



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

BMST4004

Inflammatory Conditions

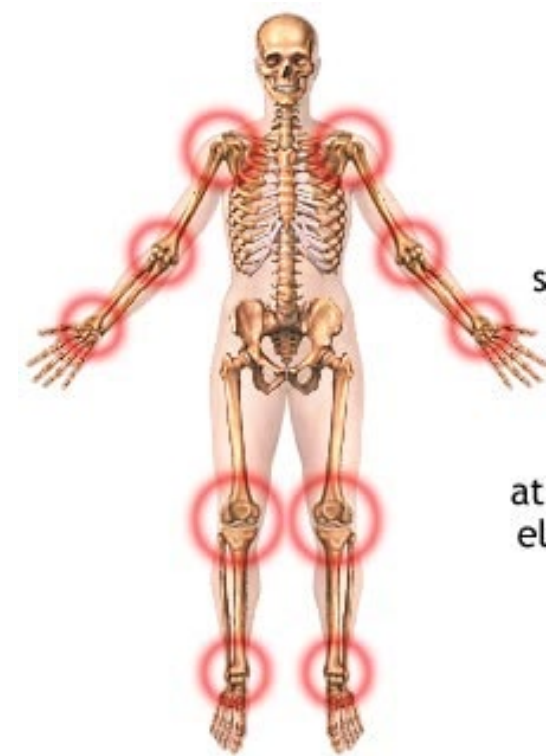
Trawsnewid Addysg; Trawsnewid Bywydau
Transforming Education; Transforming Lives



www.uwtsd.ac.uk

Rheumatoid Arthritis

- Definition
 - Multisystem Autoimmune Inflammatory Condition
- Symmetrical
- Polyarthropathy
- Small joints



Epidemiology

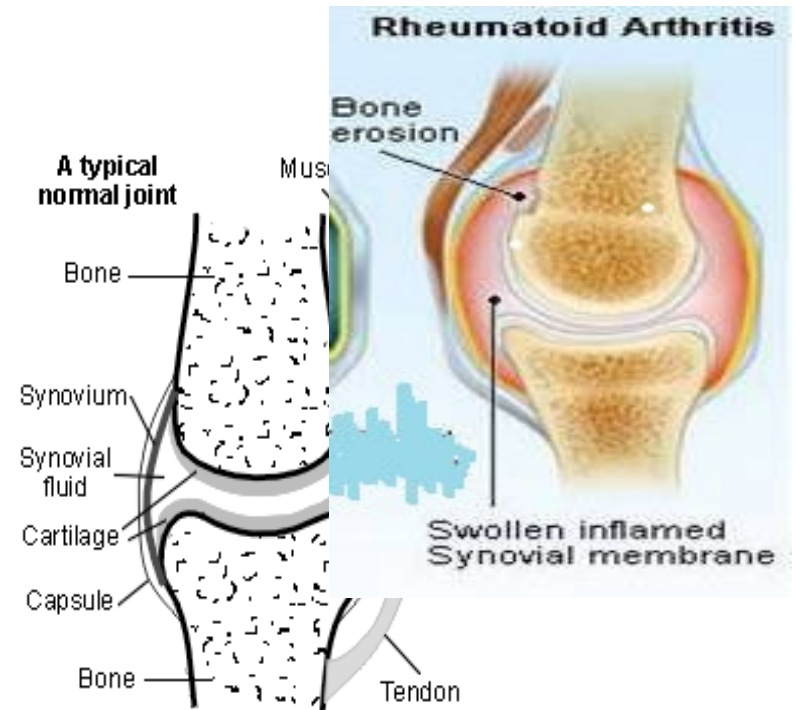
It can develop at any age, but typically starts between 40- 60 years

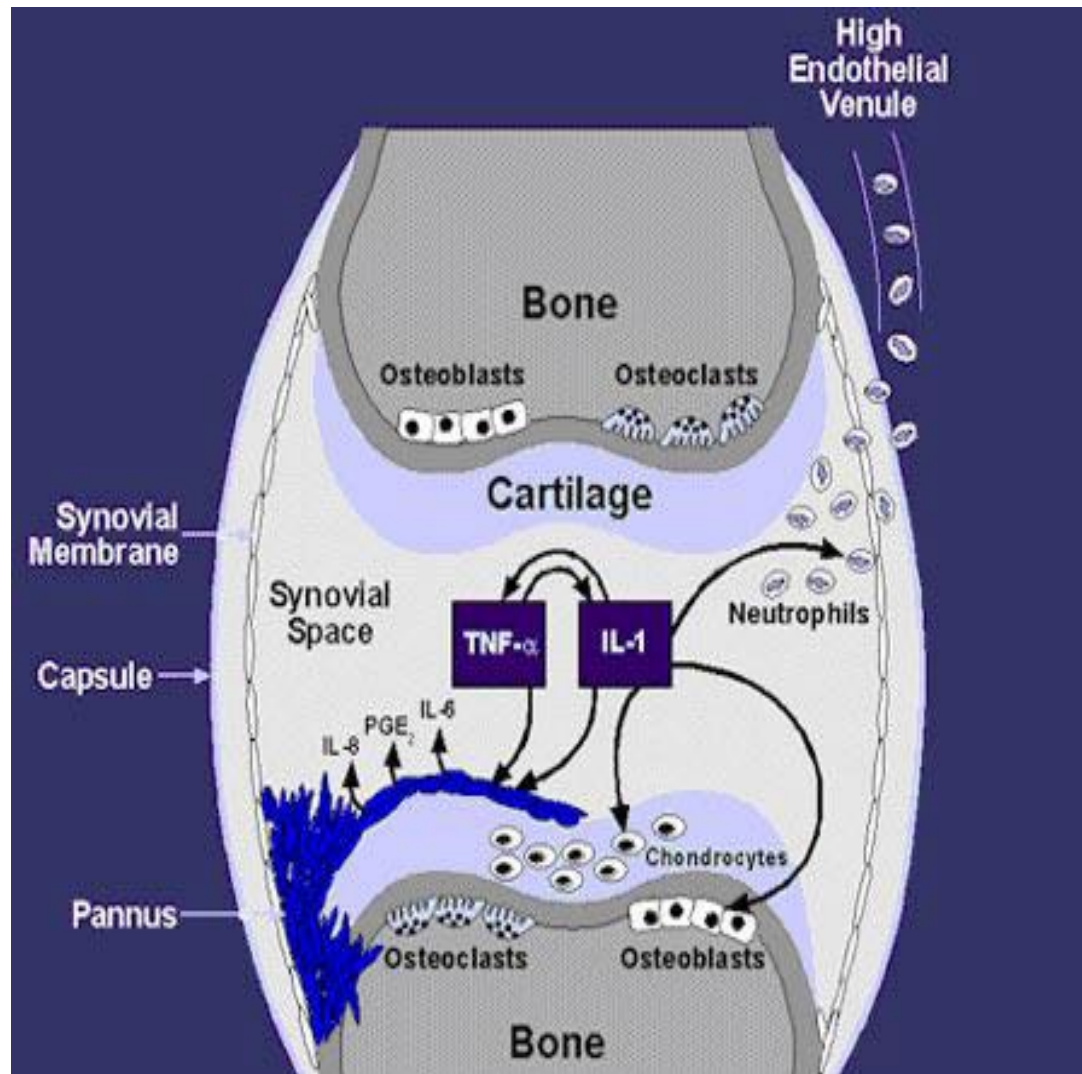
Female:Male (3:1)

