Shine a light in the pupils and check they are fixed and dilated
• Look, listen and feel for respiratory effort for 1 minute
• Palpate for a central pulse for 1 minute
• Listen for heart sounds for 1 minute
• Record the findings in the hospital notes
• Confirm with the staff that the relatives have been informed
• Complete a death certificate for your patient
• State to the examiner that you would verify that there were no indications for reporting the death to the coroner
• Complete the death certificate neatly and accurately, remembering that Ia must be the cause of death (i.e. pneumonia) and not the mode of death (e.g. respiratory failure)

### Discussion point

• Which patients need referring to the coroner?