



Realising the potential of audit and feedback

Robbie Foy

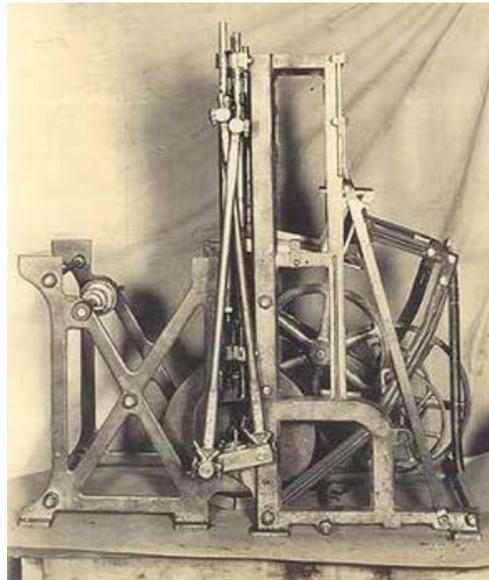
May 2017

This presentation summarises independent research funded by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research programme (Grant Reference Number RP-PG-1209-10040)

The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health



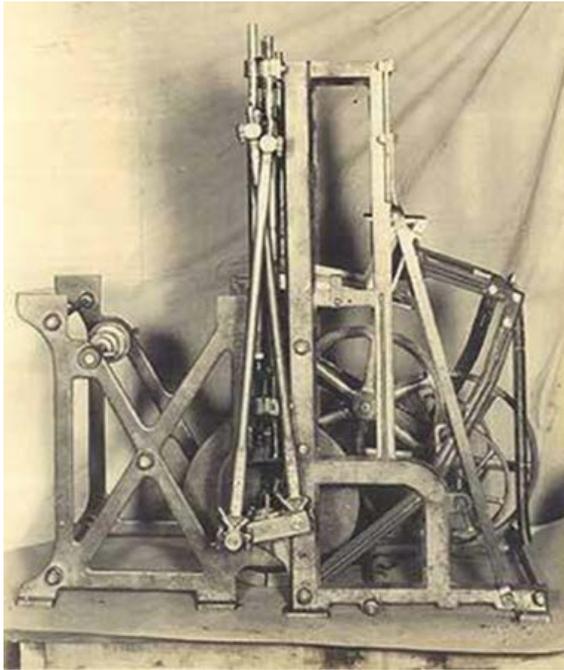
Otto Rohwedder



How long did it take for sliced bread to take off?



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One year

Five years

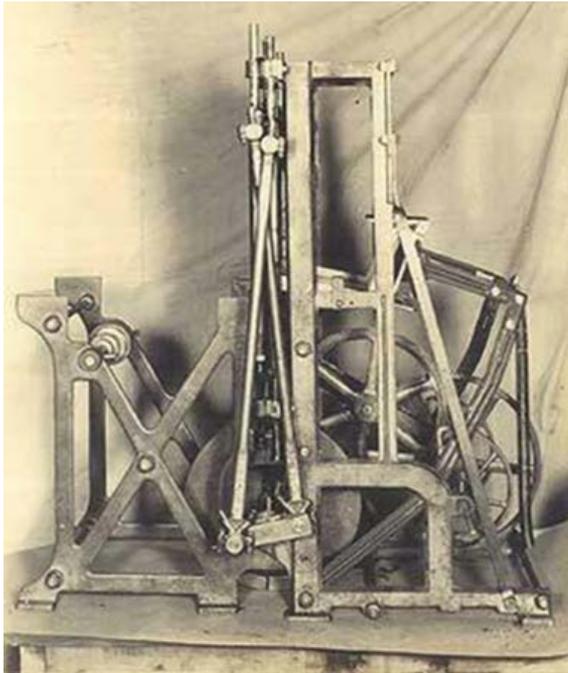
Fifteen years

Fifty years

How long did it take for sliced bread to take off?



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One year

Five years

Fifteen years

Fifty years

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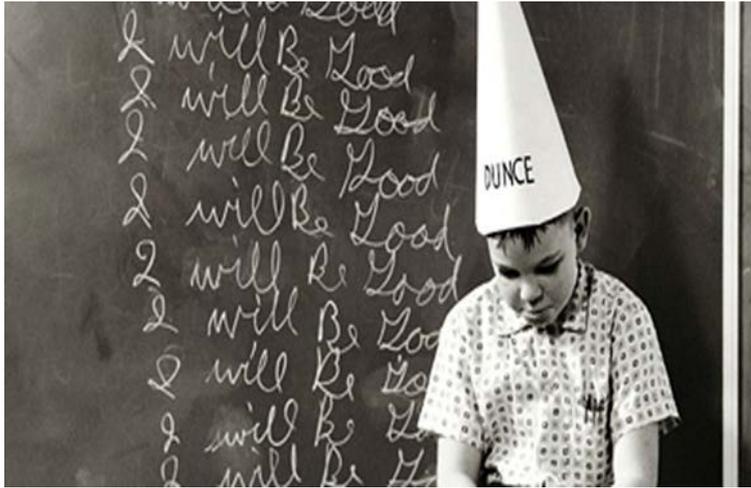
Evidence-based audit and feedback
AFFINITIE and beyond
Effects of selected QI approaches

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Any summary of clinical performance of health care over a specified period of time. The summary may also have included recommendations for clinical action

QUIZ: What is the absolute effect of A&F in research settings?



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$\leq 0\%$

1-3%

4-6%

7-9%

$> 10\%$

QUIZ: What is the absolute effect of A&F in research settings?



