



August 2008 – SUPPORT Summary of a systematic review

Does providing healthcare professionals with data about their performance improve their practice?

Audit and feedback is commonly used as a strategy to improve professional practice. It appears logical that healthcare professionals would be prompted to modify their practice if given feedback that their clinical practice was inconsistent with that of their peers or accepted guidelines.

Key messages

- **Audit and feedback can be effective in improving professional practice. The effects are generally small to moderate, but may be worthwhile.**
- **The evidence does not support mandatory use of audit and feedback as an intervention to change practice.**
- **The relative effects of audit and feedback are more likely to be larger when baseline compliance to recommended practice is low and when feedback is provided more intensively.**
- **Decisions about if and how to use audit and feedback to improve professional practice must be guided by pragmatic factors and local circumstances, including whether:**
 - The known or anticipated baseline compliance to guidelines is low;
 - Conducting an audit is feasible and the costs of collecting data are low;
 - Routinely collected data are reliable and could be used for the audit;
 - Small to moderate improvements would be worthwhile.



Who is this summary for?

People making decisions concerning use of audit and feedback to improve the quality of health care.

! 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:

Jamtvedt G et al. Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2006, Issue 2.

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. www.support-collaboration.org

Glossary of terms used in this report: www.support-collaboration.org/summaries/explanations.htm

Background references on this topic: See back page.

Background

Audit and feedback, defined as "any summary of clinical performance of health care over a specified period of time", can be given in a written, electronic or verbal format. The summary may also include recommendations for clinical action.

It appears logical that healthcare professionals would be prompted to modify their practice if given feedback that their clinical practice was inconsistent with that of their peers or accepted guidelines. Yet, audit and feedback has not consistently been found to be effective. Previous reviews have suggested that the provision of information alone results in little, if any change in practice.

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: 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 audit and feedback on the practice of healthcare professionals and patient outcomes.

	What the review authors searched for	What the review authors found
Interventions	Audit and feedback, defined as any summary of clinical performance of health care over a specified period of time with or without other interventions compared to no intervention or other interventions.	118 studies were included. The interventions used were highly heterogeneous with respect to their content, format, timing and source. Targeted behaviours were preventive care (21 trials), test ordering (14), prescribing (20), length of stay in hospitals (1), and general management of a variety of problems.
Participants	Healthcare professionals responsible for patient care.	In most trials the healthcare professionals were physicians. One study involved dentists, three studies nurses, two studies pharmacists and 14 studies mixed providers.
Settings	Healthcare setting	The studies were from the USA (58), Canada (9), Western Europe (30), Australia (9), Thailand (2), Uganda (1) and Laos (1).
Outcomes	Objectively measured provider performance or healthcare outcomes.	There was large variation in outcome measures, and many studies reported multiple outcomes.
Date of most recent search: January 2004		
Limitations: This is a good quality systematic review with only minor limitations.		

Jamtvedt G et al. Audit and feedback: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews 2006, Issue 2.

Summary of findings

The review included 118 studies. Most studies were done in North America (67) and Western Europe (30), and only four studies were conducted in low and middle-income countries (two in Thailand and one each in Uganda and Laos).

The interventions used were very different with respect to their content, format, timing and source. In 50 studies one or more groups received a multifaceted intervention that included audit and feedback as one component.

Many studies reported multiple outcomes. Most studies reported professional practice, such as prescribing or use of laboratory tests. Most of the studies were of moderate quality.

1) Any intervention in which audit and feedback is a component compared to no intervention

A total of 88 comparisons from 72 studies with more than 13 500 health professionals were included in the primary analysis. There were 64 comparisons of dichotomous outcomes from 49 trials, and 24 comparisons of continuous outcomes from 23 trials. There was important heterogeneity among the results across studies.

- ➔ **Interventions that include audit and feedback as a component can improve compliance with desired practice compared to no intervention.**
- ➔ **Low baseline compliance and high intensity of audit and feedback are factors that seem to increase the effect of audit and feedback.**

About the quality of evidence (GRADE)

⊕⊕⊕⊕

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

Any intervention including audit and feedback compared to no intervention						
Patients or population: Healthcare professionals Settings: Different healthcare settings Intervention: Highly heterogeneous interventions where audit and feedback was included Comparison: No intervention aimed at improving practice						
Outcomes	Illustrative comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk (range) Without audit and feedback	Corresponding risk (95% CI) With audit and feedback				
Compliance with desired practice	40% 70%	54%* 83%*	RR 1.08 (0.99 to 1.30)	Over 7000 (49 studies) [†]	⊕⊕○○ Low	[†] Studies reporting dichotomous outcomes
CI: Confidence interval RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page) *Corresponding risk estimates based on model with an estimated coefficient of -0.005 (p=0.05) indicating smaller relative effects with increasing baseline						

2) Audit and feedback alone compared to no intervention

A total of 51 comparisons from 44 trials reporting 35 dichotomous and 17 continuous outcomes compared audit and feedback alone to no intervention.

