

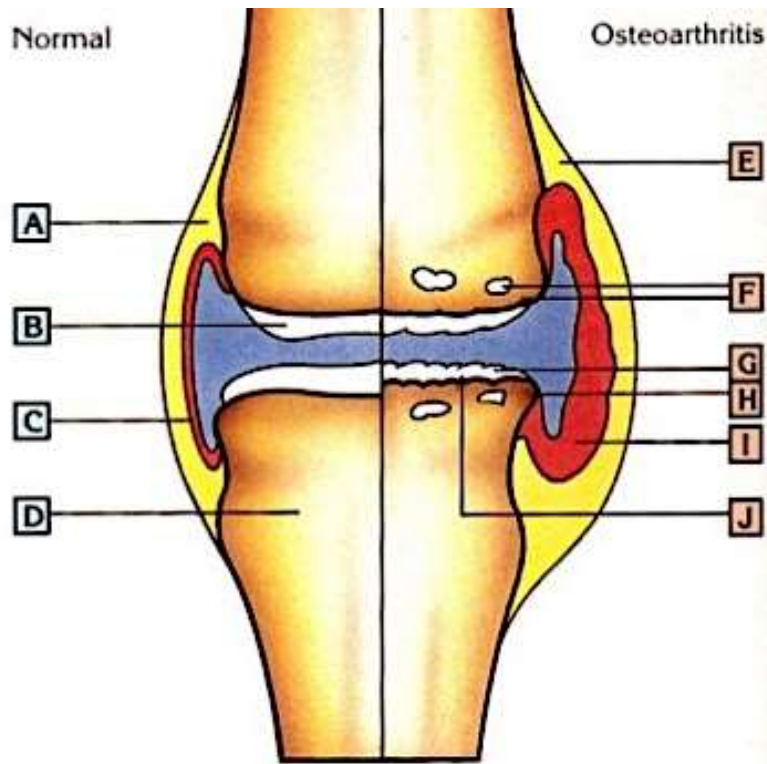
OSTEOARTHRITIS

A SERIOUS DISEASE

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Dept of General Practice
Dept of Orthopedics and Sports Medicine

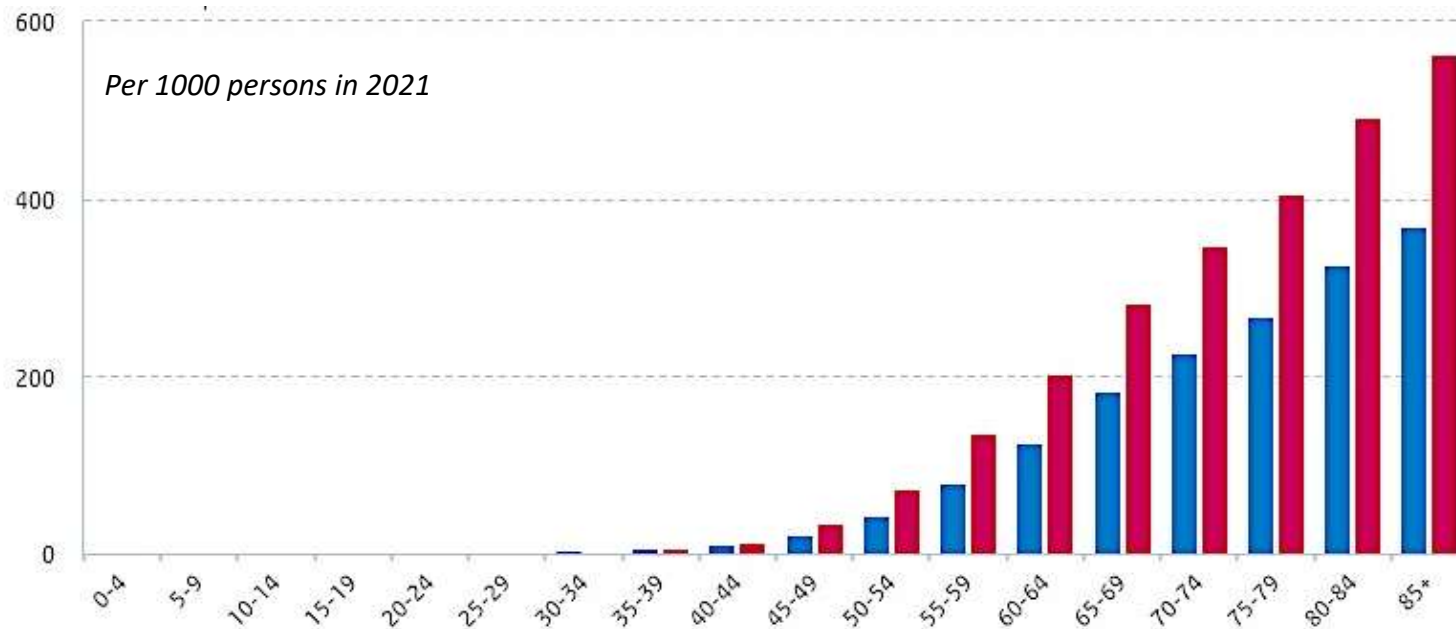


Osteoarthritis



- ◆ Slowly progressive joint disease
- ◆ Changes in
 - biochemical composition
 - tissue composition
 - joint structure
- ◇ Pain
- ◇ Disability

