Overview of Osteoarthritis & Burden of Disease

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Disclosures

- Consultant: EMD Merck-Serono, Flexion, Novartis, Pfizer/Lilly, Regeneron
- Core Team for 2019 American College of Rheumatology – Arthritis Foundation OA Treatment Guideline
- NIH grants focused on OA, pain
Osteoarthritis Epidemiology

528 Million

~10–15%

30%

#1

#2

#3
Clinical Osteoarthritis

Pain is Primary Clinical Symptom

People Are Living Longer with Knee OA

Limited Management Options

Joint Replacement: “Definitive Treatment”
Current OA Management Landscape
Unintended Consequences

Prevalence of Use, %

Survey Year

Any Opioid
Exclusive Nonnarcotic Analgesic

Stokes, et al. JAMA Network Open 2019
Contraindications to NSAIDs in knee/hip OA → More Opioids

Neogi, et al. unpublished data
Scope of the OA Problem

**Prevalence Burden**
- >500 million adults globally
- 15% adult population

**Cost Burden**
- >$100s billion annually
- >900,000 hospitalizations

**Lack of (use of) Effective Therapies**
- Disability
- Quality of Life
- Opioid Epidemic
Tremendous Unmet Need

• Need more treatment options
  • Symptoms
  • Structure modification: prevent disease progression
  • Benefit:risk balance
    • How much benefit? What risks?
Challenges in Developing OA Treatment Options

• Slow disease progression:
  • Surrogate endpoints?

• Trial Outcomes:
  • Pain
  • Structure
  → Clinical endpoints

• “Phenotype”

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 5?</th>
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<tbody>
<tr>
<td>Clinical endpoints</td>
<td>?</td>
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Numerical rating scale

<table>
<thead>
<tr>
<th>No pain</th>
<th>Worst imaginable pain</th>
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<tbody>
<tr>
<td>0</td>
<td>1</td>
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![Image of knee joint and pain scale](image_url)
Thank you

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