

BMJ Open Clinical practice guidelines for the management of atraumatic shoulder conditions: protocol for a systematic review

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ABSTRACT

Introduction Shoulder conditions are a major cause of morbidity in the general population. Many clinical practice guidelines (CPGs) for shoulder conditions have been developed. Their purpose is to provide evidence-based recommendations to assist clinicians in providing optimal care to maximise patient outcomes. The aim of this systematic review is to identify, appraise, and compare the content and quality of CPGs for atraumatic shoulder conditions.

Methods and analysis CPGs for atraumatic shoulder conditions will be included provided they make recommendations about diagnosis and/or management, are identified by their authors as a guideline and are consistent with the Appraisal of Guidelines for Research and Evaluation (AGREE) II definition of a guideline. A systematic search of electronic databases, online guideline repositories and the websites of relevant professional societies will be conducted to identify eligible CPGs. Search terms relating to shoulder conditions (eg, ‘adhesive capsulitis’, ‘rotator cuff’ and ‘bursitis’) will be combined with a validated search filter for CPGs. Pairs of independent reviewers will determine eligibility of CPGs identified by the search. Quality appraisal of included CPGs will be performed using the AGREE II instrument. Recommendations from each CPG and how they were determined will be extracted and compared across similar CPGs. Results from this systematic review will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis statement.

Ethics and dissemination Ethical approval is not required for this systematic review. The results from this study will be published in a peer-reviewed journal and disseminated to professional societies that publish shoulder CPGs, clinical policy groups, clinicians, researchers and consumers.

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INTRODUCTION

Shoulder pain is a common musculoskeletal symptom and has a reported lifetime prevalence of 6.7%–66.7% in the general population.¹ The most common cause of shoulder pain is rotator cuff disease, and its incidence increases with age.² Other major causes of

Strengths and limitations of this study

- We will use a comprehensive search strategy to identify clinical practice guidelines for atraumatic shoulder conditions that fulfil our inclusion criteria by searching bibliographical databases Ovid MEDLINE and Ovid Embase using a filter designed to maximise sensitivity and by also searching the online guideline repositories and other grey literature sources.
- Our review will compare methods and recommendations made across different guidelines.
- Reasons for inconsistencies in recommendations between guidelines will be explored based on who was involved in their development, the process and the evidence base.
- Although we will not restrict our eligibility criteria, we may not be able to assess guidelines that have limited access, are not available in English, or where we cannot obtain an adequate translation of guidelines published in languages other than English.
- We will be using a set of English-language search terms and hence will not be able to search databases that are indexed in languages other than English.

shoulder pain include adhesive capsulitis which most commonly occurs in the 40–65 age group and glenohumeral osteoarthritis in the over 60 age group.³ Systemic diseases, such as rheumatoid arthritis and polymyalgia rheumatica, may also involve the shoulder.²

People with shoulder pain can experience many impediments in their day-to-day life, including sleep disruption,⁴ and the burden of shoulder complaints can have significant costs to society.⁵ The management of shoulder pain in clinical practice varies by whom the patient sees and is often at odds with research evidence.^{6–8} For example, there is an over-reliance on unnecessary shoulder imaging^{6,9,10} and subacromial decompression surgery,¹¹ despite evidence that these are not warranted.^{12,13} The use of image-guided

shoulder injections has also been increasing in the last decade,¹⁴ despite evidence they are not more advantageous than landmark-guided shoulder injections.¹⁵

Clinical practice guidelines (CPGs) provide evidence-based recommendations for the diagnosis and management of specific conditions in order to support health practitioners to deliver appropriate, evidence-based care and optimise clinical outcomes. By doing so, CPGs can promote consistent best practice in patient care, reduce unwarranted variation and reduce the use of low-value tests and treatments. However, differences in the content, scope and quality of different CPGs may make it difficult for clinicians to determine which recommendations to follow. Changes to the evidence informing these recommendations may also change over time as research accumulates, but guidelines may not be updated in a timely fashion.¹⁶ A systematic review of CPGs relating to the diagnosis and management of atraumatic shoulder conditions may be helpful in assessing the consistency of recommendations across guidelines and promoting best practice to optimise patient outcomes for these conditions by providing an easily accessible summary of best practice recommendations.