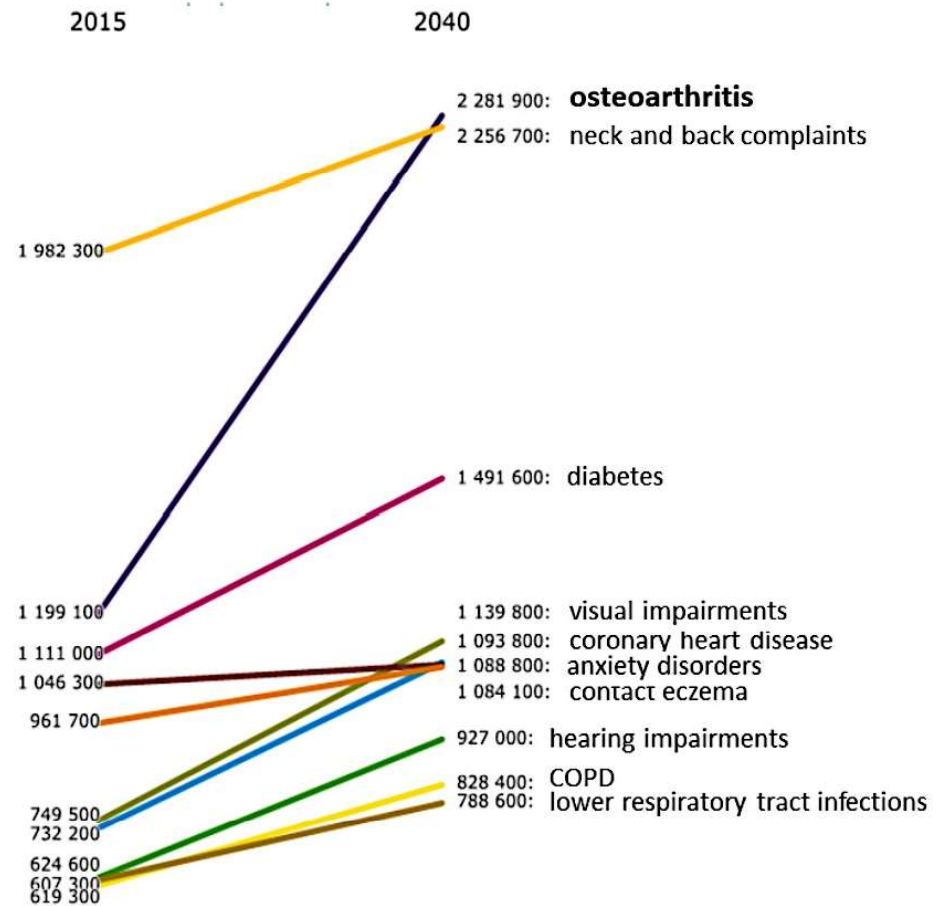
Prevalence osteoarthritis

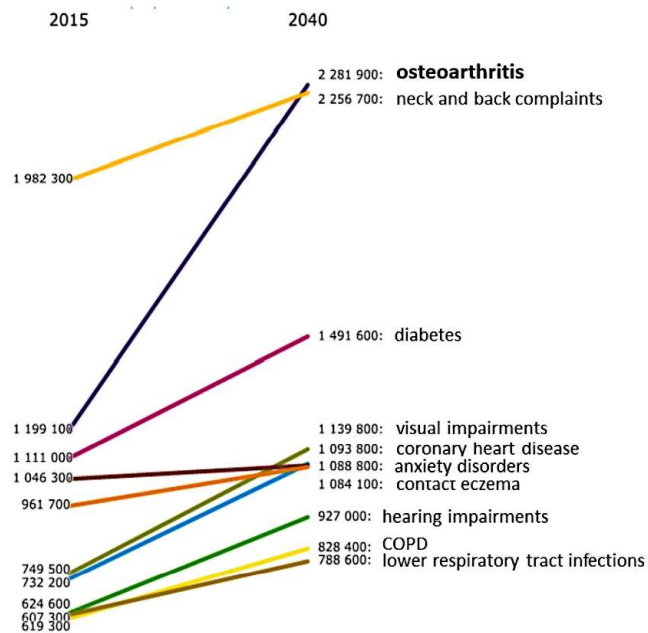


Forcast 2040



Number of people
with a specific disease





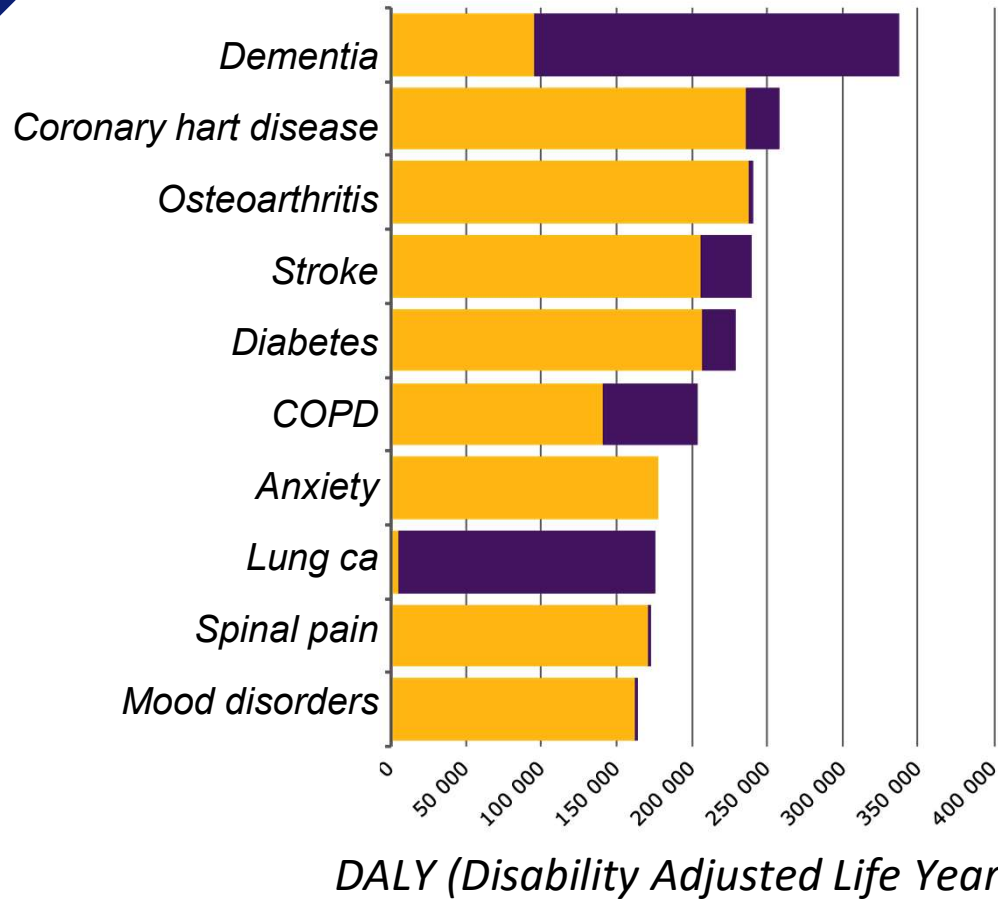
2040:
2,3 million persons with OA

By:
Ageing population, obesity, knee trauma, and population growth

→ Most frequent chronic disease in general practice



A trend scenario of diseases in 2040. Dutch Public Health Foresight Report (VTV). RIVM; 2018.



