



Arthritis Alliance of Canada
Alliance de l'arthrite du Canada

Setting the Stage: What is OA?

Disclosure

- None

Objectives

- What is OA?
 - OA as *Common Chronic Condition*
 - OA as a 'disease' (joint structure)
 - OA as an 'illness' (impact on the person)
- What causes of OA?

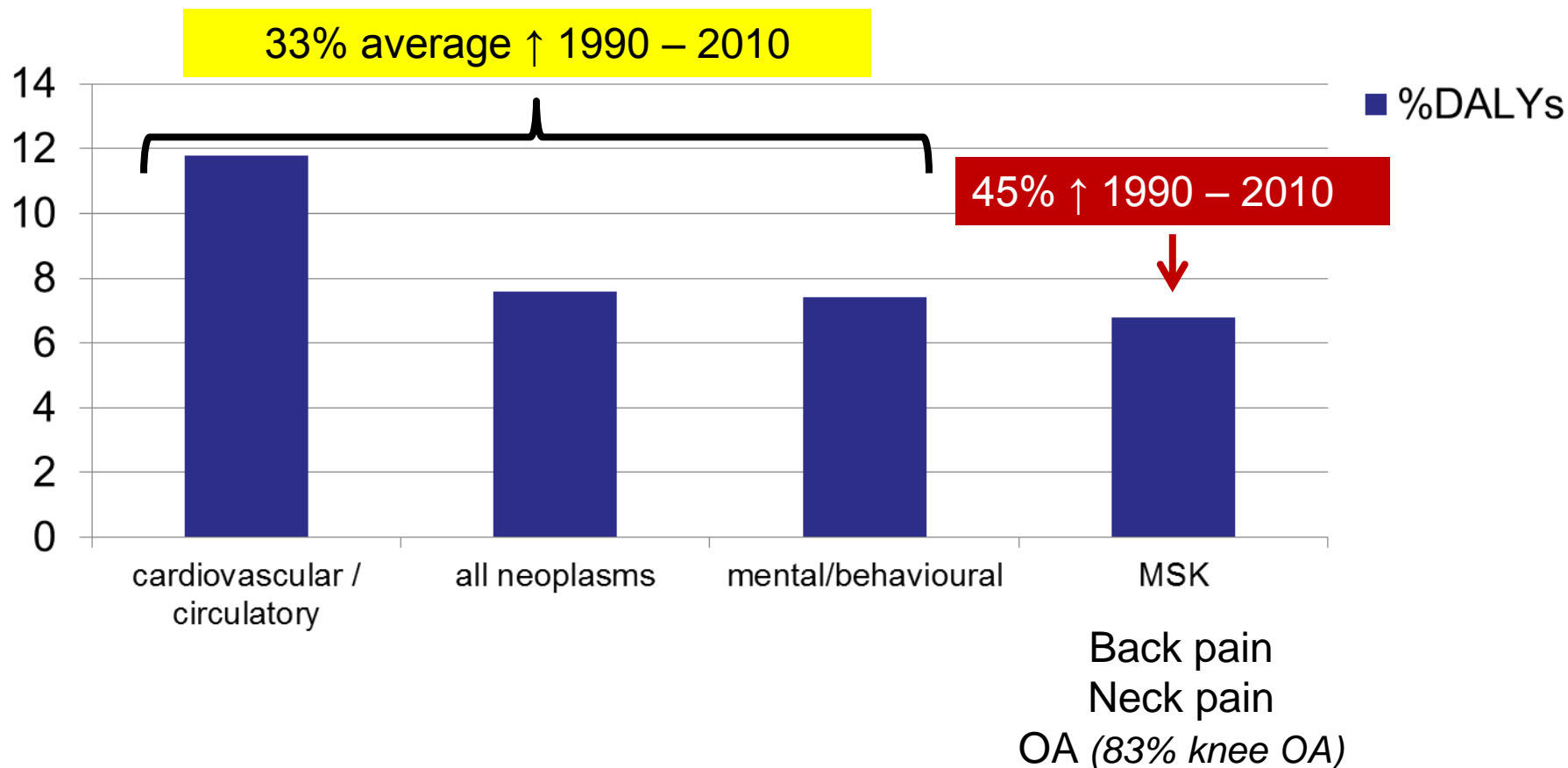
- Globally, aging populations & growing prevalence of obesity → increased population risk for hypertension, dyslipidemia, diabetes, cardiovascular disease...
... & osteoarthritis (OA)

