Overview of a Formal Scoping Review on Health System Report Cards

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Abstract

Background

There exists an extensive body of literature on health system quality reporting that has yet to be characterized. Scoping is a novel methodology for systematically assessing the breadth of a body of literature in a particular research area. Our objectives were: 1) to showcase the scoping review methodology in the review of health system quality reporting; and 2) to report on the extent of the literature from this review.

Methods

A scoping review was performed based on the York methodology outlined by Arksey and O´Malley from the University of York, United Kingdom. We searched 14 peer reviewed and grey literature databases limiting the search to English language and non-English language articles with English abstracts published between 1980 and June 2006 with an update to November 2007. We also searched specific websites, reference lists and key journals for relevant material and solicited input from key stakeholders. Inclusion/exclusion criteria were applied to select relevant material and qualitative information was charted from the selected literature.

Results

10 102 articles were identified from searching the literature databases, 962 were deemed relevant to our scoping review. An additional 227 were identified from website searching, references lists, key journals and stakeholder suggestions for a total of 1189 included articles. These were categorized and catalogued according to the inclusion criteria and further subcategories were identified through the charting process. Topic

areas represented by this review included the efficiency of health system report cards, methodological issues in their development, stakeholder views of the report cards, and ethical considerations around their development.

Conclusions

The scoping review methodology has permitted us to characterize and catalogue the extensive body of literature pertaining to health system report cards. Furthermore, the method also allowed us to identify gaps in the existing literature, thus guiding future research in health system report cards.

Background

Health system quality reporting refers to measuring health care service provision (i.e. care provided in hospitals, clinics, the community, and public health) and comparing these measurements to benchmarks or other standards to determine if best practices are being used and/or resources are being used efficiently. The results, in the form of report cards, are fed back to health service providers and sometimes other groups to potentially change practice patterns to improve effectiveness and efficiency of care. Reporting on health system quality has become a common tool to increase accountability, improve efficiency, determine funding and attract consumers in many healthcare systems worldwide [1-4]. As a result, there has been a substantial increase in the body of literature regarding these report cards. However, the extent of the literature and specific topics described are unclear and evidence-based standardized methodologies for the conduct of health system quality report cards have yet to be established. Indeed, health care and public health policy makers, managers and administrators have few consensus documents or evidence-based examples of effective and accepted means of health system quality reporting programs.

Due to the importance of health system quality reporting as a mechanism for accounting to patients, the public, governments and funding sources, it is imperative that report cards be valid and accurately reflect the quality of health care being provided. Standardized practices for collecting and analyzing data must be developed, along with appropriate methods for reporting results to different stakeholders. The effectiveness of report cards in changing practice needs to be evaluated and potential improvements must be identified to ensure that they improve care. Also, gaps in current research knowledge

need to be identified to guide future research. Thus, clarification and understanding of existing literature on health system quality report cards is the first step in addressing these concerns. Adequately disseminating the research findings to health services researchers, health care providers and administrators will promote evidence-based reporting on the quality of health care services in the future.

The comprehensive nature of scoping reviews provides a mechanism to thoroughly and systematically map the existing literature regarding health system quality report cards. The purpose of our scoping review was to determine the extent of published evidence on best practices relating to the production, reporting and dissemination of health system report cards. Our objectives here were to increase awareness of the scoping review methodology and to share the conceptual layout of the health system quality reporting research themes identified as the focus of the scoping review.

Methods

Scoping Reviews

Scoping reviews are somewhat similar to systematic reviews in that they are used to methodically organize and describe a body of literature. However, there are several aspects of scoping reviews that distinguish them from traditional systematic reviews (Box 1). Systematic reviews attempt to answer a clearly defined question, and often use explicit methodologies to asses the quality of included articles. In contrast, scoping reviews are generally conducted to examine the extent, range and nature of research activity in a particular field, without necessarily delving into the literature in depth or attempting to assess its quality. Scoping reviews produce a profile of the existing literature in a topic area, creating a rich database of literature that can serve as a foundation for more detailed reviews. These reviews are not intended to assess the quality of the existing literature, but may provide the background for full systematic reviews in a research area, or identify areas in the literature needing further research.

Arksey and O'Malley from the Centre for Reviews and Dissemination at the University of York published a pivotal paper in 2005 on the conduct of scoping reviews [5] that provides a methodological framework to carry out this type of review. This "York framework" suggests five stages: 1) Identification of the research question to be addressed; 2) Identification of studies relevant to the research question; 3) Selection of studies to include in the review; 4) Charting of information and data within the included studies; and 5) Collating, summarizing and reporting results of the review. An optional sixth stage involves consultation with stakeholders to ensure comprehensive inclusion of all relevant material [5]. We used this template to guide our scoping review, and where

necessary, developed more specific procedures to carry out the stages of the review process. The ensuing sections describe the methods we followed in our scoping review of the health system report card literature.

