The FOOT Book

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Acknowledgements

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<table>
<thead>
<tr>
<th>Examination</th>
<th>Doctors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular examination</td>
<td>Dr Baig (Consultant Cardiologist)</td>
</tr>
<tr>
<td>Respiratory examination</td>
<td>Dr Baldwin (Consultant Respiratory Physician)</td>
</tr>
<tr>
<td>Neurological examination</td>
<td>Dr Sunman (Consultant Stroke Physician)</td>
</tr>
<tr>
<td>Abdominal examination</td>
<td>Dr Teahon (Consultant Gastroenterologist)</td>
</tr>
<tr>
<td></td>
<td>Mr Lund (Consultant Colorectal Surgeon)</td>
</tr>
<tr>
<td>Breast examination</td>
<td>Mr Gomez (SpR Surgery)</td>
</tr>
<tr>
<td>Groin examination</td>
<td>Mr Mann (Consultant Urological Surgeon)</td>
</tr>
<tr>
<td></td>
<td>Mr Rigg (Consultant Transplant Surgeon)</td>
</tr>
<tr>
<td>Head and neck examination</td>
<td>Mr Gomez (SpR Surgery)</td>
</tr>
<tr>
<td>Vascular examination</td>
<td>Mr Quarmby (Consultant Vascular Surgeon)</td>
</tr>
<tr>
<td>MDD examinations</td>
<td>Mr Broodryk (Consultant Orthopaedic Surgeon)</td>
</tr>
<tr>
<td>Radiology station</td>
<td>Dr Green (Consultant Radiologist)</td>
</tr>
<tr>
<td>Acute care station</td>
<td>Dr Webster (Consultant Anaesthetist)</td>
</tr>
<tr>
<td>Rehabilitation station</td>
<td>Dr Phillips (Consultant Stroke Physician)</td>
</tr>
<tr>
<td>Ethics &amp; Communications stations</td>
<td>Professor Harwood (Professor of Stroke)</td>
</tr>
<tr>
<td></td>
<td>Dr Churchill (Consultant GP)</td>
</tr>
</tbody>
</table>
CONTENTS
Acknowledgements ................................................................................................................ 2
Introduction ............................................................................................................................... 4
OSCE1 Stations.......................................................................................................................... 9
Cardiovascular Station ........................................................................................................ 9
Respiratory Station ............................................................................................................. 13
Neurological Examination ............................................................................................... 17
Peripheral Nervous System Station .............................................................................. 17
Central Nervous System Station - Eyes ......................................................................... 23
Central Nervous System Station - Others ..................................................................... 27
Cerebellar Station ........................................................................................................... 31
Speech Station ................................................................................................................ 34
Abdominal Station .............................................................................................................. 37
Head and Neck Station ..................................................................................................... 42
Vascular Station .................................................................................................................. 48
Ankle Brachial Pressure Index (ABPI) ............................................................................ 48
Arterial Examination ....................................................................................................... 50
Venous examination ....................................................................................................... 53
MDD Examinations ............................................................................................................. 56
GALS Station ..................................................................................................................... 57
Shoulder Station ............................................................................................................... 60
Elbow Station .................................................................................................................... 64
Hand and Wrist Station .................................................................................................... 68
Spine Station ..................................................................................................................... 72
Hip Station ......................................................................................................................... 76
Knee Station ....................................................................................................................... 80
Ankle and Foot Station .................................................................................................... 84
Radiology Station .............................................................................................................. 88
Acute Care Station ............................................................................................................. 100
Integrated Examination ................................................................................................. 104
Prescribing Station .......................................................................................................... 106
Breast Station ................................................................................................................... 108
Groin and Scrotum Station ............................................................................................ 110
OSCE2 Stations...................................................................................................................... 114
History-taking Stations ................................................................................................. 115
Ethics & Communications Station ................................................................................. 118
Discharge Summary Station ........................................................................................... 124
Rehabilitation Station ....................................................................................................... 126
Introduction

Welcome to the Finals Orientated OSCE Teaching Scheme (FOOT) Workbook.

This workbook is designed to complement the organised F1 teaching that you will receive as part of the FOOT Scheme whilst on your clinical placements during your final year.

From Mr Lund (2011)

The exams are designed with a day 1 FY1 doctor in mind and should reflect those skills which will be needed by such a person. The level of competence is pitched at the same level. This gives the University confidence that safe and competent students graduate to become new doctors.

Exam questions are sampled from the learning objectives. Over a 5 year period all objectives will be examined either in knowledge or skills exam.

The skills examined in the OSCE will not remain the same year on year and the best preparation is to be competent at all skills appearing in the objectives. This includes all mandatory core clinical skills.

The FOOT Scheme

The FOOT scheme was designed specifically to optimise the teaching of final year medical students and ultimately make better junior doctors. It aims to identify all of the available teaching opportunities at each hospital and the best people available to deliver them.

You will receive teaching sessions from Foundation Year doctors lasting one hour, focussed specifically on OSCE style examinations. At the end of each session you will receive individual and group feedback on your performance. It is important that you also give feedback to the teacher so that they can improve future sessions.

All the students last year commented that the teaching they received as part of the FOOT Scheme was of a high standard,
made them feel much more comfortable on the wards as well as preparing them for their OSCE finals.

In March 2009 the OSCE failure rate of students not involved in the FOOT Scheme was 10.2%. Meanwhile, those students that were taught as part of the FOOT Scheme only had a failure rate of 5.5%.

The FOOT book

The FOOTbook is a revision tool and not a substitute for textbooks or ward work.

What it Will Do

- Give you a basic outline of the stations you may encounter in your Finals OSCE, some example cases and questions that may come up
- Provide some useful tips to avoid common pitfalls
- Highlight important learning needs

What it Won’t Do

- Guarantee passing the OSCEs
- Reduce the inevitable vast quantity of work required to pass finals

The format of the stations is generic throughout the book giving you a retainable framework which will be easy to recall on the day.

Each station starts with an introduction which explains the nature of the station as well as the correct exposure and positioning of the patient for that examination.

This is followed by HI-PEEP:
  - Hands (wash/gel your hands)
  - Introduction (introduce yourself to the patient)
  - Permission (gain verbal consent)
  - Explanation (what you are about to do)
  - Exposure (appropriate exposure of the patient)
  - Positioning (appropriate positioning of the patient)
Then there is a systematic examination. Each OSCE station follows a rigid system of examination starting with inspection from the end of the bed, including the environment and the patient, asking about pain before performing palpation, followed by percussion and auscultation. This is slightly different for MDD (Musculoskeletal Disorders and Diseases) where the system of examination is Look, Feel and Move.

Once you have finished the examination you cover the patient, thank them and turn towards the examiner. State what further examinations and/or investigations you would like to perform before presenting back your findings without looking at the patient.

The Common Cases given are based on previous experience, but are by no means an exhaustive list.

The Likely Questions are listed to give a taste of what the examiners might ask. We have not given you any example answers in order to promote your own learning. However, we do advise that you know the answers to all the likely questions we have produced.

Throughout the booklet there are top tips in yellow boxes. These are important things that you should remember that will help your examination flow as well as help you avoid the common pitfalls associated with the examinations.

**OSCE structure**

Previous years have had a 12 station OSCE and a long case OSLER. 2011 saw the replacement of the OSLER with 5x15minute OSCE2 stations. The OSCE1 introduced new Integrated and Prescribing stations and OSCE2 took the Ethics/Communications station to a more sensible 15-minute slot, with added History stations and a “ward based” station. The pharmacists are pushing for Prescribing to be a longer OSCE2 station.

Previous years’ OSCEs are collated at askdoctorclarke.com (register for a free login). It’s a bit hard to find but try “Learning Centre”, then “Search Centre” and search for “Nottingham”.

Marksheets

Previous years have all formed groups to practice OSCEs, and some have found it helpful to write their own marksheets to help co-ordinate and score these sessions. There are marksheets floating around from various sources, including Scrubs, other universities and previous years.

Marksheets used by the university will inevitably change from year to year, so nothing should be taken for granted. Items which should definitely appear on any marksheets you make are in *italics*.

Confidence

One of the recommendations from the OSCE resit course is that a large part of succeeding in the OSCEs is down to looking confident. It may not be objective, it may not be on the marksheet, but please do look confident. If you look confident, it looks like you have done these examinations a hundred times before and you would fit in as an F1 on the examiner's ward.

To present, clasp your stethoscope in both hands behind your back, deep breath and look them straight in the eyes. Don't umm, err or say “this might be consistent with” – try “This *is* consistent with...”.

OSCE Debates

Beyond the technical, there are 2 main questions:

- **To talk or not to talk?** Examiners have to watch what you are doing whilst simultaneously looking down at their marksheet and ticking all the right boxes... Consensus is you should say what you are doing and finding as you go along. If the examiner wants you to be quiet, they will say so, otherwise I'd recommend talking!

- **Presentations.** If you think you've nailed it: “My preferred diagnosis is one of Mitral Regurgitation. To support this I found x,y,z...” or if you are more cautious/careful... “On examination I found x,y,x. This would be consistent with a diagnosis of...". The former risks all on being right, and some examiners might not listen to your findings if you blurt out the wrong diagnosis.
The latter method will get you credit for each finding, keep the examiner poised with baited breath, and then you give your diagnosis.

How to Use This Book

- As a handbook to take around the wards and use to reflect after examining patients, to see how you can improve
- As a revision tool in the run up to exams

Practice as much as you can on the wards and on each other. Once the examinations become second nature you can start to focus on the pathology.

Remember to work hard, make time to relax, and look forward to your elective!!

Symbols Key

- Inspection/Look
- Palpation/Feel
- Auscultation
- Top Tip
- Presentation
- Common Cases
- Likely Questions
- Move
- Special Tests
- Gait
OSCE1 Stations

Cardiovascular Station

The key to this station is to be quick but thorough on the peripheral examination, so that you are not rushed when listening to the precordium.

Make sure you listen out for the audible click of a metallic valve from the end of the bed.

The patient should be sat at 45° with their upper body exposed, maintain their dignity at all time.

If female ask the patient to remove their bra (they do use female patients in the OSCEs and OSCE resits).

HI-PEEP

Inspection

- Environment
  - GTN, O₂, Inhalers, ECG/heart monitoring leads, lines
- Patient
  - Unwell, pallor, dyspnoea, cyanosis

Look out for vein harvesting scars on the shins - they are a really quick way to tell if a patient with a sternotomy scar has had a CABG

- Hands
  - Splinter haemorrhages, nail fold infarcts, Janeway lesions, Osler’s nodes (Endocarditis)
  - Clubbing (Cyanotic heart disease), Koilonychia (Iron Deficiency Anaemia), Quinke’s sign (Aortic Regurgitation)
  - Tendon xanthoma, palmar erythema
  - Capillary refill time
- Pulse
  - Rate, rhythm, volume
  - Radial-radial delay
  - Collapsing pulse (AR) check for shoulder pain first!
- BP
  - Ask to measure: make note of Hypertension and Pulse Pressure
• **JVP**
  - Internal Jugular Vein landmarks: Mid clavicular line over sternocleidomastoid to behind ear (double wave, non-palpable, changes with position)
  - Look, then occlude gently with ulnar side of the hand; if hard to visualise do Valsava manoeuvre, then perform Hepato-Jugular reflux

• **Eyes**
  - Pallor (anaemia), corneal arcus, xanthelasma
  - Can offer to do fundoscopy

• **Face**
  - Mouth: central cyanosis, dentition
  - High arched palate
  - Malar flush (Mitral Stenosis)

• **Carotid pulse**
  - Volume: ↑ in CO₂ retention/ thyrotoxicosis/ ↓ in low CO₂
  - Character: slow rising (AS), collapsing (AR)

• **Precordium**
  - Chest wall deformity
  - Scars: median sternotomy (CABG/prosthetic valve), lateral Thoracotomy (mitral valvotomy), pacemaker/defib

“...Do you have any pain in your chest?”

**Palpation**

• **Check the trachea** is central
• **Feel for heaves** with your hypothenar eminence placed over sternum
• **Feel for thrills** over the areas of auscultation
• **Feel for the apex beat**, which is the most infero-lateral position the heartbeat is palpable (usually 5th Intercostal space in mid-clavicular line)

**Auscultation**

• Palpate for the subclavian artery, or one carotid artery: pulse coincides with S₁ (systole)
• Auscultate the aortic (2nd intercostal space on right side) and pulmonary valves (2nd intercostal space on left side)
• Auscultate at left lower sternal edge (Tricuspid valve)
• Auscultate apex (mitral valve)
• *Half-roll patient left and ask for held expiration* ("Breathe in, out, then hold") and use bell of stethoscope (for mitral stenosis)
• *Sit up and listen at left lower sternal edge* in held expiration to highlight AR
• *Listen over carotid artery* for bruit/murmur (remember to auscultate both sides in case they have unilateral carotid bruit and not a transmitted murmur)
• Auscultate lung bases
• *Look for sacral/ankle oedema*

**Systolic murmurs are audible at the same time as you feel the pulse**

**"To complete my examination..."**

• Full vascular examination including peripheral pulses
• See observation chart for Pulse, BP & RR
• 12-lead ECG
• Dip urine (for endocarditis)
• Order echo (if they have a murmur)
• CXR

**Thank, Cover, Look away**

**Common Cases**

1) Aortic stenosis  
2) Mitral regurgitation  
3) Metallic heart valve  
4) Atrial Fibrillation  
5) Pacemaker

**Likely Questions**

• What are the cardiac causes of clubbing?  
• Causes of an impalpable apex beat?  
• Stigmata of endocarditis?  
• Stigmata of left and/or right heart failure?  
• Causes of AF?
Respiratory Station

The majority of diagnoses will be made by a combination of peripheral signs, percussion, and auscultation. It is important therefore to make sure that your systematic approach pays particular attention to these areas.

The patient should have their upper body exposed, but show respect of their modesty, e.g. by recovering the breasts once the front of the chest has been examined.

You can perform inspection, palpation, percussion and auscultation on the front and then repeat the process on the back or move straight to the back after initial inspection as most signs are detected more easily on the back.

Whenever examining the chest, always compare precisely the same position on each side.

HI-PEEP
• Note quality of voice

Inspection

• General observation
  o Environment: sputum pot, oxygen, nebulisers, inhalers, antibiotics
  o Respiratory distress
    ▪ Accessory muscle use
    ▪ Purse lip breathing
    ▪ Noisy breathing
    ▪ Cyanosis
    ▪ Count the respiratory rate
  o Cachexia/generally unwell/ankle oedema
  o “Put your hands on your hips and take a deep breath in and out,”
    ▪ Observe chest wall movements from the end of the bed
    ▪ Comment on symmetry
• Hands
  o Nails: clubbing (cancer, chronic suppurative lung disease, fibrosis), tar staining (smoker), cyanosis, β₂ agonist tremor
  o Small muscle wasting (lung cancer involving brachial plexus)
  o Hypertrophic pulmonary osteoarthropathy (HPOA): gross clubbing and tender on squeezing wrist (small cell lung cancer)

• Asterixis
  o CO₂ retention flap

Test for asterixis by asking the patient to hold their arms out in front of them as if they are trying to ‘stop traffic’. To save time count the respiratory rate simultaneously.
• Pulse and Respiratory Rate
  o Large volume pulse in CO₂ retention, tachypnoea
• JVP
  o ↑ in right heart failure, tension pneumothorax, massive PE, superior vena cava obstruction, pericardial tamponade
• Eyes
  o Anaemia
  o Horner’s syndrome: Ipsilateral ptosis, miosis, anhydrosis
• Mouth
  o Central cyanosis
• Chest
  o Symmetry, scars, hyperinflation, pectus carinatum/excavatum

Ensure that you observe the patient’s back for a hidden thoracotomy scar

“...Do you have any pain in your chest?”