Disease burden 2040

Most years lived with disability:

- Osteoarthritis
- Coronary hart disease

Most years of life lost:

- Dementia



A trend scenario of diseases in 2040. Dutch Public Health Foresight Report (VTV). RIVM; 2018.

Medical costs

1,1 billion € in 2019

> 80% hospital costs

VZinfo.nl

Total costs

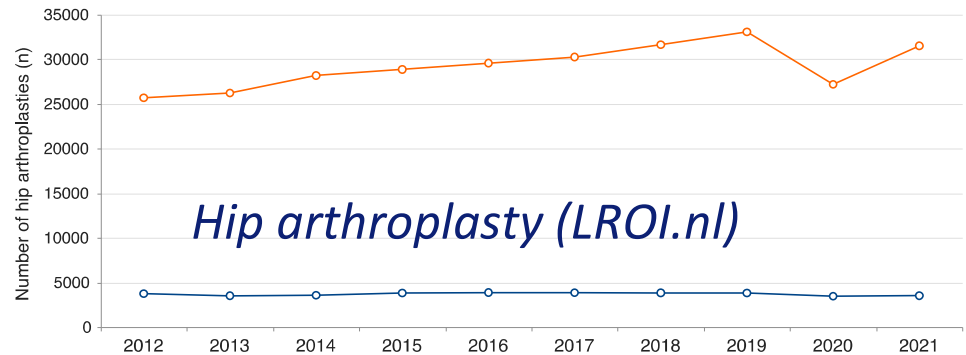
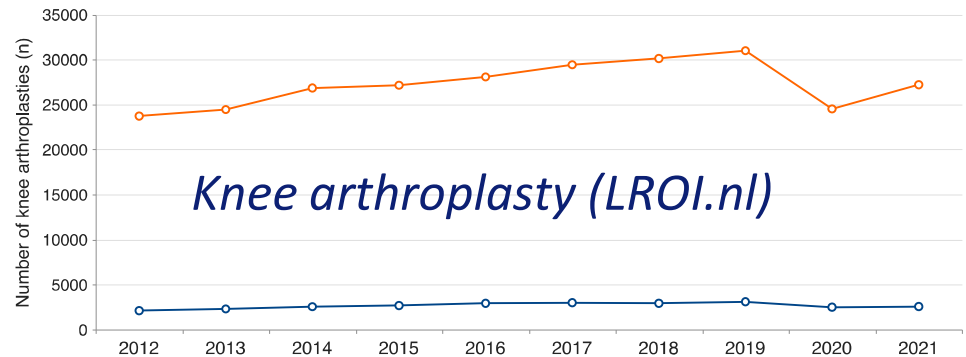
1-2% GNP