Development of Research Question

The York framework recommends that in the development of the research question, all aspects of the research area should be considered to generate a breadth of coverage. Drawing on the expertise of our research team and an initial scan of the literature, we defined our overriding research question as follows: *what is the extent of published evidence on best practices relating to the production, reporting and dissemination of health system report cards?* The rationale behind this broad question was the increased use of health system quality reports and the apparent lack of consensus in the literature on how best to design them. Although extensive, the existing literature on health system report cards is heterogeneous in its areas of focus and also its methodological rigor, with, for example, an abundance of quasi-experimental evaluations and studies [6]. Therefore, based on a combination of informal discussions, preliminary review of published topics and stakeholder consultation (see below), we developed the following Focus Areas for our scoping review:

1. Methodological issues in health system report card development. Specific examples of methodological issues that have been addressed at least to some extent in the literature include: a) What data sources can be used for studying quality of care? Does the accuracy of process and outcomes of care measurements vary across different data sources? b) What is the best approach to developing and validating quality indicators in specific clinical areas? What clinical areas have published widely endorsed and/or applied quality indicators?

c) What statistical methods should be used to risk-adjust data in health outcome report cards? d) What is the optimal format for presenting and reporting outcome or process data? Do data framing effects influence reactions to data presented in the reports? e) How, and to whom, should health system reports be disseminated? What are the pros and cons of public reporting relative to reporting to providers only, or providers and health system administrators?

2. Evidence of effectiveness/efficacy of report cards for enhancing quality. More specifically, do report cards actually affect quality of care and outcomes?
3. Research into stakeholder views of report cards. What opinions do the general public, providers, and health system decision-makers have of health system report cards? Do health system report cards influence the decision-making of the various players (i.e. patients, providers, and/or decision-makers) in the health system?
4. Ethical considerations relating to report cards. How should providers respond to demands for accountability? What are the ethical considerations regarding public reporting of quality of care outcomes? Do health system report cards have any detrimental effects on access to care for marginalized groups?

Stakeholder Consultation

The optional stakeholder consultation phase is meant to be an ongoing interaction throughout the review process [5]. Thus, we felt it was important to initiate contact with stakeholders at the beginning of the review process. Early involvement of stakeholders allowed us to seek guidance regarding our research question and choice of focus areas, thus ensuring that the results are of broad interest among different stakeholder groups.

We identified fifteen stakeholders representing fellow researchers, decision-makers, and clinicians involved in health system quality reporting. We contacted these individuals via email, and briefed them on our research question and focus areas and approach to searching the literature and solicited their feedback on our approach. Ten of the fifteen stakeholders expressed interest in the study and provided us with valuable input. They deemed our research question and focus areas to be suitable and broad enough to address the research question, and suggested appropriate studies to include. The stakeholders confirmed the need for this review, and provided suggestions as to how best distribute our knowledge and research products to various stakeholder groups.

Search Strategy

To be comprehensive, the York framework recommends searching several literature sources including electronic databases, reference lists of relevant literature, hand-searching key journals, and existing networks, relevant organizations and conferences [5]. For our scoping review, we approached this in multiple steps, first targeting electronic literature databases. Once relevant material was selected from this source, we then searched relevant websites, URLs and reference lists of key studies to increase our capture of relevant material.

Electronic Literature Database Searching

We enlisted the services of a library scientist (DLL) to conduct the electronic database search. The research team devised a broad list of terms pertinent to health system report card research, including: report cards, performance indicators, scorecards, system performance, quality improvement, health, healthcare and medical care. These terms were combined to create keywords that could be used to search both peer-reviewed

and grey literature electronic databases (listed in Box 2). Keywords were then mapped to database thesauri search terms, where available, and were also searched as text word terms in all databases. The goal was to conduct a sensitive rather than specific search of the literature; thus search terms were of necessity kept very broad, resulting in many irrelevant studies being eliminated at the Study Selection phase (see below).

A total of 14 peer-reviewed and grey literature databases were searched using these search strings. Box 3 provides a list of the literature databases employed in our scoping review. All literature database searches were limited to the English language and non-English language articles with English abstracts, and published between 1980 and June 2006. The literature search was subsequently updated to November 2007.

Website Searching

Once the relevant studies were selected from the literature database search, we carried out a selective search of relevant websites. Through consultation with our stakeholders, and members of the research team and colleagues, we compiled a list of relevant websites to search (Box 4). We attempted to search websites in a systematic manner, allowing for some variation in search strategies in response to varied website structures. For example, most websites provide Research and/or Publication links which contain a central repository of an organizations reports, research papers and/or publications. However, other websites have this material scattered throughout, making it more difficult to uncover. Therefore, our first approach to a website was to consult the Site Map and look for Research and/or Publication links. For websites without this link, we took a more sporadic approach, checking all the links for relevant material.

Once hand searching a website's links was complete, we used the website's Search Engine to attempt to uncover additional material. Once again, different types of search engines required different search tactics. For all websites we searched the terms "health care quality" "performance report" "report card". For websites that were not specifically health-care focused we added the word "health" to the specific term. We kept a log of the website searches, saving the links to relevant pages and tracking our progress through the websites.