Palpation of chest
• Trachea
  o Assess position
  o Look for tracheal tug
  o Assess distance between thyroid cartilage and manubrium (reduced in COPD)
• Neck lymph nodes
  o Sub-mental, submandibular, parotid, pre-auricular, anterior chain, supraclavicular, posterior chain, post-auricular, occipital
• Expansion
  o Place your fingers as far around the chest wall as possible. Ensuring your thumbs are not on the chest, assess the movement of your thumbs on deep inspiration (<5cm is pathological).
  o Assess for symmetry
• Percussion
  o Another good signal to the marking consultant at the back of the room are booming percussion notes. Make sure you do at least 3 levels at the front, both axillae, and 4 levels at the back. Note that you can speed this process up by following an S-shaped pattern.
  o Resonant (normal)
  o Hyper-resonant (pneumothorax)
  o Dull (consolidation, collapse)
  o Stony dull (effusion)
Auscultation of chest
- As with percussion, make sure you do at least 3 levels at the front, both axillae, and 4 levels at the back. Note that you can speed this process up by following an S-shaped pattern.
- Air entry
- Breath sounds
  - Vesicular (normal)
  - Bronchial (consolidation, fibrosis)
- Added sounds
  - Wheeze: mono/polyphonic (narrowing in cancer/turbulent airways in asthma or COPD)
  - Course crackles (bronchiectasis, pneumonia)
  - Fine crackles (oedema, fibrosis)
  - Rub (pain and pleural irritation)

Palpation of back
- Expansion
- Percussion
- Tactile vocal fremitus
  - Place ulnar border of hand on the patients back
  - Ask them to say “99”
  - Feel for vibration along the border of your hand

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Tactile fremitus</th>
<th>Vocal Resonance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleural effusion</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Collapse</td>
<td>↓</td>
<td>↓</td>
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<tr>
<td>Pneumothorax</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Fibrosis</td>
<td>↓</td>
<td>↓</td>
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<tr>
<td>Consolidation</td>
<td>↑</td>
<td>↑</td>
</tr>
</tbody>
</table>

Auscultation of back
- Breath sounds
- Added sounds
- Vocal resonance
  - Ask patient to whisper “99”

“To complete my examination..."
- Look at observation chart
- Perform peak expiratory flow rate and spirometry
- Pulse oximetry
- Review CXR
- Perform cardiovascular examination
- ABG
Thank, Cover, Look away

Common Cases
(There really are not that many different conditions that are available and suitable for a medical student OSCE)

1. Fibrosing Alveolitis
2. Bronchiectasis
3. Lung Cancer
4. Previous Thoracotomy
5. Asthma/COPD

Likely Questions

- What are the causes of lung fibrosis?
- Name the respiratory causes of clubbing?
- What is the difference between an exudate and transudate?
- What are the causes of an exudative pleural effusion and transudative pleural effusion?
- What are the extra-pulmonary manifestations of lung cancer?
- When should you use tactile vocal fremitus or whispered pectoriloquy in practice?
Neurological Examination
Peripheral Nervous System Station

The PNS station is broken down into upper limb and lower limb.

This is a very difficult station consisting of many components making it the longest examination. Therefore it requires a great deal of practice to perfect your routine.

In the OSCE you will be directed towards the upper or lower limb. The examiner will then hopefully guide you through to ensure you are likely to pick up signs within the time limit.

From the moment you enter the station start assimilating information about the patient; age, posture and walking aids are all vital clues.

Your commands to the patient should be loud and clear.

Ensure the limbs being examined are fully exposed whilst maintaining the patient’s dignity.

During the presentation if a sign doesn’t fit the clinical picture do not panic. Present things as you find them; make a comment if something is unexpected. Remember, it is the overall clinical picture that counts.

When discussing your differential diagnosis use your ‘Neurology Sieve’
- **VINDIE**
  - Vascular – Stroke
  - Inflammatory – Multiple Sclerosis, vasculitis
  - Neoplasia – Tumour
  - Degenerative – Parkinson’s Disease
  - Infective – Meningitis/Encephalitis
  - Extras – Seizures, drugs

There will be 1 neuro station in your OSCE, and the examiners will have 2 patients ready and alternate them to give the patients a rest (for example one might be an upper limb, the other a lower limb).
**HI-PEEP**

**Inspection**

Good inspection adds a lot to this station. Practice looking and commenting at everything. Don't forget the back – is there a big surgical scar down the neck/back that would explain everything?

- **Environment**
  - Walking aids

- **General**
  - Position
  - Posture
  - Age
  - Catheter

- **Up close**
  - **Muscle wasting**
  - Tremor
  - **Fasciculation**

**Inspection during movement (Screening)**

- **Upper limb**
  - Close eyes
  - Arms in front, palms up
  - **Look for pronator drift**

- **Lower limb**
  - **Walk if possible**

“...Do you have any **pain** in your arms or legs?”

**Tone**

- **Upper limb**
  - Relax patient
  - Move arm gently
    - Assess tone at the elbow & wrist joint

- **Lower limb**
  - Gently roll leg over quadriceps, look for normal lag at ankle joint
  - Lift knee: leg should flex
  - Assess tone at the knee & ankle joint

*If a patient clearly has a dense paresis ask the patient what can they do with the affected limb(s), then continue accordingly. This makes the examination flow and is kinder to the patient.*
Power

- Wherever possible you should test and compare both sides simultaneously
- All movements occur against resistance but bear in mind age and fragility when comparing power to your own
- Aim to isolate each muscle group
- Motor examination should include assessment of function e.g. buttons

- Upper limb
  - Resisted shoulder abduction/adduction ‘chicken wings’
  - Resisted elbow flexion and extension ‘up like a boxer’
  - Resisted wrist flexion/extension ‘stopping traffic’
  - Squeeze fingers
  - Resisted finger abduction

When assessing finger abduction make sure you compare using your own abducted finger span. This demonstrates to the examiner you are clearly aware of the importance of comparing like with like.

MRC power classification:

- 5 – Normal power
- 4 – Weak: overcomes resistance and gravity
- 3 – Weak: can oppose gravity but not resistance
- 2 – Can move but not against gravity
- 1 – Flicker
- 0 – Complete paralysis

- Lower limb
  - Raise legs to 45 degrees
    - Hip flexion - Resist downward pressure on quadriceps
    - Hip extension - Resist upward pressure on hamstrings
  - Flex at knee, attempt to straighten/flex further against resistance
  - Against resistance dorsiflex & plantiflex ankle
  - Flex & extend toes

<table>
<thead>
<tr>
<th>Upper limb</th>
<th>Lower limb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder abduction</td>
<td>C5</td>
</tr>
<tr>
<td>Elbow flexion</td>
<td>C5, 6</td>
</tr>
<tr>
<td>Elbow extension</td>
<td>C7</td>
</tr>
<tr>
<td>Wrist flexion</td>
<td>C7, C8</td>
</tr>
<tr>
<td>Hip flexion</td>
<td>L1, L2</td>
</tr>
<tr>
<td>Hip extension</td>
<td>S1</td>
</tr>
<tr>
<td>Knee flexion</td>
<td>L5, S1</td>
</tr>
<tr>
<td>Ankle dorsiflexion</td>
<td>L4, L5</td>
</tr>
</tbody>
</table>
Reflexes
Be ready to look slick when testing biceps, triceps & supinator, or patellar, ankle & plantar.

Bicep and supinator reflexes are elicited by tapping a finger placed over the relevant tendon—this is kinder to the patient and helps isolate the tendon.

- Position the patient appropriately
- Ensure the muscle is relaxed
- Tap lightly over the tendon using hammer provided
- Hold the hammer at the end and use flexion of the stick to generate motion
- For the planter reflex use a blunt object and run up the lateral aspect of the sole (Note: the end of tendon hammer is often too sharp)

Remember a reflex cannot be said to be absent until you have tried reinforcement.

Look slick when doing these. Practice all reflexes, standing from either side of the bed or with the patient seated. Don’t change hands.

<table>
<thead>
<tr>
<th>Tendon</th>
<th>Muscle</th>
<th>Nerve root</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biceps</td>
<td>Biceps</td>
<td>C5, C6</td>
</tr>
<tr>
<td>Triceps</td>
<td>Triceps</td>
<td>C7</td>
</tr>
<tr>
<td>Supinator</td>
<td>Brachioradialis</td>
<td>C6</td>
</tr>
<tr>
<td>Patellar</td>
<td>Quadriceps</td>
<td>L3, 4</td>
</tr>
<tr>
<td>Achilles</td>
<td>Gastrocnemius</td>
<td>L5, S1</td>
</tr>
</tbody>
</table>

Sensation
- It is unlikely they will ask a patient to come in and be stabbed 200 times by medical students with a neuro-tip. However be prepared to offer all modalities, and at a push you might have to demonstrate light touch.
- Whilst assessing sensation it is essential to ask the patient if both sides feel the same and work in a systematic manner through each dermatome.
• If parasthesia is restricted to distal dermatomes check for glove/stocking distribution by working proximally

Remember your sensory pathways!

Dorsal columns
- Light touch
- Vibration
- Proprioception

Spinothalamic tract
- Pain
- Temperature

Ensure you assess the function of both spinal sensory tracts, by testing a modality from each group

• Light touch
  o Cotton wool

• Superficial pain
  o Neuro tip

• Proprioception: Joint position sense
  o Isolate great toe proximal interphalangeal joint
  o Move up and down
  o Ask the patient “Where has it stopped?”

• Vibration
  o Use a tuning fork
  o Place on bony prominences
  o Move proximally if distal sensation impaired

Coordination

• Upper limb
  o Finger-Nose Test: get patient to fully extend arms
    ▪ Look for intention tremor/past-pointing
  o Dysdiadochokinesis: demonstrate movement to patient

• Lower limb
  o Heel-shin test
    ▪ Look for ataxia
  o Gait (if not already done)
“To complete my examination...”

- Assess gait
- Full PNS examination
- Full CNS examination
- Cerebellum and Speech

Thank, Cover, Look away

Be ready to give accurate findings leading to a correct interpretation – you at least need to get to the point of whether it is an upper or lower motor neuron lesion.

Based on your differential, what investigations would you suggest? Have investigations ready for the common cases.

Common Cases

1. Old stroke
2. MS
3. Motor Neurone Disease (MND)

 Likely Questions

- What could be the cause of your findings?
- How would you manage this condition on an acute medical take?
- What is the difference between upper and lower motor neurone lesions?
- What is the Banford Stroke classification system?
The CNS station is usually broken down into ‘Eyes’ (Cranial Nerves II, III, VI and VI) and ‘Others’ (CN I, V, VII, VIII, IX, X, XI and XII).  

You need to give the patients clear instructions and be able to demonstrate the movements/expressions yourself. This will help with the patient’s understanding and build up a good rapport. 

If the patient has glasses they can keep them on for all the visual tests, apart from pupillary reflexes, as long as you remember to comment that they are wearing glasses in your presentation. 

Both stations require the patient to be sitting in front of you, about a metre away, with their face, neck and shoulders uncovered (i.e. open collar). 

When discussing your differential diagnosis use your ‘Neurology Sieve’ 

  - VINDIE 
    - Vascular – Stroke 
    - Inflammatory – Multiple Sclerosis, vasculitis 
    - Neoplasia – Tumour 
    - Degenerative – Parkinson’s Disease 
    - Infective – Meningitis/Encephalitis 
    - Extras – Seizures 

Poorly prepared candidates become unstuck in this station as they spend too much time trying to remember the examination and not concentrating on finding the pathology – i.e. practise! 

HI-PEEP 

Inspection

- Environment 
  - Glasses 
  - White sticks 
  - Eye patch 
  - Prism
o Wheelchair

• General
  o Patient
    ▪ Position
    ▪ Posture
    ▪ Weakness
    ▪ Tremor

• Up close
  o Face
    ▪ Symmetry
    ▪ Palsies
    ▪ Pupil size and shape
    ▪ Scars
    ▪ Expression
    ▪ Ptosis

CN II: Optic

There is a lot to remember for the Optic Nerve – try using AFRO
  - A – acuity
  - F – fields
  - R – reflexes
  - O – ophthalmoscopy

• Acuity
  o General assessment: start from the top of the list and only move
down if the vision is impaired
    ▪ “Can you see my face clearly?”
    ▪ “Can you see my fingers: how many?”
    ▪ “Can you see my hand moving?”
    ▪ “Can you see the light (pen torch)?”
  o Offer to use Snellen Chart for formal assessment (unlikely to be
    asked)

• Fields
  o Sit 1m away from patient at the same level
  o Ask the patient to cover one eye and you cover the same
  o Hold fingers in your peripheral vision: equal distance between you
    and patient
  o Wiggle fingers moving slowly towards the centre of your vision
  o Ask the patient to say when they can see your fingers
  o Do right and left fields for both eyes, all four quadrants
  o Test for inattention
  o Ask if they experience double vision at any time during the above

• Reflexes
o Light reflex
  ▪ Inspect the pupil: size, shape, symmetry
  ▪ Patient looks straight ahead: warn them about the light
  ▪ Move the light in from sides and look for direct and consensual reflexes
  ▪ Use the swinging light test if you suspect a relative afferent pupillary defect

o Accommodation reflex
  ▪ Ask the patient to pick a point to focus on in the distance
  ▪ Hold your finger about 30cm in front of their face
  ▪ Ask the patient to focus on your finger
  ▪ You should see the pupil constrict when focusing on your finger

• Ophthalmoscopy – offer to do this

Remember you’ll need to swap hands half way through testing each field: practise will make this easier

CN III, IV and VI: Oculomotor, Trochlear, Abducens

• Eye movements
  o Ask patient to keep head still and follow your finger: look for palsies
  o Basic ‘H’ shape and long horizontal line to look for nystagmus
  o “Any double vision?”

You can only work out which eye is affected in diplopia if the images are side by side (i.e. 66) and not on top of each other. When the affected eye is closed the outer image disappears.

<table>
<thead>
<tr>
<th>CN</th>
<th>Muscles</th>
<th>Movement</th>
<th>Palsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trochlear</td>
<td>Superior Oblique</td>
<td>Moves eye down and in</td>
<td>Difficult to see on direct observation Causes Diplopia</td>
</tr>
<tr>
<td></td>
<td>Lateral Rectus</td>
<td>Abducts eye</td>
<td>Eye sits nasally</td>
</tr>
<tr>
<td></td>
<td>All other muscles</td>
<td>Moves eye in all other directions</td>
<td>Eye sits ‘Down and Out’</td>
</tr>
</tbody>
</table>
“To complete my examination...”