Common Arthritis: 1 in 100 develop RA at some stage in their life

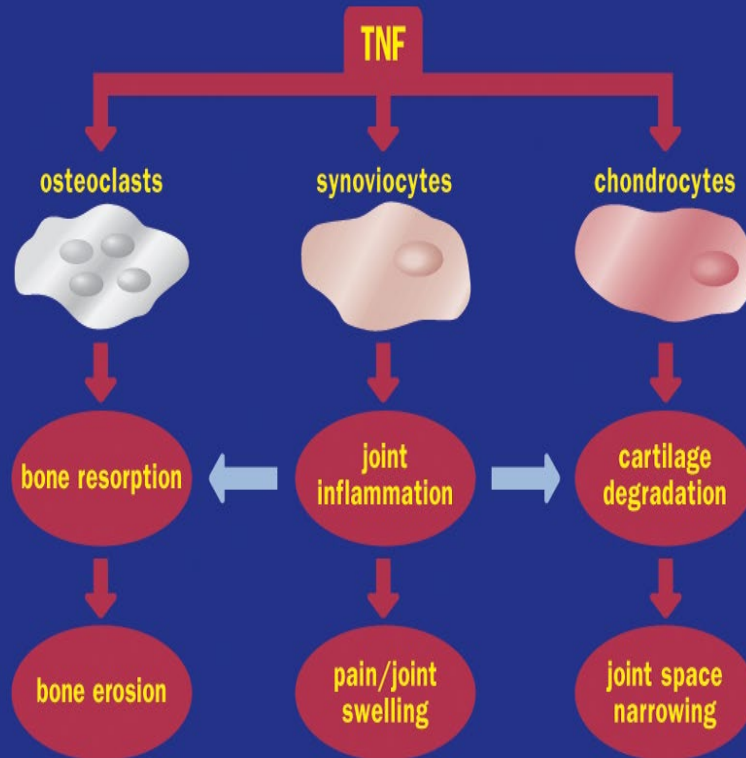
Pathophysiology

- Not completely elucidated!
- Autoimmune
- Cytokine networks are responsible for inflammation & joint destruction
 - Tumor Necrosis Factor- α (TNF- α), Interleukins
- Trigger $\rightarrow$ Synovial cell hyperplasia and endothelial cell activation $\rightarrow$ uncontrolled inflammation $\rightarrow$ bone destruction
- Genetics





Destructive effects of TNF

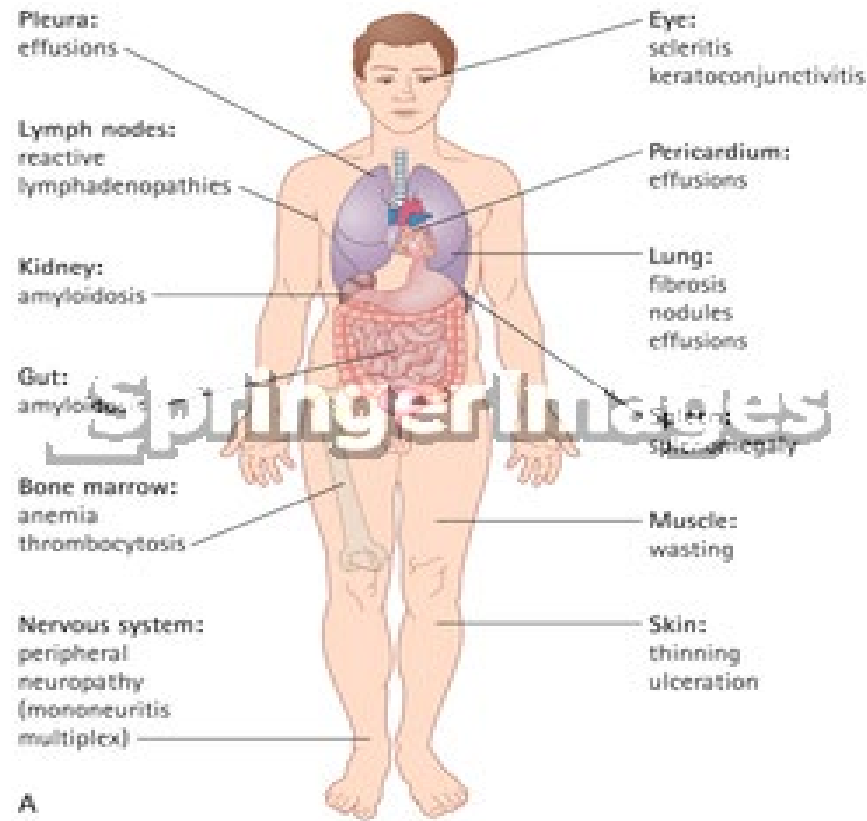


Symptoms and Signs

- Morning stiffness lasting ≥ 1 hour*
- Swelling in ≥ 3 joints*
- Swelling in hand joints*
- Symmetric joint swelling*
- Erosions or declacifications on xray of hand
- Rhematoid nodules
- Abnormal serum RF

*Must be present ≥ 6 weeks

Extra-articular manifestations



Investigations and Assessment

- Bloods
 - FBC, U&Es, LFTs, ESR, CRP, RF anti CCP
- Imaging
- Physical
 - Gait Analysis
 - Postural assessment
 - Test muscle length and strength
 - Joint ROM
 - Functional assessment (Sit to Stand, Balance, Stairs)