Other Literature Sources

In an attempt to be as comprehensive as possible in our search, we also collected literature from reference lists of relevant articles, specific journal issues with related material and suggestions from colleagues.

Study Selection

Our employ of broad terms in the electronic database searches generated a list of over 10 000 abstracts. In order to sort out the irrelevant material from this list, we developed a screening tool with specific inclusion and exclusion criteria based on the Focus Areas identified with our research question. Three members of the research team piloted the inclusion/exclusion criteria with a sub-sample of abstracts retrieved from the MEDLINE database. Multiple sample tests of criteria were carried out, and feedback from these tests was used to refine the abstract screening process. Once a final set of inclusion/exclusion criteria were agreed upon, the inter-rater reliability for this process was confirmed using a kappa analysis of 35 abstracts (kappa = 0.79).

One member of the research team was responsible for reading the abstracts of all the articles identified in the search of electronic database, applying the inclusion/exclusion criteria in the abstract screening tool. For inclusion in the scoping review, the abstracts had to indicate that the articles contain: Original research (including systematic reviews) on 1) efficacy or effectiveness of health system report cards or 2) stakeholder views of health system report cards; or original research and/or a focused discussion (including non-systematic reviews) of 3) ethical considerations or 4) methodological approaches to health system report cards. In addition to peer-reviewed articles, we also included research reports, theses and policy analyses if they met the other inclusion criteria.

Excluded from the review were obvious commentaries, editorials or non-systematic reviews regarding health system report cards (except for inclusion criteria 3 and 4), articles describing the audit of a particular health care service, but lacking the feedback component of the report card process, and articles on non-health care related quality reporting.

A similar screening process was used for literature uncovered through website searching, reference lists, and recommendations. For material from websites, less formal, interpretive descriptions of a study or investigation that may be on a home page or a web page that may or may not be linked to the report document were also excluded.

Charting

According to the York Methodology of scoping reviews, the charting process is multi-staged, involving extraction of information from individual articles. We collected descriptive characteristics such as general citation information, clinical area, country of

origin and key findings from the included articles to create a detailed spreadsheet database.

Summation, Collation and Synthesis

The purpose of this final stage of scoping is to provide a structure to the literature uncovered. Due to the broad scope of our research question and the subsequent large volume of literature uncovered in our searches, we contained this final stage to a narrative synthesis where we organized these findings into specific categories based on our Focus Areas and abstract screening tool: 1) Evidence of effectiveness of report cards; 2) Stakeholder views of report cards; 3) Methods associated with report cards; 4) Ethical considerations for report cards. Focusing on the descriptive nature of the material in the charting phase allowed for the identification of additional categories and themes in the literature. Creation of these *a priori* sub-categories provided a structure to the findings and a clearer way of describing the literature.

Results

As the purpose of scoping is not to determine the quality of study design, validity of outcomes or conduct detailed data extraction but rather create a map of the literature, we present the results in a descriptive manner to outline what currently exists in the literature pertaining to health system report cards. We provide specific examples of common themes, projects and clinical areas in the literature. A detailed literature database with catalogued organization of the included material can be obtained from the authors upon request.

Focus Areas

10 218 articles were initially identified as potentially relevant from our search of the peer-reviewed and grey literature electronic databases. Using the abstract screening tool, 976 articles were retrieved for charting. Of these articles, 776 were read in more detail and charted. An additional 156 items from website searching and 71 articles from other sources (e.g. reference lists) were charted for a total of 1003 articles in the initial round of searching. The updated electronic databases search yielded an additional 1884 articles, of which 186 were charted. Each of the selected articles were categorized into the four focus areas: evidence of report card effectiveness in improving the quality of health care (n = 192); stakeholders' opinions, views and understanding of report cards (n = 122); articles addressing various methods (e.g., statistics, data sources, quality indicators, data display, distribution) of report cards (n = 829); and ethical considerations or issues that have arisen due to health system report card use (n = 46; Figure 1). Within these focus areas, several common themes and topics became apparent from the charting process.

Below we provide an illustrative overview of the information identified in each focus area.

Evidence of Effectiveness

Overall, the articles in this area of focus examine report cards for their ability to either influence patient or purchaser choice of health care provider or improve health care performance quality. Those examining consumer (e.g., patient and purchaser) choice were divided as to whether or not report cards influenced choice [7-13]. Several of these articles found that patients and consumers had difficulty interpreting reports, thus affecting the influence of the reports on choice. This issue is also addressed in the Stakeholder Views focus area (below).

In terms of impact on quality of care, several studies found that publicly released report cards did improve outcomes and hence performance [14-16], however these improvements have been met with caution in other articles discussing the ethical consideration of report cards (see below). A Cochrane Review by Jamtvedt *et al*. [17] examined the impact of audit and feedback on health care performance and determined that in the literature, audit and feedback did provoke a modest improvement in performance, but generally this occurred where there was low baseline compliance with recommended care practices, or where there was more intensive audit and feedback programs (i.e. concomitant quality improvement programs and/or more frequent audit and feedback) [17]. Others demonstrated improvement with confidential reporting, both with or without associated quality improvement interventions [18-20].