- Rest of CNs
- Full PNS examination
- Cerebellar and Speech

Thank, Cover, Look away

Common Cases

1. Nerve palsy: CN III and VI most likely
2. Horner’s syndrome: ‘Ptosis, miosis and anhydrosis’

Likely Questions

- List common causes of nerve palsies?
- What is a false localising sign?
Central Nervous System Station - Others

HI-PEEP

Inspection

- Environment
  - Stick
  - Wheelchair
- General
  - Hearing aid
- Up close
  - Position
  - Posture
  - Weakness
  - Tremor
  - Deformities

CN I: Olfactory

- Ask about changes in smell or taste

CN V: Trigeminal

- Sensation
  - Ask patient to close eyes
  - Use cotton wool rolled into a point and test each of the 3 divisions (Ophthalmic, Maxillary, Mandibular)
  - Be systematic and compare each side
  - Ask patient to say “yes” when you touch them and whether it felt the same on both sides

Light touch should be tested using cotton wool and not fingers

- Motor
  - Muscles of mastication (Masseter, temporalis and pterygoids)
  - Ask patient to clench teeth: feel over masseter and temporalis
  - Ask patient to open jaw: will deviate towards the lesion
  - Ask patient to open jaw against resistance to test pterygoid muscles
• Reflex
  o Offer to test corneal reflex
  o Use a whisp of cotton wool, ask patient to look away from you and touch the sclera with the cotton wool at the lateral corner of the eye: reflex is to blink
  o Offer to test the Jaw reflex

CN VII: Facial

• Sensation: anterior 2/3 of tongue
• Motor
  o Muscles of facial expression: demonstrate each movement to the patient before asking them to do it
  o Compare both sides and look for palsy
  o Ask the patient to:
    ▪ “Raise your eyebrows” look for wrinkling of the forehead
    ▪ “Screw their eyes up tight and now don’t let me open them” try and open their eyes (gently)
    ▪ "Smile/Show me your teeth"
    ▪ “Puff out your cheek” push on the cheeks to see if air escapes one side

‘Forehead sparing’ occurs in unilateral upper motor neurone (UMN) CN VII lesions as there is bilateral supply to each lower motor neurone supplying the forehead muscles

CN VIII: Vestibulocochlear

• Vestibular nerve: Balance
• Cochlear nerve: Hearing
• Balance
  o Ask about hearing loss/changes and balance problems
• Hearing
  o Test hearing in each ear by whispering a number into one ear, whilst simultaneously creating ‘white noise’ (i.e. rubbing your fingers together) in the other ear
  o Offer to test for sensorineural vs conduction hearing loss
    ▪ Rinne’s test
    ▪ Weber’s test

CN IX and CN X: Glossopharyngeal and Vagus

• Examined together as they have joint function in controlling the larynx, pharynx and swallowing
  o Ask patient to open mouth: use pen torch +/- tongue depressor
- Look at uvula: deviates away from the lesion
- Ask to say “Ahh” and look for a symmetrical rise of the palate and uvula
- Offer to test gag reflex
- Ask patient “Have you had any problems swallowing?”
- Ask patient to sip some water and observe for coughing, dribbling and wet voice

**CN XI: Accessory**

- Controls SCM and upper part of Trapezius
  - Inspect muscles for wasting/scars/fasciculation
  - Ask patient to shrug shoulders: first on their own, then apply resistance whilst their shoulders are raised
  - Ask patient to look to one side then provide resistance with one hand, whilst the other palpates over the opposite SCM
  - Remember that the Right SCM moves the head Left and vice versa.

**CN XII: Hypoglossal**

- Controls motor function of tongue
  - Ask patient to open mouth but keep tongue inside; this is the only way you will see fasciculations (i.e. with the tongue in a relaxed position, resting on the floor of the mouth)
  - Ask patient to stick tongue out and move quickly from side to side (encourage patient to ‘move it as fast as you can’)
  - Test for strength by asking patient to push the inside of cheek with their tongue against your finger

**On deviation…**

- **Tongue** – Towards the lesion
- **Uvula** – Away from the lesion

**“To complete my examination...”**

- Other CNs
- Full CNS examination
- Full PNS examination
- Cerebellum and Speech examination

Thank, Cover, Look away
Common Cases

1. Bell’s palsy
2. Stroke
3. MND including bulbar and pseudo-bulbar palsies
4. MS

Likely Questions

- What could be the cause of your findings?
- What can you tell me about Multiple Sclerosis?

Notes
Cerebellar Station

This station is a gift – they have already told you the diagnosis – and there are often obvious signs.

The patient needs to be exposed so you can see their arms and legs, you will also need to see them walk.

Cerebellar lesions cause patients to have poor balance. When testing for ataxia, make sure you are close by to support them if needed, especially when testing heel-toe walking.

Remember that the Cerebellum is below the level of the pyramids (where the tracts cross over) and therefore damage to the right hemisphere causes right sided signs and vice versa i.e. the opposite of cerebral lesions.

Ensure you examine in a structured manner, starting with the patient sitting. There is an easy way to structure this examination suggested by Dr Derek Soon which is -- 3 tests for the eyes, 3 things to say, 3 with arms, 1 for truncal ataxia, then 3 things in the legs.

HI-PEEP

Inspection

- Environment
  - Walking sticks
  - Wheel chairs
- General
  - Age
  - Posture
  - Neglect
- Patient
  - Tremor
  - Speech disturbance

Eyes

- Look for nystagmus at rest: horizontal/vertical/pendular
- Test for nystagmus & jerky pursuit
  - Ask patient to follow your finger, keeping their head still
  - Hold their gaze for a few seconds in lateral field of vision
- Test for dysmetric saccades
  - Hold your finger to one side, ask patient to look at your finger, then your nose, then back to your finger etc.
Speech
• Ask the patient their address
• Ask the patient to repeat the 3 phrases ‘Baby Hippopotamus’, ‘West Register Street’ and ‘British constitution’
  o Listen for staccato/scanning speech (no breaks)

From the moment you first introduce yourself to the patient assess their speech; this gives you more time to decide if it is abnormal or not

Arms
• *Finger-Nose Test*: get patient to fully extend arms
  o Look for intention tremor/past-pointing
• *Dysdiadochokinesis*: demonstrate movement to patient
• Test for rebound
  o Patient extends arms in front
  o Closes eyes
  o Push both arms down briskly and release, look for an exaggerated rebound movement back up and past original position
• Offer to test tone and reflexes in the upper limb

Truncal Ataxia
• Ask patient to sit up in bed unsupported

Truncal Ataxia is a sign of damage to the Cerebellar vermis, this is the central part of the cerebellum that joins the two hemispheres

Legs & Gait
• *Heel-shin test*
  o Look for ataxia
• Offer to test tone and reflexes
  o Look for pendular knee jerk
• Ensure patient can walk
• Observe normal gait
• *Heel-toe walking*: demonstrate first
“To complete my examination...”

- Full CN examination
- Full PNS examination
- Speech examination

Thank, Cover, Look away

Common cases

1. Cerebellar stroke
2. MS (use the term demyelination in front of the patient)
3. Cerebellar degeneration secondary to alcohol

Likely questions

- What could be the cause of this patient’s signs?
- Where in the cerebellum do you think the lesion is?
- What do you know about Multiple Sclerosis?

Notes
HI-PEEP

Inspection

- General
  - Walking sticks
  - Wheelchairs
- Patient
  - Weakness
  - Wasting
  - Asymmetry
- Screen
  - Ask the patient how they are, their full name and Address
    - Can they understand you?
    - Listen for slurring/characteristic features/non-fluency
  - Receptive dysphasia (Wernicke’s area)
    - 3 stage command: “Close your eyes and touch your nose with the index finger of your left hand”
  - Expressive dysphasia (Broca’s area)
    - “What did you have for breakfast?”
    - Listen for fluency/inappropriate words
  - Nominal dysphasia
    - Name a pen, watch, shirt
    - Harder test: Name the watch strap, winder and hands
- Dysarthria
  - Repeat after me
    - “West Register Street”
    - “British Constitution”
    - “Baby Hippopotamus” (specifically looking for staccato speech)
  - Test phonics
    - Say “p p p” – tests for lip weakness
    - Say “t t t” – tests for tongue weakness
    - Say “c c c” – tests for palate weakness
• Dysphonia
  o Note if the voice is overly quiet/husky
• Extras
  o Offer to test reading and writing

“To complete my examination…”

• Full CN examination
• Full PNS examination
• Cerebellar examination

Thank, Cover, Look away

Common Cases

1. Cerebellar pathology
2. Stroke
3. Pseudo-bulbar
4. Bulbar palsy

Likely Questions

• What could be the cause of this type of speech problem?
• What other signs would you associate with this?
• What is the difference between Pseudobulbar and Bulbar palsy?
Abdominal Station

The key to this station is excellent end of the bed inspection in order to recognise the pathology and therefore focus your examination.

Listen to what the examiner says; you should go on to examine the groin after the abdomen, the examiner will hurry you along/stop you as necessary.

The patient should be flat with their arms by their sides for this examination; remember to ask about shortness of breath.

Offer to expose the patient from nipples to knees. The examiners will probably say there is no need but remember to ask.

**HI-PEEP Inspection**

- **Environment**
  - Nutrition drinks, lines

- **Patient – from the end of the bed**
  - Nutritional status: wasting (best seen by observing wasting the small muscles of the hand (hands looks very bony with pronounced dips between the metacarpals) and wasting of the temporalis muscle (giving the “rock star” cheek bone appearance)
  - Skin colour: jaundice, pigmented, tattoos, scars
  - Oedema

- **Hands**
  - Bruising, palmar erythema, Dupytren’s, skin crease pigmentation
  - Nails: clubbing (cirrhosis, inflammatory bowel disease), koilonychia (anaemia), leuconychia (hypoalbuminaemia)
  - Metabolic flap (liver failure)
  - Pulse
  - Arms: fistula, spider naevi, scratch marks

**Ask the patient to extend their arms as if they are trying to ‘stop traffic,’ looking for a metabolic flap. A flap is a rhythmic forward jerking of the hands at the wrist.**

- **Face**
- Cushingoid, parotid enlargement

**Eyes**
- Jaundice, anaemia, Kayser-fleischer rings (Wilson’s), xanthelasma

**Mouth**
- Angular chelitis (B12 deficiency), dentition, glossitis (B12 deficiency, iron deficiency), ulcers (Crohn’s)

**Neck**
- Virchow’s node, left supraclavicular fossa: associated with Upper GI cancer, called Troisier’s sign if palpable
- Parathyroidectomy scar?

**Chest**
- Spider naevi, gynaecomastia, bruising, scratch marks

**Abdomen**
- Take a deep breath and suck your tummy in as far as you can
- Now lift your leg up off the bed (for divarication of recti – after breathing normally again!)
- Big cough (for hernias)
- Distension
  - Fat
  - Fluid
  - Faeces
  - Flatus
  - Flipping big tumour
  - Foetus
- Scars
  - Don’t forget the flanks: nephrectomy scar

---

**If the patient is obese, ensure you look in the skin folds for hidden surgical scars**

- Striae
- Stomas
  - Identify position
  - Type
  - Surrounding skin
  - Contents of the bag
  - Does it have a spout
- Peristalsis

“...Do you have any **pain** in your tummy?” If the patient says yes then reassure them that you will be gentle and you will stop if it becomes too uncomfortable. Start the examination away from the painful site. Make especially sure to look at the patients face.

**Palpation**

- At the same level as patient
• Look at their face at all times for signs of discomfort
• Light palpation of the 9 quadrants (feel stoma bag if present)
• Deep palpation
  o Colon, abdominal aortic aneurism, masses
• Think of corresponding anatomy as you palpate
• Inguinal nodes and hernial orifices: ask patient to cough
• Organomegaly: proceed through this quickly but accurately
  o Liver
    ▪ Don’t forget to assess the character of the liver edge if it is felt
    ▪ Move your hand upwards towards the costal margin as the patient breathes in. As the liver moves down you will feel it brush past your hand if present.
  o Spleen
    ▪ Move across from right iliac fossa then use bimanual palpation at left costal margin. Left hand behind the lower left ribs and pull forwards and medially. Patient breathes in as your right hand pushes up to the costal margin - for the same reasons as the liver exam. Spleen needs to be at least 3 times normal size to be palpable.
    ▪ If enlarged, percuss and feel for lymphadenopathy
  o Kidneys
    ▪ Ballot (ask patient to breathe in to push kidneys inferiorly). If you can feel a kidney is very likely to be polycystic.

• Shifting dullness: only if you think clinically that the patient has ascites
  o Start in the midline and percuss away from you to the area of dullness
  o Get the patient to turn on their side towards you keeping your hand in the same position and wait... then percuss again to see if resonant
• Check for AAA (above the umbilicus!)

Auscultation

• Bowel Sounds (15 seconds)
• Renal Bruits

During your auscultation compose yourself and be ready to present all your findings once you have finished

“To complete my examination...”

• Digital rectal examination
• External genitalia examination
• Hernial orifices
- Dipstick urine
- Review observations charts

Thank, Cover, Look away

Common Cases

1. Organomegaly
   - Polycystic kidneys
   - Hepatomegaly
   - Splenomegaly

2. Abdominal Masses
   - Renal transplant: scar in iliac fossa which might look a bit like a large hernia repair scar - this is a Rutherford Morrison incision - and will have the mass (transplanted kidney) palpable beneath. Look for evidence of old fistulas for renal access (palpate and offer to ausculate) and scar in neck for removal parathyroid adenoma.
   - Carcinoma (unlikely)

3. Stomas
   - Ileostomy: usually right iliac fossa with a spout - if urine rather than small bowel contents in the bag its a urostomy (aka ileal conduit)
   - Colostomy: usually left iliac fossa without a spout. Stomas can occur in other places if have been re sited for complications such as hernia - look for a scar in the expected place

4. Surgical scars

Name the incision and the operations that may have been performed

1:

2:

3:

4:

5:

6:

7:
5. Chronic disease
   - Chronic liver disease/ascites
   - IBD

Likely Questions

- What is the difference between an ileostomy and a colostomy?
- What would you associate with polycystic kidneys?
- What are the causes of hepatomegaly?
- What are the causes of splenomegaly?
- Name the surgical scars
- What are the stigmata of CLD?
- What are the causes of jaundice?
- On palpation how would you differentiate between the left kidney and the spleen?
- What is the difference between UC and Crohn’s?
- What is Courvoisier’s Law?
Head and Neck Station

Listen carefully to the examiners instructions as there are several examinations that can be asked for in this station.

1. They may ask you to assess the **thyroid status** of the patient, in which case you would be expected to start your examination peripherally.

2. They may ask you to assess the **thyroid**, in which case you would be expected to start with inspection of the neck and then move onto palpation.

3. They may ask you to examine the patient’s **neck**, in which case you should combine all of the examinations (thyroid, salivary glands, and cervical lymph nodes).

Remember to palpate all regions of the neck so that you do not miss any less obvious lumps.

The patient should be sat down and have their neck and shoulders exposed.

The favourite examiners trick is to have the patient seated with their back against the wall when you come in. Introduce yourself and ask the patient if they could kindly sit in the other chair. Do not leave this until mid-examination!

HI-PEEP

**Inspection**

- **General Observation**
  - Look at build
    - Weight
    - Muscle wasting
  - Behaviour
    - Composed
    - Agitated
  - Clothing
    - Appropriateness for weather
  - Obvious lumps in neck or face

- **Hands**
  - Tremor
  - Palmar erythema
  - Sweaty
- Thyroid acropachy
- Pulse
  - Tachycardia
  - Bradycardia
  - AF

**Ask the patient to hold their arms outstretched with fingers apart. Place a piece of paper on the back of their hands to assess for the fine fast tremor of thyrotoxicosis.**

- Hair
  - Hair and eyebrows
    - Coarse Hair
    - Loss of outer third of eyebrows
- Face
  - Dry, shiny skin
- Eyes
  - Front: Lid retraction
  - From Above: Exophthalmos
  - Lid lag
- Neck
  - Look from the front and from the side
  - Skin colour
    - 'Peaches and cream'
  - Scars
    - Particularly those hidden in the skin creases
  - Goitre
  - Check trachea is central
  - Ask patient to take a sip of water, hold it in their mouth and then swallow it
    - If the swelling rises on swallowing it is likely to be thyroid.
  - Ask the patient to stick their tongue out
    - If swelling rises it is likely to be a thyroglossal cyst
- Legs
  - Proximal myopathy
    - Ask patient to stand up with their arms crossed across their chest
  - Pre-tibial myxoedema
  - Offer to test ankle reflexes
    - Brisk/Slow

"...Do you have any **pain** in your head or neck?"