→ **Audit and feedback alone can improve compliance with desired practice, compared to no intervention.**

Audit and feedback alone compared to no intervention

Participants: Healthcare professionals

Settings: Different healthcare settings

Intervention: Audit and feedback alone

Comparison: No intervention aimed at improving practice

Outcomes	Absolute effect Median adjusted increase in compliance with desired practice (interquartile range)	Relative effect Median adjusted RR (interquartile range)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
Compliance with desired practice	4%* (-0.8% to 9%)	RR 1.07 (0.98 to 1.18)	Over 8000 (44 studies) [†]	⊕⊕○○ Low	†35 comparisons in the 45 studies reported dichotomous outcomes

CI: Confidence interval; RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)

*Median (and interquartile range) for risk differences from 35 comparisons with dichotomous outcomes adjusted for baseline differences in compliance.

3) Audit and feedback with educational meetings compared to no intervention

A total of 24 comparisons from 13 trials compared audit and feedback with educational meetings to no intervention.

→ **Audit and feedback with educational meetings can improve compliance with desired practice compared to no intervention.**

Audit and feedback with educational meetings compared to no intervention

Participants: Healthcare professionals

Settings: Different healthcare settings

Intervention: Audit and feedback with educational meetings

Comparison: No intervention aimed at improving practice

Outcomes	Absolute effect Median adjusted increase in compliance with desired practice (interquartile range)	Relative effect Median adjusted RR (interquartile range)	Number of studies	Quality of the evidence (GRADE)	Comments
Compliance with desired practice	1.5%* (1.0% to 5.5%)	RR 1.06 (1.03 to 1.09)	13 studies [†]	⊕⊕○○ Low	[†] 5 of the comparisons in the 13 studies reported dichotomous outcomes

CI: Confidence interval; RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)

*Median (and interquartile range) for risk differences from 35 comparisons with dichotomous outcomes adjusted for baseline differences in compliance.

4) Audit and feedback as part of a multifaceted intervention compared to no intervention

Fifty comparisons from 40 trials compared audit and feedback as part of a multifaceted intervention to no intervention.

→ **Audit and feedback as part of a multifaceted intervention can improve compliance with desired practice compared to no intervention.**

Audit and feedback as part of a multifaceted intervention compared to no intervention

Participants: Healthcare professionals

Settings: Different healthcare settings

Intervention: Audit and feedback as part of a multifaceted intervention

Comparison: No intervention aimed at improving practice

Outcomes	Absolute effect Median adjusted increase in compliance with desired practice (interquartile range)	Relative effect - median adjusted RR (interquartile range)	Number of studies	Quality of the evidence (GRADE)	Comments
Compliance with desired practice	24%* (5% to 49%)	RR 1.10 (1.03 to 1.36)	40 studies [†]	⊕⊕○○ Low	[†] 41 comparisons in the 40 studies reported dichotomous outcomes

CI: Confidence interval; RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)

5) Short term effects of audit and feedback compared to longer term effects after feedback stops

This comparison included eight trials with 11 comparisons. Follow-up period varied from three weeks to 14 months.

→ **Results are mixed regarding short term effects compared to longer terms effects of audit and feedback after feedback stops.**

6) Audit and feedback combined with complementary interventions compared to audit and feedback alone

Twenty-one trials with 25 comparisons were included. In all trials a multifaceted intervention with audit and feedback was compared to audit and feedback alone. Reminders, economic incentives, outreach visits, opinion leaders, patient education material and quality improvement tools were among the complementary interventions that were used.

→ **Some studies found an effect of adding other interventions to audit and feedback, but most did not.**

7) Audit and feedback compared to other interventions

Eight comparisons from seven studies were included. Audit and feedback was compared to reminders, patient education, local opinion leaders, economic incentives, self-study and practice based education.