In contrast, other studies demonstrated either little or no impact of report cards on health care quality. Some found that public release of performance data did not improve

quality of care [7,21,22], while others found that confidential reports did not improve care [23], even when report card initiatives had supporting quality improvement programs [24-26].

Stakeholder Views

The articles collected within this focus area primarily consider the views and use of report cards by consumers (e.g., patients and purchasers), physicians, other health care providers (e.g., dentists, nurses, therapists, etc) and health care managers. There were two main streams of focus: either the stakeholder's opinion of report cards, or their use and understanding of report cards. With respect to consumers, the majority of the articles related to consumer use of report cards to choose health plans or health care providers. While some found that stakeholders used report cards to make decisions [27-29], others found that stakeholders did not consult quality reports to inform their choice of provider[30].

Other studies considered consumers' understanding of report cards [31-38] and/or their information needs [39-44]. The ability of consumers to understand the material in report cards dictated their opinions of them [32,33]. Furthermore, it was found that more often, those indicators deemed to not be useful were least likely to be understood by consumers [34]. Therefore, the greatest challenge with consumer-directed report cards is consumer comprehension, and several studies investigated consumer education to enable better comprehension [38,45]. Improved comprehension may also lead to increased use of report cards by consumers.

Physicians and providers had mixed views of report cards; Physicians viewed them less favorably than did other providers (e.g. therapists, nurses), citing distrust of data and quality indicators [46-52]. Those who were favorable to report cards did express concerns about burden of data collection [53,54]. Health care managers and administrators were also skeptical of data quality [47,55], especially in the case of external production and public disclosure of comparable data [48,56]. Physicians', providers' and managers' use of report cards tended to be low [50,57-59]. However some managed care plans did report using report cards [60].

Determination of provider or manager information needs was less common. Bensimon et al (2004) carried out qualitative interviews to determine cardiac providers and administrators information needs [61], and Harrington et al (1999) conducted a mail survey to determine administrators information needs for nursing home report cards [41]. Using focus groups, Palsbo and Kroll investigated the information needs of disabled patients and their caregivers to make health plan choices [62]. Therefore amongst providers and administrators, there is a general distrust of report card data, poor uptake of report cards, and little exploration of information needs.

Ethical Considerations

Studies on ethical considerations of report cards were not abundant. The most commonly discussed topics were the unintended consequences of report cards, and more specifically, the impact of report cards on vulnerable patient populations. Patients who are sicker, or from lower socioeconomic backgrounds or ethnic and/or racial minorities are often marginalized, having less access to care, or access only to poorer-performing

providers [63-66]. These observations have been made in the clinical areas of nursing home, mental illness and most often in cardiac care.

Discussions of ethical considerations of pay-for-performance schemes or performance-based contracting (i.e. where provider payment is linked to performance) were uncovered in the literature search update. Casalino and Ester (2007) discuss the potential for pay-for-performance and public reporting programs to impart racial and ethnic disparities in health care, and how to design these programs to avoid these unintended consequences [67]. Lu and Ma (2006) describe misreporting of patient severity as a consequence of performance-based contracting with substance abuse treatment providers [68].

The clinical area of cardiac care (i.e. cardiac surgery, procedures, cardiology care) has undergone considerable report card activity, and thus the majority of articles within this focus area are in the context of cardiac care. In particular, the ethical impacts of the highly-publicized, surgeon-specific New York State Coronary Artery Bypass Graft Report are most commonly discussed[69-73].

There are also several publications that discuss ethical frameworks for report cards. Once again, cardiac care report cards were most often represented [74,75]. However an ethical framework for mental health quality reporting was also published [76].

Methodology

This largest group of articles and studies was further divided into the following categories (Figure 2): articles examining dissemination of report cards (n = 25), those discussing how data is presented or framed (n = 30), descriptions of different frameworks for report cards (n = 75), data sources for report cards (n = 107), statistical methods used

to create report cards (n = 104) and the measures, or quality indicators used in report cards (n = 350).

Data Framing and Report Card Dissemination

The framing, or display of data and the manner in which a report card is distributed are both important aspects of the report card process, yet the literature regarding these aspects was sparse. With respect to data framing, most of the material discussed consumer comprehension of report card data [77-84]. Several articles presented different methods of report card display for a variety of audiences: spider diagrams [85]and dashboards [86-88]for reporting data to administrators in an understandable format, statistical process control [89-91]and league tables [92].

Material published regarding the dissemination of report cards focused on public reporting [51,93-95,95,96]. Some articles discussed the impact and outcome of public versus private reporting [97,98]. Others discussed the development and design, use and comprehension of web-based public reporting [59,99-102].