To our knowledge, a comprehensive review of CPGs relating to the diagnosis and management of atraumatic shoulder conditions has not been conducted. A recent systematic review of CPGs for rotator cuff disorders found variation in indications for imaging, surgical opinion and medications for full-thickness rotator cuff tears.¹⁷ This review, however, did not include CPGs relating to shoulder conditions other than rotator cuff disorders, did not use a validated search filter to identify CPGs and did not investigate reasons for the observed inconsistencies in recommendations.¹⁷

Therefore, the aim of this systematic review is to identify, critically appraise, and compare the content and quality of CPGs relating to the diagnosis and management of people with atraumatic shoulder conditions.

METHODS

The review was registered on the International Prospective Register of Systematic Reviews on 1 June 2020.¹⁸ This protocol is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) statement.¹⁹ Results from the systematic review will be reported according to the PRISMA statement.

Selection criteria

Selection criteria were guided by the 'Population and Clinical Areas, Interventions, Comparators, Attributes of CPGs and Recommendation characteristics' (PICAR) framework.²⁰

The population of interest for this review will be CPGs that relate to the diagnosis and management of people with the following shoulder conditions:

- ▶ Rotator cuff disease, including calcific tendinitis.

- ▶ Osteoarthritis of the glenohumeral and/or acromioclavicular joint.
- ▶ Adhesive capsulitis.
- ▶ Shoulder pain where the cause has not been specified.

Key CPG attributes required for inclusion will be that each CPG must be identified by the authors as a guideline and be consistent with the Appraisal of Guidelines for Research and Evaluation (AGREE) II definition of a guideline as being 'systematically developed statements to assist practitioner and patient decisions about appropriate healthcare for specific clinical circumstances'.²¹

No restrictions will be placed on year of publication or format of CPGs. We will include only the most recently published version of guidelines with more than one edition.

All CPGs relating to the diagnosis and management of atraumatic shoulder conditions will be included regardless of the recommendations they report. Only recommendations meeting the following inclusion criteria will be extracted. For the purposes of this review, guideline recommendations that will be extracted have been defined as per the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) Handbook as those that 'answer a focused and sensible healthcare question that leads to an action'.²² Statements that fit this definition of a recommendation but are not explicitly defined as a recommendation in the guideline will also be extracted. In cases where there is disagreement about what to extract, agreement will be reached by consensus. We will only consider recommendations that relate to diagnosis and management. We will not consider recommendations about the recommended techniques to use when performing diagnostic or therapeutic interventions; recommendations about who should perform the interventions; factors influencing prognosis of shoulder conditions or over-riding principles of care, such as consideration of cultural background.

We will exclude CPGs that:

- ▶ Relate to the management of shoulder pain due to systemic conditions such as inflammatory arthritis (including rheumatoid arthritis, psoriatic arthritis, polymyalgia rheumatica); neurological causes; malignancy; trauma (including fractures and dislocations) and chronic pain syndromes.
- ▶ Focus only on the perioperative and postoperative management of shoulder conditions.
- ▶ Relate solely to the technique of performing imaging, as opposed to the indications for imaging in making the diagnosis of atraumatic shoulder conditions.

Search methods

We will search Ovid MEDLINE and Ovid Embase as these are the two databases that are recommended by the Cochrane Collaborations Methodological Expectations of Cochrane Intervention Reviews for searching any topic on medical or healthcare intervention²³ and have a validated search filter to identify CPGs.²⁴

Our search strategy will use the Boolean operator “AND” to combine search terms relating to CPGs and shoulder conditions. The Canadian Agency for Drugs and Technologies in Health (CADTH) filter (broad) for identifying CPGs will be used as it has the highest sensitivity as validated by Lunny *et al.*²⁴ Search terms relating to atraumatic shoulder conditions will be those previously developed and used in Cochrane reviews for shoulder conditions and advised by the Cochrane Musculoskeletal group. The search strategy for these databases is detailed in online supplemental appendix 1.

We will also conduct an extensive grey literature search for CPGs relating to atraumatic shoulder conditions since 13 of 42 (44%) CPGs included in nine CADTH Rapid Response reports assessing evidence from CPGs were not available in bibliographical databases.²⁵ We will search the Epistemonikos database using a specific search strategy that combines search terms relating to CPGs and shoulder conditions (online supplemental appendix 2) and will also search additional online guideline repositories and the websites of relevant professional societies (online supplemental appendix 3). The search of the grey literature will involve a combination of the keywords ‘shoulder’, ‘glenohumeral’, ‘adhesive capsulitis’, ‘rotator cuff’, ‘calcific tendinitis’ and ‘subacromial’.

