Strategies for reducing regional variation in the use of surgery: a systematic review

Reames BN, Shubeck SP, Birkmeyer JD

CRD summary
The authors concluded that practice guidelines and decision aids could help surgeons to improve their clinical decision-making for individuals and populations with many clinical conditions. This conclusion appropriately reflects the evidence presented, but issues with the synthesis and reporting limit the usefulness of this review.

Authors' objectives
To evaluate the effect of practice guidelines and decision aids on the use of surgery and regional variation.

Searching
The authors searched MEDLINE, EMBASE and CPCI-S to November 2012. Search terms were reported in an appendix. Google Scholar was used to search the Internet, and Cochrane Database of Systematic Reviews was searched. Forward and backward bibliography searches were performed on articles included in the review. The searches were limited to studies in English.

Study selection
Studies were eligible if they evaluated the rate of a surgical procedure, before and after (or with versus without) implementation or dissemination of clinical practice guidelines or consensus statements; shared decision-making tools and decision aids; or provider feedback. Experimental and observational studies were eligible, except single-institution observational studies. Studies focusing on cesarean section rates were excluded.

Most of the included studies focused on clinical guidelines or decision aids. Most were conducted in North America; four were in the UK. Surgery types varied widely; breast surgery was the most common. The details of the interventions (implementation or dissemination strategies, or content of decision aids) were not reported.

Two reviewers independently selected studies for inclusion; disagreements were resolved with a third reviewer.

Assessment of study quality
Randomised controlled trials (RCTs) were assessed using the Cochrane Collaboration's risk of bias tool, and observational studies were assessed using the Newcastle-Ottawa scale. Quality was rated as low or high (the criteria were listed in the paper).

Two reviewers independently assessed quality; disagreements were resolved with a third reviewer.

Data extraction
Two reviewers independently extracted the data. Study authors were contacted for further information, if necessary.

Methods of synthesis
A narrative synthesis was presented by type of intervention. Interventions were considered in terms of their effects on population-based rates of surgery; choice of procedure; and regional variation in the use of surgery. The results were generally presented as the proportion of studies showing a statistically significant effect. The risk of publication bias in the RCTs was assessed using the Harbord test and a funnel plot.

Results of the review
Twenty-seven studies were included: 12 were of guidelines or consensus statements and 15 were of decision aids. Two studies of provider feedback were excluded from the synthesis. Most of the guideline studies used a retrospective time-series design, while most studies of decision aids were RCTs. Nineteen studies were considered high quality. No evidence of significant publication bias was found.

Guidelines and consensus statements: Five studies evaluated population-based rates of surgery; two of these reported a significant effect. Guideline implementation was associated with increases in the use of breast conservation therapy.
(four studies showed a significant effect, two did not report significance), but not of total mastectomy with axillary dissection (non-significant increase). Three, out of five studies reporting on regional variation, reported a significant decrease in variation with guideline implementation.

**Decision aids and shared decision-making tools:** Ten studies reported on rates of surgery, of which three reported significant effects; the direction of the effect varied by type of surgery. Two out of five studies reporting on procedure choice showed a significant change after implementation of a decision aid; breast conservation therapy increased in one study and decreased in the other. One study assessed changes in regional variation for prostate surgery, and found mixed results.

**Authors’ conclusions**
Practice guidelines and decision aids could help surgeons to improve their clinical decision-making for individuals and populations with many clinical conditions.

**CRD commentary**
The review question and inclusion criteria were generally clear. The search covered a range of relevant sources and included efforts to locate unpublished studies. Language restrictions meant that some relevant studies could have been missed. Appropriate methods were used for study selection, data extraction and quality assessment.

A narrative synthesis was appropriate, but the vote-counting approach had limitations and did not take study quality into account. Limited reporting of the interventions made it difficult to assess the generalisability of the findings, particularly for guideline implementation where various strategies are available. As noted by the authors, the findings for decision aids were strongly dependent on the specific type of surgery and clinical context.

The authors’ conclusion that guidelines and decision aids could improve surgical decision-making reflects the evidence presented, but issues with the synthesis and reporting limit the usefulness of this review.

**Implications of the review for practice and research**
**Practice:** The authors stated that barriers to the implementation of guidelines and decision aids (not explicitly investigated in the review) should not be underestimated and the adoption of these tools could be accelerated using appropriate incentives.

**Research:** The authors stated that further research was needed to cover guidelines and decision aids for a broader range of types of surgery.

**Funding**
Supported by the National Cancer Institute, and the National Institute on Aging, USA.

**Bibliographic details**

**PubMedID**
24240626

**DOI**
10.1097/SLA.0000000000000248

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Consensus Development Conferences as Topic; Decision Making; Decision Support Techniques; Great Britain; Healthcare Disparities /statistics & numerical data; Humans; Practice Guidelines as Topic; Surgical Procedures, Operative /standards /statistics & numerical data /utilization; United States
Accession Number
12013067890

Date bibliographic record published
17/12/2013

Date abstract record published
28/02/2014

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.