OSCE-Aid Presents:

Common Cases: Orthopaedics
Orthopaedic Stations

1) Shoulder pathology
2) Hand pathology
3) Knee pathology
4) Hip pathology
Key Shoulder Pathologies

Chronic stable conditions

- Osteoarthritis
- Rotator Cuff Injury/Impingement
- Frozen Shoulder

Acute problems

- Dislocation
- Fracture
Rotator Cuff Injury

Patient Demographics:

- Young, athletic man
- Older person with a recent history of minor trauma

SIGNS

- Pain on palpation of the joint, non specific location
- Pain on active movement of the joint, further passive movement
- Unable to move joint all together due to pain
Impingement

• “Painful Arc Syndrome”
• Decreased active range of movement
• Further passive movement is painful

• Low/mid/high arc impingement can indicate pathology
Subacromial impingement

The most commonly injured/impinged structure is the supraspinatus under the acromion.
Special tests

Supraspinatus

- Pain is exacerbated with the empty can test:
  - Arms abducted to 90° and moved 20° towards midline
  - Arms internally rotated so the thumbs are pointing downward
  - Push “up” against the examiners hands which are placed on top of the wrist
Special tests

• Subscapularis
  – Gerber’s lift off/belly press test

• Infraspinatus & Teres minor
  – External rotation against resistance
Present your findings:

“This 20 year old cricket player has pain on active movement of the shoulder joint, and is unable to initiate abduction unaided by other muscles. This pain is exacerbated by the empty can test. My top differential is a supraspinatus injury.”
Top questions: (1)

What are the four muscles of the rotator cuff and what are their actions?

**Supraspinatus** - Abduction
**Subscapularis** - Internal rotation
**Infraspinatus and Teres Minor** - External rotation
Top questions: (2)

How do you investigate and manage this type of injury?

- Plain XRs to rule out fracture
- MRI or MR arthrogram

Conservative, Medical and Surgical

- Analgesia
- Physio
- Cease high intensity exercise
- Arthroscopic or open repair
Orthopaedic Stations

1) Shoulder pathology
2) Hand pathology
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Rheumatoid Arthritis

Patient demographics:

- Middle aged to elderly woman
- Smoker
- Signs of steroid treatment
Rheumatoid Arthritis - signs:

1. **Boutonniere deformity** – flexed PIP with hyperextended DIP

2. **Swan neck deformity** – hyperextended PIP with flexed DIP

3. **Z–thumb deformity** – fixed flexion and subluxation of the MCP thumb joint, and hyperextension of the thumb IP joint
Rheumatoid Arthritis - signs:

4. **Ulnar deviation** and palmar subluxation of the MCP joints

5. Wasting of the small muscles of the hand ("**ulnar guttering**")

6. **Radial deviation** and subluxation of the hand at the wrist

7. **Joint replacements scars** (typically over the MCP joints)

8. **Rheumatoid nodules** – small firm subcutaneous nodules, typically best palpated over bony prominences (e.g. over knuckles)
Remember:

1) You are looking for signs of active synovitis – is there evidence of a red, hot, swollen tender joint?

2) RA typically spares the DIPs whilst osteoarthritis often affects the DIPs. Osteoarthritis may provide Heberden’s nodes (DIP) and Bouchard's nodes (PIP)

3) Assess for function of the hand – power grip, pinch grip, tripod, key grip, hook – as related to daily tasks
Present your findings:

“These findings are consistent with symmetrical peripheral deforming polyarthropathy but there are no signs of active synovitis”

“My top differential for this pattern of arthropathy would be rheumatoid arthritis but SLE and psoaritic arthropathy could also present in a similar way”
Top questions:

1) What is RA?
*Multisystem inflammatory autoimmune disease characterised by symmetrical peripheral deforming polyarthritis.*

2) What is rheumatoid factor?
*IgM against the Fc portion of IgG*

3) Who gets RA?
*Common disease – affecting 1% of the population.*
*More common in women and more common in smokers.*
*Peak incidence 5th and 6th decades.*
Top questions:

4) What are the extra articular manifestations of RA?

- Rheumatoid nodules
- Pulmonary disease inc. fibrosis, pulmonary nodules (Caplan’s syndrome), pleuritis and pleural effusions
- Pericarditis
- Felty’s syndrome (splenomegaly + neutropaenia)
- Anaemia of chronic disease
- Ophthalmic involvement - scleritis and episcleritis, Sicca syndrome
- AA Amyloid disease
Investigations for RA:

“I would like to order blood tests, looking for”:

1. FBC – Anaemia of CD / thrombocytosis / Felty’s
2. ESR and CRP - increased in active synovitis
3. RF - +ve in 80%, is not a diagnostic test, but is a prognostic indicator - high titre associated with severe disease
4. Anti CCP – worse prognosis
5. U&Es and LFTs – baseline before commencing treatment
Investigations for RA:

“I would like to request an X rays of the affected joint to assess for”:

1. Soft tissue swelling
2. Loss of joint space
3. Juxta articular erosions
4. Periarticular osteopenia
Assess deformity further i.e subluxation of joints
Treatment for RA:
Treatment for RA:

“Management options for RA can be broadly divided into: conservative, medical and surgical options”

Conservative management:

1. Education about the disease and information about access to information and support groups
2. Exercises with physiotherapy input to maintain joint movement and muscle strength
3. Occupational therapist input to ensure patient has appropriate aids for ADLS.
Treatment for RA:

**Medical management:**

1) NSAIDS and steroids: useful to control symptoms of acute synovitis...

