

# BMJ Open Quality indicators for hip fracture patients: a scoping review protocol

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## ABSTRACT

**Introduction:** Hip fractures are a significant cause of morbidity and mortality and care of hip fracture patients places a heavy burden on healthcare systems due to prolonged recovery time. Measuring quality of care delivered to hip fracture patients is important to help target efforts to improve care for patients and efficiency of the health system. The purpose of this study is to synthesise the evidence surrounding quality of care indicators for patients who have sustained a hip fracture. Using a scoping review methodology, the research question that will be addressed is: "What patient, institutional, and system-level indicators are currently in use or proposed for measuring quality of care across the continuum for individuals following a hip fracture?"

**Methods and analysis:** We will employ the methodological frameworks used by Arksey and O'Malley and Levac *et al.* The synthesis will be limited to quality of care indicators for individuals who suffered low trauma hip fracture. All English peer-reviewed studies published from the year 2000-most recent will be included. Literature search strategies will be developed using medical subject headings and text words related to hip fracture quality indicators and the search will be peer-reviewed. Numerous electronic databases will be searched. Two reviewers will independently screen titles and abstracts for inclusion, followed by screening of the full text of potentially relevant articles to determine final inclusion. Abstracted data will include study characteristics and indicator definitions.

**Dissemination:** To improve quality of care for patients and create a more efficient healthcare system, mechanisms for the measurement of quality of care are required. The implementation of quality of care indicators enables stakeholders to target areas for improvement in service delivery. Knowledge translation activities will occur throughout the review with dissemination of the project goals and findings to local, national, and international stakeholders.

## INTRODUCTION

In 2000, there were approximately 1.6 million hip fractures worldwide.<sup>1</sup> By 2050, this number is projected to increase to 6.26 million primarily due to the aging

## Strengths and limitations of this study

- Guided by validated methodological frameworks, has a peer-reviewed search strategy, and follows a systematic approach to data analysis.
- This review will include quality of care indicators for hip fracture patients across the entire continuum of care, and not just within the acute care setting.
- Validated and potential quality of care indicators for hip fracture patients will be included, which will provide insight into which potential indicators require further validation research.
- The review will be limited to English language studies only.
- The quality of the evidence will not be evaluated (as this is a scoping, not systematic, review).

population.<sup>2–5</sup> Hip fractures are a significant cause of increased morbidity and mortality, and are most prevalent in elderly women with low bone strength.<sup>1 6–12</sup> These hip fractures, also known as fragility fractures, are most often associated with osteoporosis, clinically defined by low bone mineral density.<sup>12</sup> Fragility hip fractures occur spontaneously or from minimal trauma (eg, a fall from standing height or less).<sup>13</sup>

The high prevalence of hip fractures is concerning because hip fractures are both a cause and consequence of increased frailty: Persons who sustain a hip fracture are significantly frailer, meaning they have an increased vulnerability to adverse outcomes compared to their age-matched peers.<sup>11 14 15</sup> Evidence suggests that the extensive morbidity resulting from these hip fractures results in 30–50% of hip fracture patients not returning to their pre-morbid function, even 1–2 years postfracture.<sup>16–18</sup> Furthermore, a 2010 meta-analysis concluded that the all-cause mortality risk for older adults is fivefold to eightfold higher 3 months post-hip fracture compared to age-matched controls.<sup>19</sup>

Personal and societal costs of hip fractures are high. Stukel *et al.*<sup>20</sup> determined that approximately 14% of hip fracture patients



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are either readmitted to acute care or die within 30 days postdischarge from the initial acute care admission. Readmissions to hospital and subsequent fractures after a hip fracture have serious consequences for both patients (eg, increased morbidity) and the healthcare system (increased utilisation).<sup>21 22</sup> Furthermore, postacute healthcare utilisation in hip fracture patients is also substantial as these persons require rehabilitation.<sup>23 24</sup>