Reference screening and citation tracking (using Google Scholar) of included guidelines, and contact with experts in the field, will also be performed to identify additional CPGs.

Guideline selection

The results of the electronic database search will be imported into Covidence²⁶ and duplicates removed. Two review authors (RH and JAW) will independently screen the titles and abstracts and exclude those that clearly do not meet the selection criteria. The full text of all remaining records will then be obtained and independently reviewed by the two review authors to ascertain eligibility for inclusion.

Additional records identified by searching online guideline repositories and websites of professional societies will be recorded and title screening (abstracts not available) will be performed by one member of the review team (DYLL). Full-text review will then be performed by two review authors (DYLL and RH or JAW) to determine inclusion.

Guidelines identified by reference screening, citation tracking and contact with experts will be title screened by one reviewer (RH), with full-text review performed by two review authors (DYLL and RH or JAW) to determine inclusion. Disagreements will be resolved by discussion or by consultation with a third review author (RB).

The reasons for exclusion of all full-text records will be recorded, and the screening and selection process will be reported in a PRISMA flow diagram. All associated companion documents, including information about the guideline development process, will be sourced from the corresponding author of all included CPGs if not already

published and available. For all guidelines published in a language other than English, we will endeavour to obtain either a translated copy of the CPG from the organisation and/or contact author, or produce a translation using Google translate and/or international contacts. Multiple documents of the same CPG (eg, guideline recommendations and guideline methods) will be collated so that each guideline rather than each document is the unit of interest in this review.

Data extraction

All data extraction and categorisation will be conducted by a single author (RH) and independently reviewed by another author (DYLL, JAW or RB). Any disagreements will be resolved by consensus and discussion with a third author (RB) as required. The following characteristics for each included CPG will be extracted and tabulated in an Excel spreadsheet: title, year and country of publication, developing organisation, author(s), target users, guideline writers, scope of the guideline, the method by which quality of evidence was assessed and the grading system used to determine the strength of the recommendations (eg, National Health and Medical Research Council GRADE approach.²⁷ Prior to its use, the data extraction form will be piloted on two guidelines after which any necessary modifications or clarifications will be made.

Recommendations meeting our selection criteria about the diagnosis and management of atraumatic shoulder conditions will be extracted and tabulated in an Excel spreadsheet by a single author (RH) and independently checked by another (DYLL or JAW). Recommendations for each shoulder condition will be assessed and compared separately.

The recommendations for each shoulder condition will be grouped and compared across CPGs in a recommendation matrix according to the following categories: clinical assessment, investigations, advice and education, self-management, non-pharmacological management, pharmacological management, referrals, surgical management, monitoring and review, and recommendations for work and activities.

Quality appraisal

Included CPGs will be independently appraised by four review authors using the AGREE II instrument. AGREE II is a valid and reliable CPG appraisal tool designed for use in any area of healthcare.²¹ It comprises 23 items (each with specific reporting criteria) organised within the following six domains: scope and purpose, stakeholder involvement, rigour of development, clarity of presentation, applicability and editorial independence. It also contains two global rating items in its overall assessment section. For each guideline, the 23 items from the 6 domains, and 1 global item from the overall assessment section (‘rate the overall quality of the guideline’) will be scored using a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7).

All review authors will attend a training session regarding the use of the AGREE II instrument and will have access to the same information for each CPG when completing their appraisal. They will be allowed to amend their scores if additional information for a particular CPG is located during the appraisal process (for example, a methodological supplement). A quality score will be calculated for each of the six domains separately by summing all the scores of the individual items in a domain from each reviewer and scaling the total as a percentage of the maximum possible score for that domain. Consistent with previous systematic reviews of CPGs,^{17 28 29} guideline quality will be evaluated on the basis of domain scores. Domain scores will be used to identify strengths and limitations of guidelines and to compare methodological quality between guidelines.