Xray of Hands



Management

- Conservative- weight loss, smoking cessation, OT
- Pain relief- paracetamol + NSAIDS, Steroids
- Disease modification – DMARDs and Biologics (Etanercept + Adalimumab)
- Therapy
 - Prevent disability
 - Increase functional capacity
 - Improve general fitness
 - Provide pain relief and education
 - Improve strength and flexibility
 - Educate and advise on activity/ fitness

DMARDS

- METHOTREXATE (first line)- oral ulcers, alopecia, GI upset, hepatotoxic
- SULFASALAZINE- GI upset, less hepatotoxic
- LEFLUNOMIDE- Liver cirrhosis, GI upset, alopecia
- !GOLD- Rash, Glomerulonephropathy
- !PENICILLIAMINE- Rash, lupus-like illness

Osteoarthritis

- **Definition**
 - Degenerative joint disease – characterised by breakdown of articular cartilage and proliferation of surrounding bone tissue
 - A clinical syndrome of (Synovial) joint pain accompanied by **functional limitation** and **reduced Quality Of Life (QOL)**
 - Hips
 - Knees
 - Small joints of hands

Osteoarthritis

- **Epidemiology**
 - Most common joint disease
 - 70% of people over 60 years have X-Ray classified OA
 - Some radiological evidence can be found in 90% of the population above the age of 60.

Osteoarthritis

- **Risk factors**
 - Increasing age
 - Women
 - Obesity
 - Joint injuries- sports/occupational repetitive stress load

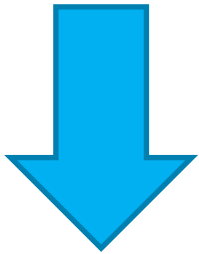
Osteoarthritis

▶ Characteristics

- ▶ OA is a **chronic** disease of the musculoskeletal system, **without systemic** involvement
- ▶ OA is mainly a **non-inflammatory** disease of synovial joints
- ▶ No joint ankylosis is observed in the course of the disease