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$\leq 0\%$

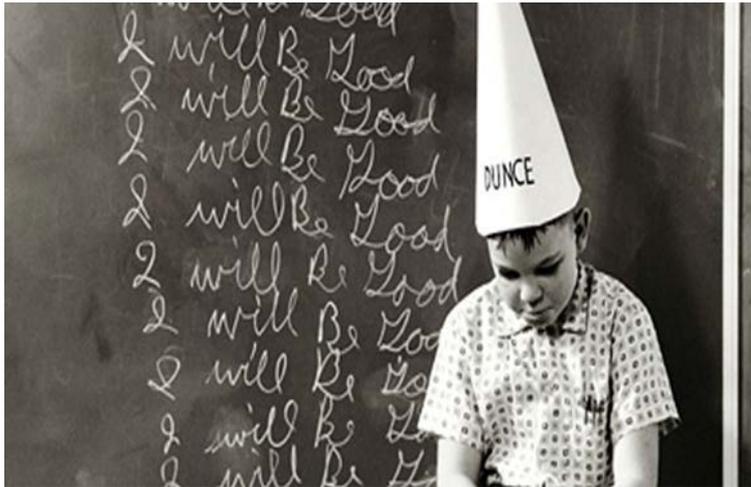
1-3%

4-6%

7-9%

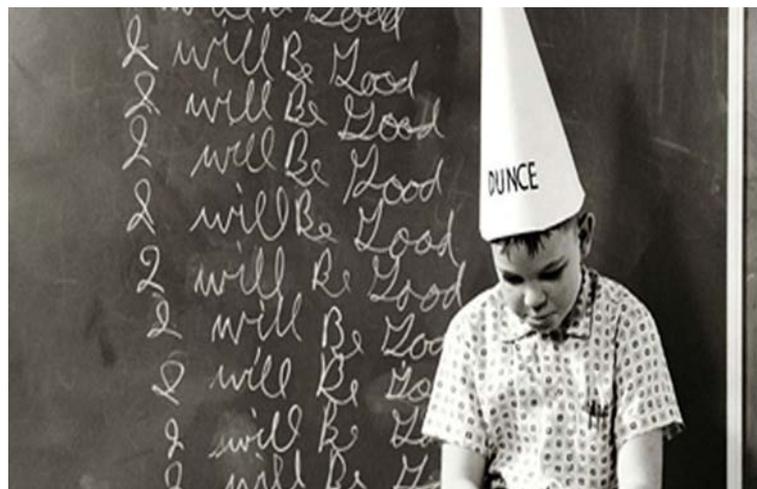
$> 10\%$

All of the above!



140 trials of audit and feedback
median absolute improvement +4%
interquartile range +1% to +16%

Ivers et al. Cochrane Database
of Systematic Reviews 2012



140 trials of audit and feedback
median absolute improvement +4%
interquartile range +1% to +16%

Larger effects if:

- Baseline compliance low
- Source a supervisor or colleague
- Feedback provided more than once
- Feedback delivered in both verbal and written formats
- Feedback included both explicit targets and an action plan



Annals of Internal Medicine

ACADEMIA AND THE PROFESSION

Practice Feedback Interventions: 15 Suggestions for Optimizing Effectiveness

Jamie C. Brehaut, PhD; Heather L. Colquhoun, PhD; Kevin W. Eva, PhD; Kelly Carroll, MA; Anne Sales, PhD; Susan Michie, PhD; Noah Ivers, MD, PhD; and Jeremy M. Grimshaw, MD, PhD

Electronic practice data are increasingly being used to provide feedback to encourage practice improvement. However, evidence suggests that despite decades of experience, the effects of such interventions vary greatly and are not improving over time. Guidance on providing more effective feedback does exist, but it is distributed across a wide range of disciplines and theoretical perspectives.

Through expert interviews; systematic reviews; and experience with providing, evaluating, and receiving practice feedback, 15 suggestions that are believed to be associated with effective feedback interventions have been identified. These

suggestions are intended to provide practical guidance to quality improvement professionals, information technology developers, educators, administrators, and practitioners who receive such interventions. Designing interventions with these suggestions in mind should improve their effect, and studying the mechanisms underlying these suggestions will advance a stagnant literature.

Ann Intern Med. doi:10.7326/M15-2248 www.annals.org

For author affiliations, see end of text.

This article was published at www.annals.org on 23 February 2016.



Nature of the desired action

- Recommend actions that are consistent with established goals and priorities
- Recommend actions that can improve and are under the recipient's control
- Recommend specific actions

Nature of the data available for feedback

- Provide multiple instances of feedback
- Provide feedback as soon as possible and at a frequency informed by the number of new patient cases
- Provide individual (e.g. practitioner specific) rather than general data
- Choose comparators that reinforce desired behaviour change



Feedback display

- Closely link the visual display and summary message
- Provide feedback in more than one way
- Minimize extraneous cognitive load for feedback recipients



