



August 2008 – SUPPORT Summary of a systematic review

## Which clinical guideline dissemination strategies improve professional practice?

A clinical guideline is a systematically developed statement intended to assist practitioners make appropriate decisions about health care for specific clinical circumstances. Potential dissemination strategies for clinical guidelines include use of:

- Educational materials, i.e. distribution of published or printed recommendations for clinical care, including clinical practice guidelines and audiovisual materials;
- Educational meetings, i.e. participation by healthcare providers in conferences, lectures, workshops or traineeships;
- Audit and feedback, i.e. any summary of clinical performance of health care over a specified period;
- Patient-mediated interventions, i.e. new clinical information (not previously available) collected directly from patients and given to the provider;
- Reminders, i.e. patient- or encounter-specific information, provided verbally, on paper or on a computer screen, which is intended to prompt a health professional to recall information;
- Educational outreach, i.e. use of trained persons who meet with providers in their practice settings to give information with the intent of changing providers' practice.

### Key messages

- **None of the studies included in this summary were conducted in a low-income country, only two were conducted in middle-income countries, and the rest were from high-income countries.**
- **The studies yield moderate quality evidence that use of the dissemination strategies (either individually or in combination) leads to improvements in guideline implementation and patient outcomes.**
- **Resources available for maintaining and improving quality of care need to be considered when assessing whether the intervention effects are likely to be transferable to other settings in high- and middle-income countries. Rigorous studies from low-income countries are needed to fully assess applicability in all healthcare settings.**



### Who is this summary for?

People making decisions concerning dissemination strategies for improving clinical guideline implementation.

#### ! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low and middle-income countries

#### X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

### This summary is based on the following systematic review:

Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale L, *et al.* Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2004;8(6).

### What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies.

**SUPPORT** – an international collaboration funded by the EU 6th Framework Programme to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low and middle-income countries.  
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**Glossary of terms used in this report:**  
[www.support-collaboration.org/summaries/explanations.htm](http://www.support-collaboration.org/summaries/explanations.htm)

**Background references on this topic:**  
See back page

# Background

Clinical practice guidelines are an increasingly common element of clinical care throughout the world. Such guidelines have the potential to improve the care received by patients by promoting interventions of proven benefit and discouraging ineffective interventions. However, a clinical guideline will only impact on practice if it is disseminated effectively to, and implemented by, the target audience. This summary is based on a health technology assessment published in 2004 by Grimshaw and colleagues, and focuses on the effects of various dissemination strategies in improving guideline implementation.

## How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low and middle-income countries. The methods used to assess the quality of the review and to make judgements about its relevance are described here:

<http://www.support-collaboration.org/summaries/methods.htm>

## Knowing what's not known is important

A good quality review might not find any studies from low and middle-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

## About the systematic review underlying this summary

**Review objective:** To assess the effects of guideline dissemination strategies in improving professional practice

	What the review authors searched for	What the review authors found
<b>Interventions</b>	Randomised controlled trials (RCT), controlled clinical trials (CCTs), controlled before and after (CBA) studies, and interrupted time series (ITS) designs.	235 studies: 139 RCTs, 17 CCTs, 40 CBAs, and 39 ITS.
<b>Participants</b>	Medically qualified healthcare professionals.	Studies of multi-professional groups were also included if more than 50% were medically qualified.
<b>Settings</b>	Any healthcare setting e.g. primary care, inpatient, and mixed settings	Studies from healthcare settings in the USA (71%), UK (11%), Canada (6%), Australia and Netherlands (3%); One each from Denmark, France, Germany, Israel, Mexico, New Zealand, Norway, Sweden, and Thailand.
<b>Outcomes</b>	Objective measures of provider behaviour and /or patient outcome.	Provider behaviours targeted included general management, prescribing, test ordering, prevention, patient education and advice, diagnosis, discharge planning, referrals, record keeping, etc, either individually (47%) or in combination. Patient outcomes included proportion of patients who received appropriate treatment or advice and those who achieved the desired outcome (e.g. stopped smoking)

**Date of most recent search:** February 2004

**Limitations:** This is a good quality systematic review, which found evidence of moderate quality

Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale L, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2004;8(6).