Osteoarthritis

▶ Primary OA

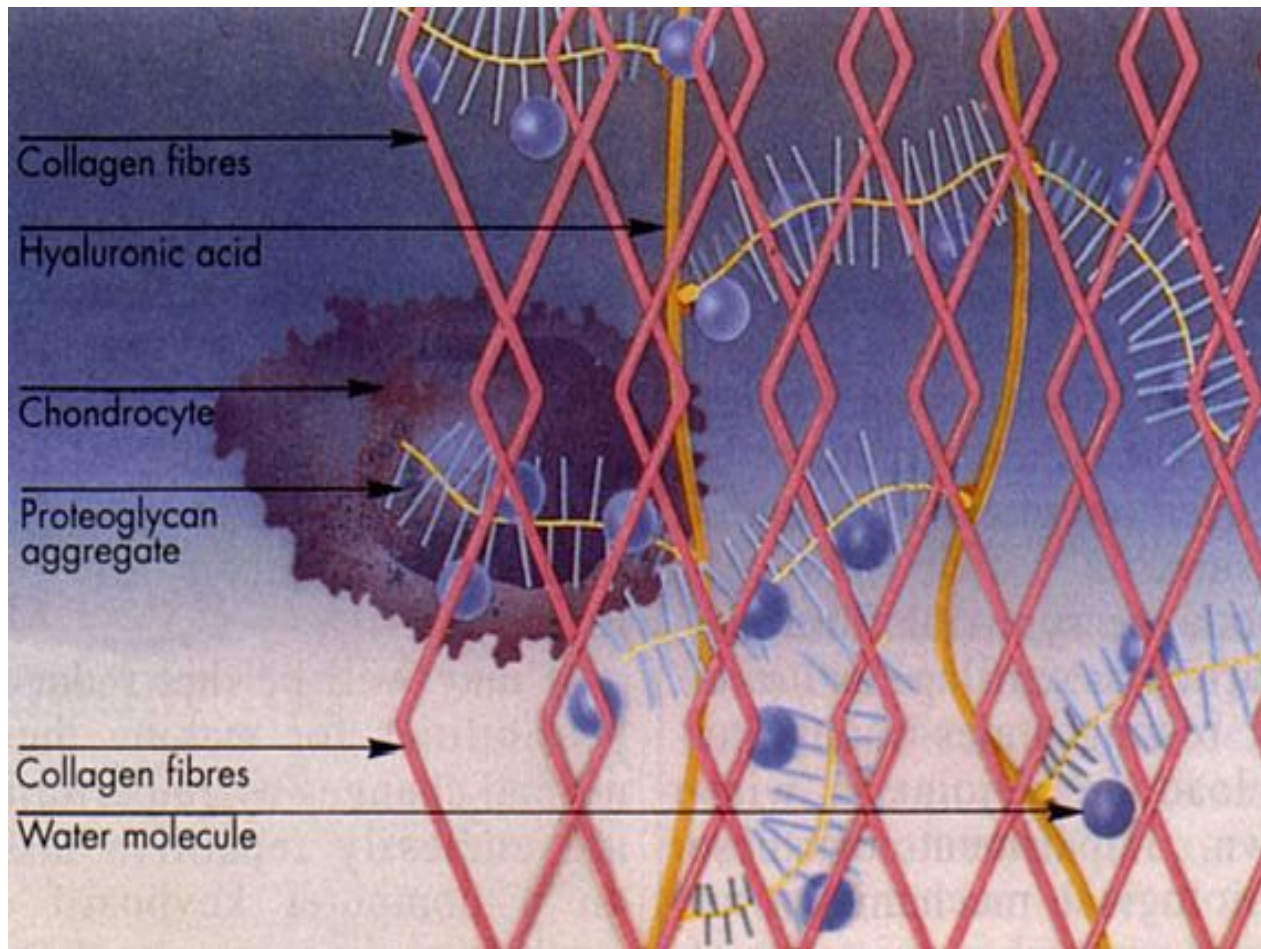


Aetiology is unknown

Secondary OA



Aetiology is known

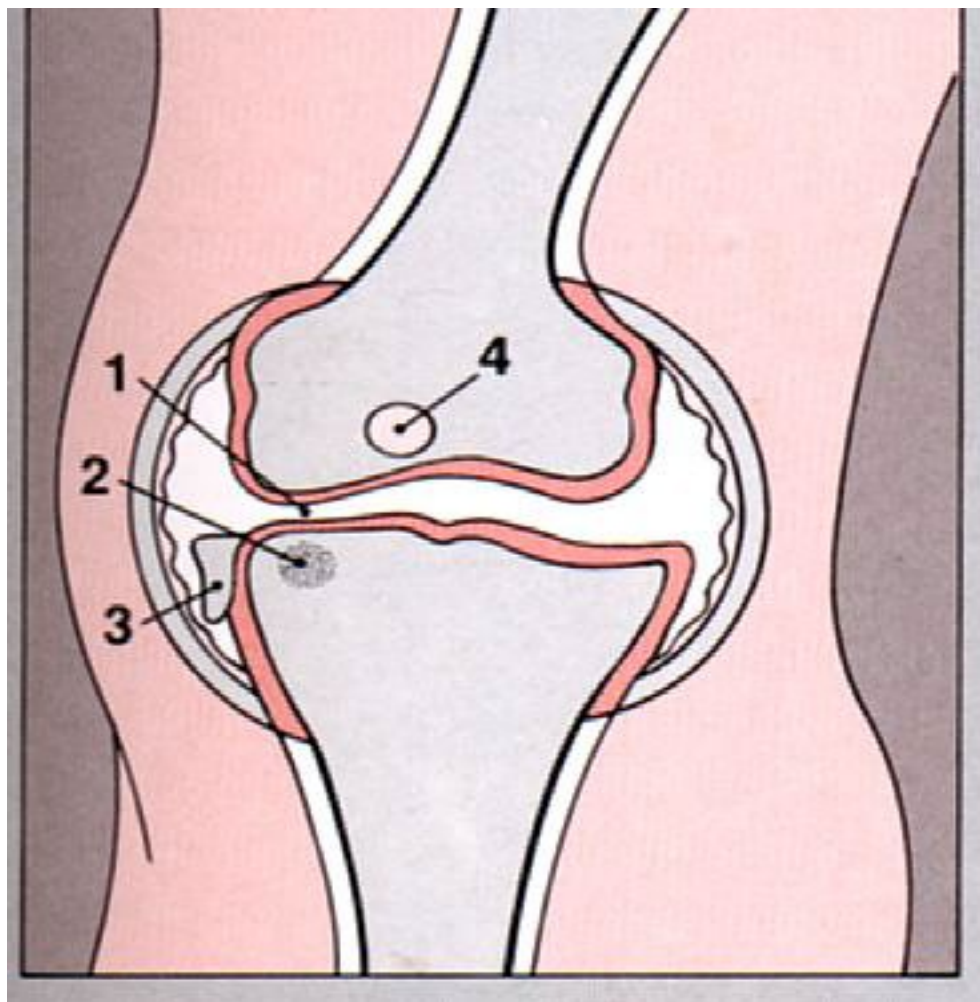


PATHOLOGY OF OA

- Fibrillation
- Eburnation
- Osteophytes
- Subcondral cysts

RADIOLOGIC FINDINGS OF OA

- Narrowing of joint space
(due to loss of cartilage)
- **Osteophytes**
- Subchondral (para-articular) sclerosis
- Bone cysts



RADIOLOGICAL GRADING OF OA

- Kellgren Lawrence Classification

Grade	Description
0	No radiographic features of osteoarthritis
1	Possible joint space (JS) narrowing and osteophyte formation
2	Definite osteophyte formation with possible JS narrowing
3	Multiple osteophytes, definite JS narrowing, sclerosis and possible bony deformity
4	Large osteophytes, marked JS narrowing, severe sclerosis and definite bony deformity