Delivering the feedback intervention

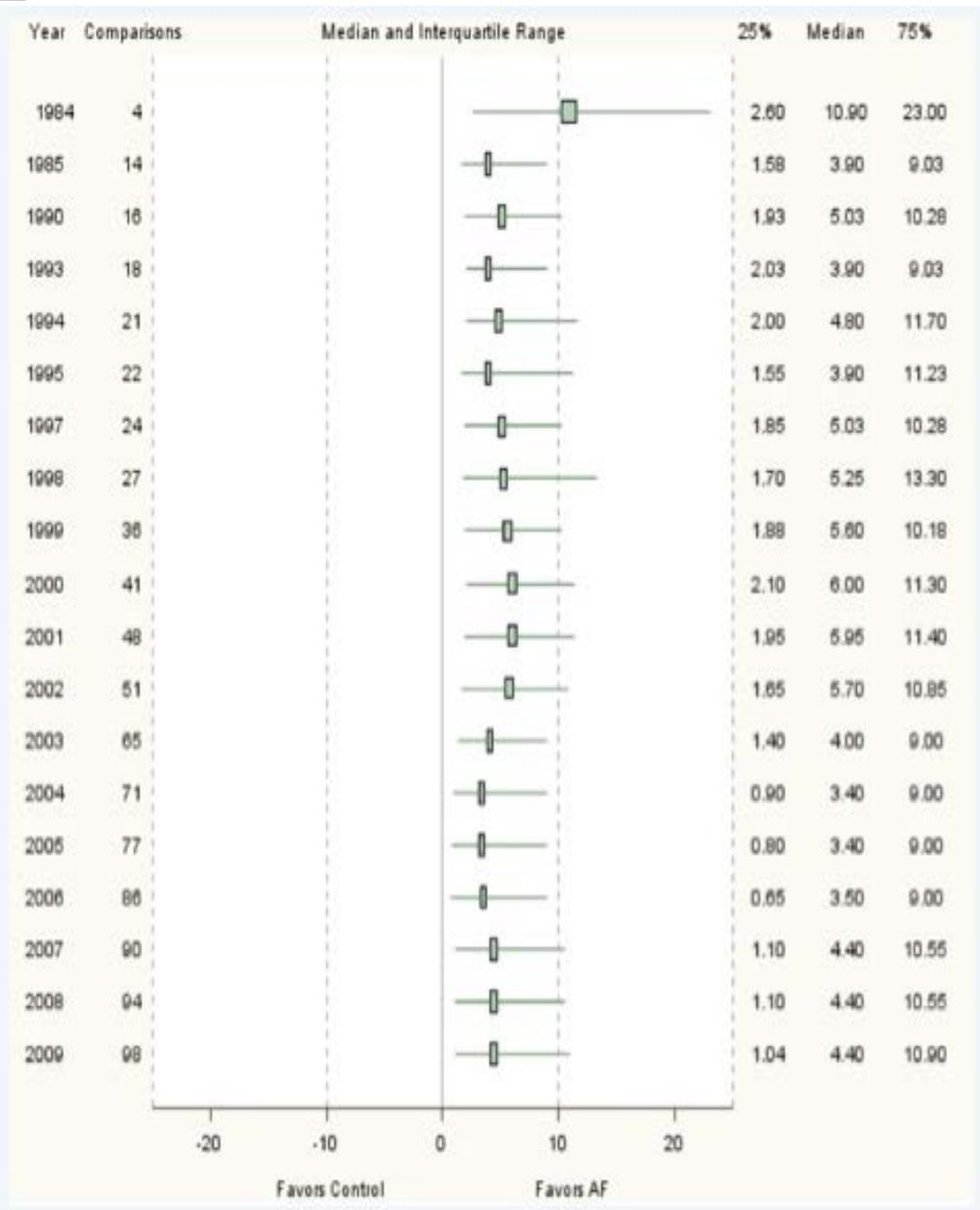
- Address barriers to feedback use
- Provide short, actionable messages followed by optional detail
- Address credibility of the information
- Prevent defensive reactions to feedback
- Construct feedback through social interaction

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Growing Literature, Stagnant Science?

Cumulative analysis – effect size of audit and feedback interventions over time

Little evidence of formal replication - only 6 studies reported testing an intervention from a previous study

DEBATE

Open Access

No more 'business as usual' with audit and feedback interventions: towards an agenda for a reinvigorated intervention

Noah M Ivers^{1*}, Anne Sales², Heather Colquhoun³, Susan Michie⁴, Robbie Foy⁵, Jill J Francis⁶ and Jeremy M Grimshaw⁷

Abstract

Background: Audit and feedback interventions in healthcare have been found to be effective, but there has been little progress with respect to understanding their mechanisms of action or identifying their key 'active ingredients.'

Discussion: Given the increasing use of audit and feedback to improve quality of care, it is imperative to focus further research on understanding how and when it works best. In this paper, we argue that continuing the 'business as usual' approach to evaluating two-arm trials of audit and feedback interventions against usual care for common problems and settings is unlikely to contribute new generalizable findings. Future audit and feedback trials should incorporate evidence- and theory-based best practices, and address known gaps in the literature.

Summary: We offer an agenda for high-priority research topics for implementation researchers that focuses on reviewing best practices for designing audit and feedback interventions to optimize effectiveness.

Keywords: Audit and feedback, Synthesis, Best practice, Implementation, Optimization

Background

Audit and feedback (A&F) involves providing a recipient with a summary of their performance over a specified period of time and is a common strategy to promote the implementation of evidence-based practices. A&F is used widely in healthcare by a range of stakeholders, including research funders and health system payers, delivery organizations, professional groups and researchers, to monitor and change health professionals' behaviour, both to increase accountability and to improve quality of care. A&F is an improvement over self-assessment [1] or self-monitoring [2] as it can provide objective data regarding discrepancies between current practice and target performance, as well as comparisons of performance to other health professionals. The recognition of sub-optimal performance can act as a cue for action, encouraging those who are both motivated and capable to take action to reduce the discrepancy.

The effectiveness of A&F has been evaluated in the third update of a Cochrane review, which included 140 randomized trials of A&F conducted across many clinical conditions and settings around the world. The review found that A&F leads to a median 4.3% absolute improvement (interquartile range 0.5% to 16%) in provider compliance with desired practice [3]. One-quarter of A&F interventions had a relatively large, positive effect on quality of care, while another quarter had a negative or null effect. The challenge of identifying factors that differentiate more and less successful A&F interventions is exacerbated by poor reporting of both intervention components and contextual factors in the literature [4]. Furthermore, most A&F interventions tested in RCTs are designed without explicitly building on previous research or extant theory [5,6]. As a result, there has been little progress with respect to identifying the key ingredients for a successful A&F intervention or understanding the mechanisms of action of effective A&F interventions