**Palpation whilst standing behind patient**
- Palpate the thyroid keeping one hand fixed and moving the other hand
• Ask the patient to swallow some more water whilst holding the thyroid
• Ask the patient to stick their tongue out whilst palpating the lump
• Palpate lump gently
  o Which triangle of the neck?
  o Size
  o Shape
  o Position
  o Surface
  o Edge
  o Composition
  o Temperature
  o Tenderness
  o Tethering
  o Fluctuancy

• Assess thyroid
  o Diffuse enlargement
  o Single nodule
  o Multi-nodular goitre

• Palpate salivary glands externally bimanually
  o Parotid
  o Submandibular
  o Submental
  o Ask the patient to clench their teeth
    ▪ Fixed mass (parotid swelling)
  o Assess any lump as above

• Palpate the cervical lymph nodes
  o Horizontal Ring
    ▪ Submental
    ▪ Submandibular
    ▪ Pre-auricular
    ▪ Post-auricular
  o Occipital Ring
    ▪ Deep cervical
    ▪ Posterior triangle
    ▪ Supraclavicular
  o Assess any lump as above

Palpation whilst standing in front of the patient

• Look inside the mouth to see salivary ducts (inflamed or blocked)
Meatus is opposite the 2nd upper molar (Parotid duct) or either side of frenulum (Submandibular, Submental ducts)

- Assess Facial nerve

Examiners favourite question: Which nerve runs through the parotid gland? Facial nerve. Therefore the muscles of facial expression can be affected by parotid gland swelling and surgery.

- Palpate the ducts inside their mouth to feel for stones
  - Ensure you wear gloves

Percussion

- Anterior chest
  - To assess for retrosternal extension of thyroid mass

Clinical assessment for retrosternal thyroid extension is not that sensitive and therefore further imaging with a CXR is necessary

Auscultation

- Thyroid bruits

“To complete my examination..."

- Full ENT examination
- Assess eye movements

Thank, Cover, Look away

Common Cases

1. Thyroid Swelling
2. Lymph Nodes
3. Parotid enlargement

Likely Questions

- What are the differences between hypo and hyperthyroidism?
- What are the causes of a solitary nodule in the thyroid gland?
- What types of thyroid carcinoma are there?
- What are the causes of cervical lymphadenopathy?
• How would you investigate of thyroid swelling?
• What are the worrying symptoms of a thyroid swelling?

Differential of Neck Swelling

<table>
<thead>
<tr>
<th>Midline</th>
<th>Anterior Triangle</th>
<th>Posterior Triangle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyroid</td>
<td>Lymph Node</td>
<td>Lymph Node</td>
</tr>
<tr>
<td>Thyroglossal cyst</td>
<td>Lipoma</td>
<td>Lipoma</td>
</tr>
<tr>
<td></td>
<td>Branchial cyst</td>
<td>Cystic hygroma</td>
</tr>
<tr>
<td>Salivary gland tumour</td>
<td></td>
<td>Cervical rib</td>
</tr>
<tr>
<td>Carotid body tumour</td>
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</tbody>
</table>
Vascular Station

Vascular could be arterial, venous, or the ABPI. Apparently the vascular surgeons agree that watching students attempt the ABPI gives them the best idea of how much time we have spent on the wards. A lot of time was invested in 2010 attempting the ABPI station, the mistakes were learnt from and the station worked well in 2011.

You may be asked to “examine this patient’s legs.” In this situation after detailed inspection of the legs continue with both arterial and venous examinations, guided by the pathology you see.

Remember some patients have both arterial and venous disease so you may need to perform both examinations, in which case the examiner should guide you. If you just perform a venous examination, you should always offer an arterial examination too (as to treat venous disease with tight dressings would be unwise without excluding arterial disease as well).

Ankle Brachial Pressure Index (ABPI)

HI-PEEP

Inspection

General observation – there is not a great deal of time in this examination. Obviously if there is anything striking to observe then comment on it – but really you need to be consenting the patient and getting the cuff on at the same time...

You would ideally want the patient lying flat so both ankle and brachial measurements are comparable (they may just move you on, but make sure you comment on this).
Measurement

Brachial pulse
• Position the cuff correctly (make sure you get the cuff the right way around).
• Identify the brachial using palpation
• Get the gel on and identify the pulse with the Doppler
• Measure the systolic BP
• State that you would of course want to measure the brachial on the other arm

“...Do you have any pain in your legs?”

Ankle pulses
• Observe leg again, checking for any ulceration. Comment that it may be slightly more uncomfortable on the legs.
• Position the cuff correctly
• Identify the dorsalis pedis and posterior tibial using palpation
• Get the gel on and identify the pulses with the Doppler
• Measure the systolic BPs

Calculation
• Calculate the ABPI (calculator provided) and get ready for questions on what the value means.

Common questions
1. What would a value higher than 1.2 suggest?
2. What about less than 0.4?
3. What about between 0.4 and 0.8?
4. What further investigations would you like to request?

It all seems very simple, but can go horrendously wrong under pressure. Practise at every opportunity with different cuffs, sphygs and feet. Always use a good blob of gel!
Arterial Examination

HI-PEEP

Inspection

- General observation
  - Amputee
  - Wheelchair
  - Previous stroke
  - Scars
    - Neck
    - Abdomen

- Legs
  - Ask the patient to stand up and inspect for scars on the front and back, comparing sides, then get them to rest on the couch
  - Colour
    - Note whether their skin is pale, erythematous or cyanosed
  - Trophic skin changes
    - Shiny skin
    - Hair loss
    - Ulcers
  - Scars: from previous fasciotomies or bypass operations
  - Muscle atrophy
  - Ulcers
  - Amputated digits or dry gangrene
  - Limb amputation and level

Look very hard for ulcers around ankle, at the ends of and in between the toes, soles of the feet and under the heels

“...Do you have any pain in your legs?”

Palpation

- Lie patient on the bed
- Work from proximal to distal
- Temperature: compare on both sides with the back of the hand
- Capillary refill of the 1st toe, watch face for pain
- Test light touch sensation in both feet as a screen for diabetic neuropathy, comparing to proximal limb or trunk
- Pulses: always compare sides
  - Feel radial first for timing and strength
  - Abdominal aorta
  - Femoral (mid-inguinal point ASIS-PS), feel for radio-femoral delay
  - Popliteal: with knee extended and then flexed
Perform Auscultation:
- Over Femoral and Popliteal arteries and renal angles for bruit

Perform Special tests:
- Buerger's test: offer to do this
  - This test demonstrates peripheral vascular disease by causing ischaemia on elevating the leg and then reactive hyperaemia when lowered
  - Explain the purpose to the patient and ask about pain before lifting the leg
  - Lift the leg slowly and look for the angle at which the foot goes pale (Buerger's angle: 25° = critical, 50° = severe)
  - Ask the patient to hang their leg over the side of the bed quickly to look for reactive hyperaemia (white → blue → bright red), note how long it takes. If this occurs they are Buerger's positive

“Thank, Cover, Look away”

“To complete my examination...”
- Ask about specific cardiovascular risk factors and claudication distance
- Examine the rest of the peripheral vascular system (upper limb and carotids)
- Measure ABPI
- Arrange a Duplex scan if there is evidence of peripheral vascular disease

Common cases

5. Peripheral vascular disease
6. Bypass grafting
7. Amputations
8. Diabetic Foot
9. Mixed aetiology arterial and venous disease
Likely questions

- How would you conduct and interpret an ABPI?
- What trophic skin changes would you see in peripheral vascular disease?
- What are the features of a critically ischaemic limb?
- How can you tell the difference between a venous/arterial/diabetic ulcer?
- How do we manage peripheral vascular disease?
- Compare dry and wet gangrene
Venous examination

It is important that you know the anatomy of the venous system so that you can identify the level of incompetence by the distribution of the varicosities.

The patient will normally have obvious signs of chronic venous insufficiency and large varicose veins.

Expose the patient down to their underwear with their socks removed and start from a standing position.

HI-PEEP

Inspection

- General observation
  - Dressings
  - Walking sticks
  - Wheelchair

- Legs
  - Look at the front, back and sides
  - Shape: look for ‘inverted champagne bottle’ appearance
  - Swelling: asymmetry
  - Bandages
  - Scars and healed ulcers
  - Varicose vein distribution
  - Trophic skin changes

<table>
<thead>
<tr>
<th>Trophic skin changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Venous eczema</td>
</tr>
<tr>
<td>2. Haemosiderin staining</td>
</tr>
<tr>
<td>3. Lipodermatosclerosis</td>
</tr>
<tr>
<td>4. Ulceration</td>
</tr>
<tr>
<td>5. Thrombophlebitis</td>
</tr>
<tr>
<td>6. Atrophie blanche</td>
</tr>
</tbody>
</table>

“...Do you have any pain in your legs?”
Palpation

- Feel for temperature changes from the feet moving up the leg
- Palpate the ankles for pitting oedema or lipodermatosclerosis
- Palpate the gaitor area for tenderness (sclerotic tissue is tender) and signs of guttering
- Palpate any varicose veins using the back of your hand for warmth and tenderness (thrombophlebitis)
- Palpate the saphenofemoral junction (SFJ): 4 cm inferolateral of pubic tubercle
  - Feel for cough impulse
  - Feel for saphena varix
- Palpate the sapheno-popliteal junction (SPJ)
  - Feel for cough impulse or fascial defect

Special tests

- **Tourniquet test**
  - Ask the patient to lie down, elevate the leg and empty the veins by sweeping down in a proximal direction
  - Place tourniquet within the upper third of the thigh
  - Ask the patient to stand as soon as you tighten the tourniquet
  - If veins fill above tourniquet but remain collapsed below the tourniquet the SFJ is incompetent
  - If veins fill below the tourniquet a perforator is incompetent (or the tourniquet is slack)
  - Re-position the tourniquet just above the knee to examine the medial thigh perforator
  - Re-position the tourniquet below the knee for:
    - The SPJ
    - The perforator veins: approximately 5, 10 and 15 cm above the medial malleolus

- **Trendelenburg test**
  - Only necessary if the tourniquet test is positive within upper third of thigh
  - Lie the patient flat, empty their veins and place two fingers at the SFJ
  - Keep your fingers in place and ask the patient to stand
    - If varicosities re-appear the incompetence is below the level of the SFJ i.e. a perforator vein
  - Remove SFJ pressure
    - If varicosities re-appear the SFJ is incompetent
• Tap test
  o Tap the varicose vein proximally whilst palpating distally at it’s lower limit, a palpable thrill demonstrates valvular incompetence
• Doppler test

**Always offer to do a Doppler test to confirm SFJ incompetence because the Trendelenburg test is unreliable. Make sure you know how to do this!**

Thank, cover, look away

“To complete my examination..."

• Look for trans-inguinal varicosities
• To exclude abdominal or pelvic masses causing IVC obstruction perform a digital rectal, pelvic and external genitalia examination
• Duplex Doppler scan of deep venous system
• Peripheral neurological examination if any suspicion of diabetes

Common cases

1. Varicose veins
2. Chronic venous insufficiency
3. Ulcers
4. Saphena varix

Likely questions

• What are varicose veins and how do we treat them?
• What are the trophic skin changes of chronic venous insufficiency?
• What are the current vascular surgical techniques?
• How do you treat a venous ulcer?
• What investigations would you perform for an ulcer?
• What is the management of a cellulitic ulcer?
MDD Examinations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>MDD</td>
<td>Musculoskeletal Disorders and Diseases</td>
</tr>
<tr>
<td>MTPJ</td>
<td>Metatarsophalangeal Joint</td>
</tr>
<tr>
<td>MCPJ</td>
<td>Metacarpophalangeal Joint</td>
</tr>
<tr>
<td>CMCJ</td>
<td>Carpometacarpal Joint</td>
</tr>
<tr>
<td>PIPJ</td>
<td>Proximal Interphalangeal Joint</td>
</tr>
<tr>
<td>IPJ</td>
<td>Interphalangeal Joint</td>
</tr>
<tr>
<td>DIPJ</td>
<td>Distal Interphalangeal Joint</td>
</tr>
<tr>
<td>ROM</td>
<td>Range Of Movement</td>
</tr>
<tr>
<td>RA</td>
<td>Rheumatoid Arthritis</td>
</tr>
<tr>
<td>OA</td>
<td>Osteoarthritis</td>
</tr>
<tr>
<td>ACJ</td>
<td>Acromioclavicular Joint</td>
</tr>
<tr>
<td>ASIS</td>
<td>Anterior Superior Iliac Spine</td>
</tr>
<tr>
<td>SIJ</td>
<td>Sacroiliac Joint</td>
</tr>
<tr>
<td>MCL</td>
<td>Medial Collateral Ligament</td>
</tr>
<tr>
<td>LCL</td>
<td>Lateral Collateral Ligament</td>
</tr>
<tr>
<td>TKR</td>
<td>Total Knee Replacement</td>
</tr>
<tr>
<td>THR</td>
<td>Total Hip Replacement</td>
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</table>

MDD Key
GALS Station

GALS (Gait, Arms, Legs and Spine) is a speedy screening tool for pathology in the major joints.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

The patient should be exposed to their underwear for this examination as you need to see all of the joints of the body, remember to maintain the patient’s dignity.

Always start with the three screening questions and at the end record your findings in a table.

HI-PEEP

Screening questions (know these word-for-word)
- “Do you have any pain or stiffness in your muscles, joints or back?”
- “Can you dress yourself completely without any difficulty?”
- “Can you walk up and down stairs without any difficulty?”

Gait
- Ask the patient to walk for several steps, turn and walk back
- Observe for:
  - Symmetry
  - Arm swing
  - Pelvis asymmetry
  - Hip flexion
  - Knee extension
  - Heel strike, stance, toe-off, swing-through
  - Turning co-ordination and stability
- Assess whether:
  - Antalgic
  - Short leg gait
  - High stepping
  - Spastic
  - Wide-based gait
  - Trendelenburg
Look at rest

- From front
  - Shoulder girdle asymmetry
  - Wasting of quadriceps and deltoids
  - Knee and forefoot deformity

- Instructions
  - "Place your right ear on your right shoulder"
  - "Place your left ear on your left shoulder"
  - "Open your mouth wide and move your jaw from side-to-side"
  - "Put your hands behind your head and push your elbows right back"
  - "Put hands by your side and straighten your arms"
  - "Put your hands out in front of you, palms facing down and your fingers out straight" (inspect for deformity)
  - "Turn your hands over" (inspect for deformity)
  - "Make a tight fist"
  - "Place the tip of each finger on the tip of your thumb in turn"
  - Perform the metacarpal squeeze

- From side
  - Cervical and lumbar lordosis
  - Thoracic kyphosis

- Instruction
  - "Bend forward and touch your toes" place your fingers on adjacent lumbar spinous processes

- From behind
  - Straight spine
  - Symmetry and muscle bulk of shoulder girdles and gluteal/iliac crest region
  - Swelling of popliteal fossa
  - Apply pressure to the mid-point of supraspinatus and perform skin-rolling for tenderness

Look at patient on couch

- Have the patient reclined comfortably
- Inspect the soles for calluses
- Squeeze the metatarsals
- Test each patella for the balloon sign
- Assess for crepitus over the patella during knee flexion
- Internally rotate each hip
“To complete my examination...”