DIAGNOSIS OF OA

CLINICAL FINDINGS

Joint pain/ Stiffness >30m/
Limited ROM/ Deformity

+

RADIOLOGIC FINDINGS

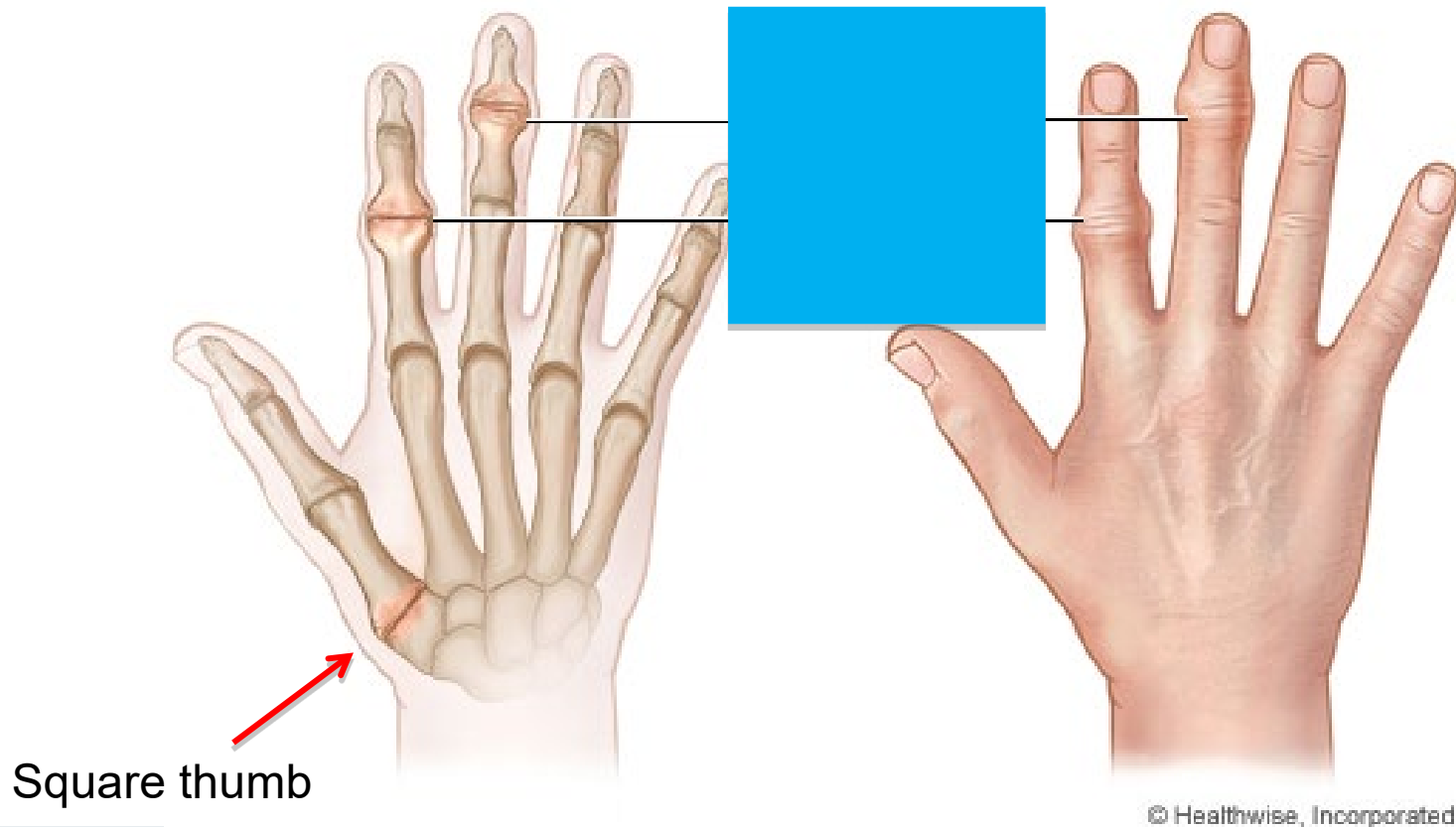
Osteophytes

CLINIC OF OA

SIGNS AND SYMPTOMS

- Joint pain - degenerative
- Stiffness following inactivity – 30 min
- Limitation of ROM – later stages
- Deformity – restriction of ADL

Symptoms and Signs



RA Vs. OA

Features	Rheumatoid Arthritis	Osteoarthritis
Age of onset	Can happen at any age	Usually later in life
Speed of onset	Rapid- weeks to months	Slow- over years
Distribution	Symmetrical polyarthritis	Initially asymmetrical monoarthritis →polyarthritis
Joints affected	Small joints of hands and feet	Weight bearing joints- knees, hips
Duration of morning stiffness	Stiffness worse in the morning >1hour	Stiffness <1hour and worse at the end of the day (after activity)
Systemic symptoms	Fatigue, fever, night sweats	-

Investigations and Assessment

- Bloods
 - FBC, U&Es, LFTs, ESR, CRP
- Imaging- 4 cardinal signs on Xray?
 - **S**ubchondrial sclerosis
 - **O**steophytes
 - **N**arrowing of joint space
 - **S**ubchondrial cysts
- Physical
 - Gait Analysis
 - Postural assessment
 - Test muscle length and strength
 - Joint ROM
 - Functional assessment (Sit to Stand, Balance, Stairs)



Figure 1



Figure 2

Knee OA

- ▶ More common in obese females
- ▶ over 50 years of age
- ▶ Joint stiffness (<30 minutes)
- ▶ Mechanical pain
- ▶ Physical examination findings: Crepitus
- ▶ Pain on pressure
- ▶ Painful ROM and functional limitation
- ▶ Limitation of ROM in later stages of OA (first extension)

Hip OA

▶ CLINICAL SIGNS

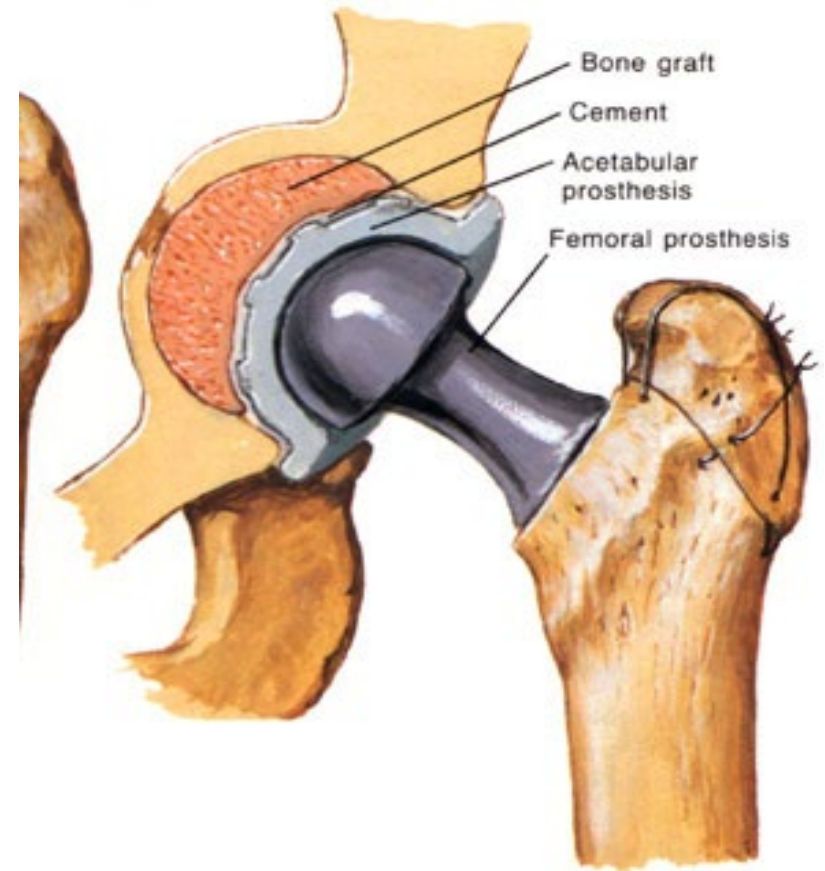
- ▶ More common in **males over 40** years of age
- ▶ Joint stiffness
- ▶ Pain of hip, gluteal and groin areas radiating to the knee (N obturatorius)
- ▶ Mechanical pain
- ▶ Limited walking function (antalgic gait)
- ▶ Limited Internal Rotation
- ▶ Painful ROM
- ▶ Leg Length Discrepancy
- ▶ Positive Trendelenburg

Management

- Management
- !THINK! Function- function-function
 - Conservative- muscle strengthening exercises + aerobic exercise (non weight bearing)
 - Weight Loss
 - Assistive devices for Gait
 - Taping
 - Footwear and Bracing (Orthotist)
 - Drugs- Paracetamol + NSAIDS (top/oral)
 - Intrarticular steroid injections as adjunct therapy
 - Hyaluronan
 - Surgery- indicated when PAIN/stiffness have a substantial impact on QOL

Surgical Management of OA

- Osteotomy
- Arthrodesis
- Arthroplasty
 - Total knee replacement
 - Total hip replacement



Osteoarthritis- !THINK! Function



Case 1

- 34 F presents 8/52 history of pain of the small joints in her hand.
 - Pain worse first thing in the morning
 - Associated with stiffness + + +
 - Takes around 1 hours for the stiffness to go away
 - Feels more tired than usual
 - Notices swollen hands