OA is the fastest growing major health condition



Major Causes of Death and Disability

(%Disability Adjusted Life Years Lost)



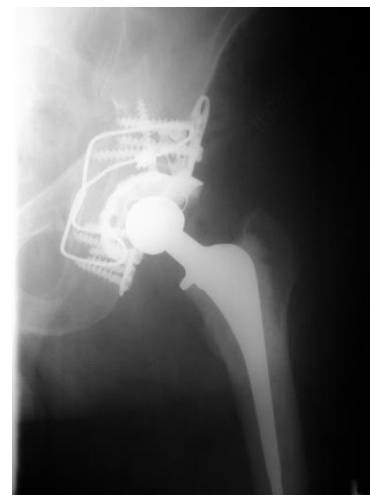
OA is the most common arthritis

three-quarters of the people who have arthritis have OA

Living with arthritis

- 2010 – 1 in 8
- By 2040 1 in 3

- Women > men
- Knee OA most likely to lead to disability
- Hand OA most common disease affecting hand function in elderly
- 95% hip/knee replacements for OA



Co-Existent Medical Conditions

- 90% of people 65+ years with OA have ≥ 1 other chronic condition (common risk factors: aging, obesity)
 - Heart disease
 - Diabetes
 - High blood pressure
- Comorbidity in OA is a *major* barrier to OA care
 - Competing demands
 - Contraindications to OA therapies

US Medicare & Medicaid Report, 2012 Edition. Baltimore, MD.

Trelle S et al (2011) BMJ 342:c7086.

Hackam DG et al 2010. Can J Cardiol 26: 249-258.

Nieves Plaza et al J Clin Rheum 2013

K Magnusson et al Arthritis Care & Res 2014

Patterns of OA

- Localized OA
 - Hands & feet
 - Knee
 - Hip
 - *Neck*
 - *Lumbar spine*
- Generalized OA
 - 3+ joint groups



Osteoarthritis is...

Characterized by thinning and destruction of the cartilage with loss of joint space & sub-chondral bony changes

Structural
Changes
(the disease)

Symptoms
(the illness)

