Is it OSTEOARTHRITIS or OSTEOPOROSIS??

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Our Goal Today

Osteoarthritis and osteoporosis are under appreciated and under diagnosed chronic conditions that left unattended can lead to debilitating outcomes.

Start early with identification and prevention strategies.

Know the risks and make a plan for healthy aging.
## Osteo...what?

<table>
<thead>
<tr>
<th></th>
<th>OSTEOARTHRITIS</th>
<th>OSTEOPOROSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary issue</td>
<td><strong>Joint</strong> pain, stiffness</td>
<td><strong>Bone</strong> density loss</td>
</tr>
<tr>
<td>Prevalence</td>
<td>32.5 million Americans</td>
<td>10 million Americans</td>
</tr>
<tr>
<td>Cases per year</td>
<td>?</td>
<td>2 million fractures</td>
</tr>
<tr>
<td>Number of people impacted</td>
<td>1 in 7 adults</td>
<td>1 in 2 women</td>
</tr>
<tr>
<td>Pain</td>
<td>Yes</td>
<td>Not unless a bone breaks</td>
</tr>
<tr>
<td>Percent affected</td>
<td>62% women</td>
<td>80% women</td>
</tr>
<tr>
<td>Often considered a</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>normal process of aging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can become debilitating</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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</table>
A Primer on Osteoarthritis

- *What is osteoarthritis?*
- *What are the risk factors for osteoarthritis?*
- *How is osteoarthritis diagnosed?*
- *How do you prevent more joint damage?*
- *What treatment options are available?*
Prevalence of Osteoarthritis

- 54 million U.S. adults have arthritis → **32.5M have OA**
- The majority of adults with OA, 16.7M, are age 18-64 years
- More women than men are affected by OA
- Minorities are disproportionately affected by OA
- 1 in 3 people with an ACL injury will develop osteoarthritis within 10 years
- In 2013, OA was the 3rd most rapidly rising disabling condition
  - increased by 75% from 1990-2013
↑ Age of Population =
↑ Rates of Arthritis

In mid to late 50's, OA surpasses back pain as most commonly reported MSK.
Cost of OA

- Among the most expensive conditions to treat when *joint replacement surgery* is required.
- OA was the 2nd most costly health condition treated at US hospitals in 2013.
  - In that year, OA accounted for $16.5 billion, or 4.3%, of combined costs for all hospitalizations.
- OA was the most expensive condition for which privately insured patients were hospitalized - *over $6.2 billion in hospital costs.*
Osteoarthritis (OA)

- OA is the **most common** type of arthritis.
- OA is not simply caused by “wear and tear” of the joint but is rather a complex disorder characterized by molecular, anatomic, and physiologic changes.
What causes OA?

- Excess weight
- Repetitive use from occupations, sports
- Joint position and strength
- Joint injury/trauma

- Genetics
- Ethnicity
- Gender (female; after age 45)
- Aging
OA Diagnosis

• Patient History
  • Symptoms, Changes in Function, Joint Injury, Comorbidities

• Physical Exam
  • Joint Appearance, Differential Diagnosis, Associated Exam Findings

• Imaging Analysis
  • X-Ray, MRI, CT, Ultrasound
OA Diagnosis: Patient History

• Symptom Assessment
• Changes in Activities of Daily Living and Function
• History of Joint Injury
• Comorbidities

Common Symptoms of OA

• Sore or stiff joints – particularly the hips, knees, and lower back – after inactivity or overuse.
• Limited range of motion or stiffness that goes away after movement
• Clicking or cracking sound when a joint bends
• Mild swelling around a joint
• Pain that is worse after activity or toward the end of the day
• Arthritis limits normal activities
  • e.g. holding a cup, lifting a grocery bag, stooping, bending, kneeling, walking 3 blocks.

• Increased pain, fear of pain, and lack of knowledge of safe forms of physical activity can make it harder for people with arthritis to be physically active.

DEPRESSION

One third of people with arthritis over the age of 45 suffer from depression or anxiety.¹

People with OA are at greater risk of depression because of increased disability and fatigue associated with their pain.²
OA & Sleep

70%
OA Diagnosis: Physical Exam

• Joint Appearance
  • Heberden’s Nodes

• Differential Diagnosis
  • E.g., OA vs. RA vs. Gout

• Associated Exam Findings
  • Gait Assessment & Malalignment
  • Quadriceps Strength
OA Diagnosis: Imaging Analysis

- X-Ray – Gold Standard
- Advanced Imaging
  - MRI, CT, Ultrasound
OA is challenging to manage

● Interventions can reduce pain, improve function, but:
  ○ No cure or remission
  ○ No strategy to reduce progression
  ○ No proven way to prevent need for joint replacement
  ○ Structural damage is irreversible and progressive
  ○ Available pharmacologic treatments are associated with significant adverse events

● One size fits all strategy may not be appropriate

● Comorbidities complicate management options
A Vicious Cycle

- Osteoarthritis (OA)
- Worsening of Other Chronic Conditions
- Pain and Decreased Mobility
- Increased Weight Gain and Obesity
- Physical Inactivity
Early Detection of OA is Key