In an effort to improve quality of care for patients and create a more efficient healthcare system, mechanisms for the measurement of quality of care should be in place. Quality of care indicators are a widely accepted performance measure used to determine the deviation in actual performance from ideal performance (ie, actual care delivery vs best practice care delivery).<sup>25 26</sup> The implementation of quality of care indicators enables stakeholders to target areas for improvement in service delivery to improve patient outcomes and ultimately save costs.<sup>27 28</sup> Examples of positive change resulting from the implementation of quality of care indicator(s) include hip fracture quality of care indicators in the UK and the WHO's surgical safety checklist.<sup>29 30</sup> The development of quality of care indicators may occur from a deductive approach (ie, indicators are derived from scientific evidence, followed by expert opinion if required) or an inductive approach (ie, existing quality of care data is used to develop indicators).<sup>31</sup> Although there is no gold standard to guide quality of care indicator development, Stelfox and Straus<sup>32</sup> suggest the approach depends on the strength of evidence for a given indicator as well as its potential impact on patient health.<sup>33</sup>

A national preconsensus meeting was held in June 2013 to garner experts' opinions on possible (ie, feasible) quality of care indicators for hip fracture patients (ie, inductive approach). However, experts felt their suggested indicators were insufficient to appropriately measure the quality of care delivery, particularly across the entire continuum of care. More information with respect to the strength and breadth of scientific evidence, particularly for potential quality of care indicators was requested. Therefore, the purpose of this study is to synthesise the evidence surrounding current quality of care indicators for patients following a hip fracture. Using a scoping review methodology, the specific research question to be addressed is: "What patient, institutional, and system-level indicators are currently in use or proposed for measuring quality of care across the continuum for individuals following a hip fracture?"

## METHODS AND ANALYSIS

We will employ the methodological frameworks used by Arksey and O'Malley<sup>34</sup> as well as Levac *et al*<sup>35</sup> for the current scoping review. The research team has expertise in the content area and methodological approach. For the purpose of this review, quality of care indicators are defined as validated quality of care measures and potential quality of care measures that have a descriptive

statement.<sup>28</sup> Care continuum includes any interaction with the healthcare system from the acute-care to postacute-care period.

## Eligibility criteria

This synthesis is limited to quality of care indicators for individuals with hip fracture caused by low trauma (eg, a fall from standing height or less). Indicators for individuals with hip fractures caused by high levels of trauma (ie, motor vehicle collisions) malignant neoplasms, and Paget's disease will be excluded. These exclusion criteria will be applied as these patients are considered to be a different population and will have different care pathways and require different measures of quality.

All study designs will be included (eg, observational studies, randomised controlled trials and qualitative studies). Quality indicators targeted at patients, institutions or the healthcare system for hip fracture care will be included. Indicators developed or proposed for either the acute care and postacute care setting will be included. Only studies or abstracts published from the year 2000-onwards, or in English will be included to ensure relevance to the current healthcare context and feasibility. Limiting the search to English language only may result in bias in results towards English language speaking countries.

## Search strategy and information sources

Literature search strategies will be developed using medical subject headings (MeSH) and text words related to hip fracture quality indicators. Studies will be identified by searching Medline (OVID interface), CINAHL (EBSCO interface), EMBASE (OVID interface), AgeLine (EBSCO interface), Cochrane Central Register Controlled Trials (Cochrane Library) and PEDro (physiotherapy evidence database). A hand search of the reference lists from reviews and selected articles from Osteoporosis International, a highly relevant journal, will be made to ensure literature saturation. Finally, experts in the field of osteoporosis and hip fracture will be contacted and consulted in order to ensure that all relevant data is obtained. An experienced information specialist (LP) will conduct all of the literature searches. The search strategy will be peer reviewed by another information specialist using the Peer Review of Electronic Search Strategies (PRESS).<sup>36</sup> This will be done to clarify the boundaries of the questions and to identify other key search terms.