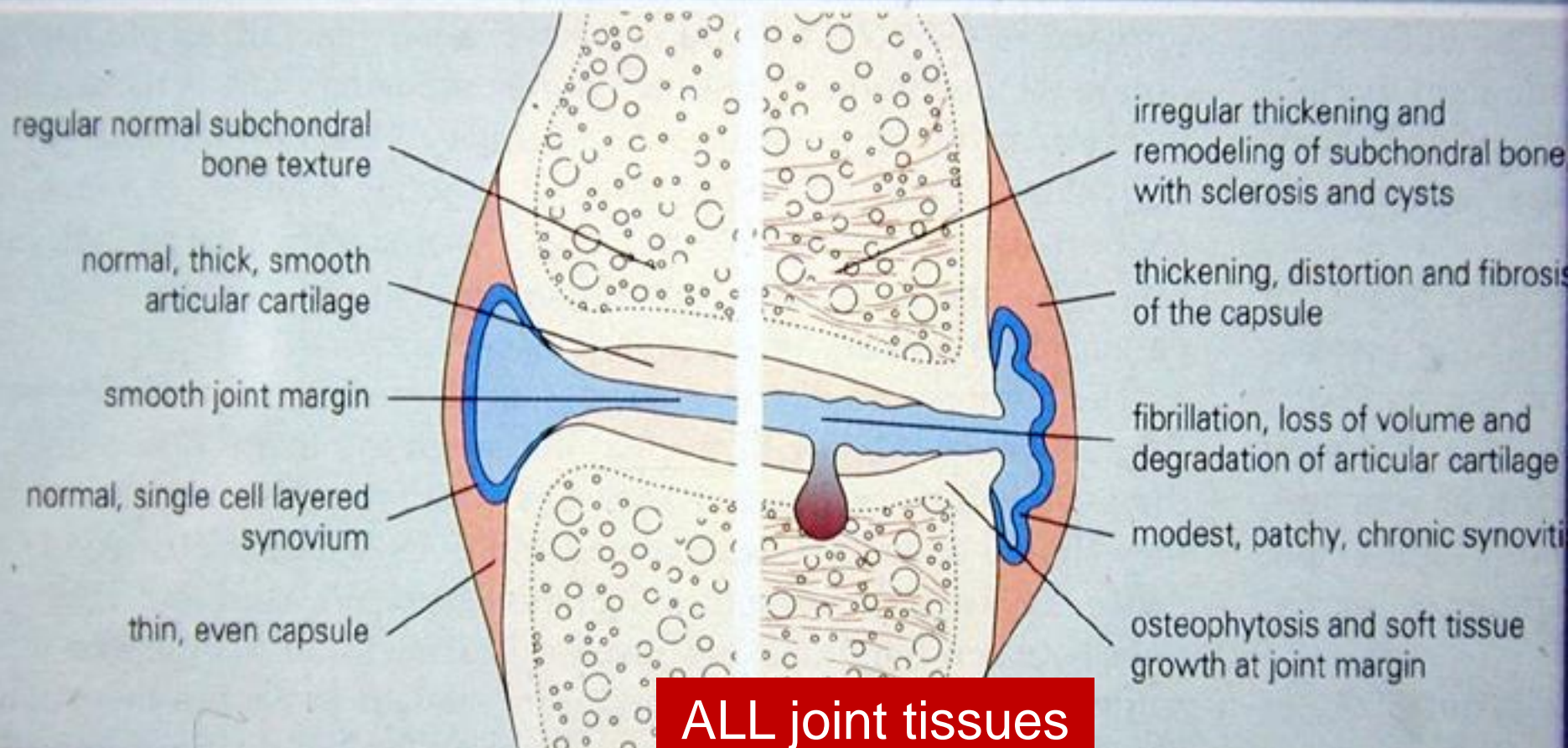
Pain on joint use, stiffness with inactivity, bony tenderness, effusion, limited ROM, ↓ physical function

Symptomatic OA

Symptoms worse with more severe radiographic OA but...association between radiographic changes and symptoms imperfect

