

Osteoarthritis Clinical Guidelines

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EXCEPTIONAL CARE. WITHOUT EXCEPTION.

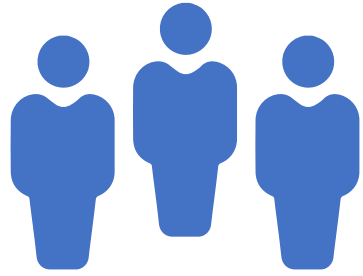
Disclosures

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

Learning Objectives

- Discuss the methodology behind development of treatment guidelines
- Recognize evidence-based recommendations for OA management
- Identify appropriate approaches to individualized management of OA

Osteoarthritis Epidemiology



528 Million



~10–15%



30%



#1



#1



#3

Clinical Knee Osteoarthritis

**Pain is
Primary Clinical
Symptom**



**People Are
Living Longer
with Knee OA**



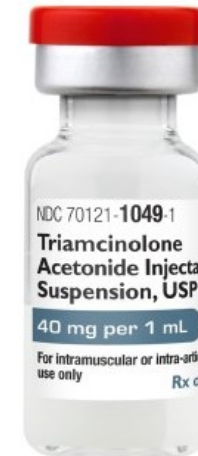
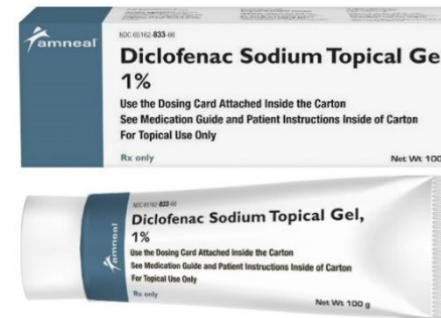
**Limited
Management
Options**



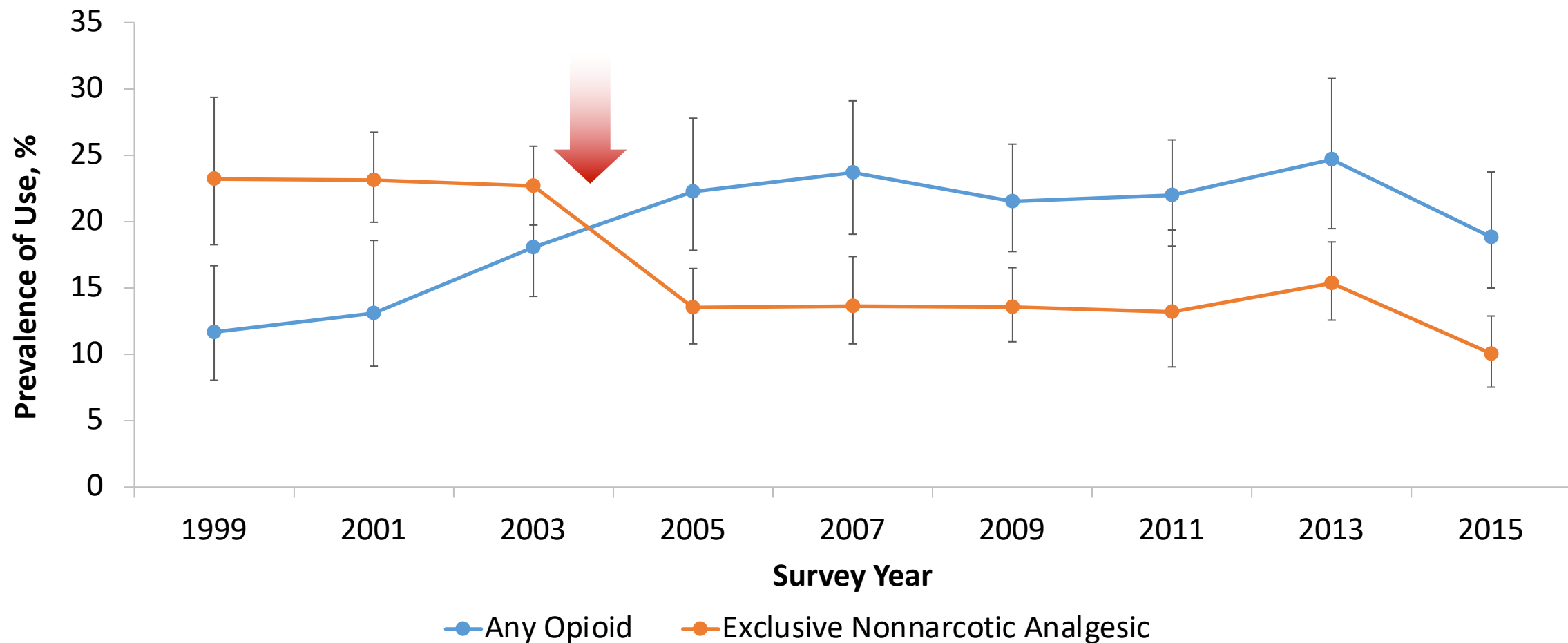
**Joint Replacement:
“Definitive
Treatment”**



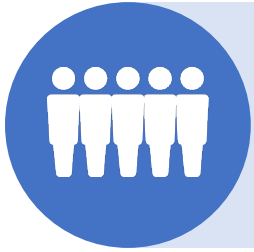
Current OA Management Landscape



Unintended Consequences



Scope of the OA Problem



Prevalence Burden

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



Cost Burden

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

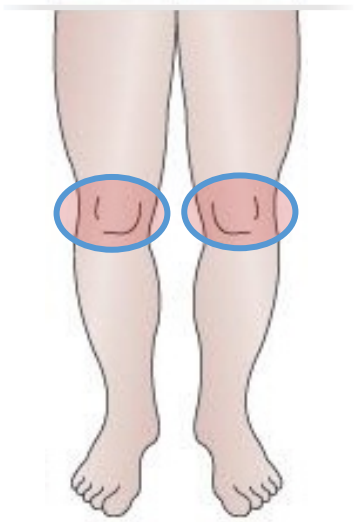


Lack of Effective Therapies

- Disability
- Quality of Life
- Opioid Epidemic

Case 1

54 Year-old Woman



- Gelling, locking
- BMI 34, medial joint-line tenderness
- Cr 1.7

Osteoarthritis Guidelines

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Empowering Rheumatology Professionals



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2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee

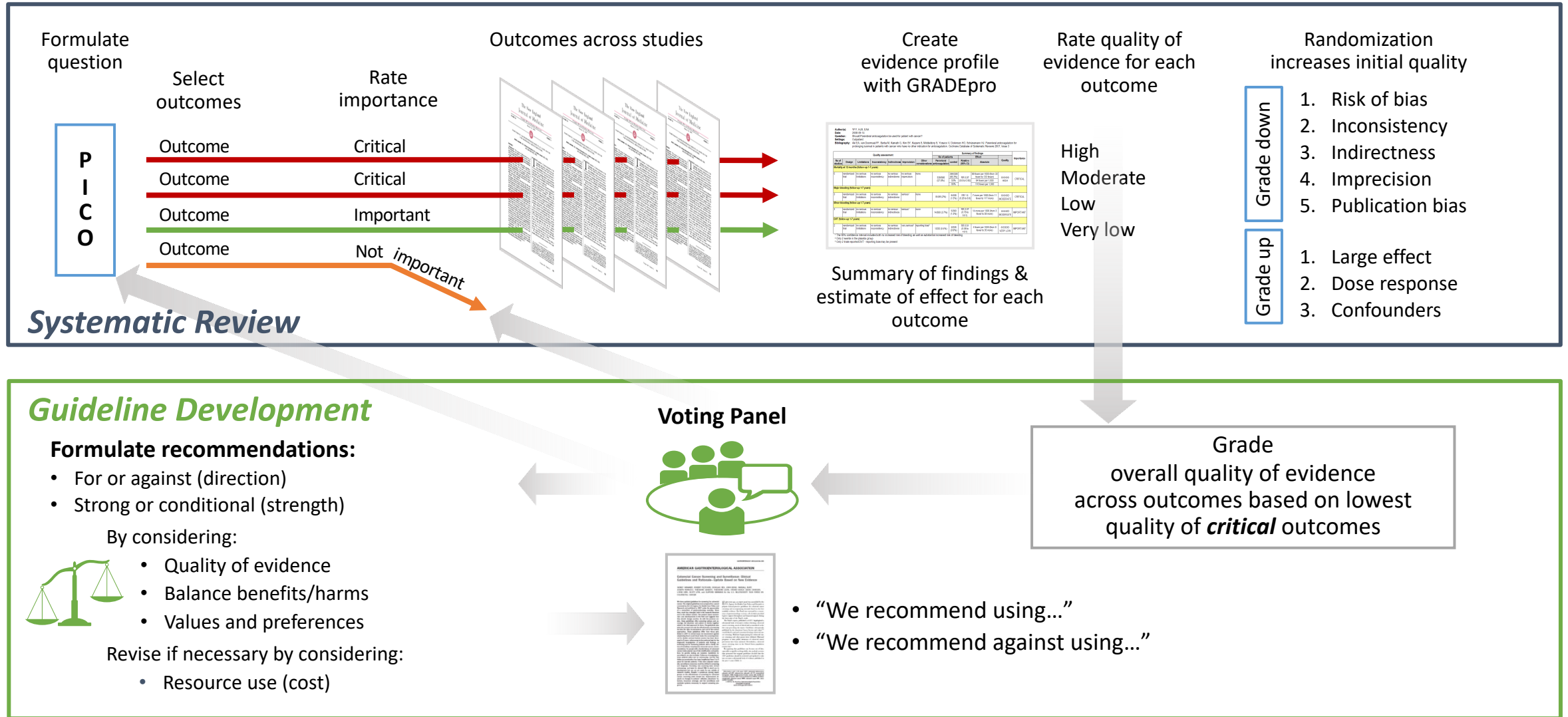
Sharon L. Kolasinski,¹ Tuhina Neogi,² Marc C. Hochberg,³ Carol Oatis,⁴ Gordon Guyatt,⁵ Joel Block,⁶ Leigh Callahan,⁷ Cindy Copenhaver,⁸ Carole Dodge,⁹ David Felson,² Kathleen Gellar,¹⁰ William F. Harvey,¹¹ Gillian Hawker,¹² Edward Herzig,¹³ C. Kent Kwoh,¹⁴ Amanda E. Nelson,⁷  Jonathan Samuels,¹⁵ Carla Scanzello,¹ Daniel White,¹⁶ Barton Wise,¹⁷ Roy D. Altman,¹⁸ Dana DiRenzo,¹⁹  Joann Fontanarosa,²⁰ Gina Giradi,²⁰ Mariko Ishimori,²¹ Devyani Misra,² Amit Aakash Shah,²² Anna K. Shmagel,²³ Louise M. Thoma,⁷ Marat Turgunbaev,²² Amy S. Turner,²² and James Reston²⁰

ACR OA Guidelines Development

- 2012 → 2019
- GRADE Methodology



Guidelines Development Process



Strong vs. Conditional Recommendations



Strong Recommendation For:

compelling evidence of efficacy

+ benefits clearly outweigh harms

- Voting Panel confident that desirable effects outweigh potential harms & burdens
- Course of action would apply to **all or almost** all patients and only a small number would not follow the recommendation
- Very few recommendations are strong in ANY guideline

Strong vs. Conditional Recommendations



Strong Recommendation Against:

compelling evidence of lack of efficacy

+/or benefits do not outweigh harms

ACR OA Guidelines Development

PICOS:



52



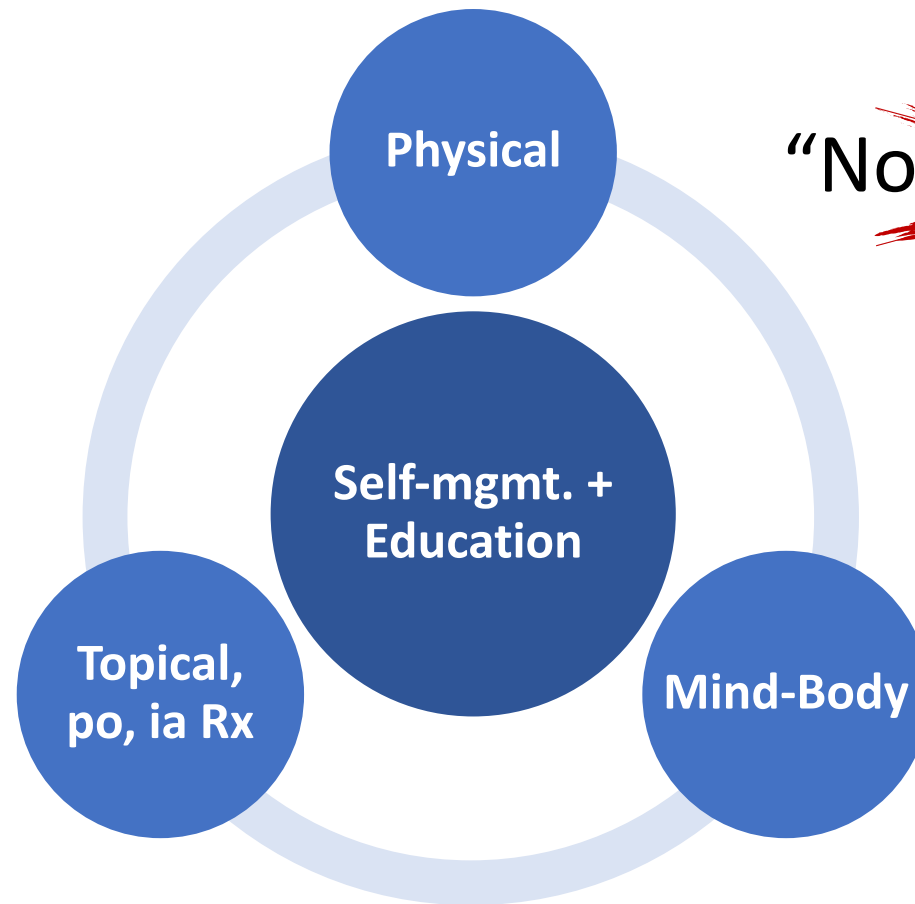
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2019 ACR-AF OA Treatment Guideline

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Empowering Rheumatology Professionals



General Approach to OA Management



~~“Nonpharmacologic”~~

Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches



Strong Recommendation For:

Self-efficacy, Self-management Programs

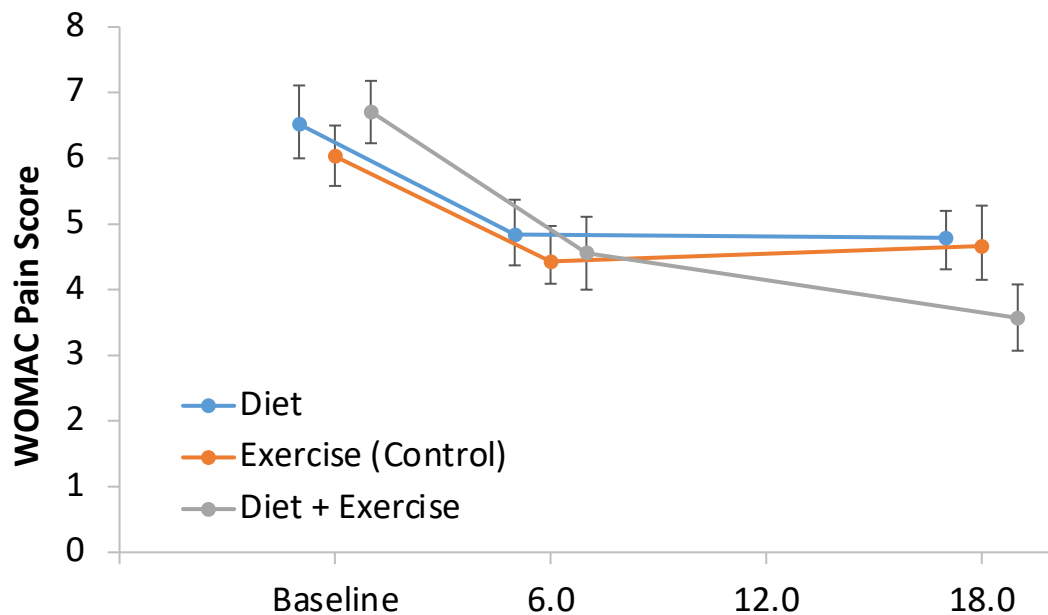


Weight Loss (Hip, Knee)



Weight Loss

IDEA RCT



No. of Patients

Diet	152	115	124
Exercise	149	119	127
Diet + Exercise	152	130	120



- D and D+E lost more weight than E alone
- Weight loss:
 - Less pain, improved function, faster walking speed, decreased knee loading

Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches

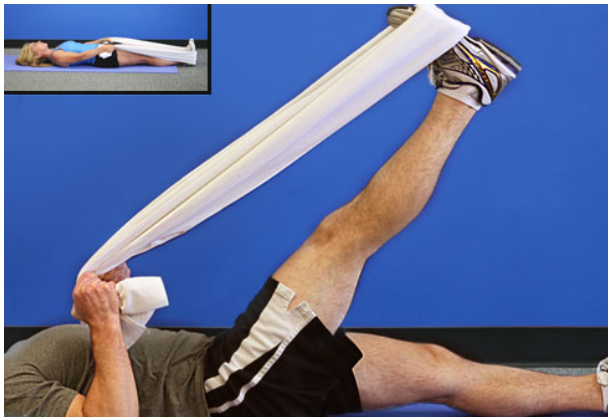


Strong Recommendation For:

Exercise



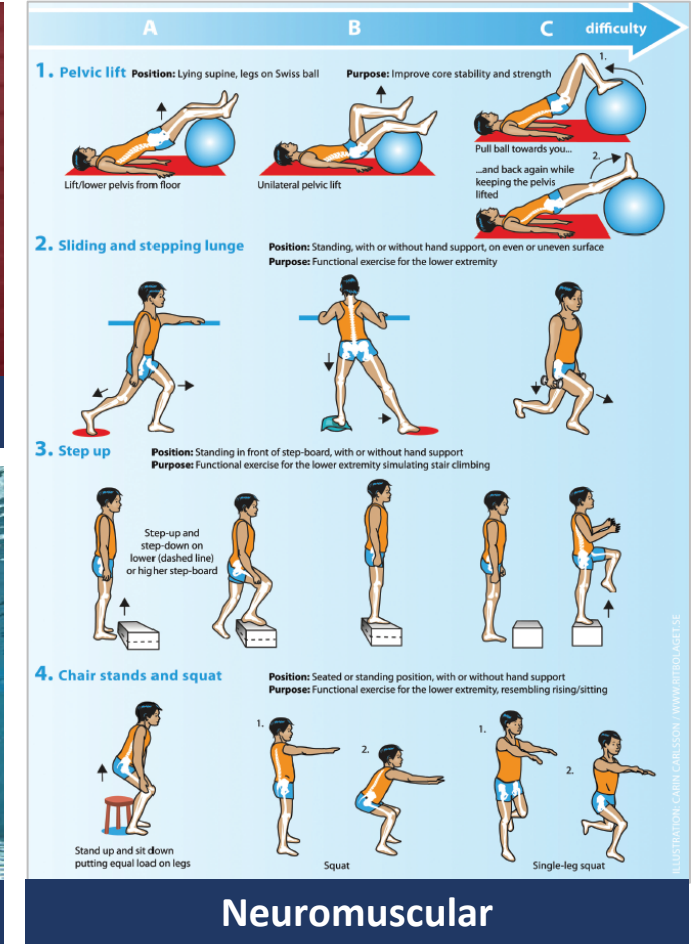
Aerobic



Strengthening



Aquatic



Neuromuscular

Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches



Strong Recommendation For:

Tai Chi (Hip, Knee)

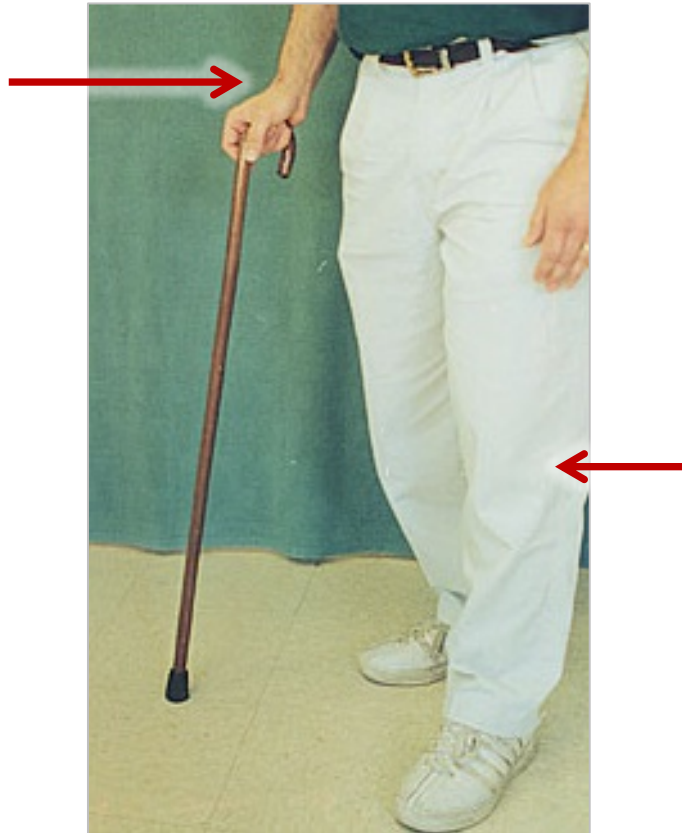


Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches



Strong Recommendation For:

Cane Use
(Hip, Knee)



Tibio-femoral
Knee Brace



1st CMC
Orthoses

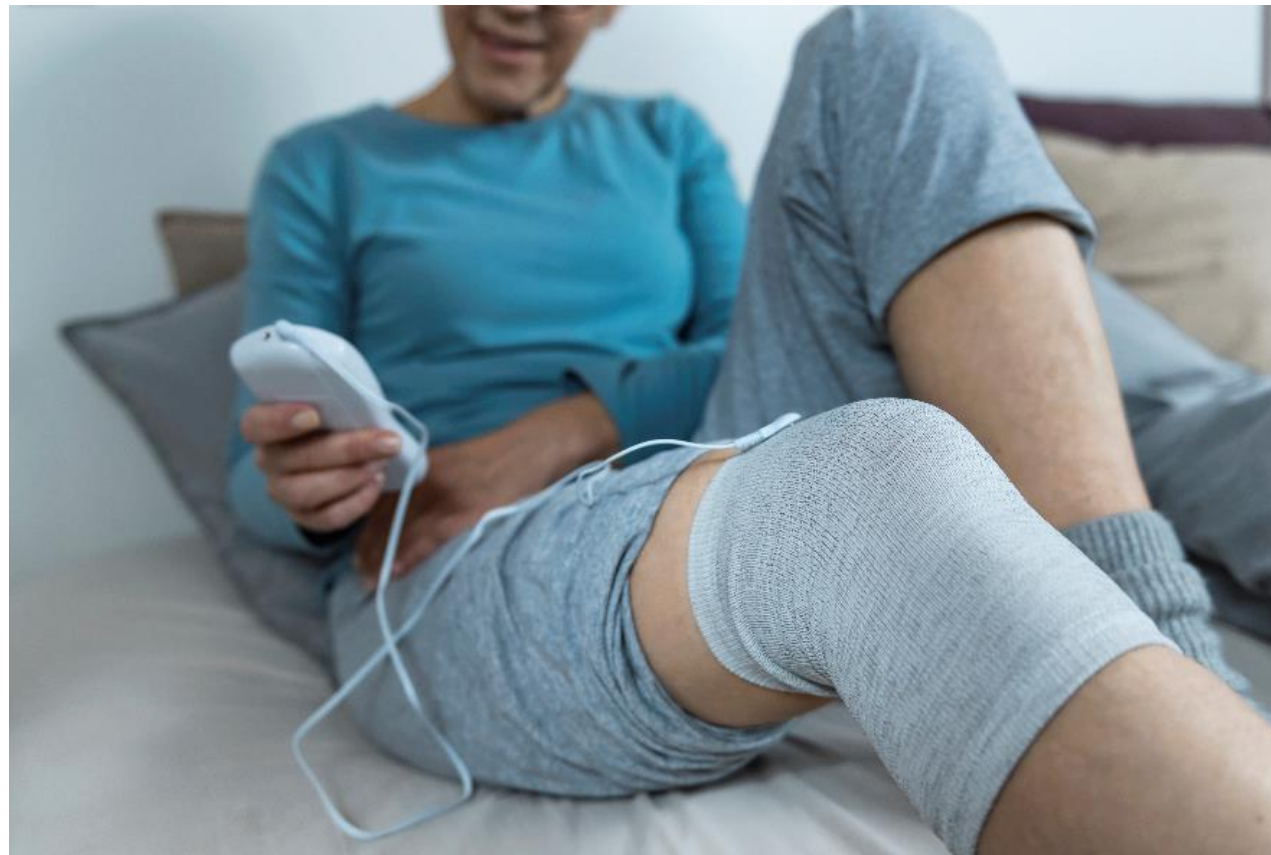


Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches



Strongly Against:

Transcutaneous Electrical Nerve Stimulation (TENS) (Hip, Knee)



Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches

Conditional Recommendations

Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches



Conditional Recommendation For:

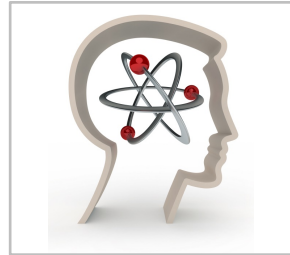
Balance Training
(Hip, Knee)



Yoga (Knee)



Cognitive Behavioral
Therapy



Kinesiotape
(1st CMC, Knee)



Other Hand Orthoses



Patello-femoral
Knee Brace



Acupuncture



Thermal Interventions



Radiofrequency
Ablation (Knee)



Educational, Behavioral, Psychosocial, Mind-Body, Physical Approaches



Conditionally Against:

- Modified shoes (knee)
- Lateral, medial wedged insoles (hip, knee)
- Massage (hip, knee)
- Manual therapy with exercise (hip, knee)
- Iontophoresis (1st CMC)
- Pulsed vibration therapy (knee)

Pharmacologic Approaches

Strong Recommendations

Pharmacological Approaches



Strong Recommendations For:

- Topical non-steroidal anti-inflammatory drugs (knee)
- Oral NSAIDs
- Intra-articular steroid injections (knee, hip)
- Imaging guidance for steroid injections (hip)



Pharmacologic Approaches



Strongly Against:

- Bisphosphonates
- Glucosamine sulfate
- Chondroitin sulfate (hip, knee)
- Combination glucosamine sulfate, chondroitin sulfate products
- Hydroxychloroquine
- Methotrexate
- Intra-articular hyaluronic acid injections (hip)
- Platelet rich plasma injections (hip, knee)
- Stem cell injections (hip, knee)
- Tumor necrosis factor inhibitors
- Interleukin-1 receptor antagonists

Pharmacologic Approaches

Conditional Recommendations

Pharmacologic Approaches



Conditionally For:

- Topical NSAIDs (hand)
- Topical capsaicin (knee)
- Intra-articular steroid injections (hand)
- Intra-articular steroid injection over other injectables
- Chondroitin sulfate (hand)
- Acetaminophen
- Duloxetine (knee)
- Tramadol

Pharmacologic Approaches



Conditionally Against:

- Topical capsaicin (hand)
- Opioids
- Colchicine
- Fish oil
- Vitamin D
- Intra-articular hyaluronic acid injections (1st CMC, knee)
- Intra-articular botulinum toxin (hip, knee)
- Prolotherapy (hip, knee)

Unable to Make a Recommendation

- Yoga (hip, hand)
- Topical lidocaine
- Pregabalin
- Gabapentin
- Selective serotonin reuptake inhibitors
- Serotonin norepinephrine reuptake inhibitors other than duloxetine
- Tricyclic antidepressants
- Anti-nerve growth factor agents

Physical & Mind-Body Approaches

Intervention	Hand	Knee	Hip
Self-efficacy/Self-management			
Exercise			
Weight Loss			
Tai Chi			
Cane			
Tibiofemoral Knee Braces		TF	
Hand Orthosis	1 st CMC		
Balance Training			
Yoga			
CBT			
Patellofemoral Braces		PF	
Kinesiotaping	1 st CMC		
Hand Orthosis	Other		
Acupuncture			
Thermal Interventions			
Paraffin			
Radiofrequency Ablation			
TENS			
Modified Shoes			
Lateral and Medial Wedged Insoles			
Massage Therapy			
Manual Therapy +/- Exercise			
Iontophoresis	1 st CMC		
Pulsed Vibration Therapy			

Pharmacologic Approaches

Intervention	Hand	Knee	Hip
Topical NSAIDs			
Oral NSAIDs			
Intra-Articular Corticosteroid Injection			
Ultrasound Guidance for IACS			
Acetaminophen			
Duloxetine			
Tramadol			
Topical Capsaicin			
Chondroitin Sulfate			
Glucosamine			
Hydroxychloroquine			
Methotrexate			
Biologics (TNF inhibitors, IL-1 RAs)			
Intra-Articular Hyaluronic Acid Injection	1 st CMC		
PRP, Stem Cell			
Non-Tramadol Opioids			
Colchicine			
Fish Oil, Vitamin D, Bisphosphonates			
i.a. Botulinum Toxin, Prolotherapy			

OARSI 2019 Guidelines

Table IV
Recommended treatments, by level, for polyarticular osteoarthritis

Recommendation level	Strength	Treatment type	No comorbidities	Gastrointestinal	Cardiovascular	Frailty	Widespread pain/depression
CORE	Strong	Arthritis Education; Structured Land-Based Exercise Programs (Type 1- strengthening and/or cardio and/or balance training/neuromuscular)					
Level 1A ≥75% “in favor” & >50% “strong” Recommendation	Strong	Pharmacologic	<i>refer to Level 1B</i>	<i>refer to Level 1B</i>		<i>refer to Level 1B</i>	<i>refer to Level 1B</i>
		Non-Pharmacologic	<i>refer to Level 1B</i>	<i>refer to Level 1B</i>		<i>refer to Level 1B</i>	<i>refer to Level 1B</i>
Level 1B ≥75% “in favor” & >50% “conditional” Recommendation	Conditional	Pharmacologic	Non-selective NSAIDs Topical NSAIDs	COX-2 Inhibitors	<i>see below</i>	<i>see below</i>	<i>see below</i>
		Non-Pharmacologic	Mind-body Exercise, Dietary Weight Management (with or without Exercise), Self-Management Programs, Gait Aids	Mind-body Exercise, Dietary Weight Management (with or without Exercise), Self-Management Programs, Gait Aids		Mind-body Exercise, Self-Management Programs, Gait Aids	Mind-body Exercise, Cognitive Behavioral Therapy, Dietary Weight Management (with or without Exercise), Self-Management Programs, Gait Aids
Level 2 60%-74% “in favor”	Conditional	Pharmacologic	<ul style="list-style-type: none"> Non-selective NSAID+PPI COX-2 Inhibitors 	Non-selective NSAID+PPI Topical NSAIDs	Topical NSAIDs	Topical NSAIDs	<ul style="list-style-type: none"> Non-selective NSAIDs Non-selective NSAID + PPI COX-2 Inhibitors
		Non-Pharmacologic	<i>None recommended</i>	<i>None recommended</i>		<i>None recommended</i>	<i>None recommended</i>
Good Clinical Practice Statements	Conditional	Various	<i>NA</i>	<i>NSAID risk mitigation</i>		<i>NSAID risk mitigation</i>	<i>Pain management program</i>

NSAID risk mitigation: In situations where the patient and physician choose to proceed with an oral NSAID treatment regimen despite a lack of recommendation, we suggest using the lowest possible dose of oral NSAID for shortest treatment duration along with gastric protection with a PPI²³.

