



Royal Medical Services
Orthopaedic Department

Orthopaedic & Trauma Surgery
Resident's
Syllabus & Logbook

Curriculum

Theme 1 – Knowledge

K.1 General Orthopaedic

Basic Science

All trainees must be able to competently apply the knowledge of basic science when interpreting clinical investigations and in the practice of orthopaedic surgery.

Anatomy:

All trainees must be able to describe the anatomy of the musculoskeletal system and neuroanatomy with special emphasis on applied anatomy relevant to clinical methods of assessment and management in orthopaedic practice. This applies in particular to:

- 1 Anatomy and embryology of musculoskeletal system
- 2 Anatomy of nervous and vascular systems
- 3 Clinical and functional anatomy with pathological and operative relevance
- 4 Surgical approaches to the limbs and axial skeleton

2 Tissues:

All trainees must be able to describe normal histological structure and function of musculoskeletal tissue. They must apply this knowledge when interpreting clinical symptoms, signs and investigations in the practice of orthopaedics.

- 1 Cellular and molecular biology
- 2 Bone
- 3 Cartilage - articular, & meniscal
- 4 Muscle and tendon
- 5 Synovium
- 6 Ligament
- 7 Nerve
- 8 Intervertebral disc

3 Physiology, Biochemistry & Genetics:

All trainees must be able to discuss physiology, biochemistry and genetics related to orthopaedics. They must apply this knowledge when interpreting clinical symptoms, signs and investigations in the practice of orthopaedics. This applies in particular to:

- 1 Bone homeostasis, metabolism and hormonal regulation
- 2 Physiology of cartilage
- 3 Bone grafts, bone banking and tissue transplantation
- 4 Shock - types, physiology, recognition and treatment
- 5 Metabolic and immunological response to trauma
- 6 Blood loss in trauma/surgery, fluid balance and blood transfusion
- 7 Application/relevance of modern genetics to orthopaedic disease and treatment

4 Biomechanics & Bioengineering:

All trainees must be able to describe biomechanics and bioengineering related to orthopaedics. They must apply this knowledge in the practice of orthopaedics. This applies in particular to:

- 1 Biomechanics of musculoskeletal tissues
- 2 Biomechanics of fracture fixation
- 3 Tribology of natural and artificial joints
- 4 Design of implants and factors associated with implant failure (wear, loosening)
- 5 Kinematics and gait analysis
- 6 Biomaterials

Bone & Joint Diseases

General Diseases

All trainees must be able to describe and categorize the pathology of bone and joints. They must apply this knowledge appropriately when interpreting clinical symptoms, signs and investigations in the practice of orthopaedics.

This includes:

Metabolic bone diseases, osteoarthritis, osteoporosis, rheumatoid arthritis and other arthropathies (inflammatory, crystal, etc), haemophilia, inherited musculoskeletal disorders, neuromuscular disorders (inherited and acquired), osteonecrosis, osteochondritis, and heterotopic ossification.

Infections

All trainees must be able to classify different infectious diseases of bone and joints, and soft tissue, and describe their pathogenesis. They must be able to identify the common causative organisms and be able to apply this knowledge appropriately when interpreting clinical symptoms, signs and investigations and identify available therapeutic options and preventative measures.

Orthopaedic Oncology

All trainees must be able to:

- 1 Identify & describe the presentation, radiological features, pathological features, treatment and outcome of orthopaedic benign and malignant bone and soft tissue tumours.
- 2 Explain the principles of management of patients with metastatic bone disease in terms of investigation, prophylactic and definitive fixation of pathological fractures and oncological management

Thromboembolism & Pain:

All trainees must be able to identify & describe the different aspects & principles of the following:

- 1 Thromboembolism and prophylaxis
- 2 Pain and pain relief
- 3 Complex regional pain syndromes e.g. Reflex Sympathetic Dystrophy and Causalgia

Investigations:

All trainees must be able to:

- 1 Explain the range of investigations available, and the circumstances in which they are used.
- 2 Select appropriate investigations and recognise when further action is required.
- 3 Recognize the limitations of the investigation and the implications of a positive or negative test result.
- 4 Recognize the possible discomfort and distress and risks to which the patient may be exposed during the test

Recognize the cost and localize the resources involved.

This applies in particular to: Blood tests. Musculoskeletal imaging: x-ray, contrast studies (myelography, arthrography), CT, MRI, ultrasound, radioisotope studies and the effects of radiation, bone densitometry and electrophysiological investigations

5 Operative Topics:

All trainees must outline the different aspects of design of operating theatre and their application. They must be able to determine the possible discomfort and distress and risks to which the patient may be exposed pre/intra/post operatively. This applies in particular to:

- 1 Pre- Operative assessment
- 2 Tourniquets
- 3 Operative theatres (Design, Circulation & Ventilation)
- 4 Anaesthesia - principles and practice of local and regional anaesthesia and principles of general anaesthesia
- 5 Postoperative assessment and care

6 Infection prevention & control

All trainees should be able to describe the standards guidelines, and protocols for infection control and prevention in the orthopaedic setting, including:

- 1 Standard precautions
- 2 Aseptic techniques
- 3 Antiseptics and disinfectants
- 4 Sterilization
- 5 Antimicrobial policy
- 6 Surgery in high risk patients with blood-borne viruses (HBV, HCV, HIV) and their ethical implications for healthcare workers.

7 Prosthetics & Orthotics:

All trainees must be able to recognize the principles of:

- 1 Design of standard prostheses
- 2 Prescription and fitting of standard prostheses
- 3 Orthotic bracing for control of disease, deformity and instability

8 Research & Audit in orthopaedic practice:

All trainees should be able to explain the principles and application of:

- 1 Design and conduction of clinical trials
- 2 Data analysis and statistics
- 3 Epidemiology

4 Evidence based medicine

5 Audit

K.2 Trauma General

Basic Science

All trainees must recognize the basic science (anatomy, biomechanics & pathology) applied to diagnosis and surgical treatment of common bone, joint and soft tissue injuries. This applies in particular to:

Anatomy:

- 1 Anatomical structures particularly at risk from common injuries or in surgical approaches
- 2 Physical anatomy and its application to injury.

Biomechanics:

- 1 Fracture pattern and fracture treatment both operative and non-operative.
- 2 Open reduction and internal fixation of fractures and external skeletal fixation.
- 3 Biomechanics of implants and fracture fixation systems, including their material properties.

Pathology:

- 1 Systemic response of body to major injury.
- 2 Response of infants, children and the elderly to injury.
- 3 Science of fluid replacement therapy in the acutely injured.
- 4 Classification systems for fractures and dislocations.
- 5 Bone and soft tissue healing, including skin, muscle, tendon and neurological structures.
- 6 Pathogenesis of compartment syndrome.
- 7 Mechanisms underlying Acute Respiratory Distress Syndrome and similar life threatening conditions.
- 8 Response of the body, and local musculoskeletal tissues to infection.
- 9 Pathology of non-union of fractures.

Clinical Assessment:

All trainees must be able to discuss:

- 1 the clinical assessment of the patient with severe injury, including spinal cord injury, soft tissue injury, burns and head injury.
- 2 The assessment of all types of fractures and dislocations, their complications, early and late.
- 3 The life & limb threatening injuries and priorities of treatment.

Investigations:

All trainees must be able to describe the principles, application and side effects of commonly used investigations, including radiographs, CT and MRI scans, radio-isotope imaging, ultrasound scans and electrophysiological investigations.

Treatment:

By the end of the training program all trainees must be able to:

- 1 Categorize different treatment options for musculoskeletal injury, both non-operative and operative.
- 3 Explain the principles necessary to plan the overall care of the severely injured
- 4 Outline and justify the treatment of all types of common fracture and dislocation including the bone and soft tissue treatment of open fractures and the treatment of pathological fractures
- 5 Design the initial management and treatment of patients with common injuries that are normally treated by a subspecialist (e.g. spinal injury, arterial injury or intra cranial haemorrhage) and outline the principles of the specialist treatment.
- 6 Explain the principles of reconstructive surgery for the injured, including treatment of non-union and mal-union of fractures, bone defects, chronic post-traumatic osteomyelitis, principles of soft tissue reconstruction and delayed treatment of nerve injury
- 7 Identify the principles of amputation in the injured and the rehabilitation of such patients.

K.3 Hip

Basic Science

Anatomy:

All trainees must be able to describe:

- 1 The regional anatomy of the hip including: Development of the hip joint, relationship of bony elements, blood supply of the femoral head, anatomical course of all major regional vessels and nerves and the capsule, labrum and related ligaments.
- 2 The action, anatomy and innervations of the regional musculature
- 3 The applied anatomy of common surgical approaches to the hip (medial, anterior, lateral and posterior).