OA: The Disease

A NORMAL VERSUS AN OSTEOARTHRITIC SYNOVIAL JOINT



**ALL joint tissues
are involved**

R

STANDING

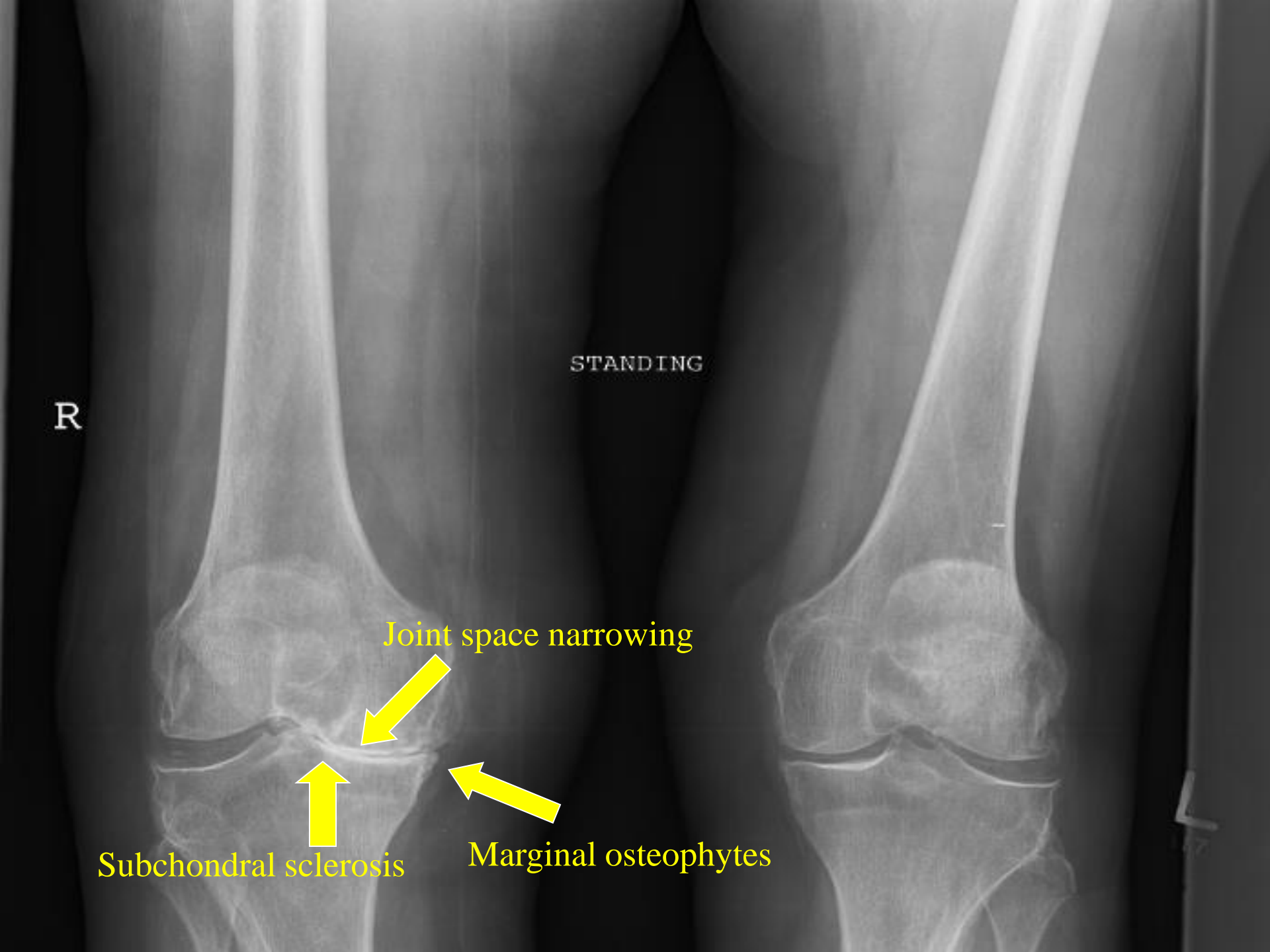
Joint space narrowing



Subchondral sclerosis



Marginal osteophytes



Physical Examination in OA

- Joint line tenderness
- Bony enlargement
- Crepitus
- Reduced range of motion
- Inflammation (swelling, redness, warmth, tenderness)
- Mal-alignment



Assessment of *Structural* OA

- PLAIN X-RAY detects cartilage loss by inference (joint space narrowing), which occurs in *late disease*
 - Like using stroke to diagnose hypertension
- MRI assesses ALL joint tissues, but still working out what changes are meaningful (relate to symptoms, progression)
 - e.g. meniscal tears common & don't differentiate people with/without pain
 - Time & Cost

But *symptoms* drive OA burden (OA: the illness)



Symptoms
(the illness)

