

# A&F 101:

What is it and why does it matter?  
How well does it work and how do we make it work better?

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Noah Ivers MD CCFP PhD

## **“You Can't Manage What You Don't Measure”**

paraphrasing of an original quote by Lord Kelvin. The first to use this paraphrasing was Bill Hewlett, the co-founder of Hewlett Packer.

## **“...if I keep no record of what I do, I can always assume I've succeeded.”**

-Stephen Colbert

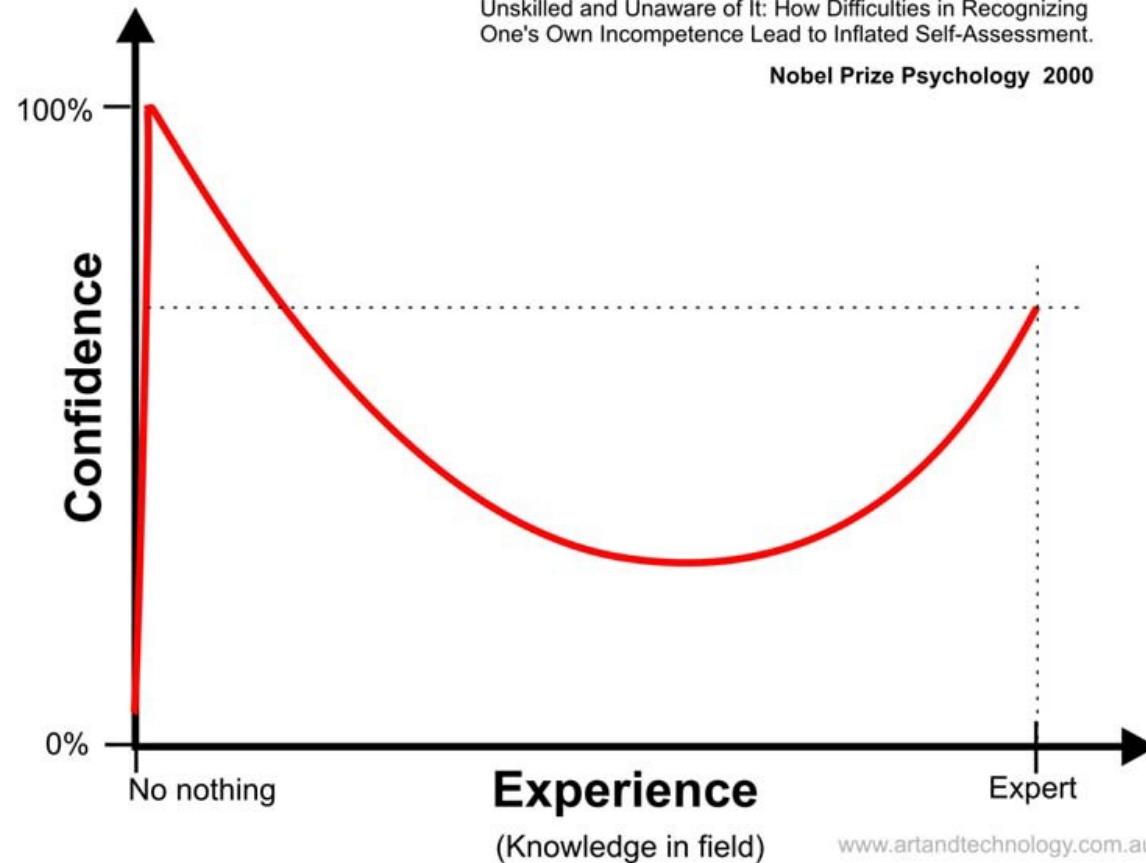
-\*10 Key Takeaways From Bill Gates' Annual Letter 2013\*



# Dunning-Kruger Effect

Unskilled and Unaware of It: How Difficulties in Recognizing  
One's Own Incompetence Lead to Inflated Self-Assessment.