Report Card Framework

There are several formal frameworks around which some, but not all, health service quality report cards are based. The scoping review uncovered publications discussing the use of the balanced scorecard approach [103-106], the Donabedian model [107], statistical control charts [108]and the Baldridge Quality Criteria [109]in development of report cards. These, and other less formal models for report card programs were presented for measuring quality of care in health care systems [110-112], hospitals [113], and health plans [114,115]. Furthermore, models for performance reporting in the clinical areas of cardiovascular health [116,117], mental health [118-121], primary care

[122,123]and long term care (e.g., nursing homes; [124-126]) were presented. The updated literature search also identified frameworks for pay-for-performance programs [127,128].

Data Sources

Report cards can be based on a variety of data sources, including administrative sources, prospective clinical data collection, retrospective chart abstraction, patient survey or interviews and/or provider interviews and reports. Several prospective clinical data collection systems for the purpose of monitoring performance for quality improvement were described [129-132]along with patient survey methods [133-136], and administrative data [137,138].

However, the majority of the literature compared or validated data sources, and the most common comparisons were made between administrative data and clinical data. Comparison of administrative data to prospective clinical data [139-145]and retrospective chart abstraction [146-148] [149]for the most part revealed under-coding of patient co morbidities in administrative data compared to clinical sources, subsequently impacting risk adjustment in administrative data. Patient surveys were also validated [150-152]and compared against administrative data [153], and provider reports [154]. Some unique data sources were also compared to more standard sources; the use of clinical vignettes to measure performance was validated against chart abstraction and standardized patients [155,156]. Finally, some authors concluded that single data sources did not sufficiently capture the required information and thus suggested combining data sources to create more complete databases [157-159].

Statistical Methods

Material uncovered pertaining to statistical methods used in health care report card production for the most part described risk adjustment methods. Earlier material (ie. from the 1990s) discussed and argued for risk adjusting rather that the use of raw rates in order to produce performance measures that accurately reflected quality of care and could be used for comparisons [160-162]. However, some more recent articles addressing the same issue were also found [163-165]suggesting that despite earlier work demonstrating the need for risk adjustment, some performance measurements and report cards still do not risk adjust sufficiently.

Methods for risk adjustment discussed in the literature include hierarchical models [166], fixed effects, random effects and standard logistic regression models [167,168], P-charts [169], Receiver Operating Curves analysis [170,171], and standard deviation calculation methods. Risk adjustment using generic severity indices such as the Charlson Comorbidity Index [172,173], or the Acute Physiology and Chronic Health Evaluation (APACHE) score [174,175]were discussed. Risk adjustment for patient characteristics [176,177], and specifically socio-economic factors [178-181], were addressed, as were risk adjustments for hospital characteristics such as peer group [182], acceptance of patient transfers [183], number of emergency surgeries [184], or the institutional protocols regarding do not resuscitate orders [185]. Adjustment methods for specific data types such as administrative data [186]or patient surveys were also addressed [176,180].

Quality Indicators

This methodology subsection of the Methods focus area contained the greatest volume of publications. This group was further subdivided into three groups: quality indicator

development (n = 249), quality indicator validation (n = 97) and uptake of quality indicators (n = 9).

Quality Indicator Development

This was the area for which we found the largest number of articles. Publications described the development of quality indicators in a variety of health care settings and clinical areas. Quality indicator development for overall hospital performance [187-190], health system performance assessment [191-195], and consumer/patient satisfaction with care [196-199], were commonly covered in the literature. There was substantial literature regarding the development of performance indicators for cardiac care [200-202], surgery outcomes [203-206], mental health [207-210], and nursing homes/long term care [211-215]. Some indicators for cancer care were also found [216-218]. Other clinical areas with quality indicator development include nursing care, mental health treatment, surgery, primary care and public health.

Many of the indicator projects described above utilized the Delphi method or a modification of the technique for quality indicator development [219-223]. However, other methods have been used to develop quality indicators, including modified nominal group technique [224], the RAND Appropriateness Method (i.e. a combination of Delphi panel and nominal group technique; [223,225-227]and adaptation of indicators from clinical guidelines [228].

Quality Indicator Validation and Uptake

Literature catalogued in this subcategory was generally focused on the validity of outcomes measures as quality indicators [229-231]. Examples of validating mortality rates [225,232,233], readmission rates [234]and patient satisfaction surveys [235,236]

were also found. Several articles debating the use of structure, process and outcomes measures were uncovered [231,237-241], and the earliest of these recommended the use of the Donabedian approach in measuring quality of care [231]. The use of composite or aggregate indicators was also addressed, and there was general agreement that these indicators should be interpreted with caution as they were found to be sensitive to subtle changes in data [242,243].

The comparability of performance indicators across hospitals, facilities, health plans and/or geographical areas has also been validated in the literature. Marshall et al 2003 [244]determined that process of care performance indicators developed in the United States were a useful starting point for development of similar indicators in the United Kingdom, but not directly transferable between the two countries due to variations in process of care practices. In contrast, it was found that patient safety performance indicators developed by the U.S. Agency for Healthcare Research and Quality were suitable for measuring hospital performance in Germany [245]. Examination of the use of performance indicators within similar jurisdictions revealed that some offered appropriate comparisons [246-250]with specific caveats (e.g. hospitals within similar peer groups, or follow similar measurement protocols), whereas others did not [251].