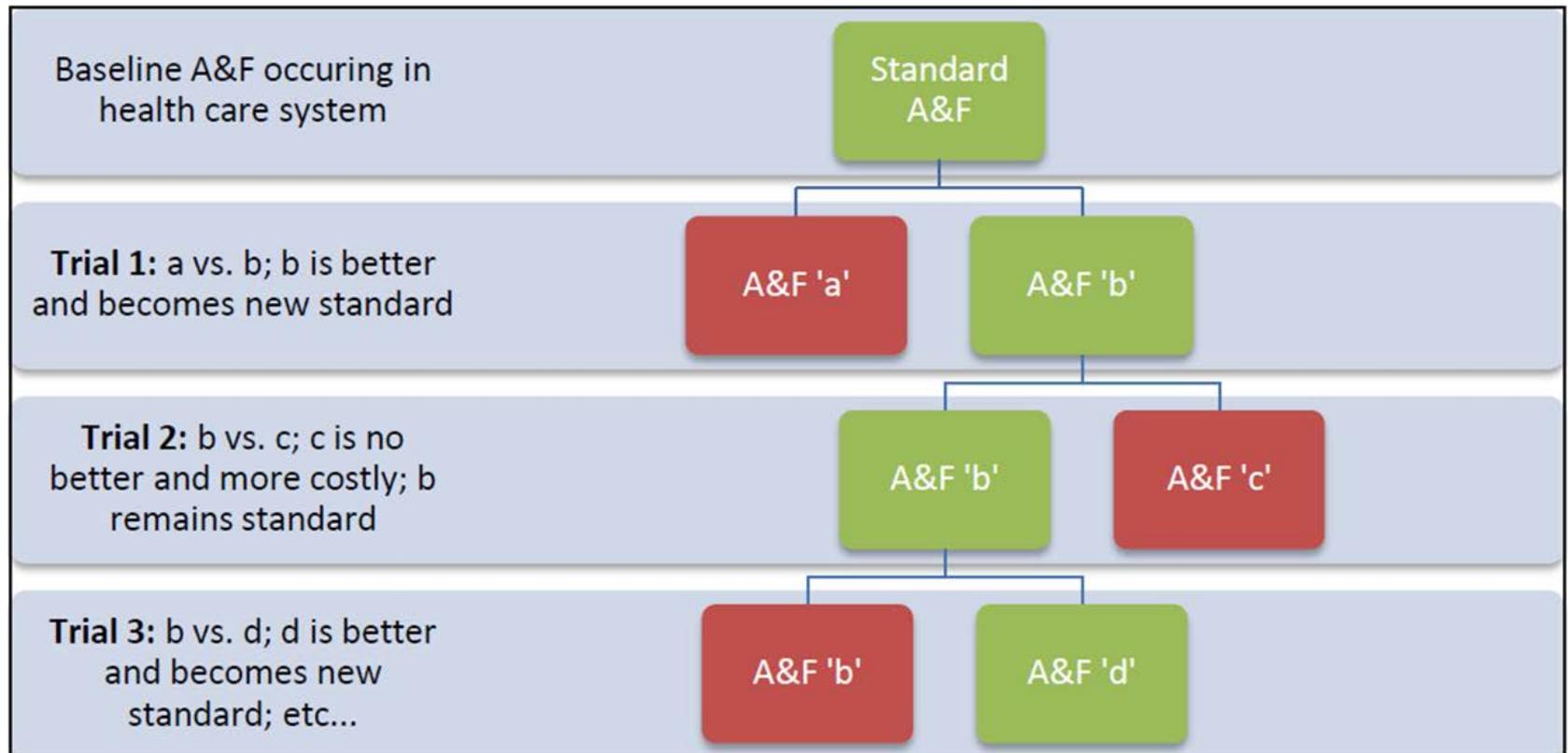
Head-to-head arm trials evaluating:

- alternative ways of designing and/or delivering audit and feedback
- audit and feedback vs audit and feedback plus co-interventions
- audit and feedback versus alternative interventions



Potential ways of varying feedback

1. Recommend actions that are consistent with established goals and priorities
2. Recommend actions that can improve and are under the recipient's control
3. Recommend specific actions
4. Provide multiple instances of feedback
5. Provide feedback as soon as possible and at a frequency informed by the number of new patient cases
6. Provide individual rather than general data
7. Choose comparators that reinforce desired behaviour change
8. Closely link the visual display and summary message
9. Provide feedback in more than one way
10. Minimize extraneous cognitive load for feedback recipients
11. Address barriers to feedback use
12. Provide short, actionable messages followed by optional detail
13. Address credibility of the information
14. Prevent defensive reactions to feedback
15. Construct feedback through social interaction





Implementation laboratories

Benefits for health system

- Learning organisation
- Incremental and demonstrable quality improvement
- Linkages to academic skills

Benefits for implementation science

- Ability to test important (but potentially subtle) variations in audit and feedback that may have important effects



Enhanced audit and feedback interventions to increase the uptake of evidence-based transfusion practice

Stanworth S, Francis JJ, Foy R, Gould N, Lorencatto F, Farrin A, Hartley S, Morris S, Walwyn R, Grant-Casey J, Glidewell L, Cicero R, Deary A, Michie S, Murphy M



WHY USE TWO? WHEN ONE WILL DO

Transfusing one unit of blood at a time reduces the risk of an adverse event – **Transfuse one then reassess**



Audit and feedback effects on professional practice and healthcare outcomes (Review)

Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, O'Brien MA, Johansen M, Grimshaw J, Oxman AD



Hospitals and Science



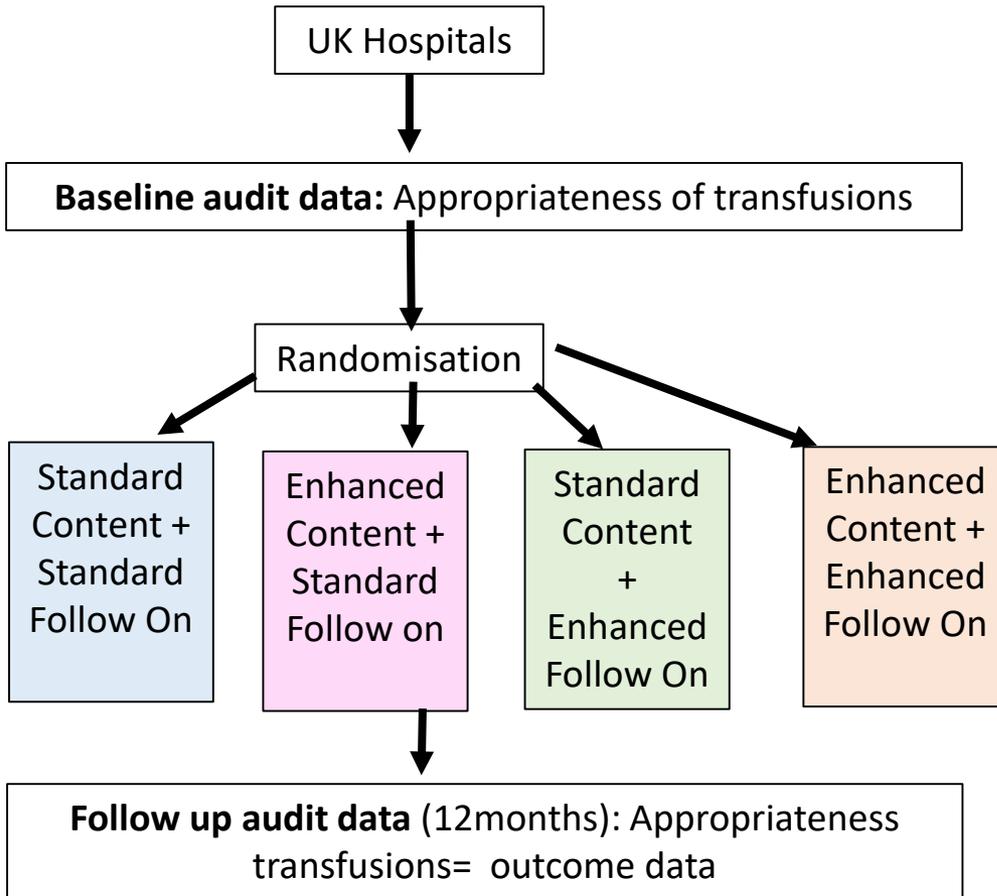
- DIAGNOSTIC SERVICES
- PATIENT SERVICES
- PRODUCTS
- TRAINING
- RESEARCH
- RESOURCES
- BUSINESS CONTINUITY
- AUDITS
- CUSTOMER SERVICES