- Reminders and use of local opinion leaders may be more effective than audit and feedback
- Audit and feedback reduced test ordering more than economic incentives (one study)
- Studies comparing audit and feedback with patient education, self-study and practice based education found little or no difference in effects.

8) All comparisons of different ways audit and feedback are done

Seven studies were included. Different formats of audit and feedback that were tested included content (with or without peer comparisons or achievable benchmarks), source (feedback or outreach to physicians by peers versus non-physicians) and recipient (group feedback alone versus group plus individual feedback).

- No firm conclusions can be drawn regarding how best to do audit and feedback.

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

→ Findings

▷ Interpretation*

APPLICABILITY

→ The 118 randomized trials reviewed covered an extensive range of interventions and settings, but only four of the studies were from low and middle-income countries. Generally, there were small to moderate improvements in compliance with guidelines. It is not possible to determine when or why audit and feedback was more effective.

▷ *Decisions about if and how to use audit and feedback to improve professional practice must be guided by pragmatic factors and local circumstances, including whether:*

- *The known or anticipated baseline compliance to guidelines is low;*
- *Conducting an audit is feasible and the costs of collecting data are low;*
- *Routinely collected data are reliable and could be used for the audit;*

Small to moderate improvements would be worthwhile.

EQUITY

→ Overall, the included studies provided little data regarding differential effects of the interventions for disadvantaged populations.

▷ *Resources needed for audit and feedback may be less easily available in disadvantaged populations.*

ECONOMIC CONSIDERATIONS

→ The findings summarised here are based on randomised trials in which the levels of organization and support were potentially higher than those available outside of research settings. Few trials reported the cost of the interventions.

▷ *The cost of audit and feedback is likely to be highly variable and must be estimated based on specific local conditions, including the availability of reliable routinely collected data and personnel costs.*

▷ *Providing adequate support to programmes for audit and feedback is likely to be vital to ensure effectiveness when scaling up.*

MONITORING & EVALUATION

→ There is little evidence of the effects or cost-effectiveness of audit and feedback in resource poor settings.

▷ *Scarcity of health professionals, potential problems with staff morale and lack of motivation to perform activities other than direct patient care may limit the feasibility and potential for audit and feedback to improve professional practice.*

▷ *The impact of audit and feedback, with or without additional interventions, should routinely be monitored by auditing practice after the intervention.*

▷ *The effects of audit and feedback or alternative interventions to improve professional practice should be evaluated before they are taken to scale in resource poor settings.*

*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

Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD, Jamtvedt G et al. Does telling people what they have been doing change what they do? A systematic review of the effects of audit and feedback. *Qual Saf Health Care* 2006; 15: 433-6.

Grimshaw JM, Shirran L, Thomas R, Mowatt G, Fraser C, Bero L, Grilli R, Harvey E, Oxman AD, O'Brien M. Changing provider behavior: An overview of systematic reviews of interventions. *Medical Care* 2001; 39: Supplement 2, II-2 - II-45.

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<http://www.york.ac.uk/inst/crd/pdf/ehc51.pdf>

Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay C, Vale L et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2004; 8: (6).
<http://www.hta.nhs.uk/fullmono/mon806.pdf>

Pommerenke FA, Dietrich A. Improving and maintaining preventive services. Part 1: Applying the patient path model. *Journal of Family Practice* 1992; 34: 86-91.

NorthStar is a tool that provides a range of information, checklists, examples and tools based on current research on how to best design and evaluate quality improvement interventions.
<http://www.rebeqi.org/?pageID=36&ItemID=18>

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Conflict of interest

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

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Keywords

All Summaries: evidence-informed health policy, evidence-based, systematic review, health systems research, health care, low- and middle-income countries, developing countries, primary health care.

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.htm

SUPPORT collaborators:

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration aiming to promote the generation and use of health policy and systems research as a means to improve the health systems of developing countries. www.who.int/alliance-hpsr

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is a Collaborative Review Group of the Cochrane Collaboration: an international organisation that aims to help people make well informed decisions about health care by preparing, maintaining and ensuring the accessibility of systematic reviews of the effects of health care interventions.
www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPNet) is an initiative to promote the use of health research in policymaking. Focusing on low- and middle-income countries, EVIP-Net promotes partnerships at the country level between policy-makers, researchers and civil society in order to facilitate both policy development and policy implementation through the use of the best scientific evidence available. www.evipnet.org

For more information:

www.support-collaboration.org

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