- Fully assess any joint that showed an abnormality during the GALS screening
- Assess the joints above and below the abnormal joints
- Assess the neurovascular status of the affected limbs

Thank, Cover, Look away

Common Cases
1. RA
2. OA
3. Joint replacements
4. Psoriatic arthritis
Shoulder Station

The shoulder station requires the patient to remove their top. Maintain their dignity throughout the examination, especially if they are female.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

Always offer to compare sides, the examiner will inform you whether to concentrate on one side or both.

HI-PEEP

Look at rest

- General
  - From the front and behind for:
    - Attitude
    - Muscle wasting
    - Skin changes
    - Scars
    - Swelling
    - Deformity

“...Do you have any pain in your shoulders?”

Look during movement

- Screening tests
  - Ask the patient to put their hands behind their head and push their elbows right back
  - Ask the patient to put their hands in the small of their back and push their elbows back

- If the patient struggles with either of these movements assess for a painful arc
  - Ask the patient to slowly raise (abduct) their arms to touch the ceiling and then slowly lower them
    - Painful middle arc?
    - Painful superior arc?
Feel and move

- When assessing each joint, feel for temperature, tenderness, swelling and crepitus

- **Sternoclavicular Joint**
  - Feel over joint for subluxation
  - Ask patient to shrug their shoulders

- **Acromioclavicular Joint**
  - Position the patient’s arm across their chest in forced adduction (Scarf Test)
  - Reproduction of pain indicates ACJ pathology

- **Glenohumeral Joint**

  - **Palpation**
    - Palpate the anterior triangle (inferior to the clavicle and medial to the deltoid)
    - Palpate for an effusion (press down and see if re-fills)
    - Palpate laterally for the coracoid process and then palpate on the anterior joint line (between coracoid and humeral head)

  - **Movement**
    - Abduction: Assess GHJ movement with one hand on the anterior joint line and the other holding the blade of the scapula
      - Ask the patient to raise their arm (abduction) to the ceiling or as far as possible (scapula should not rotate before 90°)
      - If pain limits the movement put one hand along the spine of the scapula and abduct their arm passively with other to find the extent of passive glenohumeral abduction
    - External and internal rotation: feel biceps tendon between the humeral tuberosities for tenderness during external and internal rotation (bicipital tendonitis)
      - Use passive movements if this is limited by pain
    - Flexion/extension: ask the patient to flex and extend their shoulder

---

**Limited active ROM is suggestive of muscle/tendon pathology, whereas limited passive ROM is suggestive of joint/capsular pathology**
Special tests

- Used to detect rotator cuff lesions
  - Supraspinatus ("empty can test")
    - Initiates abduction
    - Supraspinatus pathology is indicated by painful middle arc and pain on resisted active abduction
    - Absence of pain on resisted active abduction is more suggestive of subacromial bursitis
  - Infraspinatus/Teres minor
    - Responsible for external rotation
    - Fix elbow at patient’s side and resist external rotation
    - Upper arm pain suggests infraspinatus/teres minor lesion
  - Subscapularis
    - Responsible for internal rotation
    - Steady patient’s elbow by their side and resist internal rotation
    - Upper arm pain suggests subscapularis lesion

To isolate supraspinatus, ask patient to hold their arm as if they are emptying a drinks can

“To complete my examination...”
- Test for shoulder instability
- Examine the joint above (spine) and the joint below (elbow)
- Assess full neurovascular status of the upper limb

Thank, Cover, Look away

Common Cases
1. Rotator cuff lesions
2. OA
3. Adhesive Capsulitis

Likely Questions
- What are the functions of the rotator cuff muscles?
- What causes adhesive capsulitis?
- What is the treatment of adhesive capsulitis?
- What is the significance of a painful middle/superior arc?
- How do rotator cuff lesions and primary joint pathologies vary in their presentation?
Elbow Station

The elbow joint is a relatively quick examination but still requires a structured examination sequence.

Whilst examining the elbow remember to fully expose the arms right up to the shoulder.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

HI-PEEP

Look at rest

- Environment
  - Splints
- General
  - Attitude
  - Deformity
  - Wasting

Ensure you inspect the both anterior and posterior aspects of the elbow

- Up close
  - Look at:
    - Olecranon process
    - Lateral and medial epicondyles and para-olecranon grooves
  - Look for:
    - Swelling
    - Scars
    - Erythema
    - Psoriasis
    - Nodules

“...Do you have any pain in your elbow?”

Look during movement

- Assess range of movement
  - Flex and extend elbow
  - With elbow fixed at waist and bent at 90°, fully pronate and supinate wrist
Look for the ‘trick’ manoeuvre where the patient compensates for poor wrist supination by over adducting the elbow

Feel

- From behind
  - Temperature
  - Palpate joint line and olecranon bursa
    - Tenderness
    - Swelling
    - Olecranon groove

Look for the Triangle sign: with elbow flexed, place middle finger and thumb on the epicondyles and place index finger on the Olecranon process. Ask the patient to straighten their elbow, the points do not align this is a positive triangle sign.

- From the front
  - Temperature
  - Swelling
  - Tenderness
  - Palpate for the radial head
  - Palpate over the medial epicondyle
    - Medial epicondylitis (golfer’s elbow)
  - Palpate over lateral epicondyle
    - Lateral epicondylitis (tennis elbow)

Move

- During passive movement
  - Palpate joint lines
    - Crepitus
    - Tenderness

- Resisted active movements
  - Wrist extension
    - Pain indicates lateral epicondylitis
  - Wrist flexion
    - Pain indicates medial epicondylitis

As with the hand, be ready to perform any relevant nerve tests
“To complete my examination…”

- Examine joint above (shoulder) and below (wrist/hand)
- Examine full neurovascular status of arm, especially the ulnar nerve

Thank, Cover, Look away

Common Cases

1. Tennis elbow
2. Golfer’s elbow
3. Rheumatoid arthritis (olecranon bursitis/nodules)

Likely Questions

- Describe additional bedside tests for ulnar nerve entrapment?
- How does Rheumatoid arthritis affect the elbow joint?
- Describe the innervation of the forearm?
Hand and Wrist Station

General inspection is crucial to this examination as there are lots of signs to identify. The key is to keep the patient comfortable whilst working in a systematic fashion.

Take time to learn which signs are commonly associated with Rheumatoid arthritis and osteoarthritis.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

Whilst presenting your findings make sure you demonstrate an appreciation of your patient’s functional capacity.

HI-PEEP

Look at rest

Ensure the patient is comfortable by resting their hands on a pillow throughout the examination

- Environment
  - Walking aids
  - Adapted personal items
- General
  - Evidence of other joint pathology
- Up close: extensor surface
  - Skin/nails
    - Erythema
    - Psoriasis
    - Rashes
    - Nail changes
  - Swelling
    - Radiocarpal/radioulnar synovitis
    - MCPJ/IPJ swelling
    - Extensor tenosynovitis
    - Bouchard’s (PIPJ) and Heberden’s (DIPJ) nodes
  - Deformity
    - Ulnar prominence
    - Squaring of the first CMCJ
    - Ulnar deviation of the MCPJ
Deviation of the IPJs
- Volar subluxation of phalanges at MCPJs, look for prominence of metacarpal heads
- Swan-neck deformity (PIPJ hyperextension)
- Boutonniere’s deformity (DIPJ hyperextension)
- Z thumb deformity (IPJ hyperextension)
  - Wasting
    - Dorsal interossei

Ask the patient to turn their hands over...

- Up close: palmar surface
  - Skin
    - Palmar erythema
    - Dupytren’s contracture
  - Swelling
    - Flexor tenosynovitis
  - Wasting
    - Thenar/hypothenar eminences

- Up close: lateral inspection
  - Elbow
    - Nodules/psoriasis
  - Wrist
    - Carpal volar subluxation produces dinner-fork deformity
    - Swelling on dorsum of wrist
  - MCPJ’s
    - Volar subluxation

If there is swelling on the dorsum of the hand ask the patient to flex their fingers. If the mass moves distally this is the ‘Tuck sign’ and indicates tenosynovial swelling.

Look during movement (Functional assessment)
“...Do you have any pain in your hands or wrists?”

- Ask the patient to grip your fingers
- Oppose each finger in turn against the tip of the thumb
- Ask patient to attempt an everyday activity e.g. doing up a zip/button

Feel

- Support the patient’s hand
- Feel the joints of the hand and wrist systematically, assess for:
- Temperature
- Tenderness
- Crepitus/pain on movement

**When palpating the small joints of the hand, use both index fingers and thumbs, and feel carefully for the joint line. Make sure you see this technique demonstrated during your MDD attachment.**

With hand supinated...

- Inferior radioulnar joint
- Radiocarpal joint
  - Determine extent of flexion and extension
  - Test lateral movement
- **MCPJ’s**
  - Perform metacarpal squeeze
  - Feel each joint individually
  - To test ROM place thumb across palm and flex each finger in turn
- **IPJ’s/DIPJ’s**
  - Assess ROM as above
- Palpate the thumb
  - Assess ROM
  - Palpate as above

Pronate hand...

- Palpate all finger joints

**Throughout the hand examination work from the wrist distally. Present your findings in this fashion then you are less likely to forget something.**

**Special tests**

- For symptoms of carpel tunnel syndrome
  - Tinel’s sign
    - Tapping over wrist joint distal to proximal skin crease reproduces symptoms of carpel tunnel syndrome
  - Phalen’s test
    - Forced flexion of both wrists held for over 1 min reproduces symptoms, note time of onset of paraesthesia
- Nerve Assessment
  - Recognise what nerve assessment might be indicated given the examinations completed so far
  - Be able to test sensation and motor function for an radial, median or ulnar nerves.
Osteoarthritis | Rheumatoid arthritis
---|---
Heberden’s nodes (DIPJ) | Ulnar deviation/ volar subluxation at MCPJ
Bouchard’s nodes (PIPJ) | Swan neck deformity
Squaring of thumb base | Boutonniere’s deformity

“To complete my examination…”

- Full elbow examination
- Examine the neurovascular status of arm
- GALS screen

Common Cases

1. Rheumatoid hands
2. Osteoarthritis
3. Nerve lesions

Likely Questions

- How would you assess radial/ulnar/median nerve function in the hand?
- How would you demonstrate carpel tunnel syndrome?
- How would you manage RA/OA?
- Demonstrate function of flexor digitorum superficialis/profundus
- What is the Ulnar paradox?
Spine Station

The spine station requires the patient to be exposed down to their underwear. You need to assess them standing, walking and finally on the couch.

Remember to maintain their dignity throughout the examination.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

HI-PEEP

Look at rest

- Environment
  - Walking aids
- General
  - From the front
  - From the side
    - Normal cervical/lumbar lordosis and thoracic kyphosis
  - From behind
    - Scoliosis
    - Pelvic tilt
- Up close
  - Muscle spasm
  - Skin changes

Look during movement

- Ask patient to walk – observe for gait abnormalities
  - Walking on heels (tests L5 myotome)
  - Walking on tiptoe (tests S1 myotome)

Lumbar spine

- Flexion
  - Place fingers on two consecutive lumbar spinous processes and ask patient to try and touch their toes
    - If scoliosis resolves on flexion it is postural, if not it is structural
  - Ask patient to straighten up and you should see your fingers come together
• **Extension**
  o Stabilising their pelvis ask the patient to bend back as far as possible
  o Then ask the patient to flex laterally to both sides by sliding their hand down to their knee

• **Lateral flexion**

Sit patient on the couch

**Thoracic spine**

• Fix pelvis and ask the patient to rotate in each direction with arms held firmly across chest

**Cervical spine**

• With the patient on the couch, rest your hands on their shoulders
• Ask the patient to:
  o Look left and right
  o Look up to ceiling and down to the floor
  o Place their ear on their shoulder
    ▪ Facet joint disease is indicated by pain felt on the same side as the direction of movement
    ▪ Pain on opposite side is more likely to be muscle spasm

Feel

“...Do you have any **pain** in your back?”

Lie patient prone on the couch

Ensure patient is comfortable when lying prone, use a pillow for support. Some patients may be too immobile to lie prone, in this case palpate the back with the patient sat on the couch.

• Paraspinal muscles
  o Temperature
  o Tenderness
  o Spasm
• Facet joints
  o Apply pressure laterally to the spinous processes
  o Tenderness is likely to indicate joint, disc or ligament pathology

• Spinous processes
  o Alignment
  o Tenderness

With patient supine on couch

• Distraction test
  o Apply simultaneous firm downward pressure on the ASISs
  o Tenderness suggests sacroiliac joint disease

Special tests

• Straight leg raise
  o With patient supine lift the leg until you elicit pain
  o Note angle, lower leg slightly and then dorsiflex the foot to see if pain is reproduced
  o Pain reproduced: possible disc prolapse
  o Pain not reproduced: hamstring/SIJ/lumbar pathology

• Femoral nerve stretch test
  o With patient on side extend hip to apply traction to L2, 3, 4
  o Pain down anterior thigh represents a positive test

"To complete my examination..."

• Test joints above (shoulder) and below (hip)
• Perform a full neurovascular examination

Thank, Cover, Look away

Common Cases

1. Ankylosing spondylitis
2. Nerve root entrapment

Likely Questions

• What are the red flag symptoms of back pain?
• How would you recognise Cauda Equina syndrome?
• What are the extra-articular features of ankylosing spondylitis?
Hip Station

The patient should be exposed down to their underwear. You need to assess them standing, walking and finally on the couch.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

HI-PEEP

Look at rest (while patient standing)

- Environment
  - Walking aids
- General
  - From behind
    - Pelvic tilt
    - Scoliosis
    - Gluteal wasting
  - From the front
    - External rotation of foot
  - From the side
    - Exaggerated lumbar lordosis
- Trendelenburg test
  - Identifies hip abductor weakness secondary to osteoarthritis/L5 root lesion
  - Whilst supporting the patient ask them to stand on one leg, look for sagging of the pelvis on the opposite side

In Hip OA the ‘sound side sags’ during the Trendelenburg test, i.e. when stood on the affected leg the contralateral side of the pelvis sags as the hip abductors on the affected side are weakened and fail to raise the pelvis.

Look during movement

- Inspect gait
  - Antalgic
  - Trendelenburg
Look at patient on couch

- Skin changes
- Scars
- Deformity: flexed externally rotated leg
- Leg length inequality
  - First look at the heels to see if there an obvious difference
  - True leg length: distance from ASIS to medial malleolus
  - Apparent leg length: distance from xiphisternum to medial malleolus

"...Do you have any pain in your hip?"

Feel

- Palpate the anterior joint line under the lateral third of the inguinal ligament for temperature, tenderness and swelling
- Palpate trochanteric bursae

Move

- Offer to do Thomas’ test because in OA lumbar lordosis masks fixed flexion deformities
  - Flex the good hip to 90° to eliminate the lumbar lordosis (confirm this by placing your hand under the spine)
  - In a positive test the affected hip rises before the lordosis is eliminated
- Test hip flexion by passively flexing the knee towards the chest (should be 120° ROM)
- Test abduction (45° ROM) and adduction (30° ROM)
  - Ensure one forearm is fixed on the pelvis to prevent lateral spinal movement
- Internal and external rotation (45° ROM), do this with the hip and knee flexed to 90°

**Limited internal rotation is the earliest sign of hip OA**

Thank, cover, look away
“To complete my examination..."

- Examine the joint above (Spine) and below (Knee)
- Examine neurovascular status of the lower limb

Common Cases

1. Hip OA +/- previous hip replacement
2. Joint replacement
3. Rarely trochanteric bursitis

Likely Questions

- What are the radiographic features of hip osteoarthritis?
- What is the difference between apparent and true leg length, why do we measure both?
- How do we classify neck of femur fractures?
- What are possible complications of a hip replacement?
Knee Station

The patient should be exposed down to their underwear. You need to assess them standing, walking and finally on the couch.