   ...but do not alter the course of the disease.

2) DMARDS

   - Methotrexate is typically first line
   - Should be started asap following diagnosis
   - Take 6-8/52 to take full effect therefore should be covered initially with steroid
   - Monitoring is essential because of side effects
Treatment for RA:

Medical management:

3) Biological agents
   - E.g. Infliximab and Etanercept
   - Derived from antibodies
   - Indicated for DMARD refractory Rheumatoid Arthritis
     (2 failed trials of DMARDS)
Surgical Management:

1) Synovectomy

2) Tendon transfer or repair an ligament release

3) Joint arthoplasty (commonly MCPJ, also wrist)

4) Joint arthrodesis – fusion of the joint e.g. wrist, CMCJ, PIPJ
Orthopaedic Stations

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Key Knee Pathologies

Chronic stable conditions:
• Post Total Knee Replacement
• Osteoarthritis
• Rheumatoid arthritis

Other conditions:
• Cruciate Ligament
• Meniscal Tear
Osteoarthritis of the Knees

Patient Demographics:

- Elderly
- Female
- Large BMI
- OA of other joints
Osteoarthritis of the Knees

Usually affects both knees (often asymmetrically)

**SIGNS**

- Walking aids
- Varus deformity of the knees (medial OA)
- TKR Scars (midline)
- Arthroscopy scars
Osteoarthritis of the Knees

- Knees swollen
- Pain on flexion and extension
- Limited range of movement
- Effusion
- Crepitus
- Generalised laxity in all ligaments
Present your findings:

“This lady has a **swollen** left knee which is minimally **tender** on palpation and movement. She has an **old midline scar** on the right knee. She is able to **mobilise using one stick** and appears systemically well. My top differential is an **osteoarthritic knee**.

I would like to **examine** the hip and ankle and obtain **AP and lateral radiographs** of the knee.”
Top questions: (1)

What are your differentials?

- Osteoarthritis
- Rheumatoid arthritis
- Gout / Pseudogout

“In the acute setting, I would also consider…”

- Septic joint
- Fracture
Top questions: (2)

What are the causes of osteoarthritis?

Primary osteoarthritis (wear and tear)

• Risk factors:
• Age
• Female Sex
• Joint surface injury
• Anything resulting in abnormal load bearing on the joint e.g. Obesity, occupation etc

Secondary osteoarthritis

• Septic joint
• RA
• Fractures
• Connective Tissue Disorders
• Metabolic disorders
Top questions: (3)

What signs would you see on an x-ray?

- Loss of Joint Space
- Osteophytes
- Subchondral Sclerosis
- Subchondral Cysts

Remember the acronym LOSS
Orthopaedic Stations

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Key Hip Pathologies

Common

• Total Hip Replacement
• Previous neck of femur fracture
• Osteoarthritis

Acute conditions:

• Fracture
• Periprosthetic Fracture
• Prosthesis dislocation
Hip arthroplasty

Patient Demographics:

– Elderly
– Reduced Mobility
– High BMI
– OA of other joints
Hip arthroplasty

SIGNS

• Walking aids (opposite side) / antalgic gait
• Scars: antero-lateral, posterior
• Abductor weakness (*Sound Side Sags*)
• Reduced range of motion (particularly internal and external rotation)
Abductor Weakness

- Positive Trendelenburg sign

- Weakened from OA

- Weakened from Antero-Lateral approach (Gluteus medius and minimus removed and reattached)
Present your findings:

“This elderly lady has bilateral surgical scars on both hips. She is able to mobilise using a stick but has marked abductor weakness bilaterally. She is likely to have had bilateral hip replacements due to severe osteoarthritis.

I would like to examine the knees and the lumbar spine and review AP and lateral radiographs of the pelvis and hips.”
Top questions: (1)

Which prosthesis are used and when?
• Elective – total hip replacement only
• Intracapsular fractures
  – THR: if mobile and active
  – Hemiarthroplasty: if comorbidities

80 000 hip fractures per year in UK
  10% 1-month and 30% 1-year mortality

VERY IMPORTANT FOR EVERYONE
Top questions: (2)

How else may hip fractures be treated?

– Dynamic hip screw
– Cannulated hip screws
– Intramedullary nailing