- OA Treatment
- Pain and Symptom Management
  - Weight Management
  - Physical Activity
- Improve Other Chronic Conditions
Management of OA

- Ultimate goal: ↓ pain to ↑ function
- A comprehensive plan for the management of OA may include:
  - ✔ Educational
  - ✔ Behavioral
  - ✔ Psychosocial
  - ✔ Physical interventions
  - ✔ Topical, oral, and intraarticular medications
Strong (+) recommendations

- **Exercise**, self-efficacy, self-management
- Knee/Hip: **weight loss**, tai chi, canes
- Thumb and knee bracing
- Oral NSAIDs (considering risks)
- Knee: topical NSAIDs
- Knee/Hip: IA corticosteroids

Conditional (+) recommendations

• Thermal modalities, paraffin for hand OA
• Cognitive Behavioral Therapy
• Acupuncture
• Taping, balance, other braces, yoga
• Topical NSAIDs for hand OA
• Acetaminophen, tramadol, duloxetine

Educational, behavioral, psychosocial & physical approaches

- Self-Management Strategies
  - Exercise
    - Increase physical activity
    - Use Physical Activity Guidelines as a benchmark
    - Reduce sedentary behavior
    - Evidence-based physical activity programs
  - Weight loss 10% ↓ weight can = 50% ↓ pain
  - Self-efficacy and education – Chronic disease self-management

Evidence-Based Programs for OA

- Administration for Community Living’s Title IIDD of the Older Americans Act.
  - https://www.ncoa.org/resources/ebpchart/

- CDC Lifestyle Management Programs for Arthritis
  - https://www.cdc.gov/arthritis/interventions/physical-activity.html

Evidence-based programs (EBPs) offer proven ways to promote health and prevent disease among older adults. – NCOA Website
Evidence-Based Programs for OA

- Physical activity programs
- Self-Management Education
- Falls Prevention
Walk with Arthritis - OAAA’s WWE Self-Directed Portal

LESS PAIN. MORE GAIN.

WALK WITH EASE

The Arthritis Foundation's Walk With Ease program is proven to reduce the pain of arthritis and improve overall health. Our online portal provides patients with:

A WALK WITH EASE GUIDEBOOK WITH TOOLS TO DEVELOP A WALKING PLAN

&

WEEKLY ENGAGEMENT EMAILS TO KEEP YOU MOTIVATED AND MOVING FORWARD!

www.walkwitharthritis.org
oaaction@unc.edu
What is osteoporosis?

What are the risk factors for fractures?

How is osteoporosis diagnosed?

How do you prevent bone loss and fractures?

What treatment options are available?
Like Muscle, Bone Is a Dynamic Living Tissue

Bone remodeling means you have the opportunity to have new bones every 7-10 years!

Osteoclasts - remove old or damaged bone

Osteoblasts - build new bone
Osteoporosis Is a Chronic Condition

When the skeleton loses mineral density, the structure becomes thin and unable to take normal weight, leaving bones that break easily.
Osteoporosis Is Silent, But…

- Women can lose up to 25% of bone density in the 5 years around menopause.
- Bone loss continues at 0.5% (½ a percent) per year after menopause.
- Muscle mass begins to decline at 1% per year after age 50.
- If you have lost more than 1½” of height, this may be a sign you have had a spinal fracture(s).
- A wrist fracture resulting from a trip and fall is a sign of fragile bones.
Fractures Are a Serious Issue

Annual occurrences

Breast Cancer: 232,924
Heart Attacks: 735,000
Strokes: 800,000
Fractures: 2,000,000

Centers for Disease Control & Prevention, 2016
Centers for Disease Control & Prevention, 2015
National Osteoporosis Foundation, 2015
How the Skeleton Changes

- Peak Bone Mass
- Menopause
- Rapid Bone Building

2004 Surgeon General’s Report
Factors That Affect Fracture Risk

Age, gender, height and weight, race
Smoking, excess alcohol
Diabetes
Rheumatoid arthritis
Inflammatory diseases needing oral steroids
High doses of thyroid medicines
Cancer and its treatment
Long standing malnutrition or malabsorption, i.e., Celiac or Crohn’s
Serious untreated hormone deficiencies
Chronic liver disease
Organ transplant
If Your Risk is Elevated

Get a Bone Mineral Density Test
(also known as DXA)

Covered benefit for

✔ Women age 65+
✔ Men age 70+
✔ Anyone younger with a risk factor

This simple and painless test takes about 15 minutes.
Fractures Happen at all BMDs

Women with osteopenia fractured at a greater rate than those with osteoporosis.
Preventing Bone Loss and Fractures

- Bone healthy nutrition
  - Calcium
  - Vitamin D
  - Magnesium
  - Protein
- Physical activity (loading)
- Safe movement
- Fall prevention
### Calcium in Foods