Remember to maintain their dignity throughout the examination.

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

Good inspection will help you focus your examination, for example a healthy young adult is more likely to have ligament damage than an elderly patient who is more likely to have arthritis.

HI-PEEP

Look at rest

- Environment
  - Splints
  - Walking stick
- General
  - Swelling
  - Attitude
    - Painful joints are usually held in mild flexion
  - Scars
  - Erythema
- Up close: from the front
  - Genu varus
  - Genu valgus

In the “varus” deformity there is a lot of “air” between the patients’ legs. Varus is seen in OA and valgus is seen in RA.

- Up close: from the side
  - Genu recurvatum
  - Fixed flexion deformity
  - Posterior tibial subluxation
- Up close: from behind
  - Popliteal aneurysm
  - Baker’s cyst
Look during movement
- Inspect gait
  - Antalgic
  - Circumduction
  - Fixed flexion

Look at patient on couch
- Skin changes
  - Psoriasis
  - Erythema
  - Scars
- Swelling
  - Knee effusion
    - Medial
    - Superior (indicates severe disease)
  - Prepatellar bursitis
  - Infrapatellar bursitis
- Attitude
  - Fixed flexion
- Wasting
  - Ask the patient to push their knee as hard as possible down into the bed
    - Look for quadriceps atrophy

“...Do you have any pain in your leg?”

Feel
- Temperature
- Patellofemoral Compartment
  - Swelling
  - Bulge sign
    - Sweep along each side of the patella looking for fluid shift
  - Balloon sign
    - Place one hand around suprapatellar pouch and press down on the patella with the other hand, palpate for fluid shift
  - Patella tap test
    - Apply downward pressure to patella and feel for contact with the underlying femur
    - If present this indicates a large effusion
  - Patellofemoral stress test
    - Pushing the patella medially and laterally in the straightened relaxed leg elicits pain
- Tibiofemoral compartment
  - With knee in mid flexion identify tibial tuberosity and palpate the joint line medially and laterally
    - Meniscal tears: isolated anterior joint line tenderness
    - Arthropathies: generalised joint line/capsular tenderness
• Periarticular palpation
  o Palpate for superior and inferior insertion points of collateral ligaments
  o Palpate inferior to the medial joint line for anserine bursitis
• Popliteal fossa
  o Swelling
    ▪ Baker’s cyst

Move

• Assess active range of extension and flexion
• Assess passive range of extension and flexion
• Assess for crepitus with hand over the patella
• Stability testing
  o Cruciate ligaments
    ▪ Knee flexed to 90º
    ▪ Relax hamstrings
    ▪ Posterior drawer test: posterior cruciate ligament
    ▪ Anterior drawer test: anterior cruciate ligament
    ▪ Compare sides
  o Collateral ligaments
    ▪ Hold knee in mild flexion
    ▪ Push tibia laterally and femur medially to test MCL
    ▪ Push tibia medially and femur laterally to test LCL
    ▪ Assess for pain and laxity
• Assess for quadriceps lag

“To complete my examination...”

• Test joints above (hip) and below (ankle)
• Examine neurovascular status of both limbs
• Test for hypermobility

Thank, Cover, Look away

Common Cases

1. OA
2. RA
3. ACL pathology
Likely Questions

• What are the radiographic changes of OA?
• What is primary OA?
• What is secondary OA?
• What is the management of OA?
• What are the complications of a TKR?
Ankle and Foot Station

This station is difficult to master, students commonly struggle to manipulate the foot during palpation.

Listen carefully to the instructions the examiner gives you as they may take you through different sections of the exam out of sequence.

The foot has 3 functional units to examine: the hindfoot (calcaneus and talus), midfoot (five small tarsal bones) and forefoot (metatarsals and phalanges).

As with all the MDD stations, be extra careful when assessing pain. It is necessary to elicit tenderness and reproduce the patients’ pain, but you must not cause distress whilst examining them.

Always aim to get the patient standing and exposed to above the knee.

HI-PEEP

Look at rest (standing)

- Environment
  - Walking aids
  - Look at the soles of the patient’s shoes
- General
  - Inspect the foot/ankle looking for asymmetry

In general inspection do not forget to look at the patients’ hands/skin for evidence of obvious osteo/rheumatoid/psoriatic arthropathy

- Up close
  - Skin and nail changes
  - Swelling
    - Across ankle (anterior joint line), midfoot, toes and Achilles tendon area
  - Deformity
    - Pes cavus/planus
    - Hallux valgus
    - Hammer toe (MTPJ hyperextension and PIPJ flexion deformity, normally of the second toe)
- Mallet-toe (DIPJ hyperflexion)
- Cock-up toe deformity (PIPJ and DIPJ hyperflexion, with MTPJ extension/subluxation, look for secondary callus formation)
- Inversion/eversion of hindfoot/midfoot

**Look whilst walking**

- Antalgic gait
- Compensation due to deformity
  - Hindfoot deformity
    - Abducted, externally rotated leg, the patient may avoid heel strike
    - The patient may avoid push off in Achilles tendon pathology
  - Midfoot deformity
    - Inverted foot, with push off from lateral side
  - Forefoot deformity
    - The heel does not rise in late stance and there is decreased push off
    - Trunk, hip and knee flex to maintain forward motion
    - Swing phase on normal side shortens

**Look at patient on couch**

- Soles
  - Calluses
  - Adventitious bursae
  - Skin changes
  - Tinea pedis

“...Do you have any pain in your feet?”

**Feel**

*Work systematically to feel and move joints from a proximal to distal direction and then palpate extra-articular structures*

- In each joint group always palpate for:
  - Temperature
  - Swelling/tenderness
  - Crepitus
  - Range of movement
  - Pain
Move

There is a specific way to hold the joints during each movement, make sure you have practised this

- **Ankle (Talar joint)**
  - Passively move in dorsiflexion and plantarflexion identifying the anterior joint line and feel for the features of joint pathology
- **Subtalar joint**
  - Invert and evert foot, this joint is too deep for palpation but crepitus, ROM and pain can be assessed
- **Midtarsal joints**
  - Role midfoot into eversion/inversion
- **MTPJ’S**
  - Metatarsal squeeze
  - If positive palpate each MTPJ in turn and test ROM
  - Look for loss of the guttering between the metatarsal heads
- **IPJ’s**
  - Palpate each IPJ between a finger and thumb
  - Test movement by fixing the more proximal PJ and moving the phalynx
- **Periarticular structures**
  - Plantar fasciitis: pain when pressure applied to mid heel
  - Palpate Achilles tendon, surrounding tissues and insertion into calcaneus
  - Test resisted active plantarflexion for Achilles tendon enthesisopathy

“To complete my examination..."

- Examine the knee joint
- Assess the neurovascular status of legs

Thank, Cover, Look away

**Common cases**

1. RA
2. OA
3. Diabetic foot
Likely questions

- What is a Charcot joint?
- Which joints are affected with osteoarthritis compared to rheumatoid arthritis?
- How would you test for ankle stability?
- How do you classify ankle fractures?

Notes
Radiology Station

This station can be intimidating – the only solution is practicing your patter. Some will tell you to start with the ‘Technicalities’ however recently we have been told not to mention these as there is not time. All films are carefully selected by a team of senior radiologists, so will all be adequately exposed etc etc.

There are 4 films to view, for each case you will be told a vignette, e.g. “This a 65 y.o gentleman with chest pain”. You should expect a chest, an abdo, a bone and a harder film for “honours”. You

The films are likely to be from a selection of:
- Chest radiographs
- Abdominal radiograph
- Barium studies
- Intravenous Urograms (IVU)
- Bone radiographs - Fractures, dislocations, arthritis
- CT scans

Once you have seen one abnormality continue to review the rest of the film as there may be another.

Use radiological terms to describe the location, size, density and edge of the abnormality. It is never an ‘X-ray’, always a ‘Radiograph’.

For each film you are expected to:
- *Give a description of the film*
- *Give an interpretation*
- *Give a diagnosis or differential*
- *Suggest management or further investigations*

Make your introduction flow well so you can discuss the technicalities and demographics quickly e.g. “This is a plain AP erect chest radiograph of an adult female”.

Chest Radiographs

- Be systematic
  - Lung fields
    - Comment on the inspiratory effort
  - Mediastinum
  - Cardiac shadow
  - Costophrenic angles and diaphragms
  - Soft tissues and bones
  - Review areas

- Review areas
  - Behind the heart
    - Hiatus hemia - fluid level behind heart
    - The triangular shadow of left lower lobe collapse (‘sail sign’)
  - The apices
    - Pancoast tumour
    - Chronic fibrosis
    - Lung abscesses
  - Under the diaphragm
    - Pneumoperitoneum
    - Dilated loops of bowel

**Common Cases**

1. CCF
2. COPD
3. Masses
4. Pleural Effusion
5. Collapse
6. Cavitating lesions
7. Lobectomy (look for missing ribs)
Abdominal Studies

- Start by identifying the type of study/film

If you are not sure exactly what type of study it is, describe what you see i.e. “This is a Barium Study of the upper GI tract”.

Abdominal Radiographs

- The clinical scenario will guide you
- System
  - Solid viscera
  - Hollow viscera: including the aorta
  - Psoas shadows should be clear
  - Soft tissues and bones

Common Cases

1. Small and large bowel obstruction
2. Ulcerative Colitis
3. Crohn’s disease
4. Aortic aneurysm with calcification
5. Kidney stones

<table>
<thead>
<tr>
<th>Small Bowel</th>
<th>Large Bowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valvulae conniventes</td>
<td>Haustra</td>
</tr>
<tr>
<td>Central loops</td>
<td>Peripheral loops</td>
</tr>
<tr>
<td>Multiple loops</td>
<td>Few loops</td>
</tr>
</tbody>
</table>
Barium Studies

- System
  - Identify the type of study
  - Part of GI tract imaged
  - Single/double contrast

**Double contrast studies use contrast and air, this enables you to visualise the bowel wall clearly**

Common Cases

1. Barium swallows: looking at the pharynx and oesophagus
   - Oesophageal strictures
   - Pharyngeal pouch
   - Achalasia: ‘beak’ sign at gastro oesophageal junction (GOJ)

2. Barium Enemas
   - ‘Apple-core’ lesions
   - Ulcerative colitis

**If a patient has a suspected perforation you can use Gastro-graffin contrast as this is non-toxic and should not cause peritonitis**
Intravenous Urograms

- This study visualises the kidneys, ureters and bladder (KUB)
- IV contrast is given and plain abdominal films (KUB X-rays) are taken at various intervals to see the progress of the contrast through the urinary system
- The film will have a time on it, such as '5 minutes post contrast'
  - Control film (pre-contrast)
  - Immediate (at time of contrast)
    - ‘Renal blush’ (contrast in the cortex)
  - 5 minutes post-contrast
    - Calices, pelvices and pelvoureteric junction (PUJ)
  - 15 minutes
    - Ureters, vesicoureteric junction (VUJ)
  - 25 minutes
  - Post-micturition film
    - Bladder

- Look for
  - Kidney shape and size
  - Symmetrical drainage
  - Blockages causing delayed drainage of contrast
  - Hydronephrosis

If presented with an IVU you should always ask to see a control film

Common Cases

1. Stones (may be in the bladder)
2. Horseshoe kidney
3. Obstruction including hydronephrosis
Orthopaedic Glossary

- **Angulation**: deformity at fracture site - relative to the proximal fragment. Described as ‘forward’ or ‘backward’ angulation
- **Avulsion fracture**: fracture which occurs when a fragment of bone tears away from the main mass of bone as a result of physical trauma
- **Closed Fracture**: an uncomplicated fracture in which the broken bones do not pierce the skin
- **Comminuted fracture**: fracture in which the bone is splintered or crushed
- **Compound (Open) fracture**: fracture associated with lacerated soft tissue or an open wound
- **Compression fracture**: fracture in which the bone collapses (especially in short bones such as vertebrae)
- **Delayed union**: a complication of fracture healing, where the bone-ends join, but very slowly
- **Depressed fracture**: fracture of the skull where the bone is pushed in
- **Dislocation**: an injury where the components of a joint are completely separated without fracturing
- **Displaced Fracture**: fracture where the two bone-ends are separated from each other
- **Dorsal**: back (e.g. of hand)
- **Fracture-Dislocation**: dislocation associated with a fracture at the dislocated joint
- **Hairline fracture**: fracture without separation of the fragments and the line of the break being very thin
- **Impacted fracture**: fracture in which one broken end is wedged into the other broken end
- **Malunion**: a complication of a fracture, where the bone-ends join in an unacceptable position
- **Non-union**: a complication of a fracture where the bone-ends do not join
- **Reduction**: manipulating a fracture or dislocation back into its correct position
- **Stress fracture**: fracture resulting from excessive activity rather than a specific injury e.g. running
- **Spiral fracture**: fracture in which the bone has been twisted apart. It looks like the line of a corkscrew which runs parallel with the axis of the broken bone
- **Subluxation**: a partial dislocation
- **Ventral**: front (i.e. palmer aspect of hand)
- **Volar**: back of forearm
• System
  o Bones involved
  o Side
  o Field of view: joint above and below
  o ‘Metalwork’
  o Scan the bone outlines for any obvious dislocations, fractures or malpositioning
  o Look at the bone cortex for any osteopaenia, lytic lesions or sclerosis
  o Joints and joint spaces
  o Look at the surrounding soft tissues for evidence of trauma or open fracture sites

When given a bone radiograph always ask for a second view i.e. a lateral film

Common Cases

1. Osteoarthritis
   o Hip and knee
   o Look for:
     ▪ Joint space narrowing
     ▪ Sclerotic lesions
     ▪ Cystic areas
     ▪ Osteophytes

2. Fractured Neck of Femur
   o Intra/extra-capsular
   o Femoral neck fractures
     ▪ Garden’s classification

Femoral neck fractures are at risk of avascular necrosis

3. Colles’ Fracture
   o Fall onto extended wrists (‘Fall on out-stretched hand’ ‘FOOSH’ fracture)

   Classical features
   ▪ Transverse fracture of the radius
   ▪ 1 inch (2.5 cm) proximal to the radiocarpal joint
   ▪ Dorsally displaced and dorsally angulated
   o May also be associated with a fracture of the ulnar styloid
     ▪ Causes a ‘Dinner Fork’ deformity: backward angulation of joint
4. Smith’s Fracture
   - Fall onto flexed wrists
     - Distal fracture fragment is displaced ventrally
   - May be one or many fragments
   - May involve the articular surface of the wrist joint

Smith’s Fracture (top) and Colles’ Fracture (bottom)

<table>
<thead>
<tr>
<th>Colles’ Fracture</th>
<th>Smith’s Fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal fragment displaced dorsally</td>
<td>Distal fragment displaced ventrally</td>
</tr>
<tr>
<td>Fall on extended wrist</td>
<td>Fall on flexed wrist</td>
</tr>
</tbody>
</table>

5. Elbow fracture-dislocations
   - Monteggia
     - Fractured ulna, dislocated proximal radioulnar joint
   - Galeazzi
     - Fractured radius, dislocated distal radioulnar joint

Monteggia  
Galeazzi
6. Ankle Fractures
   o Weber’s classification (A, B and C)

Weber A fractures are mostly treated conservatively. Anything other than a Weber A is likely to need surgery.