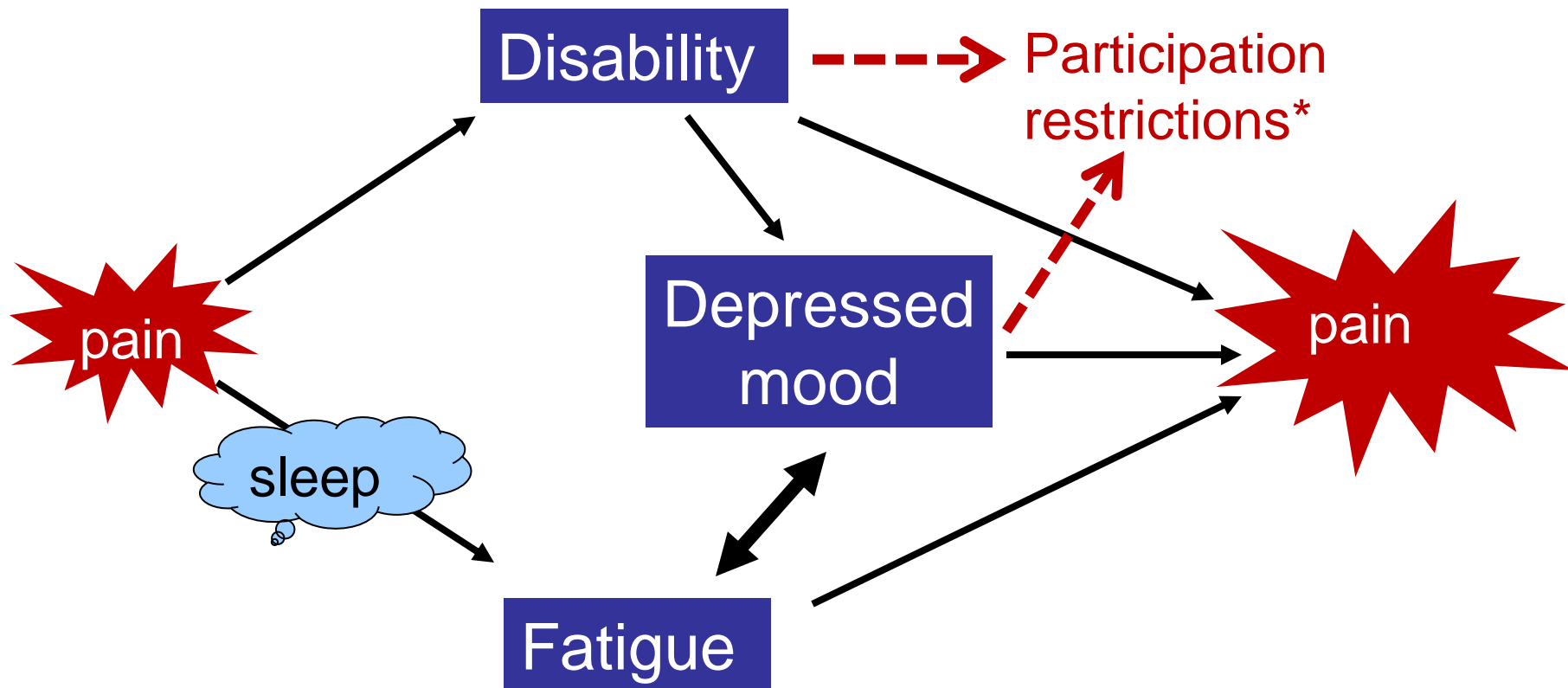
Painful OA

- Painful OA...
 - is second most frequent reason for visit to physician
 - accounts for most anti-inflammatory drug use
 - is the #1 reason why people have joint replacement surgery

Usual Course of Pain in OA

- **Early OA**
 - Predictable sharp or other pain with trigger (usually an activity) that eventually limits high impact activities but has no other major effects
- **Mid OA**
 - Predictable pain increasingly associated with unpredictable locking, other knee symptoms, pain more constant with time – starts to affect walking and stairs
- **Late OA**
 - Constant aching/dull pain with short episodes (unpredictable) of very sharp pain that leaves them exhausted; significant curtailing of all activities