Other Results

<u>Countries of Origin</u>

In addition to cataloguing the literature according to the Focus Areas, several other common themes were noted. The majority (approximately 60%) of material uncovered originated from the United States, where there is a culture of health care report cards. Approximately 12% of the material originated from Europe, 11% from the United

Kingdom and 10% from Canada. Another 3% originated from Australia and New Zealand and the remaining 3% came from a variety of other locations including Taiwan, Brazil, Israel and India.

Clinical areas

It was noted that particular clinical areas had relatively well developed performance reporting. Literature regarding cardiac care (including cardiac surgery), overall hospital performance, quality of care in long term care or nursing home facilities and quality of health plans or health management organizations addressed quality indicators and other methods such as statistical analysis, dissemination and data sources. The cardiac care literature also discussed ethical issues with these report cards, and there were some publications regarding evidence of effectiveness of report cards. Table 1 lists the clinical areas most commonly found in health care quality report card literature.

Common Groups and Projects

Several organizations commonly reported research pertaining to their health care performance measurement and quality improvement initiatives. As expected, many of these organizations are based in the United States, several of which are agencies within the federal government departments. For example, within the U.S. Department of Health and Human Services, the Agency for Healthcare Research and Quality, the Centers for Medicare and Medicaid Services and Prevention and the Centers for Disease Control all have health care performance reporting and quality improvement initiatives that were uncovered in the scoping review. Within the U.S. Department of Veterans Affairs, the Veterans Health Administration is also involved in numerous quality of care monitoring and performance improvement initiatives.

There are also several non-governmental organizations in the U.S. that published material pertaining to our scoping review focus areas including the Joint Commission on Accreditation in Health Care, the National Committee for Quality Assurance and RAND Health. Specific projects based in the U.S., separate from these and government organizations and prevalent in the selected literature include the New York State Cardiac Surgery Reports, the Northern New England Cardiovascular Disease Study Group, the Pennsylvania Consumer Guide to Coronary Artery Bypass Graft Surgery, the Cleveland Health Quality Choice Coalition, the Nursing Outcomes Coalition and the National Database of Nursing Quality Indicators.

Outside of the United States, a few other groups and projects were reported several times in our selected literature. From the United Kingdom, the Healthcare Commission published material pertaining to methods and evidence of effectiveness of health care report cards utilizing data from the National Health Services (NHS). The Australian Council on Healthcare Standards reported on the development of comparative indicators. The Institute of Clinical Evaluative Sciences based in Canada has also published several reports pertaining to report card methods. On an international level the World Health Organization published material pertaining to report card framework and statistical analyses and the Organization for Economic Cooperation and Development published material pertaining to quality indicator development.

Discussion

Using the methodology described in the York Framework and methods developed specifically for our review, we uncovered a large volume of peer-reviewed and grey literature pertaining to the published evidence on the best practices in the production, reporting and dissemination of health system report cards. We have outlined a framework for the existing literature and through the charting process we have created a comprehensive, catalogued database of the literature (available from the authors upon request) that is useful for future research on health system quality reporting. We also contribute to the methodological literature of scoping reviews by describing in detail our review protocol and our specific approach to a targeted search of the internet for relevant material.

We found numerous articles pertaining to the methodology for producing health system report cards; in particular we catalogued an extensive database on the development and validation of quality indicators. We also uncovered a considerable volume of literature on data sources used to produce report cards, and several statistical models for risk adjusting outcome performance indicators. The majority of health system report card literature originated from the United States, and the report card activity of several groups were repeatedly represented in the literature. Furthermore, it was clear that the development and implementation of report cards is more advanced in some clinical areas compared to others.

Despite the volume of material uncovered, several important gaps in the literature became apparent. First, there was a general lack of consensus on the effectiveness of health system report cards in improving quality of health care. For a practice that is

increasingly being adopted by health systems internationally there is still, somewhat surprisingly, a lack of firm evidence that health system report cards improve the quality of care by improving overall efficiency and/or patient outcomes. Although a relatively recent systematic review does exist (825), it does not make firm conclusions, nor do its findings extend to all forms of health system quality reporting.

In comparison to the other methodological aspects of health system report cards, there is relatively little in the literature on optimal framing of report card data for various stakeholder groups and how best to distribute report cards to stakeholders. Related to this is the lack of understanding by report card producers and distributors of the abilities of stakeholders to understand the report cards and ultimately their use of the data contained in the report cards. More research into data display is needed to ensure that stakeholders understand the message within the data and are able to react (such as make provider choices or administrative decisions) in an appropriate manner. Lack of understanding can contribute to the ineffectiveness of report cards to improve quality of care. Furthermore, the methods of distributing report cards to stakeholders must also be better addressed as delivering report cards to stakeholders is the first step in an effective report card quality improvement exercise.

