Effectiveness of teaching quality improvement to clinicians: a systematic review

CRD summary
This review found a lack of evidence that teaching clinicians the principles of quality improvement has a beneficial effect on clinical outcomes. The conclusion appears reliable for clinicians in the USA and similar health care systems.

Authors' objectives
To assess the effectiveness of published quality improvement (QI) curricula for clinicians and the influence of teaching methods on effectiveness.

Searching
MEDLINE, EMBASE, CINAHL and ERIC were searched for articles published in English between 1980 and April 2007; the search terms were reported. The authors also contacted experts in the field and handsearched the reference lists of included studies and relevant review articles, as well as the contents of key journals.

Study selection
Study designs of evaluations included in the review
Studies of any design involving a comparative evaluation (before- and-after evaluations, time series, and randomised or non-randomised controlled trials) were eligible for the review.

Specific interventions included in the review
Studies of curricula (formal supervised programmes) based on QI theory were eligible for inclusion. QI theory was defined as a set of principles involving knowledge, skills, and methods used to evaluate and implement change in health care systems using a systems-based approach. The interventions in the included studies consisted of curricula aimed at trainees, curricula for non-trainees (with an educational focus or associated with non-educational QI interventions) and curricula implemented within a QI collaborative.

Participants included in the review
Studies of clinicians (excluding dentists and clinical laboratory workers) were eligible for inclusion. Studies performed outside North America, Western Europe, Australia, New Zealand or Japan were excluded. The participants in the included studies were mainly physicians or nurses but some included studies also involved other clinicians, clerical staff or administrators. The majority of the included studies were performed in the USA.

Outcomes assessed in the review
No specific inclusion criteria were specified for the outcomes. The outcomes in the included studies were divided into educational and clinical (process and patient) outcomes. This review focuses on the results for clinical outcomes.

How were decisions on the relevance of primary studies made?
Two independent reviewers made decisions on relevance. Any disagreements were resolved by consensus.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
One reviewer extracted the data and a second reviewer checked the extraction. Data on outcomes were classified as showing beneficial effects, no effects or detrimental effects, depending on whether differences relative to baseline or controls were statistically significant.
Methods of synthesis
How were the studies combined?
The studies were combined in a narrative by type of participant (trainees or non-trainees) and outcomes (educational or clinical).

How were differences between studies investigated?
Differences between the studies were presented in tables and discussed in the text.

Results of the review
Thirty-nine studies were included: 8 randomised controlled trials, 14 concurrently controlled (non-randomised) trials and 17 studies of other designs (uncontrolled before-and-after studies and time series). The number of participants was unclear because most comparisons involved institutions rather than individuals.

Five studies of curricula for trainees that evaluated clinical outcomes reported generally positive results. However, most used uncontrolled evaluation methods and had small sample sizes. Studies of curricula for non-trainees that reported clinical outcomes all involved curricula associated with other (non-educational) QI interventions. They reported a wide range of outcomes. Overall, 27 studies evaluated the effects of QI interventions on process outcomes, of which 9 reported only beneficial effects, 15 reported mixed effects and 3 reported no beneficial effects. Of 18 studies reporting patient outcomes, 5 reported only beneficial effects, 4 reported mixed effects and 9 reported no beneficial effects.

Cost information
Six studies reported on QI curricular costs: these varied greatly between the studies.

Authors' conclusions
Further research is needed to determine whether interventions to teach QI to clinicians have meaningful clinical benefits.

CRD commentary
This review addressed a clear, though potentially broad research question. The inclusion criteria (other than those for the outcomes) were clear and definitions of key terms were provided. The authors searched a range of relevant sources. The search was restricted to English language publications, raising the possibility of language bias in the review. It appears that unpublished studies were not sought and publication bias was not assessed. The validity of the included studies was not assessed, which means that the reliability of the included studies and the synthesis derived from them is uncertain. However, the authors did give priority to studies with more robust designs in their synthesis. Appropriate methods were used to minimise reviewer bias and errors in the study selection and data extraction processes. Full details of the included studies were presented in the paper and accompanying online tables. The use of a narrative synthesis was appropriate in view of the large number of diverse outcomes included. This range of outcomes made it difficult to avoid elements of 'vote counting' in the synthesis. The authors' conclusion, that there is a lack of evidence for a beneficial effect of teaching clinicians QI on clinical outcomes, appears reasonable and applicable to clinicians in the USA and similar health care systems.

Implications of the review for practice and research
Practice: The authors stated that QI curricula should teach collaborative skills, facilitate learning from experience, and provide opportunities for learners to work with colleagues from other disciplines.

Research: The authors stated that future research should evaluate clearly described curricula, should be properly controlled, and should investigate both educational and clinical outcomes.
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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.