OA Pain Cascade



Hawker et al *Arthritis Care Res* 2011

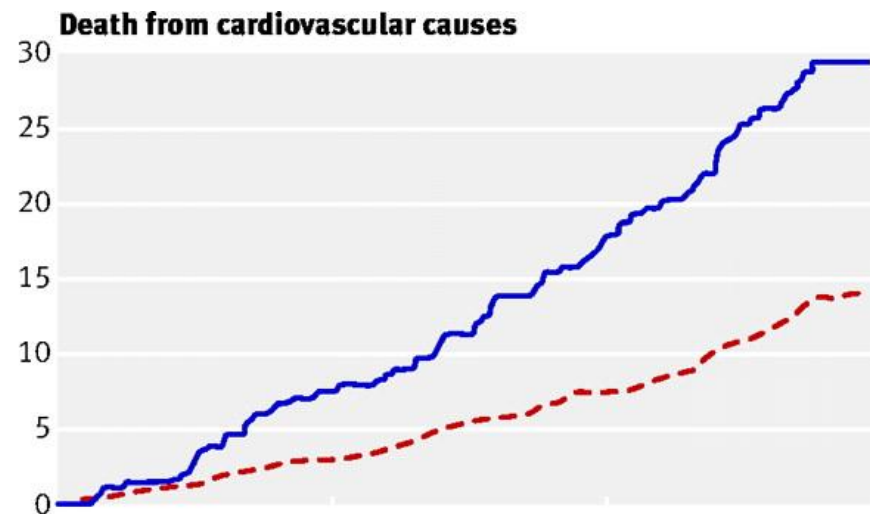
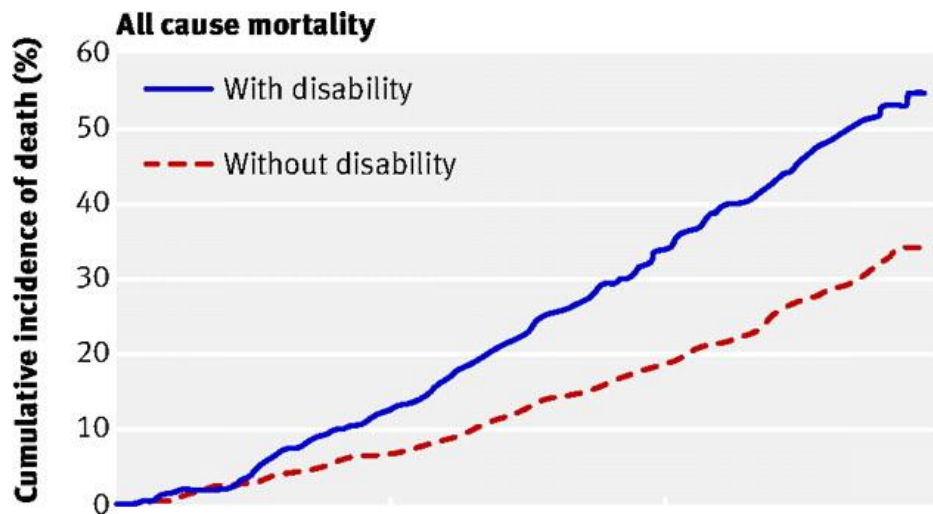
*Wilkie R et al, *Arthritis Care & Res* 2013

OA impacts mobility



Difficulty Walking Reduces Survival

- Population based cohort 35+ years with symptomatic hip/knee OA recruited 1994-5 from 40 English general practices (n=2,703)
- Examined survival status & cause of death to February 2009 using data from National Statistics
- Controlling for age, sex, diabetes, cancer, CVD, walking disability (1.48, 1.17 to 1.86) predicted ↑ all-cause death (mainly from CVD causes)



Most Distressing OA Pain Features

- Intensity (*severity*)
- Intensity (*quality*)
- Affect on sleep
- Impact on mood
 - frustration (inability to do things), worry (e.g. for the future)
- Unpredictability
- Impact on function (ADLs, work & leisure activities)