Case 1

- Social History
 - Works as a secretary and has been late for work- pain has disrupted her morning routine
 - Smokes 15 cigarettes/day
 - Drinks <10units of wine/week

Case 1

- On Examination
 - Slightly swollen over the MCP and PIP joints of both hands. Tender + + +
 - No obvious deformity
 - Temp 37.5° C
 - Injected right eye-non tender
 - Skin changes° / elbows° /scalp°



Case 1

- Differential Diagnosis
 - Rheumatoid Arthritis
 - Osteoarthritis
 - SLE
 - Sjogrens Syndrome
 - Sarcoidosis
 - Psoriatic Arthritis
 - Polymyalgia Rheumatica

Case 1

- Investigations ?
 - Bloods
 - FBC, U&Es, LFTs, ESR, CRP, (RF anti CCP)
 - Imaging
 - Narrowing of joint spaces
 - Soft tissue swelling
 - Bony erosions
 - Subluxation
 - Periarticular osteopenia
 - Joint deformity

Case 1

- Management
 - Conservative- smoking cessation
 - Drugs
 - 1) Pain relief
 - 2) Disease modifying
 - Social
 - Modifications at work
 - Modifications at home

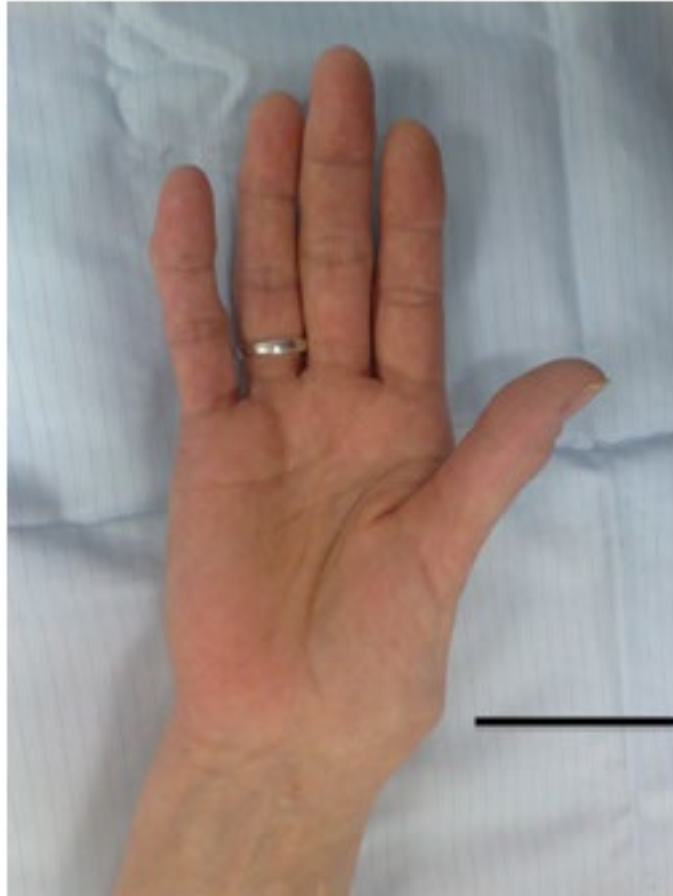


Case 2

- 67 F presents with pain in the joints of her hands, mainly the thumbs.
 - Pain worse after gardening
 - Slight swelling present
 - Pain eased by paracetamol
- Hypertension (Amlodipine 5mg), retired secretary, never smoked and non-drinker

Case 2

- On examination
 - Not grossly deformed
 - Squaring of the thumb joint
 - Tender over PIPs and DIPs
 - Do her buttons and write her name with slight discomfort

