

SUPPLEMENTARY APPENDIX 2: Population, Intervention, Comparator, and Outcome (PICO) Questions

2022 American College of Rheumatology (ACR) Guideline for Exercise, Rehabilitation, Diet, and Additional Integrative Interventions for Rheumatoid Arthritis

Diet

1. Should patients with RA use a formally defined diet?

P - Patients with RA

I - Formally defined diet/diet pattern (anti-inflammatory, Mediterranean style, ketogenic, paleo, gluten-free, vegetarian, vegan, intermittent fasting, elemental, elimination, raw foods, whole food plant based)

C - Current or alternative diet

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (mortality, CVD, joint replacement)

Potential effect modifiers/subgroup analyses: None

2. Should patients with RA use a commercially available dietary supplement?

P - Patients with RA

I - Dietary supplement (vitamin D, probiotics, fish oil/omega-3 fatty acids, antioxidants [selenium, zinc, vitamin A, vitamin C, vitamin E], turmeric, glucosamine, γ -linolenic acid, borage seed oil, evening primrose oil, black currant seed oil, selenium, Boswellia, ginger, probiotics)

C - No specific dietary supplement or other dietary supplement

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (mortality, CVD, joint replacement)

Potential effect modifiers/subgroup analyses: None

3. Should patients with RA who are overweight or obese receive a weight loss intervention?

P - Patients with RA who are overweight or obese

I - Weight loss intervention (lifestyle modifications (diet/exercise), weight-loss surgery alone, weight-loss surgery combined with lifestyle modifications, support groups, health coaching, branded dietary weight loss programs)

C - No weight loss intervention

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (mortality, CVD, joint replacement)

Potential effect modifiers/subgroup analyses: None

Exercise

4. Should patients with RA engage in an aerobic exercise program?

P - Patients with RA

I – Consistent engagement in an aerobic exercise program
C - No aerobic exercise program or other exercise programs
O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (mortality, CVD, joint replacement)
Potential effect modifiers/subgroup analyses: functional ability and comorbidities (e.g., knee OA), controlled or uncontrolled RA.

5. Should patients with RA engage in an aquatic exercise program?

P - Patients with RA
I - Aquatic exercise program
C - No aquatic exercise program or other exercise programs
O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (mortality, CVD, joint replacement)
Potential effect modifiers/subgroup analyses: well-controlled vs. uncontrolled RA

6. Should patients with RA consistently engage in a resistance training exercise program?

P - Patients with RA
I - Consistent engagement in a resistance training exercise program
C - No resistance training exercise program or other exercise programs
O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (mortality, CVD, joint replacement)
Potential effect modifiers/subgroup analyses: functional ability, comorbidities (i.e., knee OA), well-controlled vs. uncontrolled RA

7. Should patients with RA engage in a mind-body exercise program?

P - Patients with RA
I - Mind-body exercise program (Yoga, Tai Chi, qigong)
C - No mind-body exercise program or other exercise programs
O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (mortality, CVD, joint replacement)
Potential effect modifiers/subgroup analyses: well-controlled vs. uncontrolled RA

8. Should patients with RA and hand involvement perform resistive hand exercises?

P - Patients with RA and hand involvement
I - Resistive hand exercises
C - No resistive hand exercises
O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)
Potential effect modifiers/subgroup analyses: well-controlled vs. uncontrolled RA

Bracing/splinting/orthoses

9. Should patients with RA and hand/wrist impairment/deformity use splinting/orthoses/compression?

P - Patients with RA and hand/wrist impairment/deformity

I - Wrist, hand and/or finger splinting/orthoses/compression

C - No splinting/orthoses

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: none

10. Should patients with RA and foot/ankle involvement use bracing/orthoses/taping?

P - Patients with RA and foot/ankle involvement

I - Bracing/orthoses

C - No bracing/orthoses/taping

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: bracing vs. orthoses

11. Should patients with RA and knee involvement use bracing/orthoses?

P - Patients with RA and knee involvement

I - Bracing/orthoses

C - No bracing/orthoses

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: bracing vs. orthoses

Rehabilitation

12. Should patients with RA use joint protection techniques?

P - Patients with RA

I - Joint protection

C - No joint protection

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: well-controlled vs. uncontrolled RA

13. Should patients with RA use activity pacing/energy conservation/activity modification/fatigue management techniques?

P - Patients with RA

I - Activity pacing/energy conservation/activity modification/fatigue management techniques

C - No Activity pacing

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: well-controlled vs. uncontrolled RA

14. Should patients with RA use assistive devices?

P - Patients with RA

I - Assistive devices (crutches, canes, walkers, wheelchairs, tricycles, scooters)

C - No assistive devices

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

15. Should patients with RA use adaptive equipment?

P - Patients with RA

I - Adaptive equipment (Eating devices (built up handled cutlery, plates, cups), bathing devices (long handled sponges, wash mitt) dressing (long handled shoe horn, dressing stick, reacher, sock aide, button hook), grooming (tube dispenser/squeezer, adapted flosser, adapted nail clipper, long handled comb/brush), large button telephones, built up handles, knob turners, pill cutters, large size pill organizer, universal cuff, leg lifter, cellphone holder)