Lawrence, *Arthritis Rheum.*, 2008

↑ Atherosclerosis / CVD

Bierma-Zeinstra & Waarsing,

Best Pract & Res Clin Rheumatol, 2017

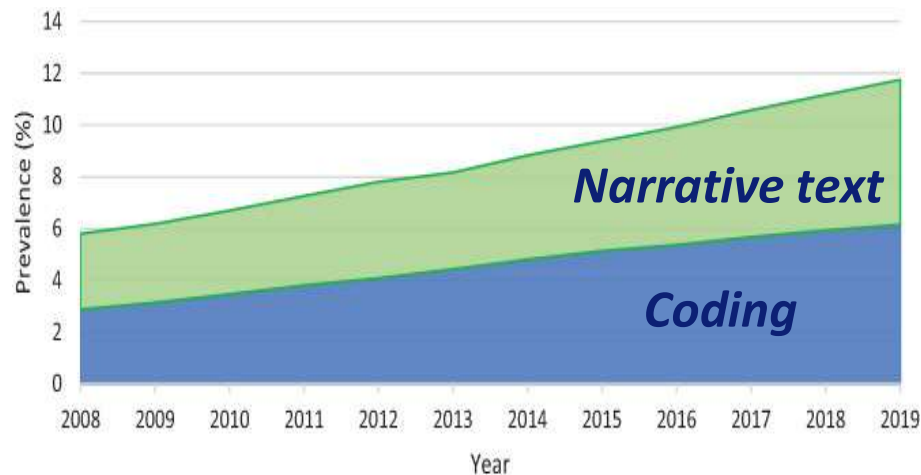


Erasmus MC



OA prevalence is underestimated

Knee osteoarthritis in people over age 30



- Twice as many knee OA patients in GP registries
- Probably, possibly, etc. excluded

The cause of OA is multifactorial

Age
Genetic
Metabolic
Sex

systemic

local

Trauma
Overload
Joint shape

biochemical processes
(cytokines, growth factors, etc.)

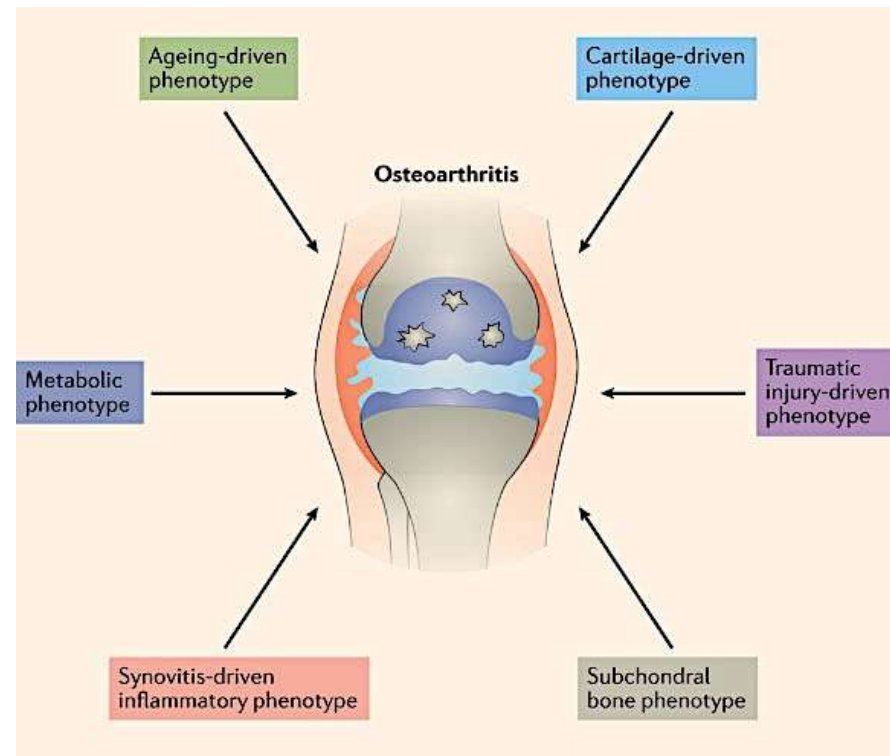
Age
Genetic
Sex
Psychosocial
Metabolic
Inflammatory