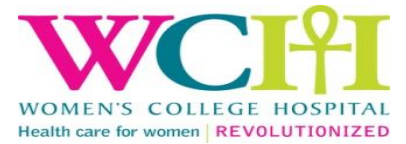
Nobel Prize Psychology 2000



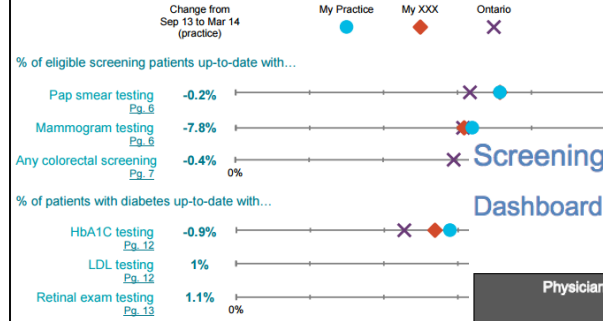
# Dashboard

Data reporting period ending: **March 31, 2014**

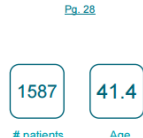
My Primary Care Enrollment Model (group type): **XXX**  
 My Group Number: **Group Ag.**  
 My LHIN: **LHIN Ag.**  
 My Rurality Index of Ontario Score: **0 - Major Urban (0 to 9)**



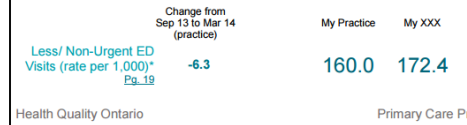
## How well are we doing?



## Who am I caring for?



## What resources are our patients using?



## Screening Activity Report (SAR) as of 31-Aug-2015

[Go to Summary](#)

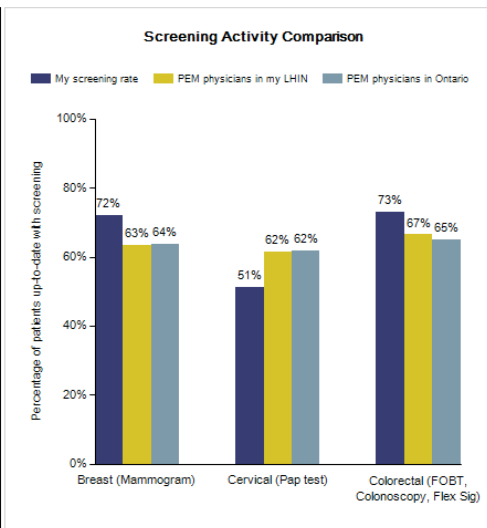
Physician: **NOAH IVERS**

CPSO: **086533**

LHIN: **Toronto Central**

## Dashboard

Physician Level Summary	Breast Screening	Cervical Screening	Colorectal Screening
Total eligible individuals	68	162	115
Total excluded individuals (due to previous cancer, surgery, or OBSP high risk)	4	4	1
<b>Action required</b>	<b>22</b>	<b>80</b>	<b>33</b>
Abnormal screen, follow-up needed	0	0	0
Invalid result, retest required	N/A	1	2
Overdue for screening	22	79	31
<b>Due for screening ≤ 6 months</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Physician review required</b>	<b>31</b>	<b>73</b>	<b>64</b>
Colonoscopy in the last 10 years or Flexible Sigmoidoscopy in the last 5 years	N/A	N/A	62
Review patient history	27	73	2
Abnormal screen, follow-up underway or completed	4	0	0
<b>No screening action required: normal screen</b>	<b>13</b>	<b>6</b>	<b>14</b>

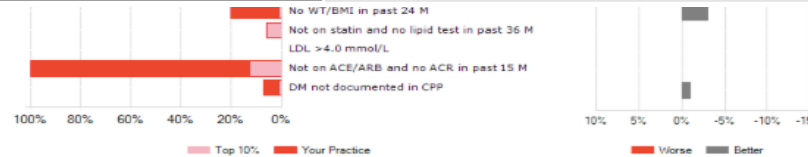


Welcome Ivers, Noah | [Sign out](#)