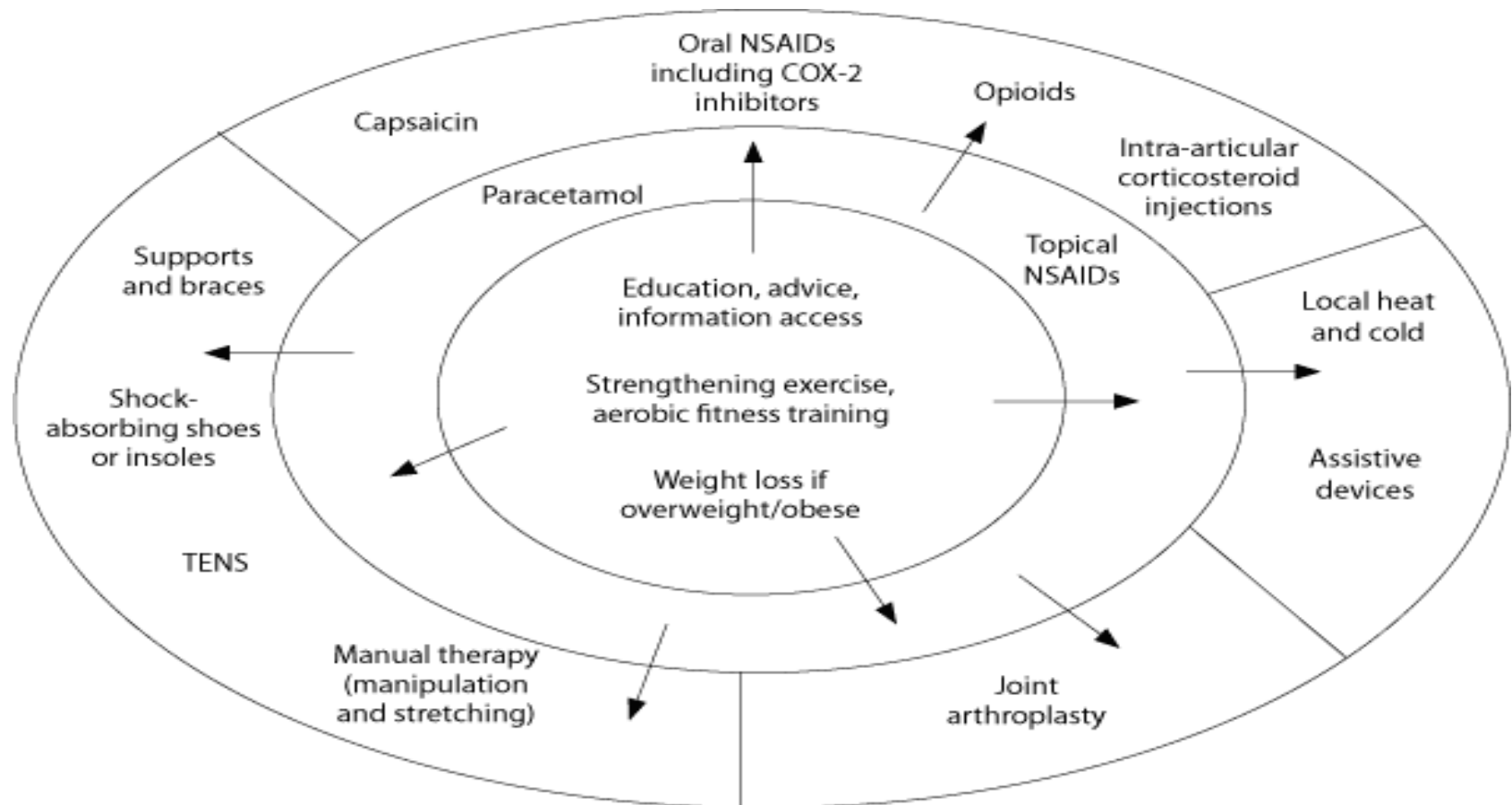


Prominence at the
base of the thumb

Case 2

- Investigations ?
 - Bloods
 - FBC, U&Es, LFTs, ESR, CRP
 - Imaging
 - **S**ubchondrial sclerosis
 - **O**steophytes
 - **N**arrowing of joint space
 - **S**ubchondrial cysts