Inter-rater reliability will be calculated for each domain using the intraclass correlation coefficient (ICC) with two-way random-effects model and a 95% CI to determine the level of agreement across reviewers. ICC values between 0.0 and 0.2 will be indicative of poor reliability; 0.3 and 0.4 will indicate minimal reliability; 0.5 and 0.6 will indicate moderate reliability; 0.7 and 0.8 will indicate strong reliability, and scores greater than 0.8 will indicate almost perfect reliability.³⁰

Appraisal of recommendations

The strength of each extracted recommendation will be summarised based on the language used into one of the following five categories to allow comparison: strong recommendation for, strong recommendation against, conditional recommendation for, conditional recommendation against or no recommendation.²² Strong recommendations for have been defined as ones where the 'desirable effects of an intervention outweigh its undesirable effects',²² while strong recommendations against have been defined as ones where the 'undesirable effects of an intervention outweigh its desirable effects'.²² Conditional recommendations for are those where 'the desirable effects probably outweigh the undesirable effects [...] but appreciable uncertainty exists',²² while conditional recommendations against are those where 'undesirable effects probably outweigh the desirable effects [...] but appreciable uncertainty exists'.²²

Synthesis of recommendations

Following the development of the recommendation matrix, one author (RH) will compare recommendations addressing the same clinical question for agreement. The clinical question of each recommendation will be appraised for similarity using the participants, intervention, comparison and outcome framework.³¹ The percentage of each set of recommendations addressing the same clinical question that concurs or agrees will be calculated. It should be noted that the process of identifying similar recommendations will be a subjective judgement as it needs to allow for differences in wording of included recommendations that have similar underlying guidance. Potential explanations for any discrepancies

between guideline recommendations will be investigated. This process will be reviewed by other members of the review panel (DYLL, JAW, DAOC, RB).

PATIENT AND PUBLIC INVOLVEMENT

Patients and the public were not involved in the development of this systematic review protocol. A consumer representative will be included in the systematic review, and patient and public involvement in the development of each included guideline in this review will be considered as part of the AGREE II critical appraisal process.²¹

ETHICS AND DISSEMINATION

Ethical approval is not required for this systematic review. The results from this study will be published in a peer-reviewed journal and disseminated to professional societies that publish shoulder CPGs, clinical policy groups, clinicians, researchers and consumers.

DISCUSSION

By identifying, critically appraising, and comparing the content and quality of CPGs relating to the diagnosis and management of people with atraumatic shoulder conditions, this systematic review will provide an easily accessible summary of current best practice recommendations for the management of these conditions. In doing so, it is hoped to facilitate evidence-based practice from clinicians, reduce variation in clinical practice including use of unwarranted interventions, and ultimately optimise clinical outcomes. It will also identify areas where further evidence is required to recommend for or against an intervention and ways in which the quality of current CPGs can be improved.

The strengths of this systematic review are its broad scope on CPGs for multiple and non-specific shoulder conditions, the comprehensive search strategy, and that it will expand on a recent systematic review of CPGs for rotator cuff disorders¹⁷ by examining potential reasons for inconsistencies in recommendations between different guidelines.

The limitations of this review are that despite our comprehensive search strategy, we may not be able to access all existing CPGs relating to atraumatic shoulder conditions; for example, those indexed in languages other than English, those with limited access or those published in languages other than English where we cannot obtain an adequate translation. In addition, traumatic shoulder conditions are beyond the scope of this current review and the subjective nature of the AGREE II instrument may mean there could be substantial variation in the scores given by different raters. To address this, we will use four raters to appraise the quality of CPGs using the AGREE II instrument, provide an AGREE II training workshop for all raters to attend and will calculate inter-rater agreement for each domain of the AGREE II.

CONCLUSION

This systematic review will use high-quality methods to assess and compare the content and quality of CPGs for the diagnosis and management of atraumatic shoulder conditions. It is hoped that this will help guide current and consistent best practice and ultimately optimise clinical outcomes relating to these conditions.

Contributors The contributors to this protocol are DYLL, RH, JAW, DAOC and RB. DYLL prepared the first draft of the manuscript with all authors providing feedback and input into the editing and content of the manuscript. The members of the review team will be RH, JAW, DYLL, JS, DAOC and RB. Screening, use of the AGREE II tool, data extraction and formulation of the recommendation matrix will be performed by RH, JAW and DYLL. All authors will be guarantors of the review.

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