7. Scaphoid
8. Salter-Harris Classification
CT Scans

- You may be shown a single-slice CT
- System
  - Edge of the skull: fractures/soft tissue damage
  - Edge of the brain: symmetrical, bulges
  - Any midline shift?
  - Cerebrum: atrophic areas
  - Sulci: any blood/volume loss
  - Ventricles: any blood/dilatation/volume loss

**In an acute bleed blood is WHITE on a CT scan, not quite as white as bone**

Common cases

1. Subdural haematoma
   - Blood in subdural space
   - Commonly associated with fluctuating consciousness
   - Often venous bleed
     - CONCAVE collection seen inferior to skull edge
     - Acute: pale
     - Chronic: darker (altered blood)

2. Extradural haematoma
   - Commonly associated with a period of lucency
   - Blood between the dura and the skull
   - Often arterial bleed (middle meningeal artery)
     - CONVEX collection inferior to skull edge

3. Stroke
   - Likely to be a chronic ischaemic lesion
   - Look for asymmetry
     - Ischaemic: areas of atrophy in the arterial distributions, i.e. middle cerebral artery
     - Acute haemorrhage: bright white area

4. Subarachnoid haemorrhage
   - Blood in sulci and/or ventricles
     - Complication: raised intracranial pressure
Summary

Radiology is a large topic and you are not expected to know it all. We haven’t gone through everything here as there is too much. The more you practise the more familiar with ‘normal’ you will become – which makes spotting ‘abnormal’ a lot easier.

Remember the basics
- Always start with your ‘Technicalities and Demographics’
- Try to remember the basics about each type of study i.e. review areas
- Remember once you’ve found one abnormality, complete your review of the film in case there is another one

The list of films likely to be included in the exam is only a guide and is not exhaustive.

Common films
- Chest radiographs
- Abdominal films
  - Including:
    - Plain AXRs
    - Barium studies
    - IVUs
- Bone radiographs
- CT scans
The principle of this station is to be confident, have conviction in your findings and stick religiously to ABC.

You will be presented with a ‘patient’ and a very brief scenario by the examiner. You should run through ABC as if it was a real patient and address them by name. The examiner will guide you i.e. tell you if the patient is breathing, if the airway is patent etc.

When you come to a problem deal with it and only move on when you have solved it or begun appropriate management i.e. a fluid challenge.

State the obvious and say what you are thinking, i.e. if the patient has saturations of 85% say that they are hypoxic and that you would like to administer some oxygen.

Always reassess your patient after the primary survey.

Always call for Help when you have enough information.

Don’t worry too much about scenarios, these are limited as they must include you getting all the way through an ABCDE assessment and reviewing your fluid challenge.

**Inspection**
- Eye ball the patient: but full inspection occurs during ‘E’
- General: defibrillator machine, blood on floor
- Patient: blood, drains, dressings, drips ?what
- What is that drip that has just given this patient anaphylaxis?

**Take a mini-history during your ABC assessment – this will help you with diagnosis and further management**

i.e. how the patient is feeling; what operation they had; if they have any pain
A – Airway

- Demonstrate that you are assessing that the airway is patent
- Apply high-flow (15L/min) Oxygen using a non-rebreath mask
- Demonstrate correct inflation of the bag

Responsive

- Continue ABC assessment
- Take a mini-history as you go
- If airway maintained independently with no obstruction
  - Move onto ‘B’

Unresponsive- Call for HELP!

- Assess airway
  - Head – tilt chin-lift
  - Look in mouth
  - Any obstruction?
  - Look for chest movements
  - Listen/feel for breath
  - Airway manoeuvres
    - Jaw thrust
    - Need for adjuvants
  - Need for ventilation

If the patient responds to you and is appropriate...

- Their airway is clear
- They are ‘Alert’ on AVPU assessment
- They have adequate cerebral perfusion and therefore a reasonable BP

B – Breathing

- Respiratory rate – request the RR (its a plastic dummy probably). Comment on the rate you are told.
- O₂ Satuations
- Examine chest
  - Expansion
  - Percussion
  - Auscultation (at least 4 zones)

Always put oxygen on the patient (15L non re-breathe mask) regardless of the clinical scenario; people die of hypoxia before anything else. Don’t panic in the OSCE if you have left it to C, just make sure you do it!!
C – Circulation

- Peripheries: warm/cold/clammy
- Pulse: rate rhythm and volume – comment on the rate.
- BP – comment on this.
- Capillary refill – comment on this.
- Temperature
- Urine output: does the patient need a catheter?
- Heart sounds: muffled/murmurs
- IV Access – 2 large bore cannulae (know your colours)
  - Order some bloods (FBC, Coag screen, X-Match, U&Es, serum glucose), and save some for an instant BM check
- Fluid challenge
  - Does the patient need a fluid challenge? (yes)
    - Say what you would give over how long
    - 500ml-1L over 5-15 mins of 0.9% NaCl or colloid
    - If they are elderly or possibly had an MI, consider 250ml

D – Disability

- AVPU
- Pupils
- Glucose

A – Alert: GCS 15
V – Responds to Voice: GCS 9-14
P – Responds to pain: GCS 8 (needs airway protection)
U – Unresponsive: GCS 3


E – Exposure

- Move all the covers (but maintain patients dignity)
- Looking for
  - Bleeding
  - Rashes
  - Wounds
  - Drains
  - Infusions – antibiotics
  - Dressings
  - Melaena
  - Swollen red calves
- Palpate abdomen and calves
Charts
- Ask for the obs chart – and comment on any obvious findings. With the adrenaline pumping you’ll probably only notice the Portsmouth sign
- Ask for Drug cards

Reassess
- Go back and review / reassess
- How has your fluid challenge affected the patient’s status?
- You can call for help (at any stage). Obviously it’s better if you wait until you have something to tell your senior. Know about the SBAR system for structuring your call.
Integrated Examination

New in 2011, but cleverly devised as it requires you to put together everything you’ve learned and give a full diagnostic examination in 5 minutes. Students experience of this station differed between examiners and scenarios (expect this to be ironed out). You will be given or read a scenario, e.g. a patient with right sided chest pain. Please perform a focussed examination.

You may be expected to perform some or all of the examinations you suggest. As usual the best tactic is to look confident and start examining, saying what you are doing. The examiner will move you along.

The philosophy behind this station may not be to test the examinations themselves (as these are examined in the other stations) but to see if you can prioritise based on the scenario presented and any symptoms elicited.

The best strategy is to listen to the scenario, and then consider the examinations that you could do (cardio, respiratory, GI, neuro, MDD etc…) - what sounds relevant. Start at the hands and work up. At each point on the body - should I examine anything here?

Consider this station as if you are an F1, what examinations will you do and why?

HI-PEEP
It's all a bit contrived as the patient will likely have nothing wrong with him and find the whole process bemusing — but don’t forget your Introduction, Positioning and Exposure

Inspection
Take some base-line Observations
  o say you would inspect the patient, do they look ill?
  o request obs, particularly temperature, pulse, RR
  o offer to take a BP

A good strategy
When it comes down to it, there are 5 main examinations you know (Cardio, Resp, Abdo, Neuro & MDD). Most start at the hands and work around the body. Given a presenting complaint, you could start at the hands and consider each examination in turn — “Is there anything I should look at the hands on an abdominal examination for nausea?” At this point it really
depends on the scenario (quite clever, as no marksheets from previous years will be of any help). Here are some things to consider though...

Hands
  o inspect peripheries for hydration status

Neck
  o any signs of meningism? (know your signs of meningism and your Kernigs from your Brundzinski)

Ears & Eyes
  o examine ears for OM?
  o offer fundoscopy for papilloedma?
  o nystagmus

Chest
  o localise any pain, clarify location
  o inspect for skin lesions (dermatomal distribution?)
  o palpate for tenderness
  o percuss
  o auscultate

Abdomen
  o palpate for tenderness
  o consider abbreviated abdominal exam
  o bowel sounds?
  o urine sample & dipstick
  o BM?

Legs
  o Check for signs of DVT (Wells Score)

Final points
  • Be prepared to justify any examinations
  • Instead of “I’d like to examine his chest”, how about “Given his history of chest pain I would like to perform a full cardio examination”
  • List your key diagnoses considered
  • Unless they say otherwise, report your findings normally
  • Investigations -- given what you have seen so far, what investigations would you order?
Prescribing Station

A GMC requirement, the medical school were ahead of game in running this station in 2011 - which may mean changes. If history is repeated, there will be extra sessions nearer the exam given by the pharmacists, and those doing Medicine or Surgery in QMC or Derby will get extra practice too.

The med school found this station to correlate extremely well with overall pass/fail in the OSCEs. It really is simple if you’ve practiced and don’t get flustered.

Below is the basis of the 6 minute OSCE station, there is limited time, so you can’t be realistically asked to do much more than this. If it moves to OSCE2 - you will be busy!

Introduction – In your rest station you will find...
• A scenario (e.g. patient details, admitted to Ward X under Consultant ABC, weight 45kg with condition Y)
• Hospital guidelines on treatment of condition Y
• Maybe a BNF (not required)

In the Prescribing Station proper you will find...
• A pharmacist
• A bag of drugs (brought in by the patient)
• A blank drug card (of the QMC variety – doesn’t matter where you are, it should be the QMC drug card)

Questions
You will be sitting with a pharmacist. They will present you with a blank drug card and a bag of drug boxes. There are at least 3 questions you need to ask the pharmacist:
1. Does this patient have any allergies?
2. For each known allergy, what reaction does the patient have?
3. What is the patient’s renal function / creatinine clearance? (required for the thromboprophylaxis box)

Drug Card tasks
There are a series of tasks for you to perform:
1. Fill in all the patient details (NB - there may be stickers available)
2. Fill in the allergies section & reactions
3. Fill in the patient’s medications (from the boxes)
- remember they will probably include one box which has a different name on it (the patients partner or cat)
- note whether it is regular or PRN (and fill in the appropriate page on the QMC drug card).

4. Fill out the thromboprophylaxis section and prescribe an appropriate amount of enoxaparin (be familiar with the QMC drug card – if it’s a medical patient you don’t need to use that whole scoring system*)
5. Follow the hospital guidelines for the patient’s condition and allergies and prescribe the medication they require.

**Checks**
- Check you have signed everything! Have you have signed, written your name and given a fake bleep number?
- Check you have circled enough times so the drug is given as prescribed. Beware of weekly prescriptions and how to draw these on the chart.*
- Check the hospital guidelines - read them carefully.
- Check all the routes and doses are correct.
- Check you have written out “microgrammes” in full, for inhalers use “two puffs”.
- ALL antibiotics (IV or PO) need a 48 hours review date.

**Variations**
The GMC may impose new requirements. This station could be shifted to a 15 minute OSCE. It would be hard to add more to a 6 minute OSCE, however in a 15 minute OSCE you could be expected to...
- Check for well known drug interactions
- Look up a drug in the BNF (instead of being given hospital guidelines)
- Prescribe fluids or infusions
- Starred sections (*)would be obvious ways to make the station slightly harder

**Be guided by the excellent teaching from the pharmacists!**
Breast Station

This station does not commonly appear in the OSCE due to its sensitive nature, but it is an important examination to learn for clinical practice. There is a model of a breast that you may be asked to examine in the OSCE.

It can be awkward for both you and the patient, however you must be professional and confident throughout the examination to avoid embarrassment.

Maintaining the patient’s dignity is of utmost importance in this station. The breasts need to be exposed but do not expose them for any longer than is necessary.

On inspection it may be clear which breast has the pathology. However, always offer to examine the normal breast first. The examiner will then inform you of what to do next.

Initially the patient should be sitting upright on the edge of the couch for inspection. For palpation they should be lying at 45 degrees with their arms above their head.

When assessing the breast lump remember to assess it as you would for any other lump: size, shape, position, surface, edge, composition, temperature, tenderness, tethering, and fluctuation.

HI-PEEP

Inspection

- General Observation
  - Cachexia
  - Prosthesis
  - Dressings

- Breast
  - Lumps
  - Scars
  - Skin changes
  - Discharge
  - Ask the patient to raise her arms above her head and then press her hands on her hips, looking for:
    - Asymmetry
    - Nipple retraction
    - Skin puckering
“...Do you have any pain in your breasts?”

Palpation
- Palpate supraclavicular fossa for lymph nodes
- Palpate the normal breast first
- Systematically palpate each of the quadrants
  - Use the flat of your fingers
  - Ensure the arm of the breast being examined is behind the patient's head
- Systematically palpate each of the quadrants of the affected breast, including the axillary tail
- Ask patient to squeeze their nipple to assess for discharge
- Palpate the cervical lymph nodes
- Palpate the axilla
  - Ask patient to sit upright facing you
  - Take the weight of patient's right arm in your right arm
  - Palpate axilla with left hand for lymph nodes
  - Repeat on the left side by swapping hands

Remember that 30% of the lymph from the breast drains to the supraclavicular lymph nodes

Percussion
- Down the spine
  - Tenderness (bony metastases)

“To complete my examination...”
- Full Abdominal examination
- Full Respiratory examination
  
  For evidence of metastatic disease
  (hepatomegaly, pleural effusions)

Thank, Cover, Look away

Common Cases
1. Fibroadenoma
2. Breast Carcinoma
3. Breast cysts
4. Paget’s disease of the nipple
5. Post breast surgery

Likely Questions
- What is the triple assessment of breast lumps?
- What is the differentiate between fibroadenosis and fibroadenoma?
- What are the indications for lumpectomy over mastectomy?
- What are the non surgical treatment of breast lumps?
- What are the causes of nipple discharge?
Groin and Scrotum Station

This is a complex examination which may comprise a standalone OSCE station. However, it could be encountered as part of your abdominal station.

During your final year you will hear different things about whether to start a groin and scrotum examination lying or standing. In general if the patient is fit and reasonably mobile – get them standing. Remember the main benefit of testicular palpation whilst standing is to rule out a varicocele.

The patient should be exposed from the waist down, always palpate from the side when the patient is standing.

Learn the anatomy of this area inside out!

HI-PEEP

Inspection of groin with patient standing

- Observe for swellings, scars and skin changes
- Look on both sides, ask patient to turn head away and cough

“...Do you have any pain in your groin or scrotum?”

Palpation

- Palpate for cough impulse on BOTH SIDES
- If mass, assess:
  - Site
  - Size
  - Shape
  - Texture
  - Consistency
  - Fluctuance
  - Tenderness
  - Temperature
• Pulsatility
• Palpate contents of scrotum to ensure testis is present; if not the groin swelling may be an ectopic testis.
• Palpate the pubic tubercle and try to assess whether lump is likely to be an inguinal or femoral hernia:
  o Femoral hernia below and lateral to pubic tubercle
  o Inguinal hernia above and medial to pubic tubercle
• If inguinal hernia try to assess whether direct or indirect
  o Ask patient to lie down
  o Ask them to reduce their hernia
  o Apply pressure to the deep inguinal ring
  o Ask the patient to turn away and cough
  o Observe for re-emergence: suggestive of a direct hernia

Watch the patient reduce their hernia. If they reduce in a supero-lateral direction it may be an indirect inguinal hernia, if they reduce supero-medially it is more likely to be a direct inguinal hernia.

Common Cases

1. Inguinal Hernia
2. Femoral Hernia
3. Lymph Node

At this point offer to continue by examining the scrotum...

Inspection

• Wear gloves!
• Penis:
  o Check shaft
  o Retract foreskin
  o Check meatus
• Scrotum:
  o Swelling
  o Scars
  o Erythema
  o Ulcers

Ensure you inspect the posterior surface and BOTH sides of the scrotum
Palpation

- If no mass on inspection...
  - Using two hands palpate each testis
    - Size
    - Smoothness
  - Feel the posterior superior pole
    - Tenderness
    - Enlarged epididymis (this should normally be barely palpable)
  - From the epididymis palpate superiorly using the thumb and forefinger around the neck of the scrotum feeling for the spermatic cord
- If mass on inspection...
  - Start with the normal side and examine as above
  - Then palpate the mass, have in mind three key questions:
    1. Can I get above it?
    2. Can I feel the testis separately?
    3. Does it transilluminate?