Opportunities
for *personalized*
Rx in OA

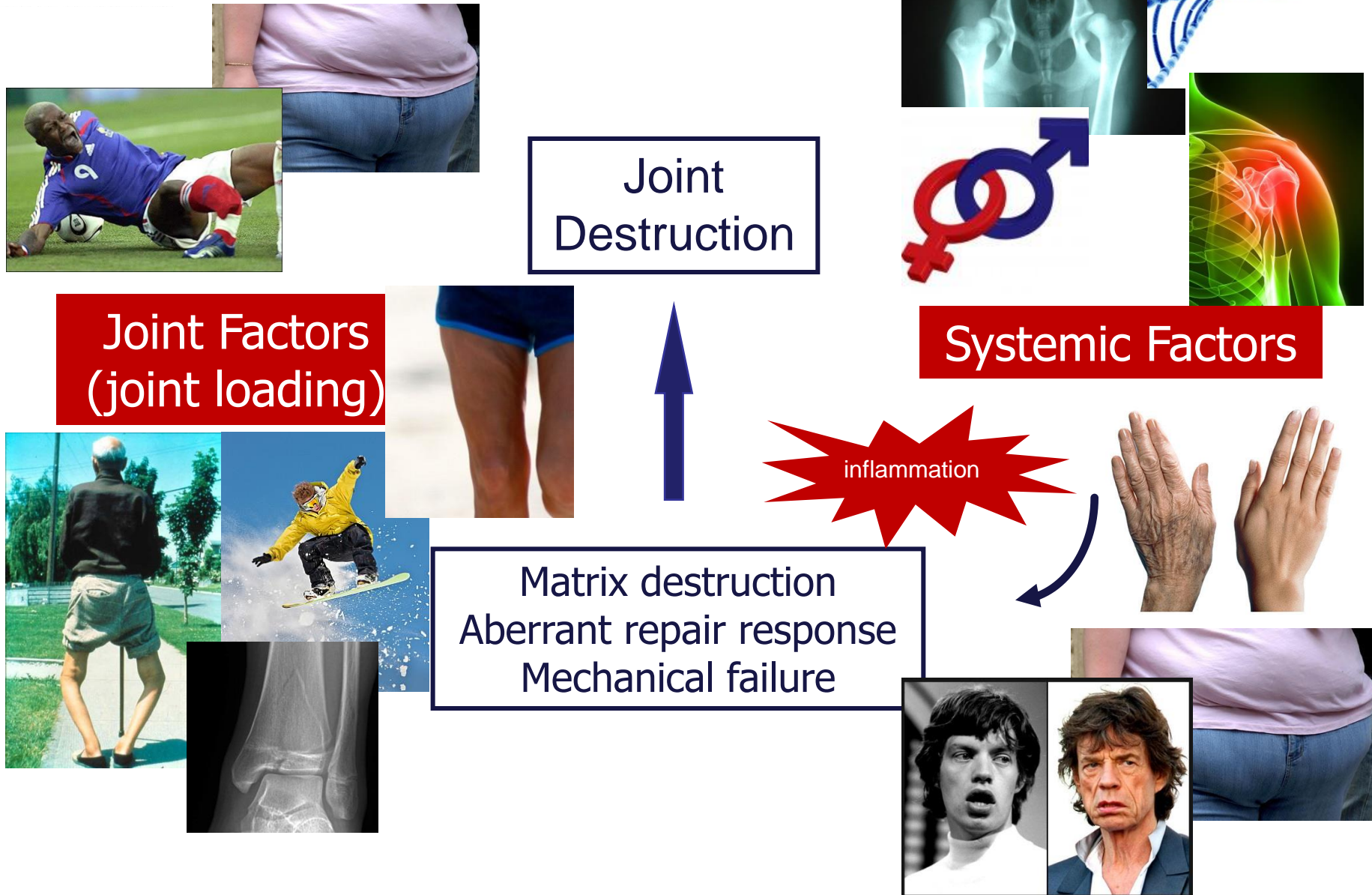
What causes OA?