Pain and
dysfunction

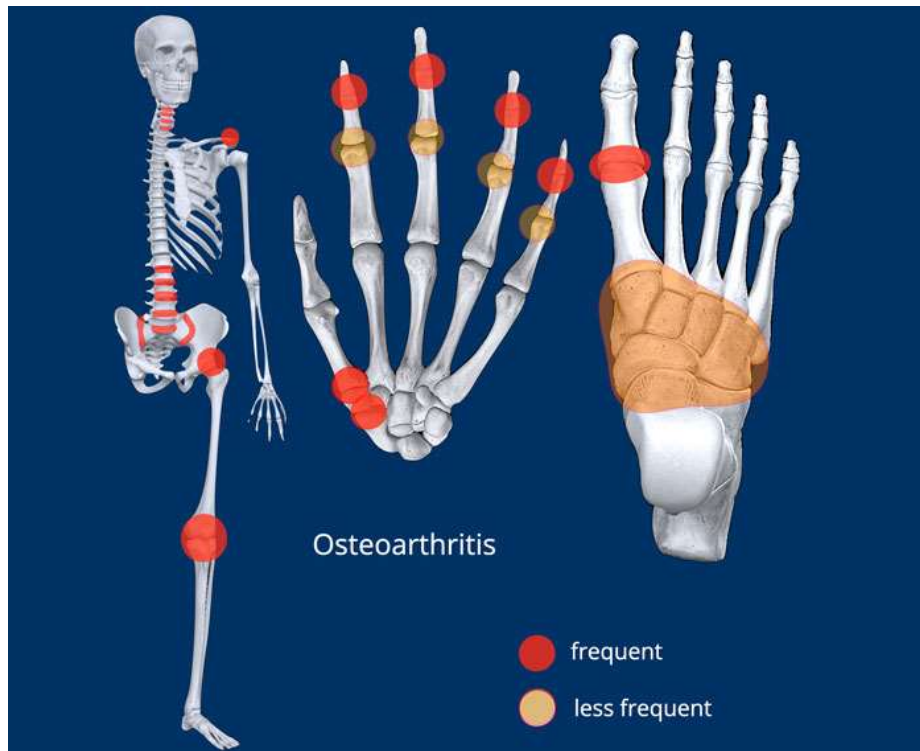
OA phenotypes/endotypes

Heterogeneity in

- Clinical manifestations
- Etiology
- Underlying pathophysiology



OA in hip and knee vs other joints



www.radiologyassistant.nl

Other joints less studied

For many joints no diagnostic criteria
(i.e. Spine, AC)