## and Feedback to Improve caRE (SAFIRE)

Date: **Jan 06, 2014**

DM Patients	Patients	%
Your practice:	15	6%
Overall EMRALD:	12,823	10%
<b>DM Patients with IHD</b>		
Your practice:	1	7%
Overall EMRALD:	2,340	18%
<b>DM Patients with HTN</b>		
Your practice:	5	33%
Overall EMRALD:	9,856	77%
<b>Female DM Patients</b>		
Your practice:	9	60%
Overall EMRALD:	5,948	46%
<b>Average Age of DM Patients</b>		
Your practice:	57 years	
Overall EMRALD:	65 years	



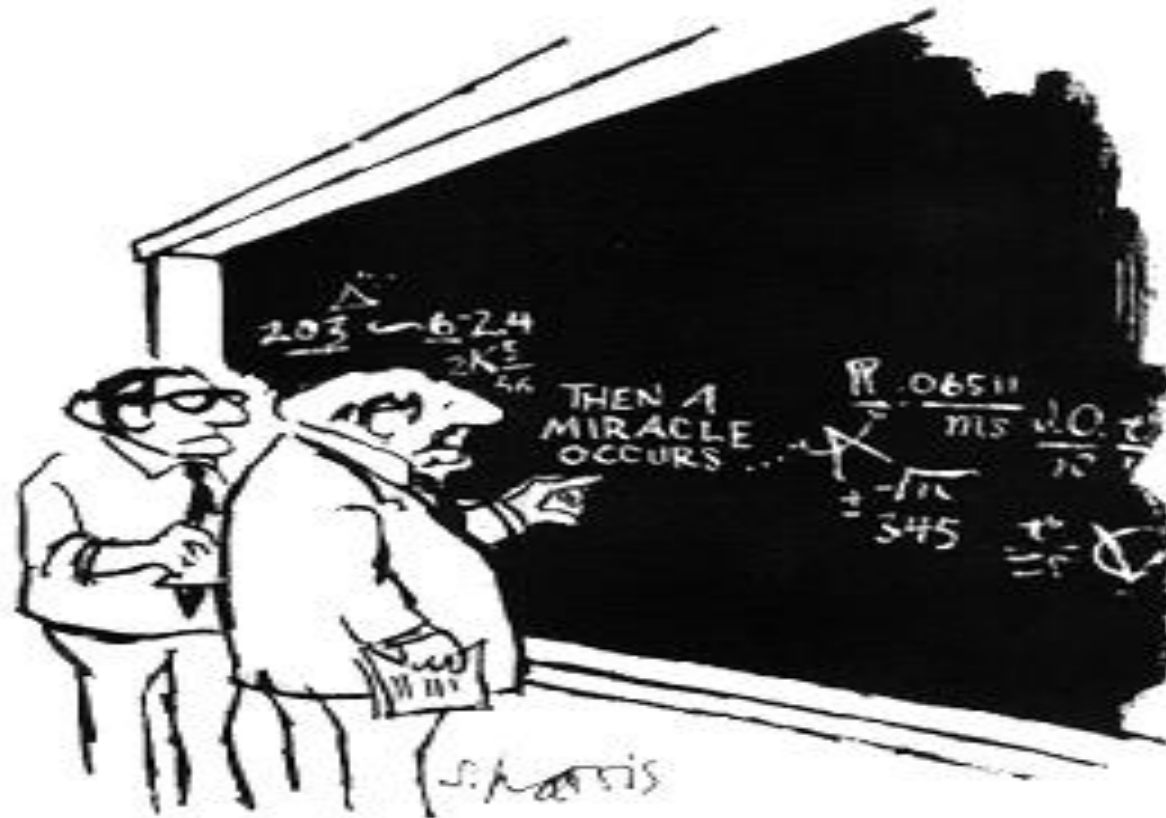
## Past Performance

High Risk Threshold	Jan 06, 2014 Your Practice	Jan 06, 2014 Top 10%	May 25, 2013 Your Practice
No A1C test in past 15 M	0%	2%	7%
A1C >9.0%	26%	3%	38%
No BP test in past 15 M	0%	1%	0%
BP >160/100 mmHg	0%	0%	0%
No ACE/ARB if HTN	28%	5%	20%
No WT/BMI in past 24 M	20%	1%	23%
Not on statin and no lipid test in past 36 M	0%	6%	0%
LDL >4.0 mmol/L	0%	0%	0%
Not on ACE/ARB and no ACR in past 15 M	100%	13%	100%
DM not documented in CPP	7%	1%	8%

## Distribution of Gap Scores



“To improve outcomes,  
we’ll give them a report card”



"I think you should be more explicit  
here in step two."

*Reprinted w/permission from Sidney Harris*

## 116 Trials

**88 comparisons from 72 studies** were included comparing any intervention in which audit and feedback is a component compared to no intervention.

For dichotomous outcomes the median adjusted risk difference of compliance with desired practice was **0.05 (IQR = 0.03 to 0.11)**

## **“Intensity of audit and feedback might also help to explain variation in the absolute effect (p = 0.04).”**

- “Intensive”(individual recipients) AND ((verbal format)OR (a supervisor or senior colleague as the source)) AND (moderate or prolonged feedback)
- “Non-intensive” ((group feedback) NOT (from a supervisor or senior colleague)) OR ((individual feedback) AND (written format) AND (containing information about costs or numbers of tests without personal incentives))
- “Moderately intensive”(any other combination of characteristics than described in Intensive or Non-intensive group).

## 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



**THE COCHRANE  
COLLABORATION®**