# Summary of findings

The review included 235 studies. The settings were mainly primary (58%) and inpatient (19%) care. Physicians alone were the target of the guideline dissemination intervention in 74% of studies; most of them (57%) involving only one medical speciality, most commonly general practice or family medicine (24%). Only the findings of trials are summarised below, given their superiority to other designs in assessing the effectiveness of healthcare interventions.

## 1) Educational materials

Nine trials were identified which assessed the effects of distributing published or printed recommendations for clinical care (including clinical practice guidelines, audiovisual materials and electronic publications) to physicians; through personal delivery or mass mailings.

→ The studies showed moderate quality evidence that the distribution of educational materials to health professionals improves the process of care and patient outcomes.

### About quality of evidence (GRADE)

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**High:** Further research is very unlikely to change our confidence in the estimate of effect.

⊕⊕⊕○

**Moderate:** Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

⊕⊕○○

**Low:** Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

⊕○○○

**Very low:** We are very uncertain about the estimate.

For more information, see last page.

## General management of a clinical problem, prescribing, prevention services, or test ordering

**Patients or population:** Physicians

**Settings:** Primary care in the USA, UK, Canada, Australia, Netherlands

**Intervention:** Dissemination of educational materials to physicians

**Comparison:** No intervention

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Dichotomous process measures</b> (e.g. proportion of patients receiving appropriate treatment)	Median effect: +8.1% (range +3.6 to +17%) absolute improvement	(5 studies)	⊕⊕⊕○ Moderate
<b>Continuous process measures</b> (e.g. number of prescriptions issued by providers)	Relative improvement: +34.7% (standardized mean difference [SMD]+0.25)	(3 studies)	⊕⊕○○ Low
<b>Continuous outcome measure</b> (e.g. mean symptom score).	Median effect: +17.1% (SMD +0.86), relative improvement	(1 study)	⊕⊕⊕○ Moderate

p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page)

## 2) Educational meetings

Three trials assessed the effects on improving professional practice of participation by healthcare providers in conferences, lectures, workshops or traineeships.

→ A synthesis of the trial results provided evidence of low quality that educational meetings improve patient care.

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### General management of a clinical problem, prescribing, prevention services, or test ordering

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**Patients or population:** Physicians

**Settings:** Primary or inpatient care in the USA (1), UK (1), Netherlands (1)

**Intervention:** Educational meetings

**Comparison:** No intervention

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Dichotomous process measures</b>	Median effect: +1% absolute improvement	(1 study)	⊕⊕○○ Low
<b>Continuous process measures</b>	Median effect: +27% relative improvement	(1 study)	⊕⊕○○ Low
<b>Continuous outcome measure</b>	Median effect: -3.6%, relative deterioration	(1 study)	⊕⊕○○ Low

p: p-value    GRADE: GRADE Working Group grades of evidence (see above and last page)

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### 3) Audit and feedback

Eight trials evaluated the effects of audit and feedback on improving professional practice, including for the general management of a clinical problem, prevention services, test ordering, and/or discharge planning.

→ The trials showed evidence of moderate quality that audit and feedback leads to significant improvements in patient care.

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#### General management of a clinical problem, prevention services, test ordering, and discharge planning.

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**Patients or population:** Physicians

**Settings:** Primary or inpatient care in the USA (7) and UK (1)

**Intervention:** Audit and feedback

**Comparison:** No intervention

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Dichotomous process measure</b>	Median effect: +7.0% (range +1.3 to +16.0%) absolute improvement in performance	(5 studies)	⊕⊕⊕○ Moderate
<b>Continuous process measure</b>	Median effect: +15.4% (range 0 to +20.3%) relative improvement in performance	(3 studies)	⊕⊕⊕○ Moderate

p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page)

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## 4) Patient-mediated interventions

Seven trials evaluated the effects of patient-mediated interventions on improving professional practice for prevention services and the general management of a clinical problem.