Multi joint OA:
3-5 type gewrichten

More joints involved: more
functional disability

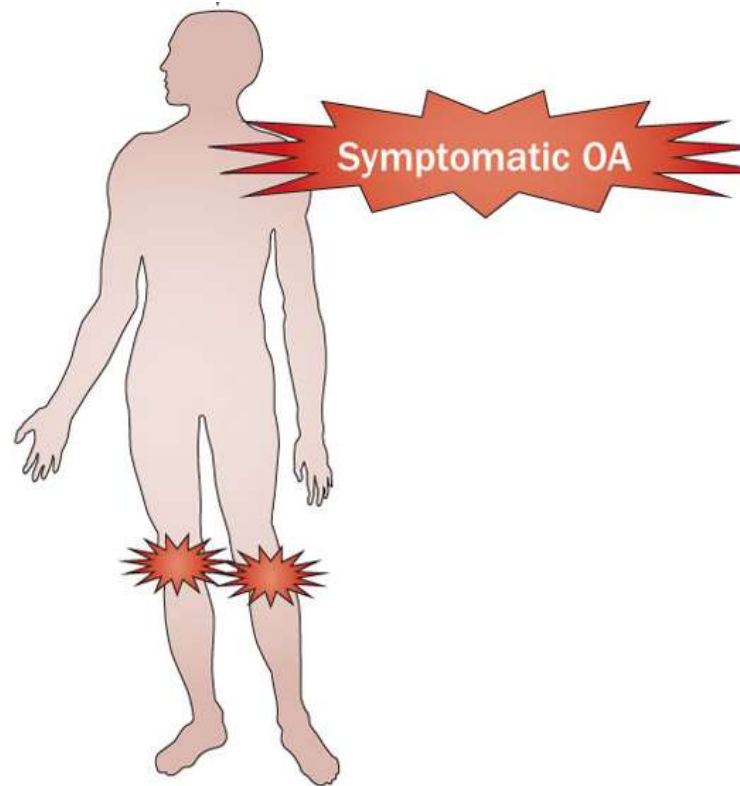
Erasmus MC



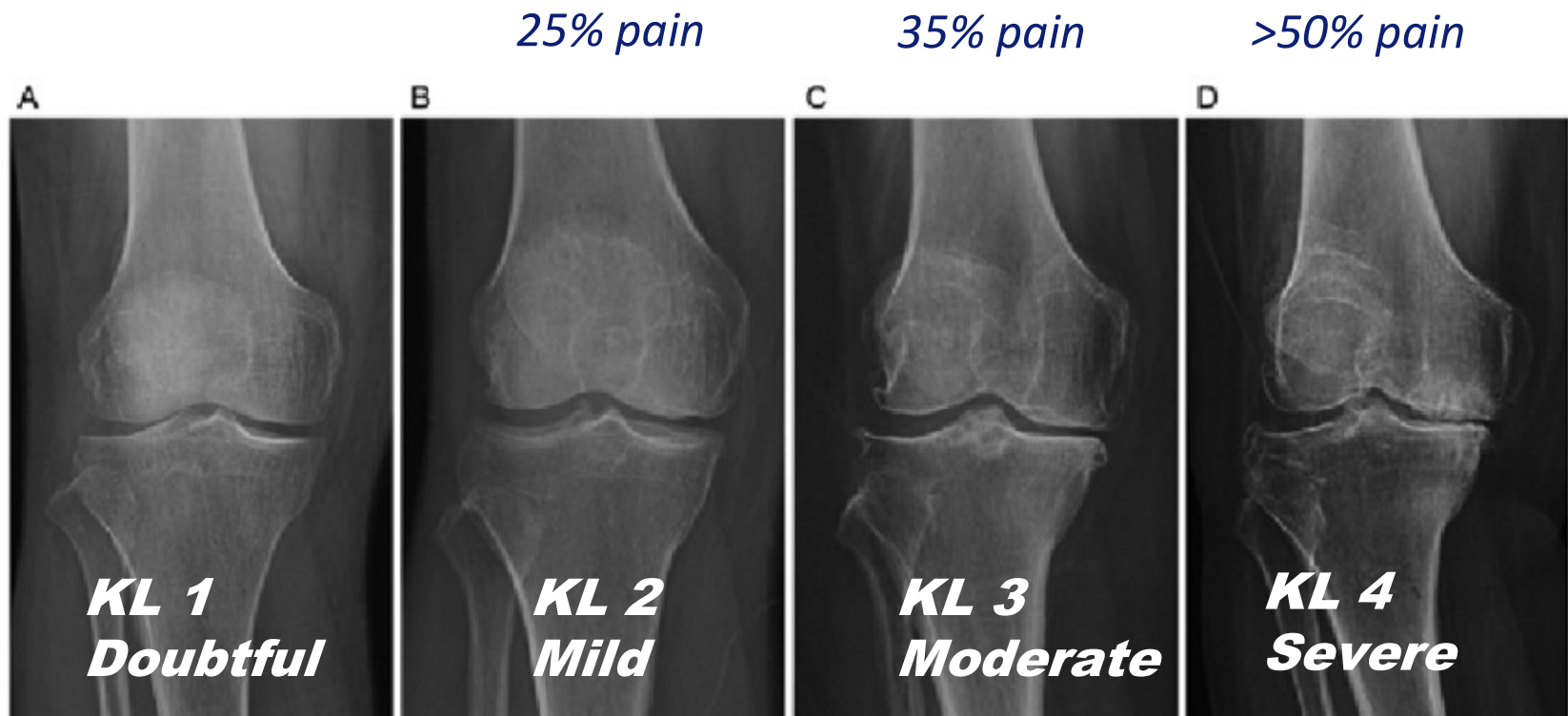
Symptoms and signs

Pain

- Morning stiffness
- Movement restrictions
- Painful movements
- Bony swelling
- Malalignment
- Joint effusion
- Crepitus
- Giving way
- Fatigue



Not all people with OA on X-ray have symptoms



Odding et al., Ann Rheum Dis., 1998.

X-ray does not predict symptomatic OA

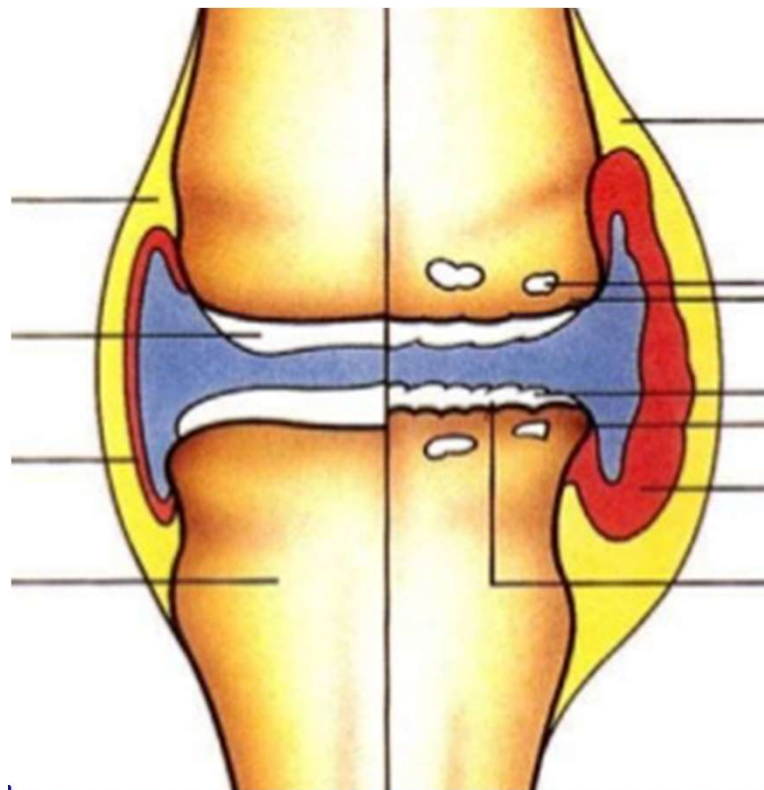
Hip	KL 0	KL 1	KL 2	KL3/4
No OA at 5-10 y follow-up	66%	25%	8%	1%
OA at 5-10 y follow-up	43%	37%	17%	2%

Knee	KL 0	KL 1	KL 2	KL3/4
No OA at 5-10 y follow-up	66%	24%	9%	0%
OA at 5-10 y follow-up	66%	22%	10%	0%