Biomechanics:

All trainees must be able to:

- 1 Describe the lever arms, muscles and body weight forces that produce the joint reaction force in both normal and abnormal hips and their application to the rationale of both pelvic and femoral osteotomies, and replacement arthroplasty.
- 2 State the tribological properties of materials used for articulating surfaces.
- 3 Recognize the biocompatibility and mechanical properties of materials in common use in total hip arthroplasty.

Pathology:

All trainees must be able to:

- 1 Describe the pathology of pyogenic and non-pyogenic arthritis, slipped capital femoral epiphysis [SCFE], Perthes' disease and hip dysplasia.
- 2 Explain the mechanism and pattern of common fractures and fracture dislocations around the hip (intracapsular, extracapsular, acetabular and periacetabular, femoral head, etc).
- 3 Describe the pathology of osteoarthritis, rheumatoid arthritis and the seronegative arthritides at the hip and of osteonecrosis of the femoral head.
- 4 Explain the current theories of the aetiopathogenesis of osteoarthritis.
- 5 Explain the microbiological rationale for the prevention of sepsis in total hip arthroplasty.

Clinical Assessment:

All trainees must be able to:

- 1 Discuss the clinical assessment of the hip, lumbosacral spine and knee. Particular reference should be paid to the gait, the Trendelenberg sign, limb length, loss of movement and deformity at the joint.
- 2 Interpret aetiopathogenesis, clinical presentation and appropriate investigation of:
 - 1 Proximal femoral fractures (intracapsular, extracapsular) and simple fracture dislocations of the hip
 - 2 Osteoarthritis and the inflammatory arthropathies
 - 3 Perthes' disease
 - 4 Slipped capital femoral epiphysis
 - 5 Infective arthritis

6 Osteonecrosis

7 Soft tissue conditions around the hip (snapping hip, gluteus medius tendonitis, etc)

All trainees should be able to identify the clinical presentations of and investigations required for:

1 Thesequelae of DDH and hip dysplasia

2 Thesequelae of SCFE

3 Juvenile chronic arthritis

4 Non pyogenic arthritis

5 The painful total hip replacement

Investigation:

All trainees should be able to:

1 Interpret plain radiographs, CT, and MRI of the hip region.

2 Recognize the value of dynamic arthrography, bone scintigraphy

3 Interpret proximal femoral and periAcetabular fractures. Also, interpret the mechanisms of failure of joint replacement and of periprosthetic fractures.

Treatment (Non-operative and Operative):

All trainees must be able to:

1 Discuss the principles of traction, bracing and Spica immobilisation.

2 Discuss the non operative aspects of the management of hip pathology

3 Discuss soft tissue surgery, osteotomy, arthrodesis and arthroplasty (excision and replacement).

4 Describe anterior, anterolateral, lateral and posterior approaches to the hip and of the complications associated with each

5 Describe internal fixation of proximal femoral fractures, hemi-arthroplasty for intra-capsular fractures, primary total hip replacement for OA and inflammatory arthropathies in the elderly, simple proximal femoral osteotomies.

6 Recognize and anticipate the potential complications (i.e. thromboembolism, sepsis, dislocation, etc) and explain the prevention and management of these complications.

7 Recognize the indications for, and principles of, complex proximal femoral osteotomies, hip arthroscopy, reconstruction of the hip in young adults (Juvenile chronic arthritis and hip dysplasia, etc.) and complex hip revision surgery.

8 Explain the management of complex Acetabular and pelvic fractures, complex periAcetabular osteotomies

9 Outline the place of modern technologies such as, joint resurfacing procedures minimally invasive hip replacements and computer assisted implantation in the management of hip pathology and the attendant risks and complications.

k.4 Knee

Basic Science

Anatomy: All trainees must be able to describe the regional anatomy of the knee including:

- 1 Surface anatomy
- 2 Neural and vascular structures and their relations with particular reference to standard anterior and posterior surgical approaches
- 3 Bones and articulations of the knee region
- 4 Functional anatomy of ligaments and supporting muscles
- 5 Innervation of the knee including controlling musculature
- 6 The extent and function of the synovium and bursae of the knee
- 7 The structure of the menisci, and articular cartilage.

Biomechanics:

All trainees must be able to outline:

- 1 The mechanics of the Patello-femoral mechanism
- 2 The medial and lateral compartments and their inter-relationship
- 3 The cruciate and collateral ligaments and other ligamentous and muscular supports
- 4 The function of the menisci and articular cartilage.

Pathology:

All trainees must be able to describe:

- 1 The mechanism of ligamentous, bony and combined trauma to the knee and healing potential
- 2 Arthritides, including degenerate wear, ageing changes and traumatic damage
- 3 Pathology of inflammatory disease and infection affecting the knee

- 4 The response of synovium to debris
- 5 Benign and malignant conditions in the knee and surrounding structures.

Clinical Assessment:

All trainees should be able to:

- 1 Compile data needed from clinical history taking and examination of the knee and include relevant surrounding structures
- 2 Describe the standard clinical signs and symptomatology of the knee and relevant adjacent structures.
- 3 Identify the rating and outcome measures in common use for knee diseases.

Investigations:

All trainees must be able to recognize the indications for and be able to interpret the following:

- 1 Radiographs – standard and specialised
- 2 Blood investigation
- 3 Aspiration
- 4 Special investigations including CT, MRI and radioisotope scanning,
- 5 Arthroscopy

Treatment:

All trainees must be able to select the conservative and surgical management, (including the indications for referral to a specialist) of:

- 1 Paediatric disorders, including deformity, dislocations, epiphyseal disorders, osteochondritis and discoid meniscus
- 2 Adolescent disorders including patello femoral and meniscal dysfunction, osteochondritisdissecans
- 3 Young adult disorders including patello femoral and meniscal injuries, instability and ligament deficiency, synovial disorders, benign and malignant tumours
- 4 Degenerative and inflammatory arthritis, including the balance between conservative and surgical options, including osteotomy, arthrodesis and arthroplasty

5 Traumatic disorders including skin and soft tissue injuries, fractures and dislocations of patella, tibia and femoral components, ligament ruptures and internal derangement of the knee, the conservative and surgical indications and detailed methods of treatment and the outcomes of conservative and operative management

6 Infections and inflammations of the bursae, intra-articular sepsis, prevention and management of sepsis in implant surgery.

All trainees should be able to:

7 Categorize the range of primary arthroplasties for patellafemoral, unicompartmental and total replacement of the knee with particular reference to secure bone anchorage, alignment, ligament stability and optimising range of movement; in addition, they must be able to discuss post-operative complications, their prophylaxis and management

8 State the indications for and techniques of revision arthroplasty particularly for aseptic and septic loosening

9 Discuss the place of simple arthroscopic surgery including meniscectomy, trimming and shaving

10 Recognize the complexity of arthroscopic procedures.

11 Describe the medical and surgical techniques available to repair and replace articular cartilage.

k.5 Ankle & Foot Surgery

Basic Science

Anatomy:

All trainees must be able to describe the regional anatomy of the ankle and foot including:

- 1 Bones and articulations
- 2 Ligamentous structures - ankle/hind foot/mid foot
- 3 Plantar fascia and MTP anatomy
- 4 Surface markings of neural and vascular structures
- 5 Tendon anatomy
- 6 Muscle compartments of the foot

Biomechanics:

All trainees must be able to recognize the:

- 1 Function of the lower limb and foot in gait
- 2 Ankle and Subtalar joint
- 3 Plantar fascia mechanisms
- 4 Tendon function
- 5 Orthoses and footwear

Pathology:

All trainees must be able to describe:

- 1 Arthritides: Degenerative joint disease and Rheumatoid foot disease
- 2 Neuropathy: Neuropathic joint and skin changes
- 3 Tumours: bony and soft tissues.

Clinical Assessment:

All trainees should be able to:

- 1 Compile data needed from directed history taking and clinical examination of the foot and ankle in order to assess pain, joint function, deformity, nerve, muscle and tendon function
- 2 Discuss the clinical presentation of the following diseases of the ankle and foot:
 - 1 Neurological disorders: Charcot joint, Morton's neuroma, Nerve entrapment, Neurological foot deformity
 - 2 Trauma: Evaluation of skin and soft tissue injury, Compartment syndrome, Recognition of all fractures and dislocations
 - 3 Ankle and hindfoot disorder: Hindfoot pain, Ankle instability, Heel pain, Degenerative disease of the ankle, Rheumatoid arthritis and Osteochondritis dissecans of talus
 - 4 Forefoot disorders: Hallux valgus, Hallux rigidus, Lesser toe deformities, Metatarsalgia, Inflammatory arthritis,
 - 5 Tumours and local foot swellings
 - 6 Diabetic foot
 - 7 Complex foot deformity: Flatfoot deformity – mobile and rigid, Cavus deformity, Residual congenital foot deformity

Investigations:

All trainees should be able to:

1 Recognize the role of Radiograph; standard foot and ankle views, CT, MRI and Scintigraphy in certain specific conditions e.g. infection, tumour, tibialis posterior rupture, osteonecrosis

2 Relate the place of electrophysiological studies in certain foot & ankle disorders e.g. tarsal tunnel syndrome.

Treatment: Non-operative and Operative

All trainees should be able to:

1 Explain the rationale for the use of footwear modifications, orthoses and total contact casting.

2 Select the appropriate closed and operative methods for management of fractures and dislocations of ankle, hind foot and forefoot.