**Constantly enquire about pain during the groin and scrotum examination**

“To complete my examination…”

- Offer to transilluminate
- Ask the patient to stand to rule out a varicocele
- Complete a full abdominal examination...and a full examination to assess fitness for surgery

Thank, Cover, Look away

Common Cases

1. Inguinal hernia
2. Hydrocele
3. Epididymal cyst
4. Varicocele
Likely Questions

- What is the definition of a hernia?
- What is the anatomy of the inguinal canal?
- Compare indirect and direct inguinal hernias?
- Compare femoral and inguinal hernias?
- What are the differential diagnoses for a groin lump?
- What are some complications of a hernia?
- What are the different types of hernia?
- How would you investigate a scrotal mass?
- Classify the causes of a hydrocele?
- Describe the anatomy of the scrotum
- What vessels are within the spermatic cord?
- What is the lymph drainage of testicular tumours?
The OSCE2 is composed of 5 15-minute stations. Stations comprised:
1. Medical History
2. Surgical History
3. MDD History
4. Ethics or Communications station
5. Ward-based station

The history stations are with a real patient, hopefully appropriately briefed, and an examiner listening to the history taking for 12 minutes, then 3 minutes to question you.

The “Ward based station” is a bit of a wild card. It was billed as “something you would be expected to do as an F1”, e.g. discuss a Discharge summary, however conceivably anything is possible.
History-taking Stations

At first glance you’d think we can all take a history, but many people failed these stations. These stations’ scenarios are in out-patient clinics with real patients. Whatever the scenario, e.g. “please assess this patient’s suitability for commencing Insulin...” - - just take a history (with one eye on the extra aspect of the scenario).

Please note these are chronic histories, so you need to capture the full chronology of the disease from initial symptoms, investigations, medications & side-effects up to a now (along with how all those have changed over time)

HI-PE

General Points
You will be marked on many aspects which reflect the overall impression you give, so when practicing pay attention to your:

- General approach to patients – do you project that atmosphere that will result in the patient giving you the thumbs-up to the consultant after you have left the room?
- Questioning – start with the welcoming open questions and then start to politely close it down.
- Sequencing – Is there an obvious logical order to your questions? Feel free to use “sign-posting” both for the patient and for the examiner so they can’t fail to notice your organised structure.
- Language – Is your language appropriate and jargon free?
- Patient centred – Have you got any questions you’d like to ask? Any other ideas, concerns or expectations (ICE)?

Content
- Patient Demographics - Name, age & occupation – You will look stupid if it turns out they were a coal miner.
- Details of how and when the original diagnosis was made
- Original treatment and how treatment has developed/changed
- Compliance with treatments
Side effects experienced
Current symptoms and severity – remember SOCRATES of course.
Past and current complications
Hospital admissions, investigations, surgeries
Monitoring of disease progression – this could be blood sugar measuring, peak flow, Crohn’s flare-ups?
Past medical history
Past surgical history

Don’t forget that rheumatological and orthopaedic conditions can be quite limiting, so be sure to ask about how it limits their life and their ADLs. Is it having a psychological impact?

Risk factors – As part of your PMH you will obviously ask about smoking and drinking, but now for whatever condition being the subject of the station – are there any added risk factors you should ask about? Are there any factors you have already asked about that you should tie into your chronology (such as smoking and ulcerative colitis?)
Co-morbidities – if its a patient with Diabetes, ask about micro- and macrovascular complications. If its IBD, ask about extra-intestinal features.

The last 3 minutes...
At the end of 12 minutes a bell will go, you should thank your patient and then present a summary to the consultant. They have already heard (and hopefully ticked) most of the points above, so your presentation should probably be short and slick.
Interpretation of the history is an interesting one. Some found the patient had been briefed not to mention the name of their condition and this was what the consultant wanted to tease out of you – others the patient blurted it out in the 1st 2 minutes.
• What were the key points in the history?
• The question from the scenario – The consultant will ask about the question prompted in the scenario. Examples include: a patient with poorly-controlled type 2 DM on oral medication – should they go onto Insulin?; an IBD patient with a long history – what operation have they just had? And what else would have been on the differential given their symptoms?; an RA patient – is there any indication of active inflammation and how could you optimise their treatment or offer alternatives?; back pain – any red flags? (don’t get too hung up on these, it seems the main thrust is to assess whether you can take a good history in clinic next year, so there was only 2 marks for actually answering the question posed).
The Ethics & Communications stations used to be squeezed into 6 minute OSCE1 stations.

The OSCE2 format gives you a vignette setting the scene - you will be acting as a junior doctor. The entire 15 minutes is a discussion with the actor, so the station requires you to demonstrate your knowledge of ethics & the law through use of your communication skills. The examiners expect more from you than being able to name the 4 Ethical principles, but you could be ready with stock phrases to demonstrate each one, e.g. “some drugs can have dangerous side-effects and I have a duty to prevent harm to you”.

In 2011 the Comms team obviously went to a lot of effort and produced 5 separate scenarios. Practice is required, with consideration of:

- The patient’s capacity
- The cultural and religious ideas/situation
- The feelings and emotions of those involved
- The society they live in
- Laws

Have a robust structure so that you can form a thorough answer regardless of the scenario. Previous years have used KIEVS (Key issues, Individuals involved, 4 Ethical principles, 4Cs (a bit like an E) – consent, confidentiality, capacity, children, Viewpoints of the individuals & Solutions you propose. (This suits ethical discussion scenarios, so not as useful here).

Medical knowledge is not being tested. Even if you are not familiar with a certain condition the focus of the station is on your ability to identify and discuss the ethical dilemma. If in doubt, think “what would I say as an F1?” – would you play it safe, not-commit yourself and ask your senior?

Always try to remember to use ‘ICE’ - Ideas, Concerns and Expectations.

Possible types of scenario:

- Explanation
- Breaking bad news
- Addressing/exploring a patient’s concerns
- Dealing with an angry patient/relative
- Tricky clinical scenarios (the pt wanting Librium, the parents whose child has some troubling bruises)
Introduction

- Shake hands and introduce yourself
- Make eye contact
- Smile
- Look at patient’s body language
- Listen to their tone of voice

Open questions

- “What brings you here today?”
- “Is there a problem I can help you with?”
- “What seems to be the trouble?”
- “Do you know why you’re here today?”
- “Tell me about your problem”

Identify the ethical dilemma

- What is the problem in the scenario?
- Who is involved?
- What is their role i.e. patient, carer, healthcare professional?

Applying the 4 ethical principles

- Autonomy

“Treating the patient according to their wishes as far as possible and allowing them involvement in their own care”

- Remember to consider capacity because this can affect a patient’s autonomy
- Basic capacity assessment:
  - Can the patient understand the information given?
  - Can the patient retain the information given?
  - Can the patient recall the information given?
  - Can the patient make a rational decision based on the information given?

Remember capacity is ‘decision specific’ i.e. someone may have the capacity to choose the type of sandwich they want, but not whether they want a specific medical treatment or not.
• Beneficence - “Doing good for the patient"
  o This can in fact be the withdrawal of treatment if it would end unnecessary suffering for the patient i.e. blood tests on a patient on the ‘Care of the Dying’ pathway
• Non-Maleficence - “Doing no harm"
  o Avoid harmful practice e.g. an operation where the patient is at high risk from the anaesthetic
  o Consider risk/benefit analysis before a potentially harmful decision is made
• Justice
  o Are the actions legal?
  o Is the treatment just?
    ▪ Does it cause detriment to others? I.e. using a very expensive treatment for one patient and therefore depriving resources from other patients?
  o Does political policy play a role?
    ▪ e.g. The so called ‘Postcode Lottery’ – where certain Primary Care Trusts fund treatments, which others don’t

Exploration of concerns

• “What would you like me to do for you today?”
• “How can I help you with this problem?”
• “Is there anything else/in particular bothering you?”

Explanation to patient

• Establish the patient’s initial knowledge/understanding
• Do not use jargon
  o If you have to, explain the word/term first and check the patient is happy with it
• Diagrams can be helpful
• Once you have explained something get the patient to repeat back what they have understood from the conversation

Aggressive patients

• Do not raise your voice
• Do not take it personally
• Reflect back what you are seeing: “I can see that you’re feeling angry / upset about things”
• Try to find out the cause of their aggression, it may not be what you are expecting
  o “Is there anything specific that is upsetting you?”
  o “Are there any other issues contributing to this?”
  o “What can I do to help with this problem/make this better for you?”

Breaking bad news

• Ask what the patient/relative already knows
• Ask them what they are expecting
• If they are alone ask if they would like anyone with them
• Do not use jargon
• Be upfront and honest with the patient
• Allow pauses/silences when appropriate
• Body contact can be appropriate here if you feel you want to use it, e.g. hand holding
• If they cry offer them some tissues and be empathetic
• Ask if they have any questions/want any information repeating

Culture, Religion and Society

• Identify the cultures of those involved
  o Does culture have any bearing on the decisions made/issues brought up?
• Religious beliefs
  o Are any of the individuals involved influenced by religion?
  o Does this cause any ethical issues?
    ▪ e.g. Jehovah’s Witnesses’ refusing blood transfusions
• The society the scenario is set in
  o Are there any societal pressures affecting the situation

Feelings and emotions

• Describe the feelings and emotions of those involved e.g. fear, guilt or grief
• Do these influence any part of the scenario? E.g. relatives not wanting to withdraw treatment
• How does the scenario make you feel?
Bringing it all together

- Identify the dilemma and questions raised by the issue
- Talk through the scenario using a structured approach (such as the one above)
- Try and end with possible outcomes to the situation

Closing the scenario

- Talk about the ‘next step’
  - Further investigations
  - Follow-up appointments/referrals
  - Other resources e.g. literature, other healthcare professionals
- Offer written information to take home e.g. leaflets
- Agree the plan with the patient
- Appropriate closing. If you run out of time, don’t just up and leave! (there are marks available) – say something like “I’m very sorry I’ve been called away and have to leave now. Are you going to be all right? Shall I send my colleague in to talk to you?”
Notes
**Discharge Summary Station**

The final OSCE2 scenario was billed as "something you’d be expected to do as a newly qualified F1". This could well change each year, but 2011’s scenario was Discharge Planning - a brief scenario about a patient on your ward, they are now fit for discharge, what would you like to consider?

**HI-PE**

**Structure**

The best way to do any of these stations is to have a sensible structure – helps you remember what to ask, and make you sound organised. I would recommend a chronological order for this station – pre-admission, admission, current status, post-discharge...

**Pre-admission**
- Patient status & Mobility
- Any significant Medical History
- What medication were they on?
- What was their Nutritional status - BMI, DM?
- Social – Did they receive any support in the home? (From who?). Did they get financial help?
- Housing – Did they manage stairs?, live in a flat?, manage the walk to the front door?, warden-assisted? Are they independent of their ADLs? Meals on wheels?

**Current status –**
- Current health / medically fit (yes)
- What were they admitted for (usually given in the scenario)? What operation/procedure did they undergo? Any complications?
- What medication was started in hospital? Has any medication been changed (stopped, reduced)? Has the route of administration been altered?
- Nutritional status now – lost weight?
MDT

Obviously you need to involve and consult a wide variety of members of the MDT. I would recommend you mention at least 4 professionals, and why (and make it relevant to the case). For example...

- A dietician to address the patient's nutritional status (so identify their role as well as naming them).
- Don’t forget the pharmacist & psychiatrist

Discharge

- Is there family / carers / social services involvement? What do they know? Are they involved?
- Are the patient and family informed about discharge? Are they happy to go home? Is the accommodation still suitable? Is it ready (OT etc)?
- Is the patient mobile?
- How are they going to get home? Can the family take them home, get a taxi, or order patient transport?

After discharge

- You should identify some follow-ups as a result of their presenting complaint and problems which have been identified since admission (at least 4).
- Again, you would want to say why as well, e.g. District nurses to assist with dressings in the community.
- Paperwork – is all the paperwork in order -- interim discharge summary, drugs TTO
- GP letter – Have all the medication changes (route, additions & substractions) been recorded for the GP?
- Primary & secondary prevention - drinking, smoking, BMI, diabetic control – have all these factors been addressed?

Overall –

- Did you present this with a logical structure?
- Did you consider all the Bio-psycho-social aspects?
The rehabilitation station should not be underestimated. It was not used in 2011 but could be dusted off for OSCE2 – It is kept here just in case (this is not a hint – I have no idea here).

It will probably involve analysing photos that highlight rehabilitation issues. You will then be asked to comment on the different parts of a rehabilitation assessment and consider a rehabilitation strategy.

It is important that you have a good understanding of what ‘Impairment’, ‘Activity’ and ‘Participation’ actually mean.

There are many possible cases to prepare for; the scheme below is a general way to approach the station

Rehabilitation

“The development of a person to his/her fullest potential within the limitations of his/her underlying condition and the resources available”

The backbone of assessing rehabilitation is **P.A.P.E.R**, which identifies the areas of focus for the multidisciplinary team (MDT).

**Pathology**

**Activity**

**Participation**

**Environment**

**Risks**

Pathology

- This refers to body structures and physiological functions
- It is the physical disorder from which the patient suffers; their diagnosis e.g. stroke.
- It also includes the anatomical or physiological impairment secondary to that diagnosis e.g. ataxia, weakness, diplopia, spasticity, impaired cognition
Participation

- It is very important you know the difference between participation and activity
- Participation is how the activities a person can or cannot do impact on their ambitions and motivations. These are individual to each person.
- It can be summarised as ‘soul, roles and goals’
  - Soul
    - What motivates that person; their reasons for living
    - Consider religious beliefs
  - Roles
    - Family: relationships with partners, children and extended family
    - Others: friends and colleagues
    - Work and career aspirations
    - Education
    - Leisure: sports and hobbies
  - Goals
    - These are the short and long term aims for that individual

A good example of activity limitation is not being able to wash, this would make it difficult for them to get ready before going out with friends and therefore affect their ability to participate.

Environment

- Environment has a large impact on people’s activity and participation. It should be thought of as ‘who, where and what’
  - Who
- Attitudes of family, friends, employers, teachers
- Legislation (Disability discrimination Act, Human rights Act)
  - Where
    - Home, work, school
  - What
    - Equipment

Risks

- From the primary pathology e.g. complications such as contractures in stroke patients
- To self e.g. change in body image or mood
- To others e.g. injury to carers during transferring

Management

- Rehabilitation management is dependent on two factors:
  1. Performance: the patient’s current ability
  2. Capacity: the potential for that patient, in view of their current performance and the resources available

\[
\text{Capacity (potential)} = \text{Performance} + \text{Optimal Rehabilitation}
\]

- Goals are then decided between the patient and MDT and methods are devised to achieve those goals.
- Goal setting should follow the S.M.A.R.T acronym

**S**pecific: goals must be aimed at the activities affecting that person’s participation
**M**easurable goals: so that staff and patients are aware when goals have been achieved
**A**chievable: where function is unlikely to return compensatory strategies must be emphasised
**R**ealistic: when considering their primary pathology
**T**ime scale: this depends on their progress
Common Cases

1. Traumatic brain injury, stroke, MND, PD or MS
2. Gait abnormalities
3. Pressure sores
4. Orthoses and aids
5. Amputees

Likely Questions

- Discuss any activity or participation related complications in this case
- What are the avoidable complications of this patient’s pathology/environment?
- How do we grade activity limitations?
- What aids are available to a patient with...?
- Discuss the aetiology, assessment, risk factors and management of pressure sores