Pain management program: Based on clinical assessment, it may be appropriate to refer individuals of this phenotype to a multidisciplinary chronic/widespread pain management program.

shortest treatment duration along with gastric protection with a PPI²³.

Pain management program: Based on clinical assessment, it may be appropriate to refer individuals of this phenotype to a multidisciplinary chronic/widespread pain management program.

Back to the Patient



Has Used Acetaminophen

Asking About



Acupuncture



Injections



'Natural' Remedies

First-line Approaches

General Best Practices: Assess Sleep, Mood, Coping Skills, Physical Activity



Weight loss, PT



Topical NSAIDs



What About Acupuncture, Injections, Chondroitin, Other Medications?

Understanding the Recommendations: Acupuncture



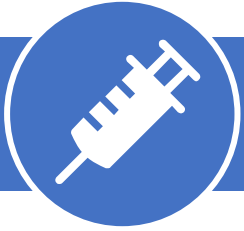
Acupuncture

Sham-control

Placebo & contextual effects

Low risk of harm

Understanding the Recommendations: I.A. Corticosteroids



Intra-articular Corticosteroids

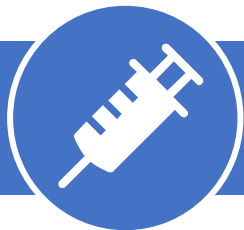
Short-term efficacy

No long-term efficacy

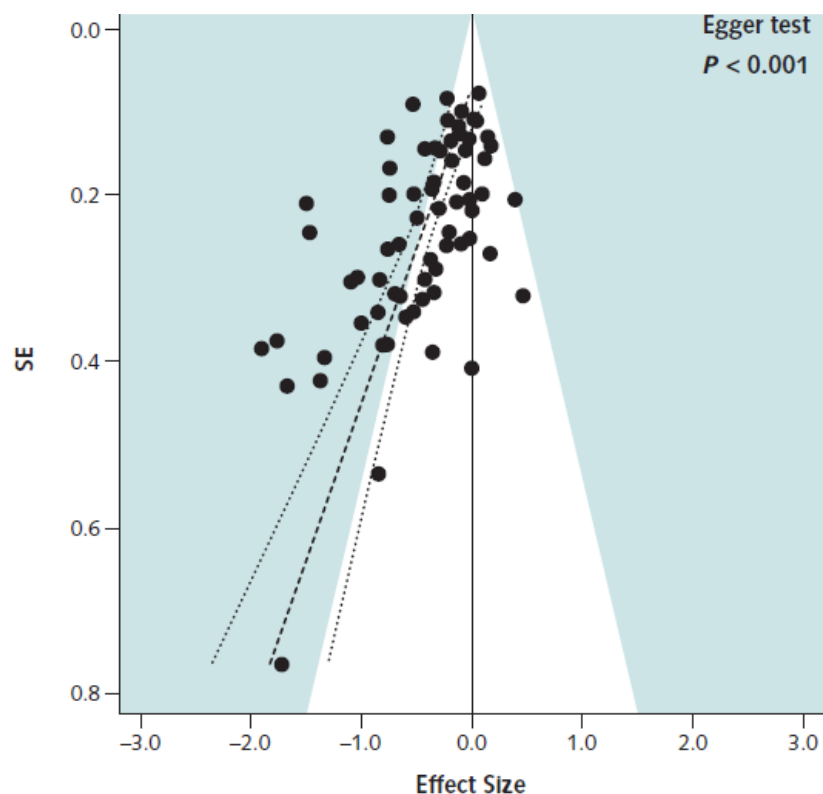
Unclear clinical implications for potential MRI cartilage finding

- Less than one voxel on MRI
- 0.1mm over 2 years: ~1mm over 20 years
- Not associated with pain, function

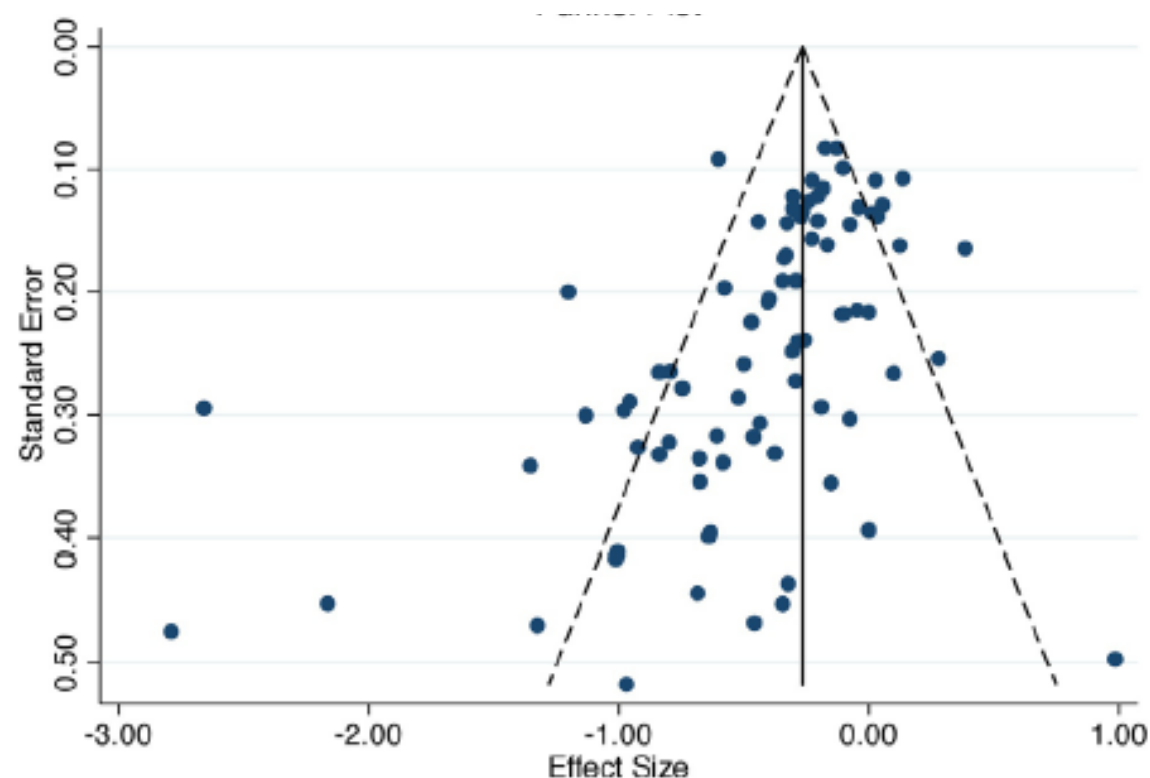
Understanding the Recommendations: I.A. Hyaluronic Acid