→ The studies provided moderate quality evidence that patient-mediated interventions improve professional performance

### Prevention services and general management of a clinical problem

**Patients or population:** Physicians

**Settings:** Primary care in the USA (6) and Canada (1)

**Intervention:** Patient-mediated interventions (i.e. new clinical information collected directly from patients and given to the provider)

**Comparison:** No intervention

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Dichotomous process measures</b>	Median effect: +20.8% (range +10.0 to +25.4%) absolute improvement in care	(6 studies)	⊕⊕⊕○ Moderate
<b>Continuous process measure</b>	Median effect: -9.1% (SMD -0.67) relative deterioration in performance	(1 study)	⊕⊕○○ Low
<b>Continuous outcome measure</b>	Median effect: +5.0% (SMD +0.09) relative improvement in performance	(2 studies)	⊕⊕⊕○ Moderate

p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page)

## 5) Reminders

Thirty five trials evaluated the effects of reminders in improving professional practice for prevention services, general management, prescribing, discharge planning, and financial procedures.

→ The studies yielded low to moderate quality evidence that the use of reminders leads to improvements in patient care

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### Prevention services, general management, prescribing, and discharge planning

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**Patients or population:** Physicians

**Settings:** Primary or inpatient care in the USA (6), Israel (2), Canada (1) and Thailand (1)

**Intervention:** Reminders

**Comparison:** No intervention

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Dichotomous process measures</b>	Median effect: +14.1% (range -1.0 to +34.0%) absolute improvement in care	(31 studies)	⊕⊕⊕○ Moderate
<b>Continuous process measure</b>	Median effect: +5.7% (range -41.8 to +36.0%) relative improvement in care	(6 studies)	⊕⊕○○ Low

p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page)

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## 6) Multifaceted interventions

A total of 117 studies (including 47 trials) evaluated 68 different combinations of interventions, including 26 combinations of two interventions, 19 combinations of three interventions, 16 combinations of four interventions and seven combinations of five or more interventions. The maximum number of comparisons of the same combination of interventions was 11. These studies provided:

- Low to moderate quality evidence that multifaceted interventions incorporating educational outreach improve performance.
- Moderate quality evidence that combinations of reminders and patient-mediated interventions lead to improvement in performance.
- Moderate quality evidence that combinations of educational materials, educational meetings, and audit and feedback lead to improvement in performance.

## General management, prevention, prescribing, and test ordering

**Patients or population:** Physicians

**Settings:** Primary care, inpatient care, or mixed settings in the USA (82), UK (16), Canada (6) and Australia (5), 1 each in Mexico and Thailand

**Intervention:** Multifaceted interventions

**Comparison:** No intervention

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Dichotomous process measures</b> [multifaceted interventions incorporating educational outreach]	Median effect: +6.0% (range -4 to +17.4%) absolute improvement in care	(13 studies)	⊕⊕○○ Low
<b>Continuous process measure</b> [multifaceted interventions incorporating educational outreach]	Median effect: +15.0% (range +1.7 to +24.0%) relative improvement in performance	(5 studies)	⊕⊕⊕○ Moderate
<b>Dichotomous process measures</b> [combinations of reminders and patient-mediated interventions]	Median effect: +11.5% (range +1.3 to +20.0%) absolute improvement in performance	(4 studies)	⊕⊕⊕○ Moderate
<b>Dichotomous process measures</b> [combinations of educational materials, educational meetings, and audit and feedback]	Median effect: +3.0% (range +2.6 to +9.0%) absolute improvement in performance	(3 studies)	⊕⊕⊕○ Moderate

p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page)

## 7) General remark

The differences in effect sizes between various strategies should be interpreted with caution, as the effect sizes might be context-specific. For example, larger effects might be found for single intervention studies because they may target relatively simpler clinical behaviours more amenable to change. Similarly, the finding that higher numbers of interventions are not associated with larger effect sizes for multifaceted interventions may be because such multifaceted interventions were used when more difficult barriers to change were anticipated, or because these interventions did not sufficiently target key factors that influence change.

# Relevance of the review for low and middle-income countries

## → Findings

## ▷ Interpretation\*

### APPLICABILITY

→ The included trials were mainly from North America and Western Europe, with only two studies from middle-income countries (Mexico & Thailand) and none from low-income countries. The range of study settings and the consistent pattern of findings suggest that the measured effects may be transferable across settings in high- and middle-income countries.

▷ Resources available for maintaining and improving quality of care need to be considered when assessing whether the intervention effects are likely to be transferable to other high- and middle-income countries.  
▷ We need rigorous studies from low-income countries to fully assess applicability to all healthcare settings.