Runhaar et al., Rheumatology, 2021-1

Runhaar et al., Rheumatology, 2021-2

Local causes of pain in OA



Subchondral bone marrow edema +

Cartilage -

Osteophyte -

Synovitis +

*Invasion blood vessels
(and small nerves)
through tide mark ?*

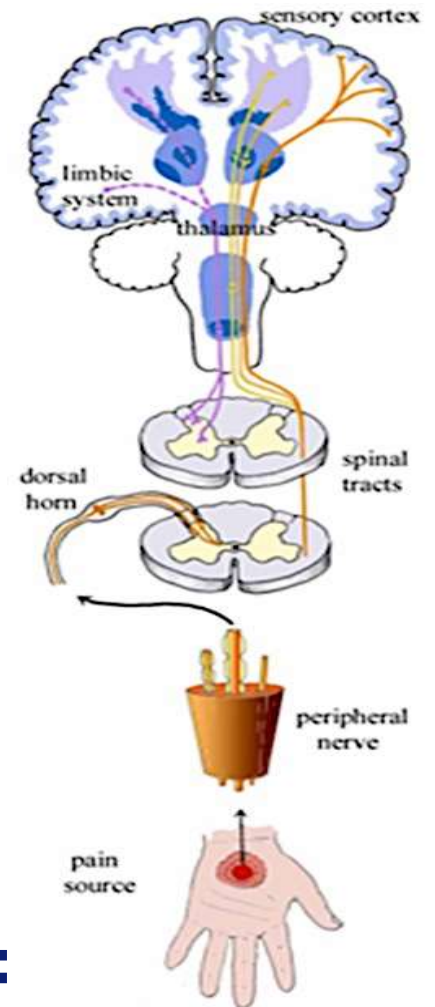
Pain in OA

- Nociceptive pain
- Peripheral sensitization
- Central sensitization
 - spinal cord (dorsal root)
 - brain

Central sensitization: 25-30%

Pain detect Questionnaire

- Immunological
- Psychosocial



Clinical management guidelines for OA

Diagnostiek en behandeling van heup- en knieartrose



KNGF-richtlijn

Artrose heup-knie
Conservatieve, pre- en postoperatieve behandeling



Osteoarthritis and Cartilage



OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis

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INITIATIEF
Nederlandse Orthopedische Vereniging

IN SAMENWERKING MET
Koninklijk Nederlands Genootschap voor Fysiotherapie
Nederlands Huisartsen Genootschap
Nederlandse Vereniging voor Arbeids- en Bedrijfsgezondheidskunde
Nederlandse Vereniging voor Klinische Geriatrie
Nederlandse Vereniging voor Radiologie
Nederlandse Vereniging voor Reumatologie

MET ONDERSTEUNING VAN
Kwaliteitsinstituut voor de Gezondheidszorg CBO

FINANCIERING
De richtlijn is tot stand gekomen met financiële steun van de Orde van Medisch Specialistinnen in het kader van het programma 'Evidence-Based Richtlijn Ontwikkeling (EBRO)'.

NHG-Standaard M67

NHG-Standaard Niet-traumatische knieproblemen bij volwassenen

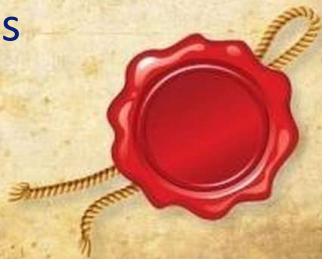
Eerste herziening





Initial management

Education
Self management
Lifestyle
Exercise therapy
Walking or other aids
Paracetamol
Topical NSAIDs



Add on management

Oral NSAIDs
Corticosteroid injections
Braces

Osteotomy
Joint replacement



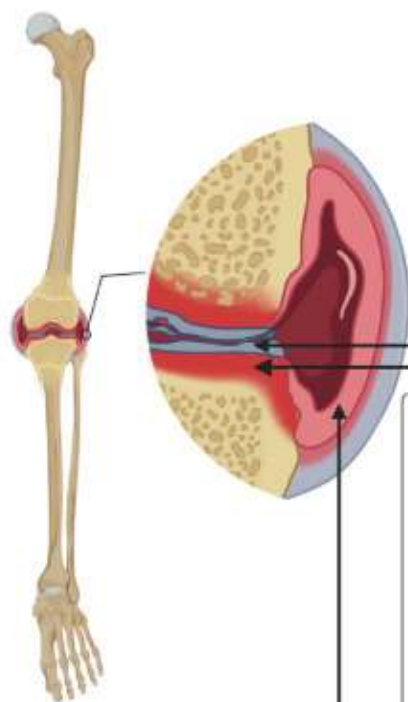
GP registrations of knee OA patients over age 30

N = 750	1st visit	After three yrs
Advice	13%	29%
Medication	20%	48%
CS injection	1%	11%
Aids	3%	6%
X-ray	33%	69%
Referral PT	10%	30%
Referral SP care	10%	56%



Disease modifying treatment

- DMOAD targeting synovitis**
- Interleukin-1 inhibitor:**
- Gevokizumab (XOMA-052)
 - AMG108
 - Lutikizumab (ABT-981)
 - Anakinra
 - Canakinumab
 - Diacerein
- Tumor necrosis factor-alpha inhibitors:**
- Adalimumab
 - LY3016859
 - Etanercept
 - Infliximab
- Senolytic therapies:**
- UBX0101
 - Fisetin
- Curcuma longa extract**



- DMOAD targeting cartilage**
- Fibroblast growth factor 18:**
- Sprifermin (rhFGF18)
- Proteinases inhibitors:**
- GLPG1972/S201086
- Wnt signaling inhibitors:**
- Lorecivivint (SM04690)
- Transforming growth factor-β:**
- TG-C
- AMPK modulator:**
- Metformin
- Platelet riched plasma:**
- Human PRP