Current Understanding of OA

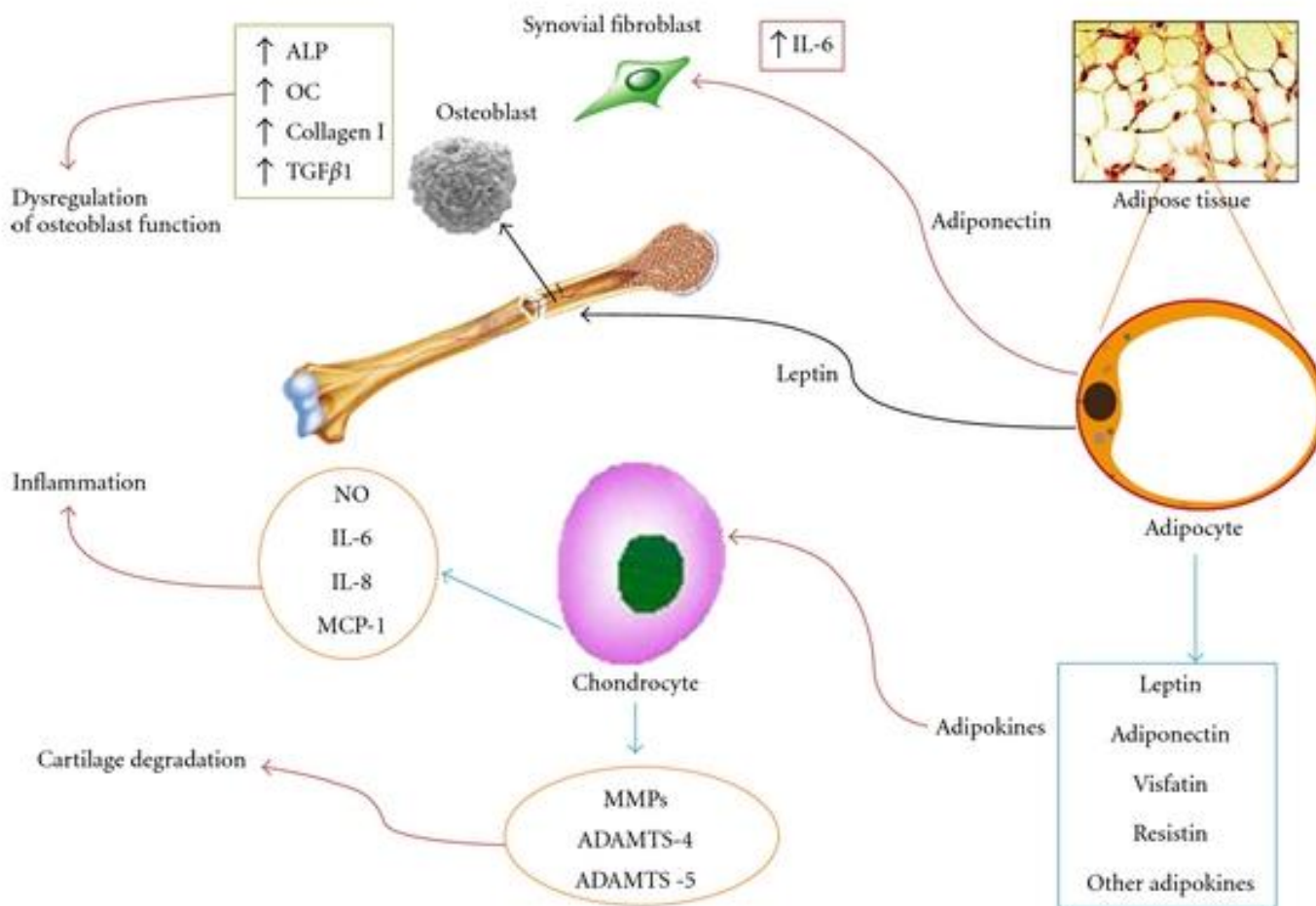
- A progressive disease of synovial joints that represents **failed repair of joint damage** resulting from **stresses** that may be initiated by an abnormality in ANY of the joint tissues (articular cartilage, subchondral bone, ligaments, menisci, periarticular muscles, peripheral nerves, synovium) → **breakdown of cartilage and bone**

2009 OARSI Task Force on Defining OA

OA Pathogenesis



Concept of “Metabolic OA”



Personalizing OA Care

linking treatment to etiology

Biomechanics

- **Weight loss**
- Insoles, Braces
- Canes, Walker
- Exercise (resistance, aerobic, neuromuscular training)



Systemic Factors

Local treatments

- Topical therapies
- Intra-articular injections

Systemic treatments

- **Weight loss**
- Exercise
- Analgesics
- NSAIDs

Self-management strategies, including education



Summary

- OA is the most common arthritis
 - Most people with OA also have other common chronic conditions
- Paradigm shift: from cartilage 'wear and tear' to complex pathogenesis where *ALL joint tissues* involved
 - Multiple causes with one final common pathway rather than a single condition
 - Opportunities for personalized approach to prevention (weight, injury prevention) and treatment (systemic, biomechanical approaches)
- Symptoms drive care seeking behaviour
 - Better assessment of symptoms provide opportunities for targeted therapies

Thank you...