### EQUITY

→ The included trials did not provide data regarding differential effects of the interventions for disadvantaged populations.

▷ Some dissemination strategies (e.g. reminders and audit and feedback) relied on technologies that may not always be appropriate when attempting to contact practitioners in low-income settings. Implementation of interventions in these settings utilizing such technologies may exacerbate health inequities or fail to address them adequately.  
▷ Where used appropriately, these strategies may have the potential to improve the delivery of effective care in under-resourced settings.

### COST-EFFECTIVENESS

→ The results of the review are based on trials in which the levels of organization and support were potentially higher than those available outside of research settings. Respondents to the key informant survey which accompanied the review rarely identified existing budgets to support guideline dissemination strategies.

▷ Decision makers need to use considerable judgement about how best to use the limited resources they have for maintaining and improving the quality of care in order to maximize population benefits. They need to consider the potential areas for clinical effectiveness activities, the likely benefits and costs required to introduce guidelines and the likely benefits and costs as a result of any changes in provider behaviour.

### MONITORING & EVALUATION

→ Multiple guideline dissemination strategies were evaluated across a wide range of targeted behaviours and in a wide range of settings. Though the results suggest that various dissemination strategies may have a moderate effect on guideline implementation, information is limited on their effectiveness in low-income settings

▷ When guideline dissemination interventions are implemented in low and middle-income countries, implying different barriers and effect modifiers, robust monitoring and evaluation mechanisms should be put in place to inform better the choice of interventions.

\*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low and middle-income countries. For additional details about how these judgements were made see: <http://www.support-collaboration.org/summaries/methods.htm>

# Additional information

## Related literature

Fairall LR, Zwarenstein M, Bateman ED, Bachmann M, Lombard C, Majara BP, et al. **Effect of educational outreach to nurses on tuberculosis case detection and primary care of respiratory illness: pragmatic cluster randomised controlled trial.** *BMJ* 2005;331:750-4.

Althabe F, Buekens P, Bergel E, Belizán JM, Campbell MK, Moss N, et al. **A behavioral intervention to improve obstetrical care.** *N Engl J Med* 2008;358:1929-40.

Althabe F, Bergel E, Cafferata ML, Gibbons L, Ciapponi A, Alemán A, et al. **Strategies for improving the quality of health care in maternal and child health in low- and middle-income countries: an overview of systematic reviews.** *Paediatr Perinat Epidemiol* 2008;22(Suppl 1):42-60.

Barosi G. **Strategies for dissemination and implementation of guidelines.** *Neurol Sci* 2006;27 (Suppl 3):S231-4.

Chaillet N, Dubé E, Dugas M, Audibert F, Tourigny C, Fraser WD, Dumont A. **Evidence-based strategies for implementing guidelines in obstetrics: a systematic review.** *Obstet Gynecol* 2006;108:1234-45.

Grimshaw J, Eccles M, Thomas R, MacLennan G, Ramsay C, Fraser C, Vale L. **Toward evidence-based quality improvement. Evidence (and its limitations) of the effectiveness of guideline dissemination and implementation strategies 1966-1998.** *J Gen Intern Med* 2006;21 (Suppl 2):S14-20.

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## Conflict of interest

None declared. For details, see: <http://www.support-collaboration.org/summaries/coi.htm>

## Acknowledgements

This summary has been peer reviewed by: Martin Eccles, UK; Robbie Foy, UK; Suzanne Kiwanuka, Uganda; Simon Lewin, UK; Tracey Perez Koehlmoos, Bangladesh.

## This summary should be cited as

Wiysonge CS. Which clinical guideline dissemination strategies improve professional practice? A SUPPORT Summary of a systematic review. August 2008. <http://www.support-collaboration.org/summaries.htm>

## This summary was prepared with additional support from:



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## About quality of evidence (GRADE)

The quality of the evidence is a judgement about the extent to which we can be confident that the estimates of effect are correct. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the type of study design (randomised trials versus observational studies), the risk of bias, the consistency of the results across studies, and the precision of the overall estimate across studies. For each outcome, the quality of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

### For more information about GRADE:

[www.support-collaboration.org/summaries/grade.pdf](http://www.support-collaboration.org/summaries/grade.pdf)

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