Intra-articular Hyaluronic Acid

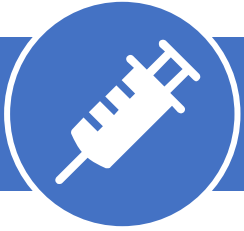


Rutjes, et al. *Ann Int Med* 2012



Johansen, et al. *Sem Arth Rheum* 2016

Understanding the Recommendations: I.A. Hyaluronic Acid



Intra-articular Hyaluronic Acid

Overall risk of bias, blinding, trial size

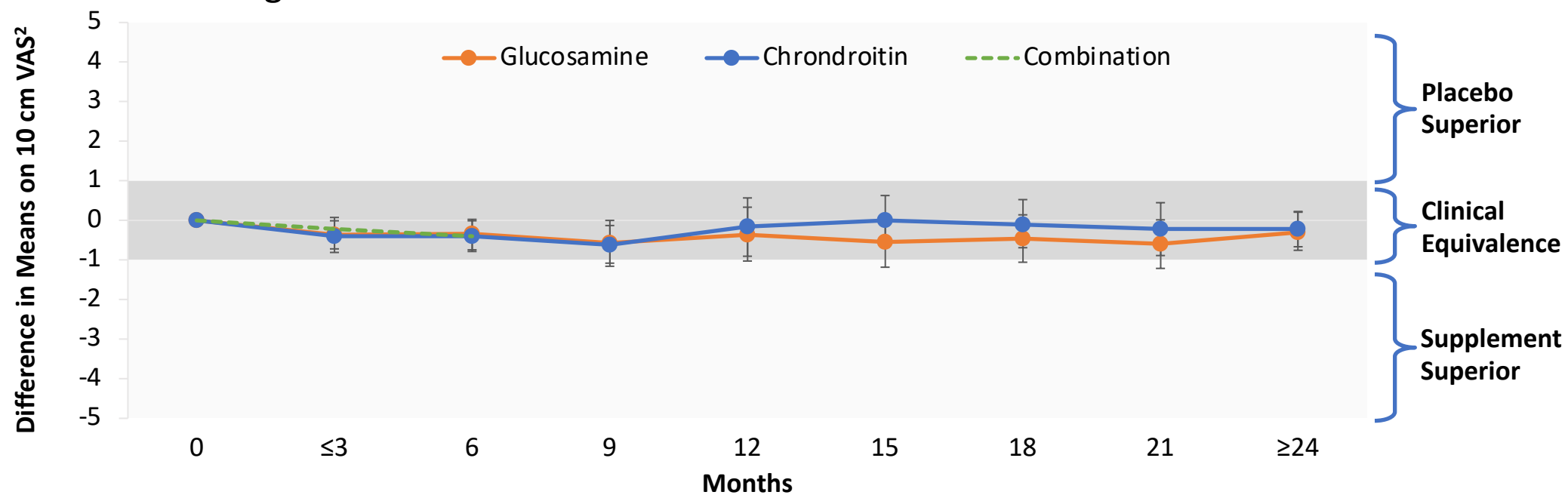
Effect size when limited to large trials with blinded assessments:
-0.11 (95% CI -0.18 to -0.04)

Effect size of low risk-of-bias trials: **0.00 (-0.13 to 0.12)**

Safety signal: flares, SAEs, local AEs

Understanding the Recommendations: Chondroitin

- Predominance of negative studies¹



No. of Trials	10	7	6	4	3	3	3	3	5
No. of Patients	3786	2009	2828	1353	1046	1046	1046	1046	1558

- 1 hand OA RCT with positive results, low risk of bias, no evidence of harm²

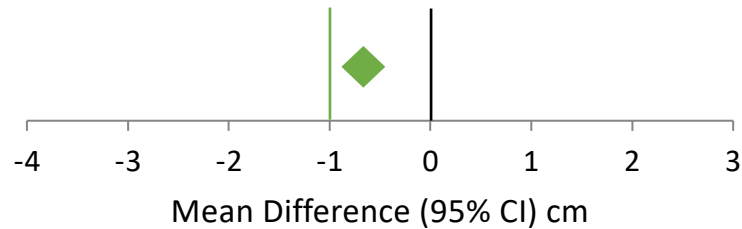
1. Wandel, et al. *BMJ*. 2010.

Understanding the Recommendations: Opioids

- Dangers of opioids with limited efficacy for pain and function

Pain

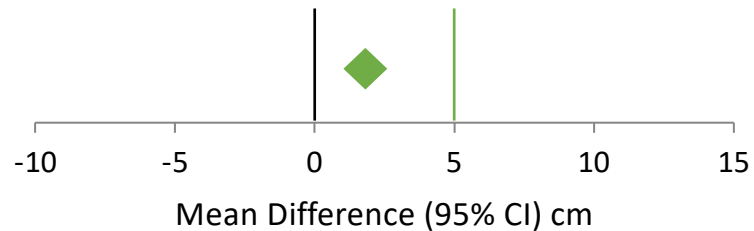
-0.69 (-0.82 to -0.56)



100.00

Function

2.04 (1.41 to 2.68)