You are here: [Home](#) > [Audits](#) > National Comparative Audit



- NHSBT Clinical Audit
- National Comparative Audit

National Comparative Audit of Blood Transfusion



Intervention 1 'enhanced CONTENT': Overview

Theory/Evidence informed enhancements

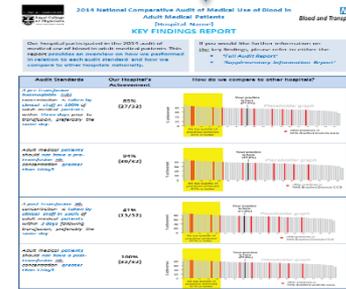
1. In each feedback report, include at least one **BCT related** to each component of **Control Theory**
2. **Behaviourally specify** audit standards, feedback, recommendations (i.e. Target/ Action/ Context/ Timeframe/Actor)
3. Only deliver **feedback** explicitly **related** to an audit **standard**
4. Include **multiple comparators** (i.e. national/ regional/ top 10%)
5. If feedback delivered once, conduct **rapid re-audit** comparing past/present behaviour
6. Include **positive feedback** (i.e. message of encouragement)

Enhancement guidance manual + template reports: audit writing group

(2) Who should do what, to whom, when and where: Ensure audit standards, feedback, recommendations and action plans are behaviourally specific

| Brief Description and Rationale | How to apply | Consensus Rating (1 low - 5 high) | Guides from Acceptability and Feasibility interviews |
|---|---|-----------------------------------|---|
| <ul style="list-style-type: none"> Evidence that guidelines are more likely to be implemented if they are behaviourally specific. Evidence that more effective when it includes explicit action plans and goals (Kohn 2012) | <p>Behavioural specificity = Who should do what, to whom, when, where?</p> <ul style="list-style-type: none"> Who is responsible for performing behaviour (e.g. Nurses) What action is performed (e.g. Check -vital signs) When behaviour is performed (e.g. immediately pre-transfusion) Where behaviour is performed (e.g. At the bedside) Specific behaviour = Nurses should check patients' vital signs at the bedside immediately pre-transfusion <p>* To the extent that is appropriate/feasible, phrase audit standards, feedback, recommendations and action plans so that they are behaviourally specific.</p> <p>See pp. 20-24 Full Enhancement Guidance Report.</p> | 4/2 | This action plan... we can set timeframes within it and we can task people with it so I think that sort of thing trials would flow because it gives you a very, concrete thing. This is what we're doing, this is who is doing it, this is when we will do it by, and check that we do" -we need the practical stuff" (Regional TR in Action Plan template) |

| AUDIT STANDARD | FEEDBACK | RECOMMENDATION | ACTION PLAN |
|--|---|--|--|
| A post-transfusion Hb concentration is taken [red] by clinical staff [red] in 100% of adult medical patients [red] within 3 days following transfusion [red] (preferably the same day) [green] not specified | Clinical staff [red] took a post-transfusion Hb concentration [red] within 3 days following transfusion [red] | Clinical staff [red] should take a post-transfusion Hb concentration [red] in 100% of adult medical patients [red] if there are good clinical indications for including a post-transfusion Hb concentration (e.g. chronically transfused patients), alternative outcome measures should be assessed and recorded | See action planning template in prototype enhanced reports |