<table>
<thead>
<tr>
<th>High (200+mg)</th>
<th>Moderate (50–200 mg)</th>
<th>Low (&lt;50 mg)</th>
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<tbody>
<tr>
<td>Dairy foods</td>
<td>Almonds</td>
<td>Nuts and seeds</td>
</tr>
<tr>
<td>Sardines</td>
<td>Beans</td>
<td>Broccoli</td>
</tr>
<tr>
<td>Fortified cereals</td>
<td>Canned salmon</td>
<td>Cabbage</td>
</tr>
<tr>
<td>Fortified soy or rice milk</td>
<td>Green vegetables(some)</td>
<td>Fruits</td>
</tr>
<tr>
<td>Fortified tofu</td>
<td>Breads</td>
<td></td>
</tr>
</tbody>
</table>

**RDA**
1,000–1,200 mg or 3–4 servings of high calcium food

**Note:** Fruits, vegetables, nuts and seeds have smaller amounts of calcium and the calcium in fruits and vegetables attaches to fiber and passes through the body.

[ndb.nal.usda.gov/ndb/search/list](ndb.nal.usda.gov/ndb/search/list)
Other Bone Healthy Nutrients

In addition to Calcium

• Vitamin D
• Magnesium
• Protein
Bone Health Bandits - In Excess

1. Salt
   >1 teaspoon

2. Alcohol
   3+ drinks

3. Caffeine
   >6 cups

How much is too much a day?
Bones Like a Load

To build bone density, you must do activities that “surprise” and add weight to the bone.

*Activities that strengthen muscles, strengthens bone.*
Loads Vary by Activity

4+  
Jump, strength train

3  
Run, jog

1-2  
Brisk walk

Swim, cycle  
<0

Increasing effect on bone density
The Effects of Spine Fractures
Proper Alignment for Everyday Activities

General Lifting
This Way
Stand with feet a little wider than hips, knees in line with middle toes. Squat to lift. Hinge at hips, chest lifted, shoulders back and down. Bring object as close to you as possible.

Not This Way

Brushing Teeth
This Way
Keep spine long and straight, chest lifted and knees bent. Hinge at the hips instead of rounding the back to bend towards the sink.

Not This Way

Driving
This Way
When backing up, reach right hand behind passenger headrest to brace yourself and keep chest lifted as you rotate.

Not This Way

Exercising
Considerations for exercise. Avoid rounding and twisting your spine.

Core Strengthening
This Way
Avoid all forms of crunches. Do core control by pulling in abdominals as you bring one leg to 90° while pressing lower back down. Alternate touching toes to the floor.

Not This Way

Spinal Twisting
This Way
Avoid extreme seated or supine spinal twists. Gently rotate the pelvis and legs keeping shoulder blades on the floor.

Not This Way

Spinal Stretching
This Way
Avoid yoga Forward Fold and Pilates Spine Stretch. Do seated chest stretch supported by arms.

Not This Way

For more tips and exercises, order the complete prevention booklet by visiting americanbonehealth.org!

Avoid loaded forward flexion and twisting
Improve Strength and Balance

1. **Sit to Stand**
   - To strengthen the hips and thigh muscles.
   - With feet shoulder-width apart, sit on edge of chair.
   - With your feet in front of your knees, stand up.
   - Keeping back straight, stick out your rear end, begin to sit by hinging forward at the hip.
   - Lightly touch your rear end to the chair and then stand up again.
   - Repeat eight times.

2. **Toes and Heels**
   - To increase ankle strength and range of motion.
   - Use a chair to steady yourself if needed.
   - With feet hip-width apart, stand up on to the balls of your feet.
   - Lower slowly so that your feet are flat on the floor, then lift your toes so that you are on your heels.
   - Lower your toes back down and relax.
   - Repeat eight times.

3. **Standing Hip Flexion**
   - To increase hip strength and range of motion.
   - Use a chair to steady yourself if needed.
   - Keeping your upper body tall, lift your knee until your thigh is parallel to the ground.
   - Hold for a count of two.
   - Slowly lower your leg.
   - Repeat eight times with each leg.

4. **Standing Hip Abduction**
   - To increase hip strength and promote good balance.
   - Use a chair to steady yourself if needed.
   - With knee straight and toes pointed forward, raise leg to the side.
   - Hold for a count of two.
   - Slowly lower your leg.
   - Repeat eight times with each leg.

https://americanbonehealth.org/downloadable-materials
There are many treatment options available.

Treatments go through rigorous testing and have been approved by the FDA.

There are very few side effects and treatments are effective at reducing fracture risk.
Get bone healthy nutrition daily. Food is best, supplement if needed.

Do weight-bearing and balance exercises everyday.

Know your risk for fractures, get tested and diagnosed.
Free educational resources for…

www.AmericanBoneHealth.org

- Fracture Risk Calculator
- Patient Journey
- Hotline
- Events
- Getting Involved

https://oaaction.unc.edu/

- Living with OA
- Prevention
- Evidence-based interventions
- Healthcare providers (PCPs, Pharmacists)

Check back in early 2021 for our revamped Resource Library!
Q&A

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