3 Recognize common reconstructive surgical procedures for degenerative and inflammatory disorders of ankle and foot

4 State common amputations through foot and ankle.

k.6 Shoulder & Elbow

Basic Science

Anatomy:

All trainees must describe the regional anatomy of the shoulder including:

1 Detailed anatomy of the Sternoclavicular, Acromioclavicular, Glenohumeral and elbow joints to include the connecting bones, muscles and tendons acting across them, neurovascular supply, bursae and relationships to local structures

2 Surgical approaches: deltopectoral and posterior approaches to Glenohumeral joint; superior (McKenzie) approach to rotator cuff; and surgical approaches to the Acromioclavicular and Sternoclavicular joints

3 Structure and function of the above joints; and the static and dynamic stabilisers of the Glenohumeral and elbow joints

Biomechanics:

All trainees must be able to:

1 Identify the biomechanics of the shoulder and elbow

2 Distinguish various types of shoulder and elbow prostheses including the factors influencing design, wear and loosening

Pathology:

All trainees must be able to:

- 1 Describe and identify benign and malignant conditions affecting the shoulder girdle, elbow and surrounding soft tissues
- 2 Interpret the pathology of: Impingement and rotator cuff disorders, Instability of the shoulder and the elbow, Inflammatory and degenerative conditions affecting the articular cartilage and synovium, Infection, Adhesive capsulitis of the shoulder. The pathology of the stiff elbow, Disorders such as ulnar neuritis and tennis or golfer's elbow.

Clinical Assessment:

All trainees should be able to:

- 1 Compile data from history taking and examination of the painful, stiff or unstable shoulder or elbow
- 2 Categorize clinical tests used specifically to assess instability of the shoulder and elbow, rotator cuff disorders, the stiff shoulder or elbow and the use of local anaesthetic in assessment. Examples are the apprehension tests for shoulder instability, impingement signs and tests, Gerber's lift off test, Napoleon's sign, elbow instability tests, ulnar nerve assessment.
- 3 Recognize conditions causing referred symptoms to the shoulder and elbow (e.g. cervical spine diseases, entrapment neuropathies and thoracic outlet disorders).
- 4 Recognize common conditions affecting the shoulder including: instability, impingement, rotator cuff tears, adhesive capsulitis, osteoarthritis, rheumatoid disease, avascular necrosis, biceps tendon disorders, fractures of the proximal humerus and clavicle, and disorders of the Acromioclavicular and Sternoclavicular joints and scapula.
- 5 Recognize common conditions affecting the elbow including instability, osteoarthritis, rheumatoid arthritis, causes of stiffness, soft tissue problems such as medial and lateral epicondylitis, neuropathies and fractures around the elbow.

Investigation:

All trainees must be able to:

- 1 Describe the role of plain radiographs as used to assess shoulder and elbow disorders; including special views (e.g. Modified axial, Stryker notch, Supraspinatus Neer outlet and cubital tunnel views) required to assess adequately the conditions which commonly affect the

shoulder and elbow and interpret correctly normal and abnormal abnormalities on plain radiographs.

2 Recognize the value of ultrasound, arthrography, CT and MRI as used to assess the shoulder and elbow and describe straightforward abnormalities on CT and MRI (e.g. full thickness and partial thickness rotator cuff tears on MRI and the pathological anatomy of fractures around the shoulder and elbow using CT).

3 Explain the use and abuse of arthroscopy of the shoulder and elbow including description of normal and abnormal arthroscopic findings.

Treatment:

All trainees must be able to discuss nonoperative and operative treatment of:

1 Straightforward fractures and dislocations of the shoulder girdle and elbow.

2 More complex fractures including referral to specialist; examples of these might include four part fractures of the proximal humerus and complex intra-articular fractures of the distal humerus, upper limb injuries involving injuries to the brachial plexus.

3 Disorders such as recurrent anterior traumatic instability of the shoulder, rotator cuff impingement and small rotator cuff tears, adhesive capsulitis and Acromioclavicular joint pain.

4 Soft tissue elbow disorders such as lateral and medial epicondylitis and ulnar neuropathy.

5 The principles of management of tumours around the shoulder and elbow

All trainees must be able to recognize the principles and indications of:

6 Injection techniques for both the shoulder and the elbow.

7 Arthroscopy of the shoulder and elbow.

8 Prosthetic replacement of the shoulder and elbow (without the details of the surgical techniques).

K.7 Hand Surgery

Basic Science

Anatomy

The trainees must be able to describe the regional anatomy of the hand including:

1 The wrist/MCP/PIP/DIP joints and CMC joint of the thumb

2 The flexor and extensor mechanism of the fingers including interaction between extrinsic and intrinsic mechanism

3 The posture of the thumb in pinch, power and key grip

4 The nerve supply to the hand

5 The closed compartments of forearm and hand

Pathology:

All trainees should be able to describe:

1 The special circumstances associated with swelling and the effects of rising pressure in a closed compartment secondary to infection and injury

2 The special circumstances in which oedema causes fibrosis and permanent stiffness

3 Tendon injury and healing

4 Nerve injury and healing

5 The imbalances and deformities associated with inflammatory arthritis

6 The classification system for congenital hand disorders

7 Langers lines

8 Hand tumours (e.g. ganglion/enchondroma)

9 Dupuytren's disease

Clinical Assessment:

All trainees must be able to:

1 Compile data for clinical history taking and examination of hand and wrist in the assessment of tendons, distal radioulnar and radiocarpal joints

2 Discuss methods for eliciting median, ulnar and radial nerve function and disorders

3 Recognize patterns of presentation of common compressive neuropathies and brachial neuralgia

4 Discuss methods for assessing intrinsic and extrinsic motors in digits and recognize common deformities and deficiencies

5 Describe presentation of work-related hand disorders

6 Describe methods for examination and assessment of common rheumatoid hand deformities, e.g.: inferior radio-ulnar subluxation and carpal translocation; MCP subluxation and ulnar drift; digital Boutonniere and swan neck; thumb Boutonniere deformity and CMC disease

7 Explain methods for assessment of focal hand swellings

Investigations:

All trainees should be able to:

- 1 Interpret plain and stress x-rays of wrist and describe other views.
- 2 Identify the role of MRI/bone scan/arthrography/arthroscopy
- 3 Select electrophysiological studies and correlate them with clinical situation.

Treatment:

All trainees should be able to:

- 1 Describe a strategy of management for the osteoarthritic and rheumatoid hand.
- 2 Recognize the place of soft tissue reconstruction, joint fusion, interposition and excision arthroplasty in the treatment of the arthritic hand and wrist.
- 3 Outline the management of stenosing tenovaginitis
- 4 Describe the principles of treatment for common flexor and extensor tendon injuries and of the common surgical approaches to the digital flexor and extensor compartments
- 5 Describe the principles of treatment for fractures of metacarpals and phalanges
- 6 Explain the surgical treatment of Dupuytren's disease
- 7 State the treatment of common compressive neuropathy
- 8 Discuss the principles of tendon transfer for the reconstruction of median, ulnar and radial nerve palsy and describe simple transfers
- 9 Describe splinting techniques and rehabilitation principles
- 10 State the management of finger tip injuries
- 11 Describe surgical approach to digits with particular regard to the restoration of function and prevention of stiffness
- 12 Describe the levels for digital amputation
- 13 Identify treatment options for injuries of ulnar collateral ligament of thumb
- 14 Identify treatment options for dislocations of carpus and carpal instability

15 Discuss closed and operative options of treatment for fractures of distal radius and common carpal injuries including scaphoid non union.

16 Discuss the surgical techniques for treating hand infections

k.8 The Spine

Basic Science

Anatomy:

All trainees should be able to:

- 1 Recall the development of the spine
- 2 Describe the surgical anatomy of the cervical, dorsal and lumbosacral spine
- 3 Describe the surgical anatomy of spinal cord and nerve roots
- 4 Describe the anterior and posterior surgical approaches to the spine at each level

Biomechanics:

All trainees should be able to describe:

- 1 The biomechanics of the cervical and lumbosacral spines
- 2 The biomechanics of spinal instability as applied to trauma, tumour, infection and spondylolysis/listhesis
- 3 The biomechanics of spinal deformity
- 4 The basic mechanics of spinal instrumentation

Pathology:

All trainees should be able to describe:

- 1 Pathophysiology of the ageing spine and degenerative disc disease
- 2 Acute and chronic infections of the spine
- 3 Pathology of spinal deformity
- 4 Pathology of the acutely prolapsed cervical and lumbar disc
- 5 Patterns of spinal injury and associated cord and nerve root damage
- 6 Tumours of the spine

Clinical Assessment:

All trainees should be able to:

- 1 Compile data for necessary for general and orthopaedic history-taking and examination

- 2 Discuss the methods of assessment of spinal deformity
- 3 Explain the assessment of thoracic pain
- 4 Discuss the methods of clinical assessment of the spine for low back pain, sciatica, spinal claudication, neck pain, radiating arm pain, spinal injury and incipient myelopathy
- 5 Describe the clinical assessment of spinal tumour
- 6 Outline the assessment of a patient after failed spinal surgery.