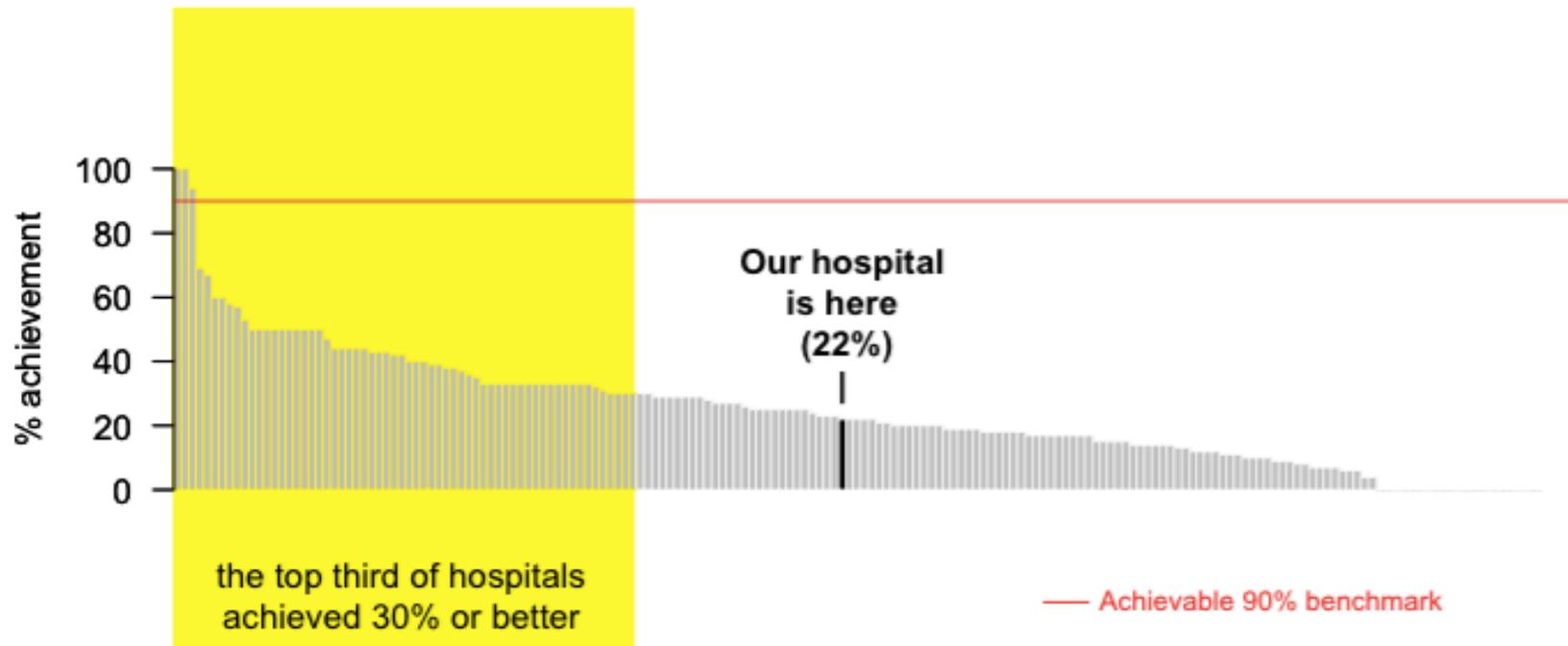


Enhanced feedback reports: transfusion clinical staff

Post-operative transfusion indicated (PBM standard 8):

In patients who do not have active post-operative bleeding, clinical staff should only prescribe a transfusion if the Hb is less than the defined Hb threshold or for transfusion (70g/L in patients without acute coronary ischaemia 80g/L in patients with acute coronary ischaemia).

Our hospital achieved this standard for **22% (4/18)** of patients



What should we do next? Recommendations:

| For our Hospital | For clinical staff responsible for pre-operative management | For the Hospital Transfusion / Patient Blood Management Committee |
|--|---|---|
| <ul style="list-style-type: none"> • Well done. We showed a high level of achievement in this standard. We are performing within the top third of hospitals nationally. This demonstrates strong support for PBM within our hospital. However, there is room to further improve our practice. • We should prepare an action plan that will recognise and build upon our existing good practice to further improve the service that we provide. | <ul style="list-style-type: none"> • Clinical staff should ensure that patients are counselled about the relationship between anaemia, morbidity and mortality, and should be given the opportunity to defer non-urgent surgery until anaemia is investigated and treated. • Clinical staff should ensure that anaemia screening occurs between the referral for surgery and decision to proceed in order to allow investigation and correction if appropriate. • Even where surgery is urgent, clinical staff should still use whatever time is available before operation for anaemia investigation and treatment initiation. | <ul style="list-style-type: none"> • The Committee should ensure that healthcare pathways are structured to enable anaemia screening and investigation/ correction before surgery. • The Committee should work with Commissioners to formalise integrated pathways and funding for the referral of patients found to be anaemic during surgical workup, if the nature of the anaemia suggests that unexpected significant underlying disease is possible. • The Committee should work with clinicians to continue monitoring practice in relation to this standard, by conducting further local audits of the number of patients undergoing surgery with anaemia, and feeding back this information to clinical teams. |

Intervention 2 'enhanced FOLLOW ON SUPPORT': Overview

Behaviour Change Techniques (n=20), including:

- **Instruction** how to perform behaviour
- **Problem solving**
- **Action planning**
- **Goal-setting** (behaviour/ Outcome)
- **Self-monitoring**
- Behavioural **practice/rehearsal**
- **Demonstration** of the behaviour
- Social **reward**
- **Prompts and cues**
- Social **support** (practical)