## Study selection

To increase the reliability of screening by the two reviewers, a pilot test of the level 1 screening form based on the eligibility criteria described above will be performed on a random sample of 50 articles. The  $\kappa$  statistic will then be calculated to determine the inter-rater agreement for study inclusion.<sup>37</sup> If necessary, the inclusion and exclusion criteria will be clarified to promote the consistent application of the selection criteria. Two

reviewers will independently screen the titles and abstracts identified by the literature search for inclusion using the screening form (level 1 screening). The full text of potentially relevant articles will then be obtained and screened to determine final inclusion (level 2 screening). A pilot test of the level 2 screening form will be performed on approximately 1% of the articles and the inter-rater agreement for study inclusion will also be calculated.<sup>37</sup> The involvement of a third reviewer who is knowledgeable in the research area will be available to resolve discrepancies. Studies excluded during the screening phases will be recorded along with the reason (s) for exclusion.

### Data items and data collection process

Abstracted data will include study characteristics (eg, year of publication, country of study), indicator definitions (eg, length of stay defined as the number of total days stayed at institution without interruption), numerator and denominator definitions when applicable (eg, per 1000 hip fractures). The main focus of the studies will be categorised or 'charted' by target of interest (either individual, institution, or system-level) as well as the indicator's place within the continuum of care (eg, acute care setting). We will examine the purpose and components of the indicators as well as the reported measurement properties if available/applicable (eg, sensitivity and specificity). Further categories may be identified through the completion of the search and via discussion with the study team. As in the study selection process, a data abstraction form will be pilot tested, standardised, and modified if poor agreement is observed. For example, any wording on the form that may be contributing to poor agreement will be reviewed and modified as necessary. Two reviewers will independently abstract all of the data, and a discussion or the involvement of a third reviewer will resolve discrepancies. Study quality will not be assessed during the scoping review as the objective of the review is to identify gaps in the literature and highlight future areas for systematic review.<sup>34 35</sup> This means that results from poor quality studies may be inaccurate and therefore have the potential to bias study findings.

### Synthesis

The results of this scoping review will be summarised quantitatively using numerical counts and qualitatively using thematic analysis (ie, using a qualitative descriptive approach). Specifically, the results of this review will determine what individual, institutional and system-level quality of care indicators are currently in use for individuals with hip fractures. Owing to the anticipated breadth of evidence that will arise from this scoping review, there is a likelihood that a given quality of care indicator, or potential quality of care indicator, is measured in a number of different ways, is context-dependent, and its applicability may change over the study time period (ie, within the past 14 years) due to changes in best practice.

The synthesis of results will ensure these differences in measurement are highlighted in order to determine potential areas of discussion among international experts (eg, discussion of why certain measures are used, and the pros and cons of each measure). Although different healthcare contexts likely require different quality of care indicators (eg, due to different funding policies), this synthesis enables discussion of the role of context, as well as any potential areas for international synergy, or at the very least international learnings (ie, informs a consensus meeting). Trends in quality of care delivery for hip fracture patients have changed over the course of the study inclusion years (ie, within the past 14 years). These changes will be discussed in brief within our synthesis; however, priority will be given to results that are most recent as they are more consistent with the current healthcare context. This review will identify gaps in the literature as well as future areas for study either via implementation studies, consensus meeting or systematic review.

### ETHICS AND DISSEMINATION

Knowledge translation (KT) activities will take place at the beginning of the review and continue throughout with dissemination of the project goals to members of Bone and Joint Canada (BJC) and Osteoporosis Canada (OC) to create awareness of the project. End-of-grant KT will also occur through these agencies and their venues (eg, print and online newsletters) as well as through conventional KT mechanisms (eg, conferences and peer-reviewed journals). For example, the results of the scoping review will be presented at relevant meetings locally, nationally and internationally (eg, the Technology Evaluation in the Elderly Network Conference, the Fragility Fracture Network's International Hip Fracture Registries group, Health Quality Ontario,) and published in a peer-reviewed journal so that results are available to the appropriate academic and clinical audiences. Lastly, partnerships with local clinical programmes and/or research initiatives (eg, Toronto Rehabilitation Institute) will be made to give timely and effective application of the research results.

This scoping review will summarise the body of evidence of established and potential quality indicators for hip fracture patients across the continuum of care, thereby summarising performance measures that can be used to determine the quality of care delivery for these patients.

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