Investigation:

All trainees should be able to:

- 1 Select the basic investigations required in spinal surgery, specifically: blood tests, plain radiographs, bone scintigraphy, discography, electrophysiological studies [including cord monitoring], CT scanning, MRI scanning
- 2 Explain how each of these investigations contributes to the diagnosis and management of each of the major areas of spinal disease

Treatment :

Non-operative

All trainees should be able to:

- 1 Describe the non-surgical methods available for the treatment of low back pain, sciatica, claudication, neck pain, spinal deformity, instability, tumour, infection and fracture
- 2 Discuss the indications for the use of analgesics and NSAIDs, physiotherapeutic regimes, pain clinic techniques, bracing, use of radiotherapy and chemotherapy and other non-operative management approaches of spinal injuries.

Operative

All trainees should be able to:

- 1 Explain the indications for and technique of operative surgical management of the acute prolapsed lumbar intervertebral disc, spinal stenosis, lumbar spinal instability due to spondylolysis/litheses.
- 2 Describe the indications for, and operative surgical management of the acutely prolapsed cervical disc, cervical stenosis, spinal injury and the surgery of spinal infection.
- 3 List surgical treatment options for spinal deformity and tumours of the spine.

k.9 Paediatric Orthopaedic Surgery

Basic Science

All trainees should be able to describe:

- 1 The growth of bones, physal anatomy and its application to fracture types and pathological processes and infection in particular.
- 2 The anatomy of bones and joints in the growing child and its application to growth and deformity.
- 3 The neurological processes involved in the production of deformity e.g. spina bifida, cerebral palsy, muscular dystrophy and poliomyelitis.

Clinical Assessment:

All trainees should be able to:

- 1 Describe competently the orthopaedic clinical examination of a child and to relate effectively with the family.
- 2 Describe normal variants that would be considered deformities by family and paediatricians
- 3 Identify proper management decisions in paediatric orthopaedic practice and when to refer appropriately for specialists treatment.

Investigations:

All trainees should be able to:

- 1 Recognize the indications for plain x-ray, CT, MRI and interpret the images.
- 2 State the indications for the use of ultrasound,arthrogram and nuclear imaging.
- 3 Recognize the limitations of certain investigations in paediatric practice.
- 4 Recognize screening methods for congenital abnormalities and methods for assessment of physical disability.

Treatment:

All trainees should be able to discuss the treatment of:

- 1 Fractures (including non-accidental injury) and growth plate injuries and recognise the sequelae.
- 2 Bone and joint infection

3 Common childhood orthopaedic conditions, e.g. irritable hip, anterior knee pain, Talipes, slipped epiphysis, and Perthes' disease.

All trainees should be able to list the treatment options for:

4 Birth injuries, Developmental dysplasia of the hip, Scoliosis, Simple foot deformities (e.g. hallux valgus, metatarsus varus), Simple congenital hand abnormalities (e.g. trigger thumb), Osteogenesis imperfect, Skeletal dysplasias, Tarsal coalitions, Torticollis, and leg length discrepancy.

Curriculum

Theme 2: Applied Intellectual & Operative Skills

S.1 Clinical Management

This applies to: Trauma (General, spine, pelvis, UL & LL)

Orthopedics (site nonspecific, spine, UL & LL)

S.1.1 Clinical Assessment and Management

All trainees should be able to:

- 1 Take a directed clinical history from a patient, which is appropriate for the clinical problem and the individual patient's needs.
- 2 Examine the patient both general & musculoskeletal examinations.
- 3 Formulate an evaluation plan for appropriate medical, laboratory, and radiological examinations.
- 4 Construct a diagnosis and differential diagnosis.
- 5 Identify when a situation is sufficiently complex or multifaceted to require a further opinion and investigations.
- 6 Plan for treatment (surgical or non-surgical).

7 Explain the perioperative process and likely outcome to the patient and/or relatives or caregivers and check understanding.

8 Take informed consent.

Preoperative planning

All trainees should be able to:

- 1 Recognize anatomical and pathological abnormalities (and relevant comorbidities) and select appropriate operative strategies/techniques to deal with these.
- 2 Choose with reasoning appropriate equipment, materials or devices (if any) taking into account appropriate investigations e.g. x-rays, ECG.
- 3 Check materials, equipment and device requirements with operating room staff.
- 4 Ensure the operation site is marked where applicable.
- 5 Check patient records, personally review investigations.

3 Preoperative preparation

All trainees should be able to:

- 1 Check in theatre that consent has been obtained
- 2 Give effective briefing to theatre team
- 3 Ensure proper and safe positioning of the patient on the operating table
- 4 Demonstrate careful skin preparation
- 5 Demonstrate careful draping of the patient's operative field
- 6 Ensure general equipment and materials are deployed safely (e.g. catheter, diathermy)
- 7 Ensure appropriate drugs administered
- 8 Arrange for and deploy specialist supporting equipment (e.g. image intensifiers) effectively

Exposure and closure

All trainees should be able to:

- 1 Select the proper skin incision / portal / access
- 2 Achieve an adequate exposure through purposeful dissection in correct tissue planes and identifies all structures correctly
- 3 Complete a sound wound repair where appropriate
- 4 Protect the wound with dressings, splints and drains where appropriate

5 Intra operative Technique

All trainees should be able to:

- 1 Follow an agreed, logical sequence or protocol for the procedure
- 2 Consistently handle tissue well with minimal damage
- 3 Control bleeding promptly by an appropriate method
- 4 Demonstrate a sound technique of knots and sutures/staples
- 5 Use instruments appropriately and safely
- 6 Proceed at appropriate pace
- 7 Anticipate and respond appropriately to variation e.g. anatomy
- 8 Deal calmly and effectively with unexpected events/complications
- 9 Use assistant(s) to the best advantage at all times
- 10 Communicate clearly and consistently with the scrub team
- 11 Communicate clearly and consistently with the anaesthetist

Post-operative management

All trainees should be able to:

- 1 Ensure the patient is transferred safely from the operating table to bed
- 2 Construct a clear operation note
- 3 Record clear and appropriate post-operative instructions
- 4 Deal with specimens. Label and orientate specimens appropriately

Trauma procedures

By the end of the training program all trainees have to demonstrate competence in the procedures below to the defined level

The Defined Levels of Competence

1= Has observed (Real/Video)	2= Can assist
3= Can do under supervision	4= Competent to do whole without assistance, including managing complications
SL= Competent to perform in skill lab	

Procedures to be performed according to the level of competence by the end of the 3rd year

Year 1 after enrolment in orthopedics

S.2.1 Trauma General		
	Operative Skill	Competence level
S.2.1.1	Free flap	1
S.2.1.2	Full thickness skin graft	2
S.2.1.3	Muscle flap	1
S.2.1.4	Nerve repair	2
S.2.1.5	Pedicle flap	1
S.2.1.6	Removal external fixator or frame	4
S.2.1.7	Removal foreign body from skin / subcutaneous tissue	4
S.2.1.8	Removal K wires or skeletal traction	4
S.2.1.9	Split skin graft	2
S.2.1.10	Trans positional flap	1
S.2.1.11	Wound closure, delayed primary or secondary	4
S.2.1.12	Wound Debridement	4
S.2.1.13	Closed management of fractures and plaster application	4
S.2.2 Spine		
S.2.2.1 Cervical Spine		
S.2.2.1.1	Anterior fixation fracture / dislocation cervical spine	2
S.2.2.1.2	Cervical spine traction / tong traction cervical spine	SL
S.2.2.1.3	MUA fracture / dislocation cervical spine	2
S.2.2.1.4	Posterior fixation fracture / dislocation cervical spine	2/3
S.2.2.2 Thoracic Spine		
S.2.2.2.1	Anterior decompression / fixation thoracic spine	1
S.2.2.2.2	Posterior decompression / fixation thoracic spine	2/3
S.2.2.3 Lumbar Spine		
S.2.2.3.1	Anterior decompression / fixation lumbar spine	2
S.2.2.3.2	Posterior decompression / fixation lumbar spine	2/3
S.2.3 Pelvis		