100.00

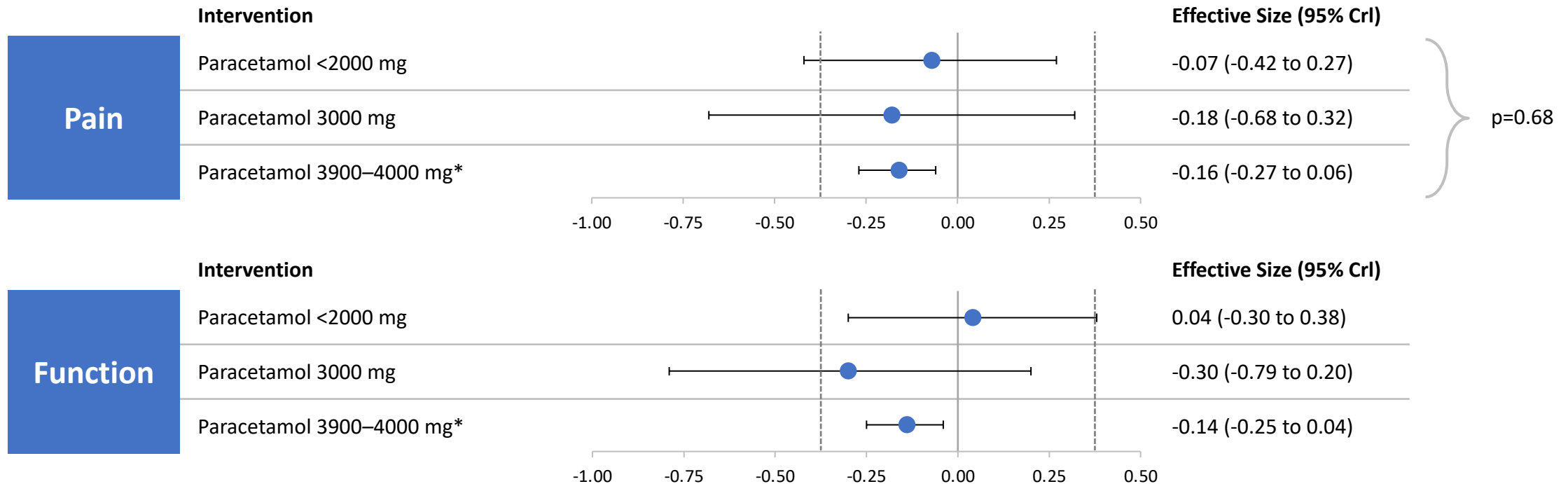
Understanding the Recommendations: Opioids

Patient Panel

Don't want opioids, but wanted to have it as an option

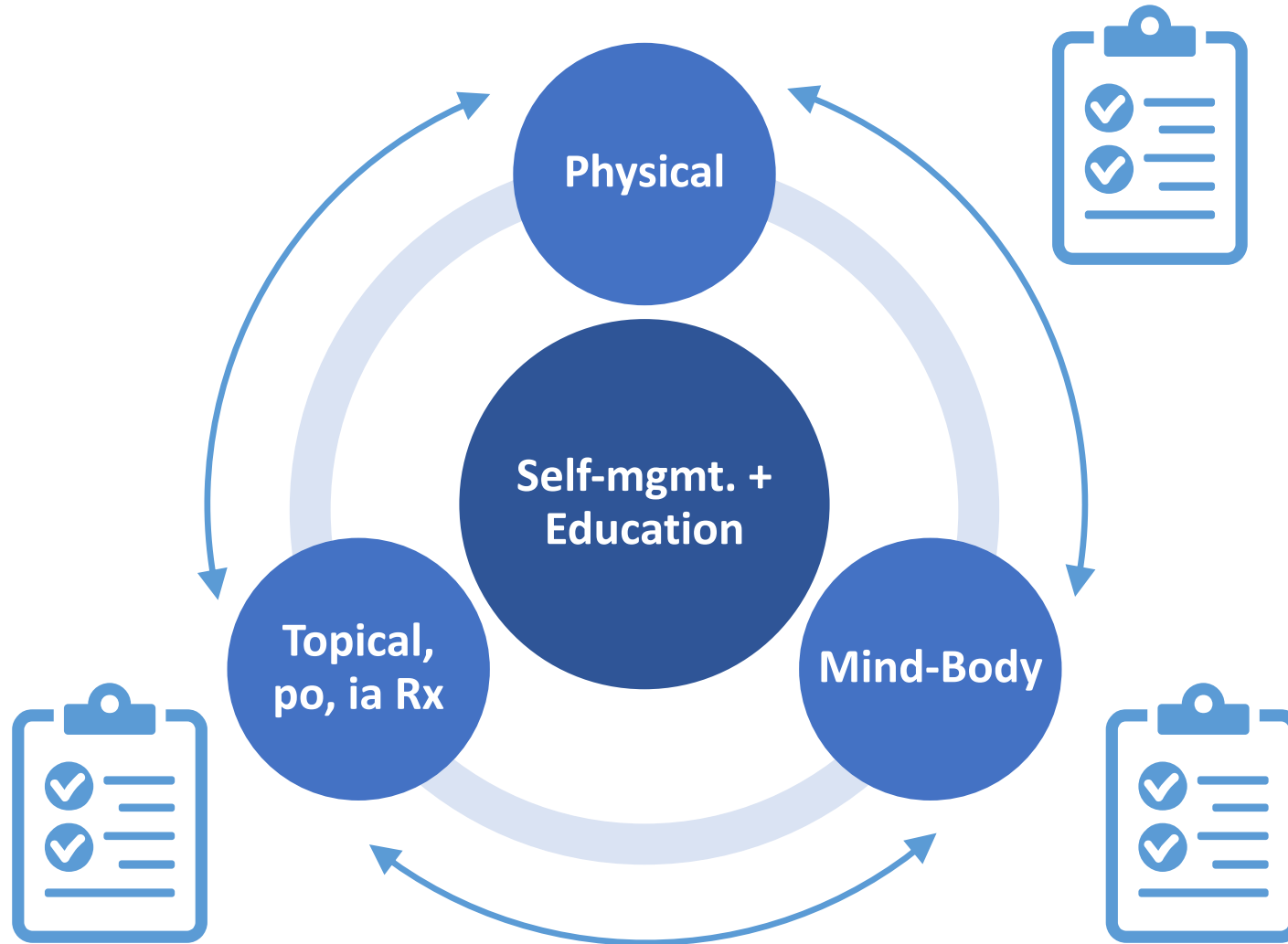


Understanding the Recommendations: Acetaminophen



- Toxicities: hepatotoxicity
- Minimal, if any, efficacy, but needed as an option for those with contraindications for other therapies

General Approach



OA Management Summary




- Physical modalities
- Multimodal therapy
- Consider & manage other contributors to pain
- Realistic goals about symptoms, function
- Urgent need for DMOADs and pain management options
- Mechanism-based approach to management

Acknowledgements

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P30 AR072571, U01 AG18820,
R01 AR062506, P60 AR047785

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