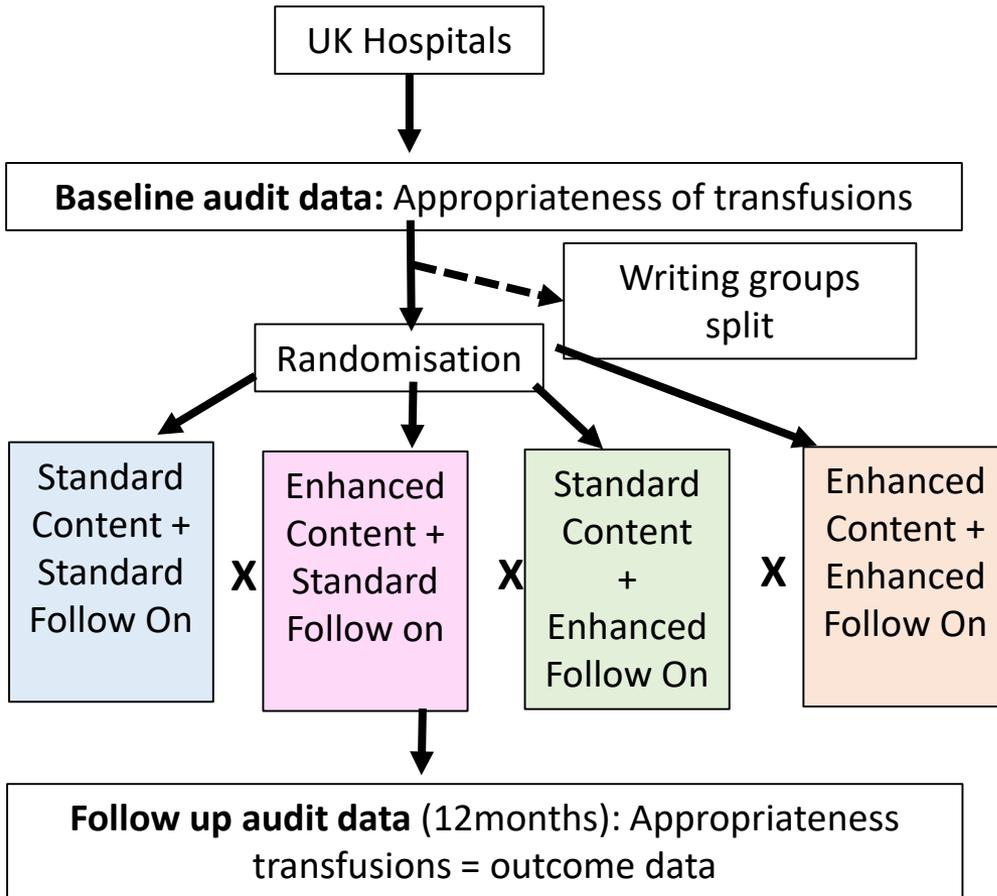
Web-Toolkit



Telephone Support



AFFINITIE Cluster RCT with 2x2 factorial design



Trial 1: Surgery



- N= 155 Sites
- Int delivered: **Oct 15**
- Outcome Eval: **Oct 16**

RE-RANDOMIZED BETWEEN TRIALS 1 +2

Trial 2: Haematology



- N= 167 Sites
- Int delivered: **Jul 16**
- Outcome Eval: **Jul17**



If only it were so easy...

- Aligning timelines
- Competing audit activities within the same national audit programme
- Perceived equipoise
- Contamination
- Data quality

Need for considerable mutual investment in building a long-term partnership



Planned outputs

- Evidence-based materials and resources to support intervention adaptation and scaling up for other national audits
- Clear specifications of intervention components, professionals targeted, fidelity of interventions, and mechanisms of change





AIM: To improve patient care by optimising the content, format and delivery of feedback from national clinical audits

OBJECTIVES:

- To develop and evaluate feedback modifications, within a web-based randomised screening experiment
- To evaluate how different feedback modifications from national audit programmes are delivered, perceived and acted upon in healthcare organisations
- To explore the opportunities, costs and benefits of UK national audit programme participation in a long-term international collaborative to improve audits through a programme of trials

Realising the potential of audit and feedback

Evidence-based audit and feedback

AFFINITIE and beyond

Effects of selected QI approaches



12 randomised trials; 11 non-randomised studies

Process of care (e.g. x-ray requests, prescribing): Median absolute improvement 4.3 % (interquartile range -8.0 % to +9.6 %)

Patient outcomes (e.g. depression scores, smoking cessation): No benefits

Relatively cheap

Potential for enhancing effects using 'persuasive communication' methods?

Farmer et al. Printed educational materials: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews 2008, Issue 3. Art. No.: CD004398. DOI: 10.1002/14651858.CD004398.pub2



81 randomised trials

Process of care: 6.0% (1.8% to 15.3%)

Patient achievement of treatment goals:
3.0% (0.1% to 4.0%)

Larger effects with higher attendance rates
and interactive meetings

Smaller effects for complex behaviours

Commonly used and generally feasible

Main cost is release time for professionals

Forsetlund et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews 2009, Issue 2. Art. No.: CD003030. DOI: 10.1002/14651858.CD003030.pub2.



28 randomised trials

Process of care: 4.2% (0.8% to 18.8%)

Clinical end-points (e.g. BP control): 2.5% improvement (1.3% to 4.2%)

Most studies examined the effects of relatively simple reminders

More complex decision support less successful, especially for chronic disease management

Shojania et al. The effects of on-screen, point of care computer reminders on processes and outcomes of care. *Cochrane Database Syst Reviews* 2009, Issue 3. Art. No:CD001096. DOI: 10.1002/14651858.CD001096.pub2



28 randomised trials

Process of care: 4.2% (0.8% to 18.8%)

Clinical end-points (e.g. BP control): 2.5% improvement (1.3% to 4.2%)

Systems more likely to succeed if...

- Provided advice for patients in addition to practitioners (OR 2.8, 1.1 to 7.2)
- Required practitioners to supply a reason for over-riding advice (11.3, 2.0 to 63.7)
- Evaluated by their developers (4.4, 1.7 to 11.4)

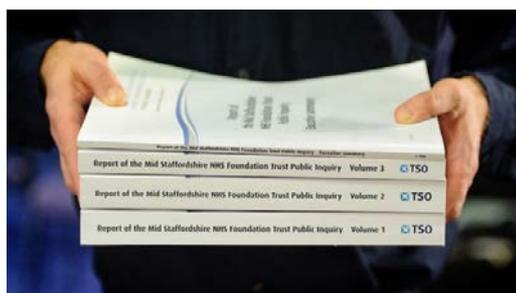
Shojania et al. The effects of on-screen, point of care computer reminders on processes and outcomes of care. Cochrane Database Syst Reviews 2009, Issue 3. Art. No:CD001096. DOI: 10.1002/14651858.CD001096.pub2

Roshanov et al. Features of effective computerised clinical decision support systems: meta-regression of 162 randomised trials. BMJ 2013;346:f657