Finally, as mentioned above, report card activity is fairly well developed in certain clinical areas such as hospital care and cardiac care, yet other clinical areas such as diabetes care had little or no report card activity published in the literature. For the clinical areas still in the preliminary stages of developing quality report cards, it is hoped that report card developers look to clinical areas with more advanced activity to draw on their experiences and avoid reinventing the wheel of report card development.

Limitations

This was our first encounter as a research team with the scoping review methodology and it is important to discuss our experience of using the methodology. Scoping is a relatively new review method and that has been embraced by several research and granting organizations as a rapid method for mapping and synthesizing existing literature in a particular topic area and identifying gaps where future research should be conducted. Although we created a comprehensive database of existing literature on health system quality report cards, this was by no means a rapid review (taking more than a year to complete). Furthermore, the volume of literature that we amassed in this scoping review is so great (i.e. almost 1200 relevant articles uncovered) that it is not feasible to chart articles in more depth, while still maintaining the breadth of perspective required for scoping. Others have published scoping reviews with smaller volumes of relevant literature that contain succinct, detailed syntheses of the uncovered literature. Recognizing the breadth of our literature scan, we opted to produce a catalogued database of the literature that can be accessed electronically to perform more in-depth research on specific topic areas.

Also, by definition, scoping reviews are not intended to assess the quality of the literature scoped. Given the intensity of scoping reviews, this lack of quality assessment of the literature is difficult to reconcile and can create difficulties with the understanding and acceptance of this review type. Indeed, scoping reviews are often misinterpreted to be a less rigorous systematic review when in actual fact they are a different entity.

On some levels, we are uncertain about the utility of large-scale scoping reviews to stakeholders. The packaging of a large volume of literature into a catalogued database

may be useful to researchers; however it is unclear whether policy-makers or administrators would use such a resource. Greater synthesis of the results would create a more distilled product more suitable to policy and decision-maker use although it is difficult to see how a huge body of literature can be distilled into any representative product. Despite these caveats, we have provided narrative text in the results section above that presents representative information on what our scoping review has yielded. We have also made the catalogued literature database available to all interested parties, and can now proceed to conduct targeted systematic reviews and meta-analyses to distill the information into more useable formats.

Conclusions

Scoping reviews are useful for mapping literature and identifying gaps in the existing material. The timeliness and depth of the scoping review results is dependent on the volume of literature that exists in the particular topic area to be scoped. Our scoping review has produced a comprehensive literature database from a large body of literature pertaining to health system quality report cards. This database catalogues existing literature, creating a manageable framework on which to base further research.

Box 1: A comparison of the characteristics of scoping and systematic reviews.

Systematic Review	**Scoping Review**
Focused research question with narrow parameters	Research question(s) often broad
Inclusion/exclusion usually defined at outset	Inclusion/exclusion can be developed *post hoc*
Quality filters often applied	Quality not an initial priority
Detailed data extraction	May or may not involve data extraction
Quantitative synthesis often performed	Synthesis more qualitative, and typically not quantitative
Formally assesses the quality of studies and generates a conclusion relating to the focused research question	Used to identify parameters and gaps in a body of literature

Box 2: Thesaurus terms and keywords used to search peer-reviewed and grey literature databases.

quality indicators, health care AND reports/reporting quality of health care AND reports/reporting benchmarking AND reports/reporting report card/cards AND health/healthcare/medical performance reports/reporting AND health/healthcare/medical care quality reports/reporting AND health/healthcare/medical care health system evaluation/quality/performance/rating health system reports/reporting healthcare evaluation/quality/performance/rating AND reports/reporting healthcare system reports/reporting consumer reports AND health/healthcare/medical care public performance reports/reporting AND health/healthcare/medical care public reporting AND health/healthcare/medical care

Box 3: Literature Databases searched in Scoping Review

<u>Peer-Reviewed Literature</u>
ABI Inform
Cumulative Index of Nursing and Allied Health Literature (CINAHL)
Cochrane Library
EconLit
EMBASE
MEDLINE
PsycINFO
Social Sciences Abstracts

<u>Grey Literature</u>
Grey Literature Report http://www.nyam.org/library/greyreport.shtml
PapersFirst
ProQuest Dissertations and Theses

Box 4. List of Organizations included in the targeted website searching

Europe	**United States**
European Centre for Health Policy	Center for Studying Health System Change
European Centre for Social Welfare and Policy Research	Centers for Medicare & Medicaid Services
Health Impact Assessment Database	Health Policy Institute
International Health Policy Library	National Center for Policy Analysis
International Network of Agencies for Health Technology Assessment	RAND Organization
World Health Organization	U.S. Department of Health and Human Services
Australia	U.S. Agency for Healthcare Research and Quality
Australia Health and Aging	U.S. Dept HHS National Institutes of Health
Australian Policy Online	U.S. Dept. Veteran Affairs
Centre for Clinical Effectiveness (Monash University)	**Canada**
Centre for Health Economics (Monash University)	Centre for Health Services and Policy Research
Monash Institute of Health Services Research	The Fraser Institute
United Kingdom	Institute for Clinical Evaluative Sciences
Centre for Health Economics (University of York)	Manitoba Centre for Health Policy
Centre for Reviews and Dissemination, University of York	
Institute for Public Policy Research	
King's Fund	
National Institute for Clinical Excellence	
Policy Studies Institute	
UK National Health Service	
UK Health and Wellbeing	
UK National Research Register	