C - No adaptive devices

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

16. Should patients with RA use environmental adaptations?

P - Patients with RA

I - Environmental adaptation (Toileting: Raised toilet seat, commode, toilet safety rail; Showering: tub seat, handheld shower, walk in bath; Grab bars; Ramps; Stairlift; Home modification)

C - No Environmental adaptations

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

17. Should patients with RA participate in comprehensive occupational therapy (OT)?

P - Patients with RA

I - Comprehensive occupational therapy

C - No comprehensive occupational therapy

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

Comprehensive OT: Evaluated by Occupational Therapist for functional status with the goal of increasing function/participation. Receives patient-centered individualized treatment. Components of OT services

vary and may include: arthritis education, ADL training, joint protection, ergonomic training (joint protection techniques), fatigue management, exercise (particularly for the hand and arm), splinting/orthotics, provision of assistive/adaptive devices, work and leisure counselling/rehabilitation, sexual advice, relaxation, and pain and stress management training.

18. Should patients with RA participate in a comprehensive physical therapy (PT) program?

P - Patients with RA

I - Comprehensive physical therapy program

C - No comprehensive physical therapy

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

Comprehensive PT: Evaluated and treated by a physical therapist. Some of the literature uses “physical therapy” as synonymous with exercise and should not be included in the PT PICOs. Components of PT services will vary and hopefully can be identified by reviewers. Should include exercise. May also include functional training and physical activity, energy conservation, workplace accommodations, mobility and gait training, manual therapy, self-management education, pain-management including thermal therapy, electrotherapy, application of orthoses, instruction in assistive devices

Psychosocial and vocational

19. Should patients with RA use a standardized, evidence-based self-management program?

P - Patients with RA

I - Any of the available standardized self-management programs (e.g., Arthritis Self-Management Program, Chronic Disease Self-Management Program, Better Choices Better Health; Tomando Control de su Salud; RA Self-Management Intervention, OPERAS [an On-demand Program to Empower Active Self-management, peer mentoring/support groups])

C - No standardized self-management program

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: disease duration

20. Should patients with RA use mind-body approaches?

P - Patients with RA

I - Cognitive behavioral therapy or mind-body approaches (biofeedback, goal setting, meditation, mindfulness, breathing exercises, progressive muscle; guided imagery (GI); relaxation guided imagery (RGI)

C - No cognitive behavioral therapy, mind-body approaches, or alternative mind-body approaches

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, self-efficacy, work status, sleep status, mental health status, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: type of mind-body intervention

21. Should patients with RA, who are currently employed or want to become employed, use vocational rehabilitation?

P - Patients with RA, who are currently employed or want to become employed

I - Work interventions (vocational rehabilitation)

C - No work interventions (vocational rehabilitation)

O - Work-related outcomes (presenteeism, absenteeism, work satisfaction, work underemployment, work disability [e.g., Workplace Activity Limitations Scale (WALS), Work Instability Scale (WIS), Work Limitations Questionnaire (WLQ) Work Productivity and Activity Impairment Questionnaire (WPAI), Rheumatoid Arthritis Specific Work Productivity Survey (WPS-RA)], quality-of-life

Potential effect modifiers/subgroup analyses: None

22. Should patients with RA, who are currently employed or want to become employed, receive work site evaluations and modifications?

P - Patients with RA, who are currently employed or want to become employed

I - Work site evaluations and modifications

C - No work site evaluations and modifications

O - Work-related outcomes (presenteeism, absenteeism, work disability [e.g., Workplace Activity Limitations Scale (WALS), Work Instability Scale (WIS), Work Limitations Questionnaire (WLQ) Work Productivity and Activity Impairment Questionnaire (WPAI), Rheumatoid Arthritis Specific Work Productivity Survey (WPS-RA)], quality-of-life

Potential effect modifiers/subgroup analyses: none

Additional integrative interventions

23. Should patients with RA use acupuncture?

P - Patients with RA

I - Acupuncture

C - No acupuncture

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

24. Should patients with RA receive massage therapy?

P - Patients with RA

I - Massage therapy

C - No massage therapy

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

25. Should patients with RA receive thermal modalities?

P - Patients with RA

I - Thermal modalities (e.g., cryotherapy, heat, therapeutic ultrasound, infrared sauna, paraffin therapy, and laser therapy)

C - No thermal modalities

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: Type of thermal modality (i.e., heat vs cold)

26. Should patients with RA receive electrotherapy or vagal nerve stimulation?

P - Patients with RA

I - Electrotherapy (TENS, NEMS) or vagal nerve stimulation

C - No electrotherapy or vagal nerve stimulation

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

27. Should patients with RA receive chiropractic therapy?

P - Patients with RA

I - Chiropractic therapy / manipulation

C - No chiropractic therapy

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (joint replacement)

Potential effect modifiers/subgroup analyses: None

28. Should patients with RA who are current smokers engage in a smoking cessation program?

P - Patients with RA who are current smokers

I - Smoking cessation program (counseling, nicotine replacement therapy, quit lines, apps)

C - No smoking cessation program

O - Disease activity, radiographic progression, functional status (HAQ, PROMIS, ADLs, performance measures), pain, fatigue, quality-of-life, treatment-related harms, long term outcomes (mortality, CVD)

Potential effect modifiers/subgroup analyses: None