Strategies to improve organisational culture



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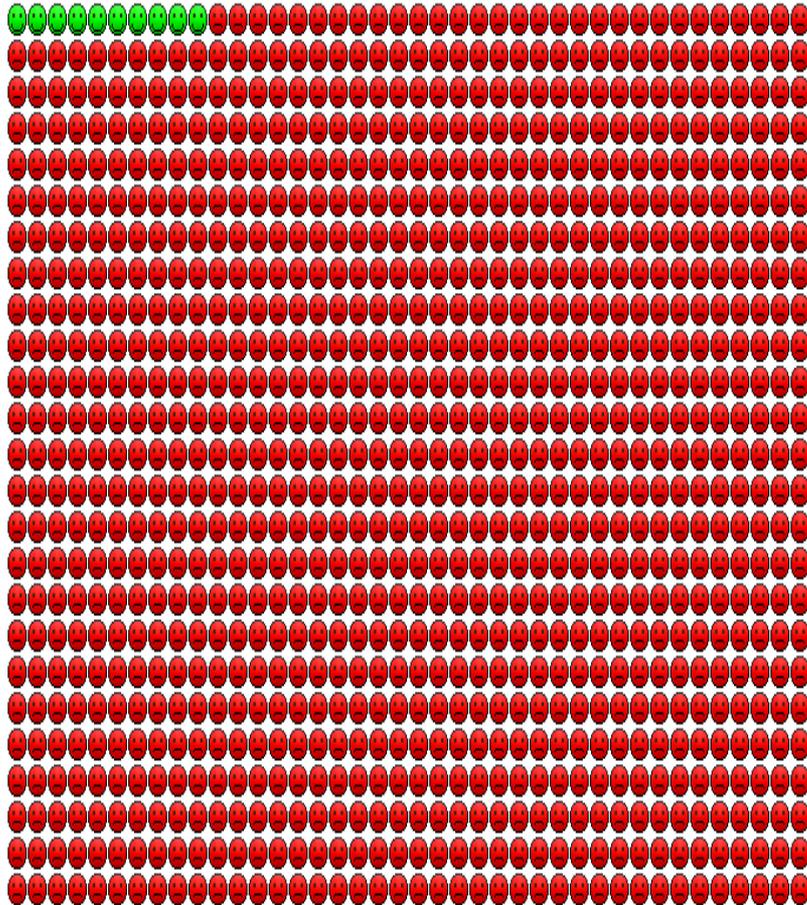


“It is not possible to draw any conclusions about the effectiveness of strategies to change organisational culture because we found no studies that fulfilled the methodological criteria for this review.”

Parmelli E, Flodgren G, Schaafsma ME, Baillie N, Beyer FR, Eccles MP. The effectiveness of strategies to change organisational culture to improve healthcare performance. Cochrane Database of Systematic Reviews 2011, Issue 1. Art. No.: CD008315. DOI: 10.1002/14651858.CD008315.pub2.



Are modest effect sizes worthwhile?



Effect sizes in range of those for many recommended clinical treatments

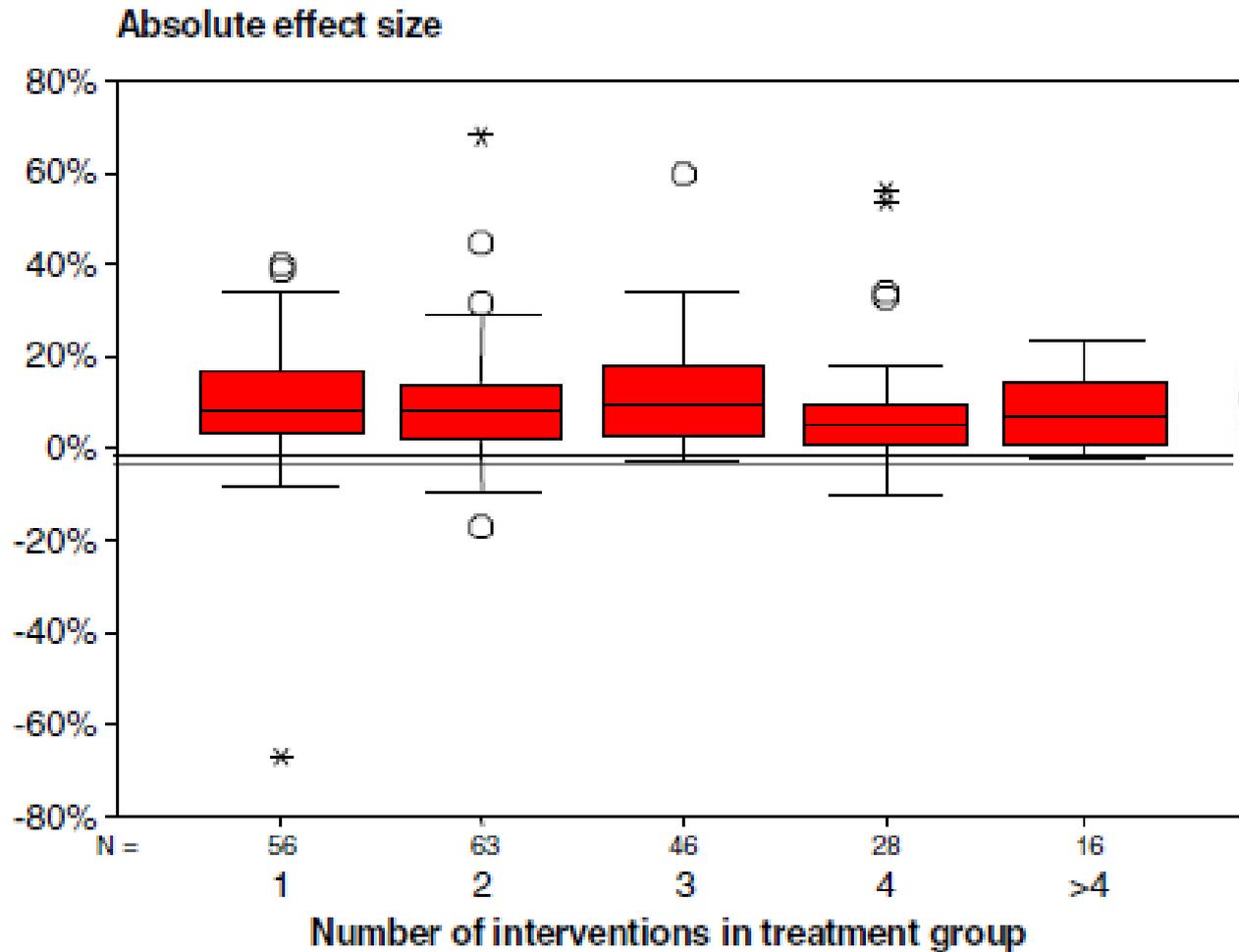
Population impact potentially worthwhile in relation to costs of interventions

Effects of quality improvement interventions cumulative and complementary...



... but not necessarily

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Grimshaw et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. Health Technol Assess 2004; 8(6)

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International A&F Collaborative

International community of health researchers and health system partners that undertake shared activities to enhance the provision of audit and feedback to improve health care performance, patient outcomes and health system sustainability



**Established Canada
April 2016**

**Next meeting Leeds, UK
6-7 June 2017**