S. 2.3.1	Acetabular fracture ORIF	2
S. 2.3.2	Pelvic fracture external fixator application	3
S. 2.3.3	Pelvic fracture ORIF	2
S.2.4 Upper Limb:		
S.2.4.1Clavicle		
S. 2.4.1.1	ORIF clavicle fracture	2
S. 2.4.1.2	ORIF non-union clavicle fracture	1
S.2.4.2Shoulder		
S. 2.4.2.1	Anterior dislocation shoulder closed reduction	4
S. 2.4.2.2	Anterior dislocation shoulder open reduction +/- fixation	2
S. 2.4.2.3	Acromioclavicular joint dislocation acute ORIF	2
S. 2.4.2.4	Fracture proximal humerus ORIF	2
S. 2.4.2.5	Glenoid fracture ORIF	1
S.2.4.3Humeral Shaft		
S. 2.4.3.1	Fracture diaphysis humerus POP +/- MUA	2
S. 2.4.3.2	Fracture diaphysis humerus ORIF plating	2
S. 2.4.3.3	Fracture diaphysis humerus IM nailing	4
S. 2.4.3.4	Non-union ORIF +/- bone grafting	4
S.2.4.4Elbow		
S. 2.4.4.1	Dislocated elbow +/- fracture closed reduction	4
S. 2.4.4.2	Dislocated elbow +/- fracture open reduction +/- fixation	3
S. 2.4.4.3	Intra-articular distal humerus fracture ORIF	2
S. 2.4.4.4	Lateral condyle fracture ORIF	4
S. 2.4.4.5	Medial condyle / epicondyle fracture MUA / K wire / ORIF	4
S. 2.4.4.6	Olecranon fracture ORIF	4
S. 2.4.4.7	Radial head / neck fracture MUA +/- K wire/ excision	4
S. 2.4.4.8	Radial head / neck fracture ORIF	1
S. 2.4.4.9	Supracondylar fracture MUA +/- K wires	4
S. 2.4.4.10	Supracondylar fracture ORIF	3
S.2.4.5Forearm		
S.2.4.5.1	Fasciotomy for compartment syndrome	2
S.2.4.5.2	Fracture shaft radius / ulna MUA & POP	4
S.2.4.5.3	Fracture shaft radius / ulna MUA & percutaneous wires	4
S.2.4.5.4	Fracture shaft radius / ulna ORIF	4
S.2.4.5.5	Fracture distal radius MUA & POP	4
S.2.4.5.6	Fracture distal radius MUA & percutaneous wires	4
S.2.4.5.7	Fracture distal radius external fixation	3
S.2.4.5.8	Fracture distal radius ORIF	2
S. S.2.4.6 Wrist		
S.2.4.6.1	Carpal fracture / dislocation MUA & percutaneous wires/ MUA & POP/ ORIF	1
S.2.4.6.2	Scaphoid fracture non-op	4
S.2.4.6.3	Scaphoid fracture MUA & percutaneous wires	1
S.2.4.6.4	Scaphoid fracture ORIF	2
S.2.4.6.5	Scaphoid fracture non-union ORIF +/- graft	2
S.2.4.7 Hand		
S. 2.4.7.1	Metacarpal fracture / dislocation POP & MUA	4
S. 2.4.7.2	Metacarpal fracture / dislocation MUA & percutaneous wires	3
S. 2.4.7.3	Metacarpal fracture / dislocation ORIF	2
S. 2.4.7.4	Base of 1st metacarpal fracture/dislocation POP/Percutaneous wire/ORIF	4
S. 2.4.7.5	Phalangeal fracture MUA +/- POP	4
S. 2.4.7.6	Phalangeal fracture MUA & percutaneous wires	3
S. 2.4.7.7	Phalangeal fracture ORIF	2
S. 2.4.7.8	MCPJ fracture / dislocation MUA +/- POP	4
S. 2.4.7.9	MCPJ fracture / dislocation MUA & Percutaneous wires	3
S. 2.4.7.10	MCPJ fracture / dislocation ORIF	2
S. 2.4.7.11	Extensor Tendon repair	3
S. 2.4.7.12	Flexor Tendon repair	2

S.2.4.7.13	Ligament repair hand	1
S.2.3.7.14	Finger tip reconstruction	2
S.2.3.7.15	Nail bed repair	4
S.2.3.7.16	Infected hand drainage (not tendon sheath)	4
S.2.3.7.17	Infection tendon sheath drainage	2
S.2.3.7.18	Hand compartment syndrome decompression	2
S.2.5 Lower Limb:		
S.2.5.1 Hip		
S.2.5.1.1	Dislocated hip closed reduction	4
S.2.5.1.2	Dislocated hip open reduction +/- fixation	2
S.2.5.1.3	Intracapsular fracture internal fixation	4
S.2.5.1.4	Intracapsular fracture hemiarthroplasty (excluding bipolar)	4
S.2.5.1.5	Bipolar hemiarthroplasty	3
S.2.5.1.6	Intracapsular fracture THR	1
S.2.5.1.7	Extracapsular fracture CHS / DHS	4
S.2.5.1.8	Extracapsular fracture intramedullary fixation	1
S.2.5.1.9	Extracapsular fracture other fixation	1
S.2.5.2 Femur		
S.2.5.2.1	Subtrochanteric fracture plate/screw fixation	2
S.2.5.2.2	Subtrochanteric fracture intramedullary fixation	2
S.2.5.2.3	Diaphyseal fracture in children traction or spica	4
S.2.5.2.4	Diaphyseal fracture intramedullary nailing	4
S.2.5.2.5	Diaphyseal fracture plate/screw fixation	4
S.2.5.2.6	Diaphyseal fracture external fixator	3
S.2.5.2.7	Supracondylar fracture (not intraarticular) DCS / blade plate etc	3
S.2.5.2.8	Supracondylar fracture (not intraarticular) other fixation methods	1
S.2.5.2.9	Intraarticular fracture distal femur ORIF	2
S.2.5.3 Knee		
S.2.5.3.1	Acute haemarthrosis aspiration/ arthroscopy	4
S.2.5.3.2	Quadriceps tendon repair	3
S.2.5.3.3	Patella tendon repair	3
S.2.5.3.4	Acute ligament repair	2
S.2.5.3.5	Patella dislocation closed reduction +/- open repair	3
S.2.5.3.6	Patella fracture ORIF	4
S.2.5.3.7	Tibial plateau fracture ORIF with plates & screws	3
S.2.5.3.8	Tibial plateau fracture treatment with circular frame	2
S.2.5.4 Tibia & Fibula		
S.2.5.4.1	Diaphyseal tibial fracture MUA & POP	4
S.2.5.4.2	Diaphyseal tibial fracture intramedullary nailing	4
S.2.5.4.3	Tibial shaft plating	4
S.2.5.4.4	Diaphyseal tibial fracture external fixation (including frame)	4
S.2.5.4.5	Fasciotomy for compartment syndrome	4
S.2.5.4.6	Tibial non-union management	2
S.2.5.5 Ankle		
S.2.5.5.1	Ankle fracture / dislocation MUA & POP	4
S.2.5.5.2	Ankle fracture / dislocation ORIF	4
S.2.5.5.3	Pilon fracture with external fixator	2
S.2.5.5.4	Pilon fracture ORIF	1
S.2.5.5.5	Tendoachilles repair	1
S.2.5.6 Foot		
S.2.5.6.1	Calcaneal fracture ORIF	1
S.2.5.6.2	Talar, subtalar or midtarsal fracture/ dislocation MUA +/-POP +/-K wires	1
S.2.5.6.3	Talar, Subtalar or midtarsal fracture/ dislocation ORIF	1
S.2.5.6.4	Lisfranc fracture ORIF	2
S.2.5.6.4.5	Metatarsal fracture ORIF	3
S.2.5.6.4.6	Phalangeal fracture MUA +/-K wire +/- ORIF	3
S.2.5.6.4.7	Amputation toe / ray for trauma	4

S.3 Orthopedics

By the end of the training program (Years 4 and 5) all trainees have to demonstrate competence in the procedures below to the defined level