Table 1: Clinical areas with the greatest number of references

Clinical area	Number of articles	Representative references
Hospital performance	115	[252-254]
Health plans/health management organization	74	[79,255,256]
Cardiovascular/cardiac	66	[69,257,258]
Patient surveys	44	[176,259-261]
Physician performance	35	[25,155,262]
Mental health	33	[46,165,263]
Surgery	30	[262,264,265]
Primary care/general practice	29	[39,122,266]
Nursing homes/long term care	25	[41,213,267]
Nursing specific performance	22	[163,268,269]
Geriatrics	18	[270-272]
Public health	15	[107,273,274]
Cancer	12	[222,275,276]
Diabetes	11	[277-279]
Healthcare in developing countries	10	[280-282]

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Figure 1

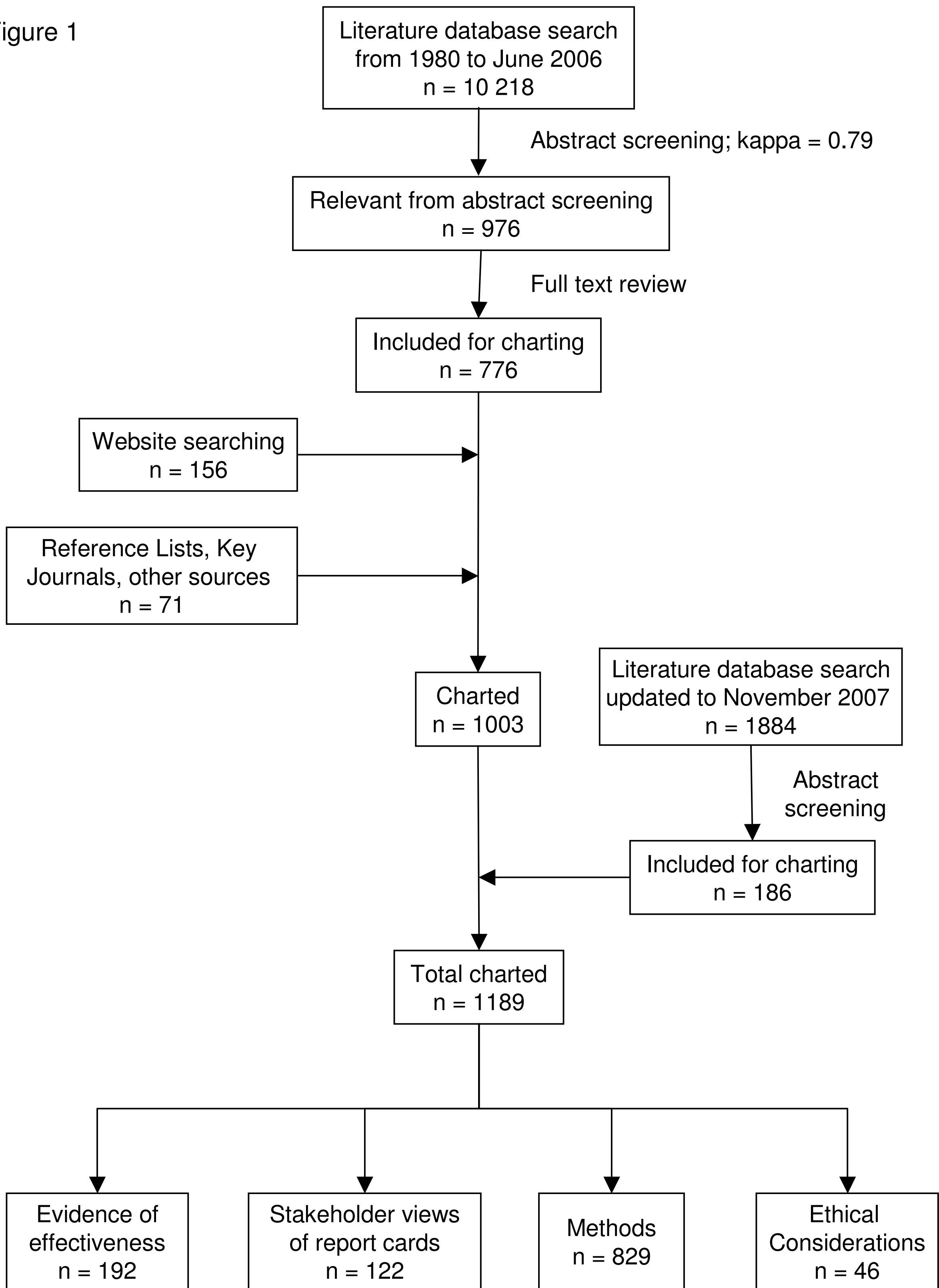

Figure 1

Figure 2