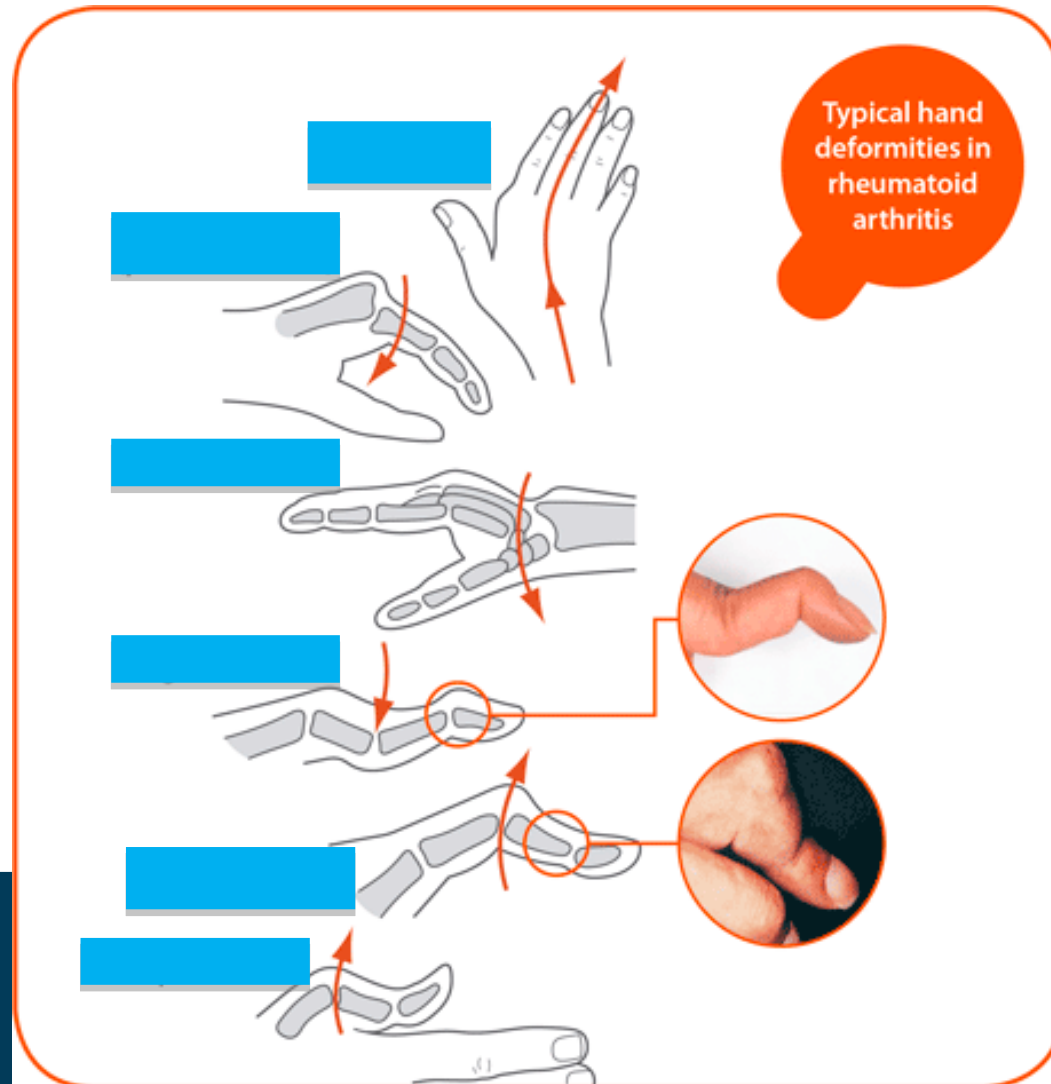
Management



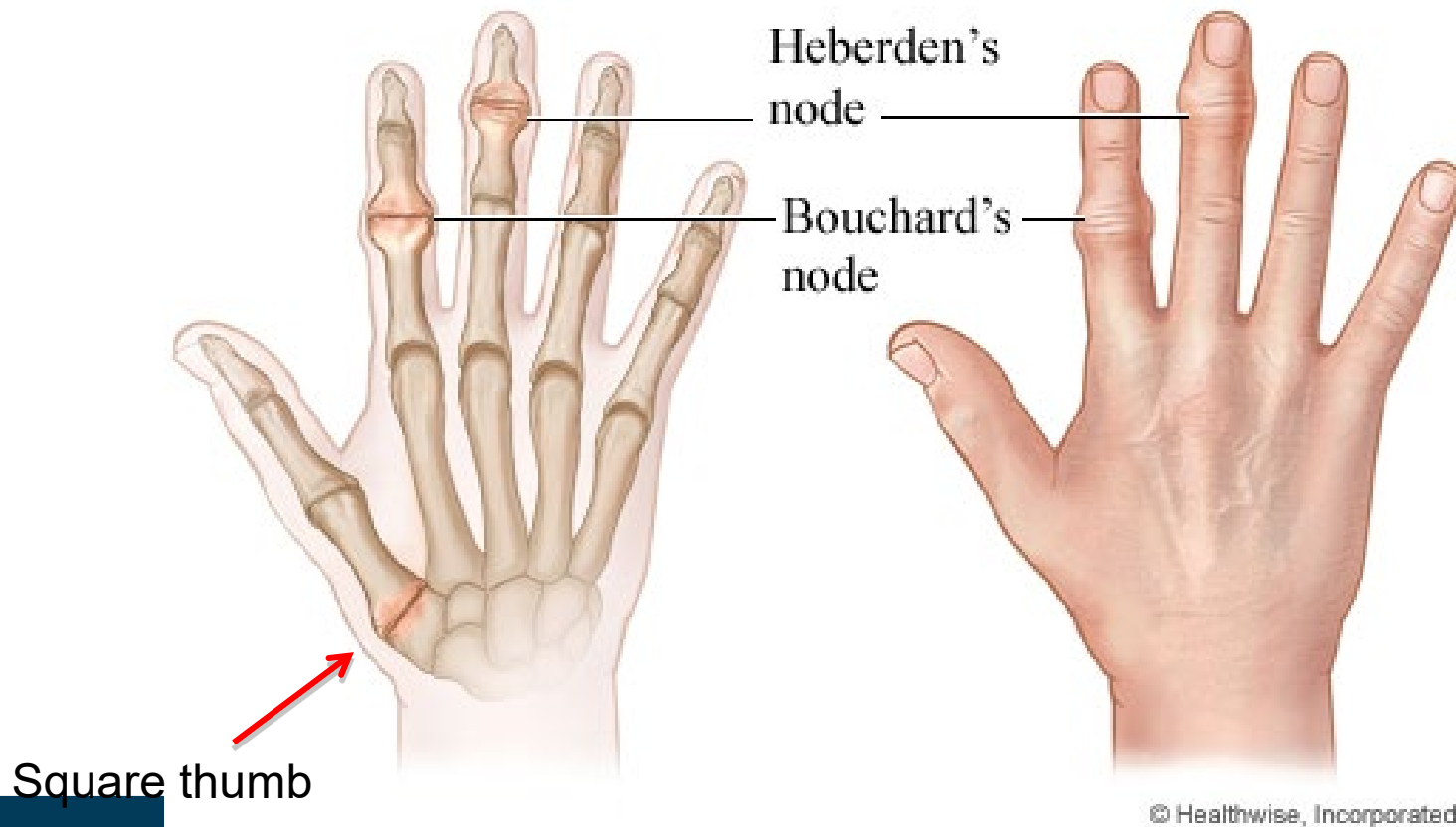
Reading

- <https://www.versusarthritis.org/>
- OA NICE Guidelines (2014)
 - <https://www.nice.org.uk/guidance/cg177>
- RA NICE Guidelines (2018)
 - <https://www.nice.org.uk/guidance/ng100>

Hand Changes in RA

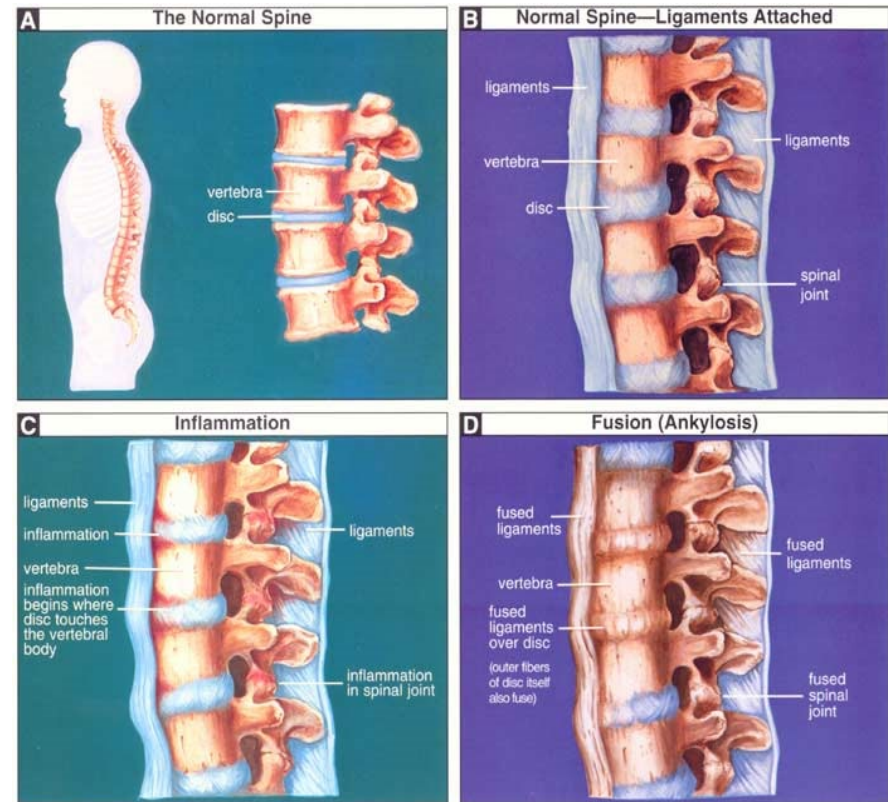


Hand Changes in OA



Ankylosing Spondylitis

- Chronic disease that primarily affects the spine and may lead to stiffness of the back. The joints and ligaments that normally permit the back to move become inflamed. The joints and bones may grow (fuse) together.
- The effects are inflammation and chronic pain and stiffness in the lower back that usually starts where the lower spine is joined to the pelvis or hip.
- Diagnosis is made through: (a) medical history including symptoms, (b) X-rays, and possibly (c) blood tests for HLA-B27 gene



Ankylosing Spondylitis

- Treatment options:
 - With early diagnosis and treatment, pain and stiffness can be controlled and may reduce fusing. In women, AS is usually mild and hard to diagnose.
 - Exercise
 - Medications: NSAIDs, Sulfasalazine
 - Posture management
 - Self-help aids
 - Surgery



Psoriatic Arthritis

- Causes pain and swelling in some joints and scaly skin patches on some areas of the body.
- The symptoms are:
 - About 95% of those with psoriatic arthritis have swelling in joints outside the spine, and more than 80% of people with psoriatic arthritis have nail lesions. The course of psoriatic arthritis varies, with most doing reasonably well.
 - Silver or grey scaly spots on the scalp, elbows, knees and/or lower end of the spine.
 - Pitting of fingernails/toenails
 - Pain and swelling in one or more joints
 - Swelling of fingers/toes that gives them a "sausage" appearance.

