

Identification of Red Flags for Telehealth Musculoskeletal Evaluations: A Modified Delphi Process

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Introduction

Improving and expanding Military Health System-based telehealth is a priority¹ and could enhance access to and time for musculoskeletal (MSK) care. Yet, barriers remain, such as specific guidelines and structured clinician frameworks.^{2,3} Thus, there is a need for objective tools to standardize clinical practice and aid clinicians during telehealth-based MSK evaluations.

Aim: Transition existing Rehab, Refit, Return to Duty (Rx3) program's clinician-decision support tools (CDSTs) for evaluation of common military MSK injuries using a modified Delphi process for telehealth utilization.

Methods

- Researchers with MSK clinical backgrounds and familiar with the Rx3 program utilized the existing Rx3 CDSTs (Figure 1 & QR code) to develop preliminary general red flags for telehealth MSK evaluations, regardless of anatomical collocation.
- General red flags were defined as requiring the telehealth provider to refer patient to in-person care.
- A panel of 15 clinicians, consisting of both general medical (2 family medicine, 1 nurse practitioner) and MSK specialized providers (2 orthopedics, 2 sports medicine, 3 athletic training, 3 physical therapy, 1 PM&R) voted on the items using an anonymous Qualtrics survey (Figure 2).
- Modified Delphi process-based consensus required 80% agreement of "strongly agree" or "strongly disagree" with inclusion.

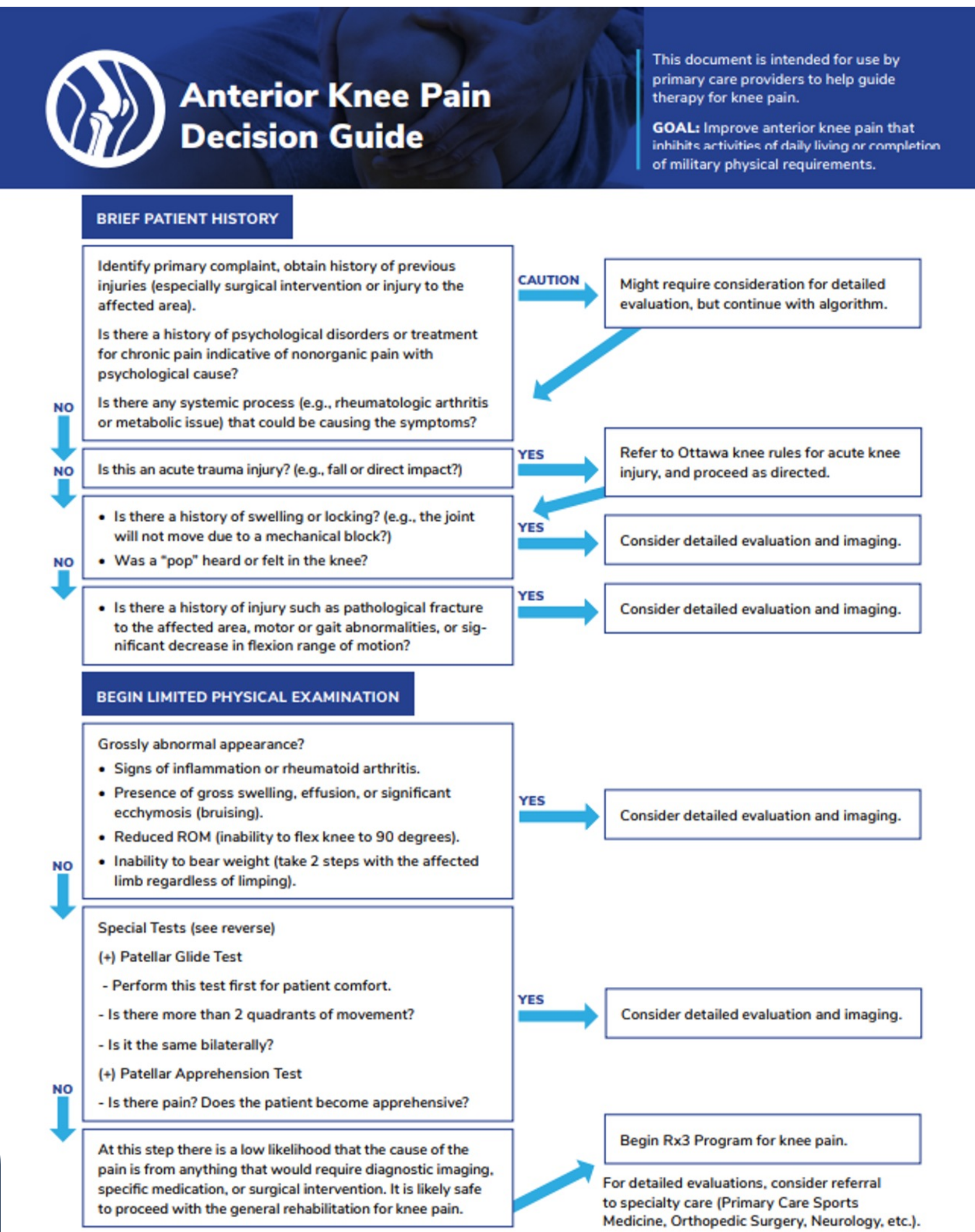


Figure 2. Existing Rx3 Example



QR Code to access existing Rx3 provider resources

Please rate your level of agreement with each red flag being included in all clinician-decision support tools with the instructions that they warrant immediate referral to an in-person provider.

Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree

Red, hot, very swollen joint and patient presenting with fever/chills and/or ill-appearing.

○ ○ ○ ○ ○

Figure 1. Example of Voting Item

References & Disclosure

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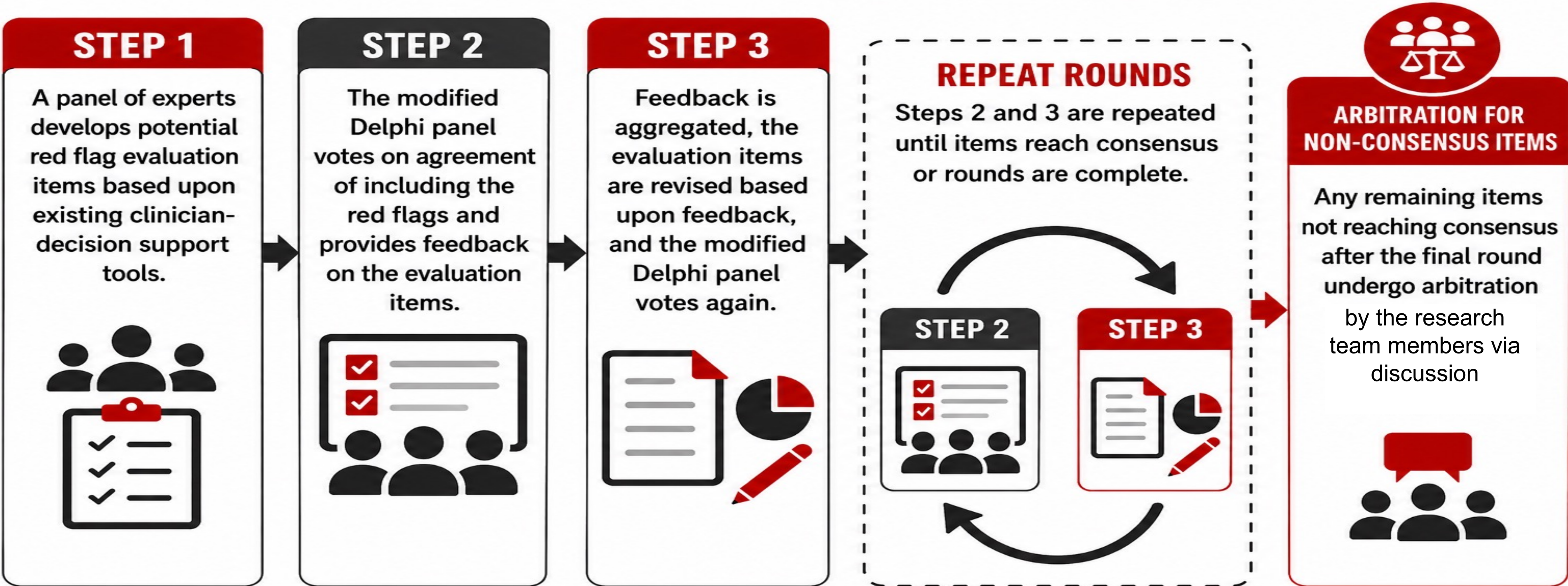


Figure 3. The Modified Delphi Process

Results

- Following the research team's panel review of the existing Rx3 CDSTs, 12 potential general red flags were developed as evaluation items for the modified Delphi panel to vote on.
- A total of 9 of 12 items were retained as general telehealth MSK evaluation red flags.
 - Six reached consensus following round 1 voting
 - Two items met consensus following round 2 voting
 - One item was included following round 3 and arbitration

Final General Red Flags

The following met consensus to be included as red flags for all Rx3 Telehealth CDSTs, regardless of anatomical region:

- Red, hot, very swollen joint and patient presenting with fever/chills and/or ill-appearing
- Significant trauma, gross effusion and/or discoloration, visible deformity, suspected fracture/dislocation
- Fever with localized bone/spine/joint pain
- Pale/cool limb and/or clinician suspected weak or absent pulses
- Open wound with signs of infection
- Concerns that current symptoms are related to exertional rhabdomyolysis
- Cannot move limb or cannot bear weight at all after injury
- Rapidly progressive weakness, numbness, or widespread tingling
- Severity and presentation of pain/symptoms not congruent with mechanism of injury

Next steps

Red Flags



Consensus on general and anatomical region-specific red flags for telehealth CDSTs

Evaluation Items



Consensus on general and region-specific evaluation items (e.g., history questions, self-palpation) for telehealth CDSTs

Implementation



Graphic design and implementation of the telehealth CDSTs into a telehealth program for Reserve Officers' Training Program (ROTC) cadets (August 2026)