Years 2 and 3 Orthopaedics

S.3.1 Site non specific:		
S.3.1.1	Aspiration / injection joint	4
S.3.1.2	Benign tumor excision (not Exostoses)	3
S.3.1.3	Biopsy bone – needle Biopsy bone - open	2
S.3.1.4	Bursa excision	4
S.3.1.5	Cyst bone curettage +/- bone graft	3
S.3.1.6	Epiphysiodesis	2
S.3.1.7	Malignant tumor excision	2
S.3.1.8	Drainage of acute infection of bone and joints	4
S.3.2 Spine:		
S.3.2.1 Cervical Spine		
S.3.2.1.1	Anterior decompression +/- fixation/ fusion (C2-C7)	2
S.3.2.1.2	Atlantoaxial fixation +/- fusion	2
S.3.2.1.3	Biopsy cervical spine	2
S.3.2.1.4	Excision cervical / 1st rib	2
S.3.2.1.5	Nerve root / facet joint injection cervical spine	2
S.3.2.1.6	Occipito-cervical fusion +/- fixation	2
S.3.2.1.7	Posterior decompression +/- fixation/ fusion (C2-C7)	2/3
S.3.2.2 Thoracic Spine		
S.3.2.2.1	Anterior decompression +/- fixation/ fusion	2
S.3.2.2.2	Biopsy thoracic spine	2
S.3.2.2.3	Posterior decompression +/- fixation/ fusion	2/3
S.3.2.2.4	Scoliosis correction – anterior release +/- instrumentation	2
S.3.2.2.5	Scoliosis correction – posterior fusion +/- instrumentation	2
S.3.2.3 Lumbar Spine		
S.3.2.3.1	Caudal epidural injection	3
S.3.2.3.2	Decompression lumbar spine with fusion +/- fixation	2/3
S.3.2.3.3	Decompression lumbar spine without fusion (not discectomy alone)	2/3
S.3.2.3.4	Discectomy open / micro	2
S.3.2.3.5	Nerve root / facet joint injection lumbar spine	2
S.3.3 Upper Limb:		
S.3.3.1 Shoulder		
S.3.3.1.1	Acromio-clavicular joint excision- arthroscopic / open / lateral clavicle	2
S.3.3.1.2	Acromio-clavicular joint reconstruction (e.g. Weaver Dunn)	2
S.3.3.1.3	Acromioplasty open	2
S.3.3.1.4	Anterior repair for instability arthroscopic/open	2
S.3.3.1.5	Arthroscopic subacromial decompression	2
S.3.3.1.6	Arthroscopy diagnostic	2
S.3.3.1.7	Rotator cuff repair (open or arthroscopic) +/- acromioplasty	2
S.3.3.1.8	Total shoulder replacement	2
S.3.3.2 Elbow		
S.3.3.2.1	Elbow arthroscopy	SL
S.3.3.2.2	Arthrotomy elbow	4
S.3.3.2.3	Excision radial head +/- synovectomy	4
S.3.3.2.4	Radial head replacement	2
S.3.3.2.5	Tennis / golfer elbow release	3
S.3.3.2.6	Ulnar nerve decompression /transposition	3/4
S.3.3.3 Wrist		
S.3.3.3.1	Arthrodesis wrist (includes partial arthrodesis)	1
S.3.3.3.2	Carpal tunnel decompression	4
S.3.3.3.3	De Quervain's decompression	4

S.3.3.3.4	Excision distal ulna	4
S.3.3.3.5	Ganglion excision at wrist	4
S.3.3.3.6	Ulna shortening	4
S.3.3.3.7	Ulnar nerve decompression at wrist	3
S.3.3.4 Hand		
S.3.3.4.1	Fusion of MCPJ or IPJ	2
S.3.3.4.2	Soft tissue reconstruction hand	2
S.3.3.4.3	Tendon transfer hand	2
S.3.3.4.4	Trapezium excision or replacement	2
S.3.3.4.5	Trigger finger release	4
S.3.3.4.6	Trigger thumb release	4
S.3.4 Lower Limb:		
S.3.4.1 Hip		
S.3.4.1.1	Arthrodesis hip	2
S.3.4.1.2	Arthrotomy hip (drainage)	4
S.3.4.1.3	Excision arthroplasty hip (e.g. Girdlestone)	3
S.3.4.1.4	Open reduction for DDH	3
S.3.4.1.5	Osteotomy hip - pelvic for DDH	2
S.3.4.1.6	Osteotomy hip - proximal femoral for DDH	2
S.3.4.1.7	Revision of Hip Replacement	2
S.3.4.1.8	Slipped upper femoral epiphysis pinning	4
S.3.4.1.9	THR cemented/ hybrid/ surface replacement/ uncemented	3
S.3.4.2 Femur		
S.3.4.2.1	Amputation above knee	4
S.3.4.2.2	Femoral lengthening	2
S.3.4.2.3	Proximal femoral osteotomy (not for DDH)	3
S.3.4.3 Knee		
S.3.4.3.1	ACL reconstruction	3
S.3.4.3.2	Arthroscopic lateral release	3
S.3.4.3.3	Arthroscopic partial meniscectomy	3
S.3.4.3.4	Arthroscopic removal loose bodies knee	3
S.3.4.3.5	Arthroscopic synovectomy	3
S.3.4.3.6	Arthroscopic knee diagnostic	3
S.3.4.3.7	Osteotomy distal femoral	4
S.3.4.3.8	Osteotomy proximal tibial	3
S.3.4.3.9	Patella realignment	2
S.3.4.3.10	Unicompartmental knee replacement	2
S.3.4.3.11	TKR	3/4
S.3.4.3.12	Revision TKR	2/3
S.3.4.4 Tibia& Fibula		
S.3.4.4.1	Amputation below knee	4
S.3.4.4.2	Tibial lengthening	2
S.3.4.5 Ankle		
S.3.4.5.1	Arthrodesis ankle	3
S.3.4.5.2	Arthroscopy ankle	SL
S.3.4.5.3	Arthrotomy ankle	4
S.3.4.5.4	Decompression tendons at ankle	4
S.3.4.5.5	Tendoachilles lengthening	4
S.3.4.6 Foot		
S.3.4.6.1	Amputation toe / ray	4
S.3.4.6.2	Calcaneal osteotomy	3
S.3.4.6.3	CTEV correction non-operative	4
S.3.4.6.4	CTEV correction operative	3
S.3.4.6.5	Fifth toe soft tissue correction	1
S.3.4.6.6	First metatarsal osteotomy	3
S.3.4.6.7	First MTPJ arthrodesis	4
S.3.4.6.8	First MTPJ excision arthroplasty	4

S.3.4.6.9	First MTPJ soft tissue correction	3
S.3.4.6.10	Hind-foot arthrodesis	4
S.3.4.6.11	In growing toenail operation	4
S.3.4.6.12	Tendon decompression or repair	2
S.3.4.6.13	Tendon transfer foot	2
S.3.4.6.14	Wedge tarsectomy	3

MUST DO LIST: for all candidates, by the end of the training these operations must be mastered by every candidate.

S.2.1.6	Removal external fixator or frame	4
S.2.1.7	Removal foreign body from skin / subcutaneous tissue	4
S.2.1.8	Removal K wires or skeletal traction	4
S.2.1.11	Wound closure, delayed primary or secondary	4
S.2.1.12	Wound Debridement	4
S.2.1.13	Closed management of fractures and plaster application	4
S. 2.4.2.1	Anterior dislocation shoulder closed reduction	4
S. 2.4.3.3	Fracture diaphysis humerus IM nailing	4
S. 2.4.3.4	Non-union ORIF +/- bone grafting	4
S. 2.4.4.1	Dislocated elbow +/- fracture closed reduction	4
S. 2.4.4.4	Lateral condyle fracture ORIF	4
S. 2.4.4.5	Medial condyle / epicondyle fracture MUA / K wire / ORIF	4
S. 2.4.4.6	Olecranon fracture ORIF	4
S. 2.4.4.7	Radial head / neck fracture MUA +/- K wire/ excision	4
S. 2.4.4.9	Supracondylar fracture MUA +/- K wires	4
S.2.4.5.2	Fracture shaft radius / ulna MUA & POP	4
S.2.4.5.3	Fracture shaft radius / ulna MUA & percutaneous wires	4
S.2.4.5.4	Fracture shaft radius / ulna ORIF	4
S.2.4.5.5	Fracture distal radius MUA & POP	4
S.2.4.5.6	Fracture distal radius MUA & percutaneous wires	4
S.2.4.6.2	Scaphoid fracture non-op	4
S. 2.4.7.1	Metacarpal fracture / dislocation POP & MUA	4
S. 2.4.7.4	Base of 1st metacarpal fracture/dislocation POP/Percutaneous wire/ORIF	4
S. 2.4.7.5	Phalangeal fracture MUA +/- POP	4
S. 2.4.7.8	MCPJ fracture / dislocation MUA +/- POP	4
S.2.3.7.15	Nail bed repair	4
S.2.3.7.16	Infected hand drainage (not tendon sheath)	4
S.2.5.1.1	Dislocated hip closed reduction	4
S.2.5.1.3	Intracapsular fracture internal fixation	4
S.2.5.1.4	Intracapsular fracture hemiarthroplasty (excluding bipolar)	4
S.2.5.1.7	Extracapsular fracture CHS / DHS	4
S.2.5.2.3	Diaphyseal fracture in children traction or spica	4
S.2.5.2.4	Diaphyseal fracture intramedullary nailing	4
S.2.5.2.5	Diaphyseal fracture plate/screw fixation	4