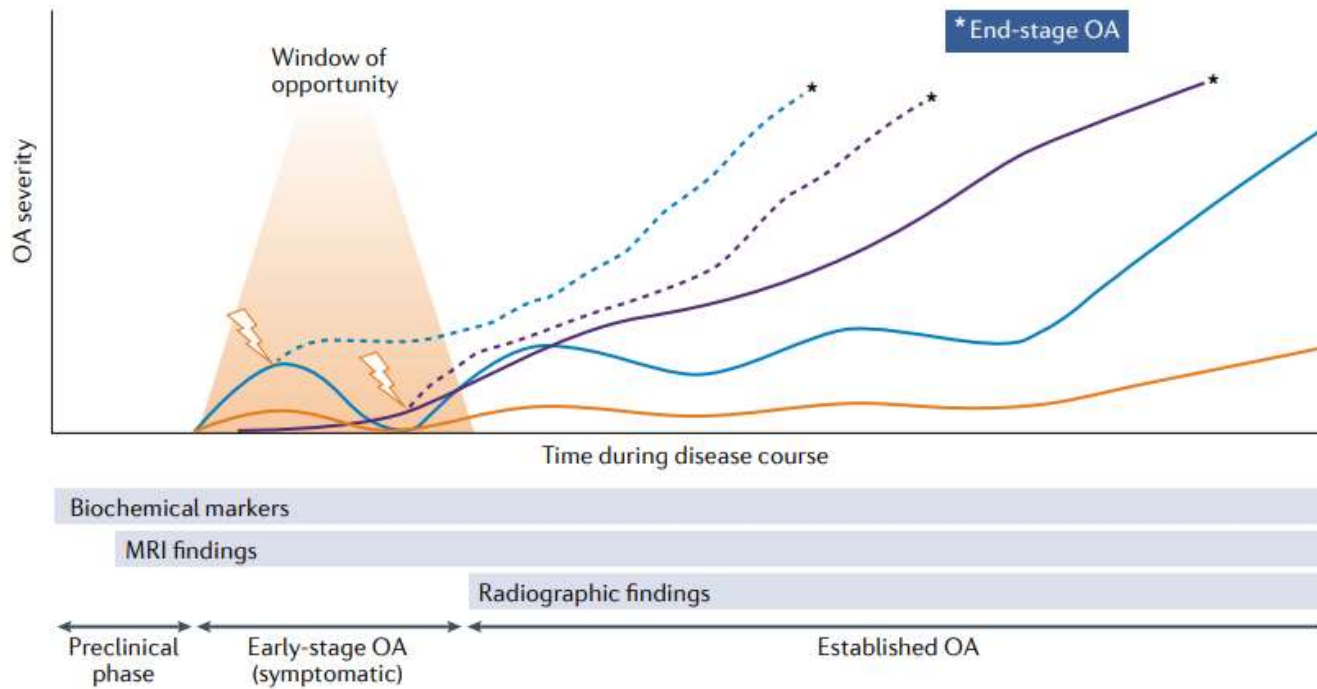
Knee osteoarthritis

- DMOAD targeting subchondral bone**
- Cathepsin K inhibitors:**
- MIV-711
- Parathyroid hormone:**
- Teriparatide
- Matrix extracellular phosphoglycoprotein:**
- TPX-100
- Bisphosphonates:**
- Zoledronic Acid
- Transforming growth factor-β:**
- TG-C
- Strontium ranelate**
- Vitamin D**

Slown progression

Not there yet

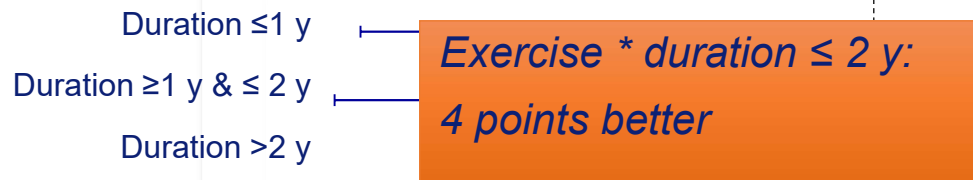
Early stage OA treatment



Hawker & Lohmander OAC, 2021; Mahmoudian et al., Nat Rev Rheumatol., 2021

Exercise in early stage OA

After 3 months



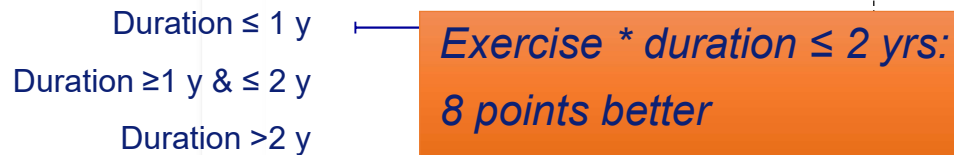
N / number studies

248/10

184/10

1250/10

After 12 months



N / number studies

185/6

141/6

964/6



Osteoarthritis is a serious disease



Awareness

Better implementation

Better education

Early treatment (where possible prevention)

Phenotypic treatment

Disease modifying treatment