S.2.5.3.1	Acute haemarthrosis aspiration/ arthroscopy	4
S.2.5.3.6	Patella fracture ORIF	4
S.2.5.4.1	Diaphysealtibial fracture MUA & POP	4
S.2.5.4.2	Diaphysealtibial fracture intramedullary nailing	4
S.2.5.4.3	Tibial shaft plating	4
S.2.4.4.4	Diaphysealtibial fracture external fixation (including frame)	4
S.2.5.4.5	Fasciotomy for compartment syndrome	4
S.2.5.5.1	Ankle fracture / dislocation MUA & POP	4
S.2.5.5.2	Ankle fracture / dislocation ORIF	4
S.2.5.6.4.7	Amputation toe / ray for trauma	4
S.3.1.1	Aspiration / injection joint	4
S.3.1.4	Bursa excision	4
S.3.1.8	Drainage of acute infection of bone and joints	4
S.3.3.2.2	Arthrotomy elbow	4
S.3.3.2.3	Excision radial head +/- synovectomy	4
S.3.3.3.2	Carpal tunnel decompression	4
S.3.3.3.3	De Quervain's decompression	4
S.3.3.3.4	Excision distal ulna	4
S.3.3.3.5	Ganglion excision at wrist	4
S.3.3.3.6	Ulna shortening	4
S.3.3.4.5	Trigger finger release	4
S.3.3.4.6	Trigger thumb release	4
S.3.4.1.2	Arthrotomy hip (drainage)	4
S.3.4.1.8	Slipped upper femoral epiphysis pinning	4
S.3.4.2.1	Amputation above knee	4
S.3.4.3.7	Osteotomy distal femoral	4
S.3.4.4.1	Amputation below knee	4
S.3.4.5.3	Arthrotomy ankle	4
S.3.4.5.4	Decompression tendons at ankle	4
S.3.4.5.5	Tendoachilles lengthening	4
S.3.4.6.1	Amputation toe / ray	4
S.3.4.6.3	CTEV correction non-operative	4
S.3.4.6.7	First MTPJ arthrodesis	4
S.3.4.6.8	First MTPJ excision arthroplasty	4
S.3.4.6.10	Hind-foot arthrodesis	4
S.3.4.6.11	In growing toenail operation	4
S.3.4.3.11	TKR	3/4
	SPINE posterior fusion/disc, decompression	4
	Biopsy	4
	Oncology surgery	3/4
S.3.4.3.12	Revision TKR	2/3
	Arthroscopy knee	3

Theme 3: Attitudes & Behavior

Good clinical care

All trainees must maintain the centrality of the best interest of the patient through the consistent application of ethical codes to all aspects of assessment, treatment and case management. This applies in particular to:

Patient's medical History: All trainees must show empathy with patients. Appreciate the importance of psychological factors for patients and relatives. Appreciate the interaction of social factors and the patient's illness.

Patient's Examination: All trainees must respect patients' dignity and confidentiality, acknowledge cultural issues, appropriately involve relatives. Appreciate situations where there is the need for a chaperone.

Investigations including imaging: All trainees must use a widely accepted diagnostic system to assist in making the diagnosis and differential diagnosis in each case. They must be able to provide explanations to patients as to rationale for investigations, limitations and possible unwanted effects.

Treatment (Operative & Nonoperative): All trainees must clearly and openly explain treatments options, their side effects and complications.

Management of chronic disease: All trainees must treat each patient as an individual. Appreciate the effects of chronic disease states on patients and their relatives.

Compassionate approach to patient care: All trainees must be compassionate in how they manage patients.

Patient safety: All trainees must demonstrate awareness of patient safety in a practical situation and put safety and care of patients first.

Providing treatment in emergencies: All trainees must be able to carry out their responsibilities in a timely fashion. They must be able to deal with emergency and crisis situations as they arise and review and reschedule workplan accordingly.

All trainees must respond to any complaint about their own clinical practice in a professional manner and ensure that the clinical care of the patient is not compromised. They must respond to

complaints about the clinical practice of other health service professionals in a sensitive and professional manner.

Maintaining good medical practice

All trainees must recognize the limits of their competence and always work for maintaining and improving their professional competence. They must:

- 1 Keep up-to-date.
- 2 Maintain and improve their practice

Teaching and Training, Appraising and Assessing

1 All trainees must demonstrate a willingness, enthusiasm and ability to contribute to the teaching and training of students and other healthcare colleagues

2 All trainees must be honest and objective when appraising or assessing the performance of colleagues. They must provide only honest, justifiable and accurate comments.

Relationship with patients

Trainees should be able to establish a doctor/patient/relatives relationship characterized by good communication, understanding, trust, respect, empathy and confidentiality.

1 Doctor-patient partnership: All trainees must adopt a non-discriminatory attitude to all patients and recognize their needs as individuals. They must involve patients in clinical decision making. They must accept that a patient may make a decision about their management that appears to contradict clinical advice.

2 Good communication: All trainees must be able to communicate effectively and sensitively.

3 Consent: All trainees must be able to obtain valid consent from the patient according to national guidelines. They must be aware of, and be able to respond to, the patient's level of understanding and mental state and how this may impair their capacity for informed consent.

Working with colleagues

Trainees should recognize their own limitations and understand the importance of co-operation and team working with other healthcare professionals involved in patient care. They should be able to:

1 Work cooperatively as part of a multi-professional clinical team and accept, where appropriate, the role of the leader of the team.

2 Arrange cover

3 Share information with colleagues

Probity

Being honest and trustworthy. All trainees must demonstrate honesty and openness in any financial arrangements with patients by not putting pressure on patients to accept private treatment, providing information about fees and charges before obtaining patients' consent to treatment, not exploiting patients' vulnerability or lack of medical knowledge when making charges for treatment or services and ensure that their practice conforms to codes of practice.

Writing reports and CVs, giving evidence and signing documents: All trainees must demonstrate an appropriate knowledge of gathering, organizing and providing evidence.

Demonstrate an understanding that the purpose of these reports is to inform the judges and facilitate them in decision-making. Use appropriate language, for example avoiding use of medical jargon and write concise and precise reports.

Conflicts of interest: They should declare any relevant financial or commercial interest.

Health

1 All trainees must take appropriate steps to protect patients when their own health is affected by illness or disability.

2 All trainees must protect themselves, their colleagues and their patients by being immunized against vaccine preventable diseases (HBV, influenza,...etc)

3 Trainees must be able to recognize the manifestations of infectious diseases that require work restriction.

Weekly activities

It is expected that the trainees are attached to their respective hospitals for 5 days per week.

Once per month he expected to join an academic activity –central teaching day.

The weekly timetable of clinical and scientific activities held in the training hospitals should be drafted at the beginning of each placement and documented in the Learning Form.

It is the duty of the trainers to ensure that trainees are freed from hospital duties at least for an additional half day per week which is dedicated for formal teaching in their respective hospitals.

Teaching activities and meetings held during this half day should be attended by trainers on a rotational basis and by ALL trainees in the hospital.

A) Activities held in the training hospital shall cover the following items:

- 1) 5 days per week (10 sessions) in the training hospital:
- 2) Two sessions outpatient clinics (including special clinics when applicable)
- 3) Two sessions group ward round
- 4) Three sessions operating theatre
- 5) Three sessions educational activities:
 - a) Grand rounds
 - b) Lectures
 - c) Journal club
 - d) Meetings: Pathology-radiology, Morbidity- Mortality, Clinical meetings
 - e) Research activities: including the preparation of the allocated research report and data collection

Out of hour duties including ER cover, postoperative and on call Rota according to the hospital policy.

B) Central Scientific Day:

All Trainees are expected to have protected teaching time at a specific day of the week (as Specified by the local training authorities).

Central scientific days are organized in higher specialized centers on alternate weeks. The teaching program of these days is drafted centrally at the local training coordinator. The Specialty Coordinator should notify training centers by the agenda of these days.

Job description for ST3 Trainee

In Emergency room

- 1- The first on call; conducts primary assessment and management of patients in ER
- 2- Suggests admission of patients
- 3- Performs closed reduction of fractures and cast application under supervision.
- 4- Assists in various emergency procedures performed in ER.

In wards

- 1- Clerking of all admissions (history, general and orthopedic clinical examination) and suggests basic investigations and plan of management.
- 2- Perform daily rounds.
- 3- Write detailed daily progress notes
- 4- Arrange discharge, home medication and follow up appointments of inpatients.
- 5- Assists and learns to perform various bedside procedures; including traction, cast application, joint aspiration, etc
- 6- Follow and obtains various results of investigations and reports abnormal results to seniors.
- 7- Follow up referral of patients to other specialties
- 8- Observes seniors explaining to patients the methods of management and their illness and discusses this process with seniors.
- 9- Observes the approaches taken by the seniors when talking to patients about prognosis of their illness
- 10- Checks completeness of medical reports of patients
- 11- Participates in pre and post operative assessment of the patient.

In OPD

- 1- Attends the general orthopedic and fracture clinic with other senior staff
- 2- Completes various hospital forms.
- 3- Assists and learns outpatient procedures in the clinic and plaster room.

In OR

- 1- Participates in basic operative planning of fracture fixation
- 2- Participates in minor surgical procedures and perform some under supervision
- 3- Participates in moderate surgical procedures as an assistant.

- 4- Attends major and subspecialty surgical procedure.
- 5- Learns how to write operative notes and postoperative orders.
- 6- Learn the usage of various operative instruments and implants

Educational activities

- 1- Presents cases in rounds.
- 2- Participates in grand rounds and journal clubs
- 3- Attends all educational activities of the residency program
- 4- Attends local education courses and basic courses of internal fixation.
- 5- Learns to prepare audiovisual materials for presentations

SEE TABLE FOR SKILLS COMPETNCE LEVEL

Job description for ST4 trainee

In Emergency room

- 1- The first/second on call; conducts primary assessment and management of patients in ER
- 2- Decides on and admits patients with consultation of seniors
- 3- Performs closed reduction of fractures and cast application
- 4- Performs various emergency procedures performed in ER

In wards

- 1- Performs or supervises clerking of all admissions, requests basic and special investigations and draws plan of management
- 2- Perform daily rounds
- 3- Comments on daily progress notes
- 4- Write discharge notes with supervision and checks proper home medication and doses and proper follow up appointments of inpatients
- 5- Performs various bedside procedures under supervision if necessary; including traction, cast application, joint aspiration, etc
- 6- Checks results of various investigations
- 7- Suggests referral of patients to other specialties
- 8- Assists in explaining to patients the methods of management and their illness and discusses this process with senior staff
- 9- Observes the approaches taken by the seniors when talking to patients about prognosis of their illness
- 10- Write preliminary medical reports of patients
- 11- Ensures full preoperative assessment and preparation under supervision of seniors
- 12- Performs post operative follow up of the patient.

In OPD

- 1- Assess patients in the general orthopedics and fracture clinic with supervision
- 2- Attends sub-specialized orthopedic clinics with consultants
- 3- Requests various investigations
- 4- Performs basis outpatient procedures in the clinic and plaster room (removal of the cast, change of cast, joint aspiration)

5- Suggests booking patients for elective admission under supervision and completes admission forms.

In OR

1- Prepare operation lists and actively engages in operative planning of various fractures and reconstructive operations

2- Performs minor surgical procedures

3- Performs moderate surgical procedures as first assistant

4- Assists consultants/senior performing major and sub-specialty surgical procedure (2nd assistant)

5- Writes operative notes and postoperative orders under supervision

6- Master the usage of various operative instruments and implants; their advantages and disadvantages.

Educational activities

1- Supervises junior in daily case presentation in the rounds

2- Presents cases in grand rounds and prepares topics for journal clubs

3- Participates and presents cases in pathology/radiology meetings

4- Participates in morbidity and mortality meetings

5- Presents topics in the orthopedic club

6- Attends all educational activities and lectures of continuous education.

7- Attends local education courses and basic and advanced courses of internal fixation

8- Plans a clinical research project

9- Helps in data collection and data search of ongoing research

10- Prepares audiovisual materials for presentations

Job description for ST5 trainee

In Emergency room

1- The second on call; supervises junior trainee on primary management of patients in ER

2- Checks and approves decision of admission and management of patients

3- Supervises and performs closed reduction of fractures

4- Supervises and performs various procedures performed in ER

In wards

- 1- Performs comprehensive clinical assessments of all admissions , supervises the junior trainees, approves basic investigations and requests advanced investigations
- 2- Executes and modifies plan of management after consulting with senior staff
- 3- Responsible for daily rounds on all patients
- 4- Supervises and ensures the complete, thorough and up-to-date clinical progress notes are written
- 5- Solves problems related to discharge of patients, their home medications and follow up appointments
- 6- Supervises various bedside procedures; and ensures the quality of execution and follow up of such procedures
- 7- Takes actions based on results of investigations after consulting with seniors when required
- 8- Suggests and execute referral of patients to other specialties
- 9- Ensures full understanding of patients to their management plan including operations, medications and various procedures
- 10- Answers patients with regards to prognosis under the supervision of or after discussion with consultants
- 11- Approves preliminary medical reports of patients and write detailed medical reports
- 12- Performs preoperative assessment of inpatients and discusses assessment with seniors
- 13- Ensures proper post operative follow up of patients

In OPD

- 1- Runs a general orthopedic and fracture clinic alone with supervision of seniors
- 2- Attends sub-specialized orthopedic clinics with consultants
- 3- Interprets results of various investigations and takes decisions related to patient management
- 4- Supervises performance of basic outpatient procedures in the clinic and plaster room and ensures quality control
- 5- Arranges booking patients for elective admission after consulting with the seniors

In OR

- 1- Ensures completion of operation lists and ensures operative planning of various fractures and reconstructive operations

- 2- Assists junior trainee performing minor surgical procedures
- 3- Performs moderate surgical procedures as independently
- 4- Performs major and sub-specialty surgical procedure (1st/2nd assistant)
- 5- Writes operative notes and postoperative orders independently and supervises juniors doing so
- 6- Learns special techniques and usage of special implants for complicated cases.

Educational activities

- 1- Heads daily rounds
- 2- Supervises case presentation in grand rounds and topics for journal clubs
- 3- Prepares and presents cases in pathology/radiology meetings
- 4- Helps in preparation of morbidity and mortality meetings
- 5- Presents cases in the orthopedic club
- 6- Attends all educational activities and prepares the schedule for lectures of continuous education and teaching of the residency program and supervises juniors
- 7- Attends education courses (local and international) as well as advanced courses of internal fixation
- 8- Finalize a clinical research project
- 9- Organizes the on call Rota
- 10- Allocates duties and tasks to juniors and supervises their execution
- 11- Prepares various audiovisual presentations and supervises juniors
- 12- Participates in ongoing research and preparation of papers and data collection and data search.

SEE TABLE FOR SKILLS COMPETNCE LEVEL

Job description of the trainer during part 2 of the training program

1. Provides training and teaching for the trainees according to the provided curriculum and intended learning outcomes.
2. Supervises various activities of the trainees and their logbooks.
3. Ensures fulfillment of the logbook activities according to year of training and the required level of competence and signing them.
4. Ensuring patient safety in relation to trainee performance by the early recognition and management of those trainees in distress or difficulty.
5. Evaluate monthly the trainees with feedback to the trainee and reporting to the educational supervisor and the Egyptian board administration.
6. Coordinate with hospital authorities the administrative affairs of the trainees.

Job description of the educational supervisor during part 2 of the training program

1. Check and evaluate the progress of the training program at each training site he is responsible for.
2. Evaluates the trainers periodical reports
3. Ensures that all training activities are running according the Curriculum.
4. Follow up trainers' activities and their commitments for delivering the educational programs and discuss with them any relevant difficulties and propose remedial actions.
5. Arrange topics to be distributed for the trainees for clinical research project and checks its progress.
6. Assess the logbook activities of each trainee and provide needed remarks for both trainer and trainees.
7. Ensure the adherence to rotation plan for each trainee
8. Report to the scientific board and discuss with it the performance of trainees and their illegibility to sit for the exam.

9. Write a collective monthly report for each training site that he is responsible for, and forward it to the local coordinator.

Job Description of Specialty Coordinator

1. Training management across hospitals and hospital networks
2. Keep records of trainees' progression in trainees files
3. Management of rotations.
4. Recruitment of trainers according to pre specified board criteria.
5. Recruitment of trainees according to available training posts.
6. Follow up and facilitation of trainers and supervisors activities
7. Coordination of half annual appraisal.
8. Coordination of training site accreditation visits.
9. Audit of training Centre's performance through the board monitoring office.

Logbook Evaluation

- 1) It is the responsibility of the trainee to record operations and/or other activities into the logbook at least on weekly basis.
- 2) These entries should be signed by the surgeon directly supervising the trainee during the procedure and countersigned by his assigned trainer.
- 3) Educational activities should also be recorded and signed by person in charge of the activity and countersigned by the assigned trainer.
- 4) Logbooks should be ready for inspection by the education supervisor at all times.
- 5) It is the responsibility of each trainee to fill the logbook statistics in the trainee assessment form. This form should be counter signed by his assigned trainer.

Personal details:

Full Name in Arabic:

Full name in English:

National number:

Start date of your residency program:

Your signature: _____

Head of the Department: _____

Signature & Stamp: _____ Date: _____

Training Posts Held

Post Number	Hospital	Residency Year	Start Date	Finish Date	Consultant	Consultant signature
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This form should only be signed by the consultant or trainer at the end of the post, provided that the trainee has finished the period of the training satisfactorily.

Educational and Academic Activities

Mandatory Certificate (s):

Jordan Medical Council First Part Board Examination Certificate:

Date of Issuing the Certificate:

Certificate Number:

Other Courses:

Course	Date	Location	Course Director

Other activities, including CME hours, ATLS, ACLS, PTC:

Other Activities (cont):

SAMPLE

Residency Year:	Hospital:	Dates:	From:
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Consultant: _____

Date: _____

Signature: _____

Supervisor name and signature _____

Program director signature _____

Chief of department name and signature _____