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2012, Issue 6

<http://www.thecochranelibrary.com>

Included 140 RCTs up to end of 2010  
111 studies directly tested A&F  
82 comparisons from 45 trials with dichotomous outcomes of professional practice for primary analyses

Primary analyses included:

2310 groups of health professionals from 32 cluster-randomized trials

and

2053 health professionals from 17 trials allocating individual providers




**Patient or population:**Healthcare professionals

**Settings:**Primary and secondary care

**Intervention:**Audit and feedback with or without other interventions<sup>1</sup>

**Comparison:**Usual care

Outcomes	Absolute improvement <sup>2</sup>	Number of health professionals (studies)	Quality of the evidence (GRADE)
Compliance with desired practice (dichotomous outcomes)	Median 4.3% absolute increase in desired practice (IQR 0.5% to 16.0%)	82 comparisons from 49 studies. <sup>3</sup> 2310 clusters/groups of health providers (from 32 cluster trials) and 2053 health professionals (from 17 trials allocating individual providers)	 <b>moderate</b> <sup>4</sup>



# Meta-Regression

<b>Characteristic</b>	<b>Effect</b>
<b>Format of feedback</b>	<b><math>p=0.020</math></b>
Verbal	3.4
Written	9.5
Both Verbal and Written	11.2
Not clear	5.3

# Meta-Regression - Exploratory

<u>Characteristic</u>	<u>Effect</u>
<b>Type of professional practice</b>	<b><i>P</i>&lt;0.001</b>
Diabetes/CVD	5.91
Laboratory testing/radiology referrals	4.21
Prescribing	11.11
Other	4.71
<b>Direction of change required</b>	<b><i>P</i>=0.525</b>
Increase current behaviour	6.64
Decrease current behaviour	7.13
Change behaviour or mix or unclear	5.7

...in addition to being indirect, findings are somewhat unstable...  
FEW 'HEAD-TO-HEAD' TRIALS

# 2012 A&F Cochrane Review

## 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



This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2012, Issue 6

<http://www.thecochranelibrary.com>

A&F improves compliance with desired professional behavior by 4% (IQR 0.5 - 16)

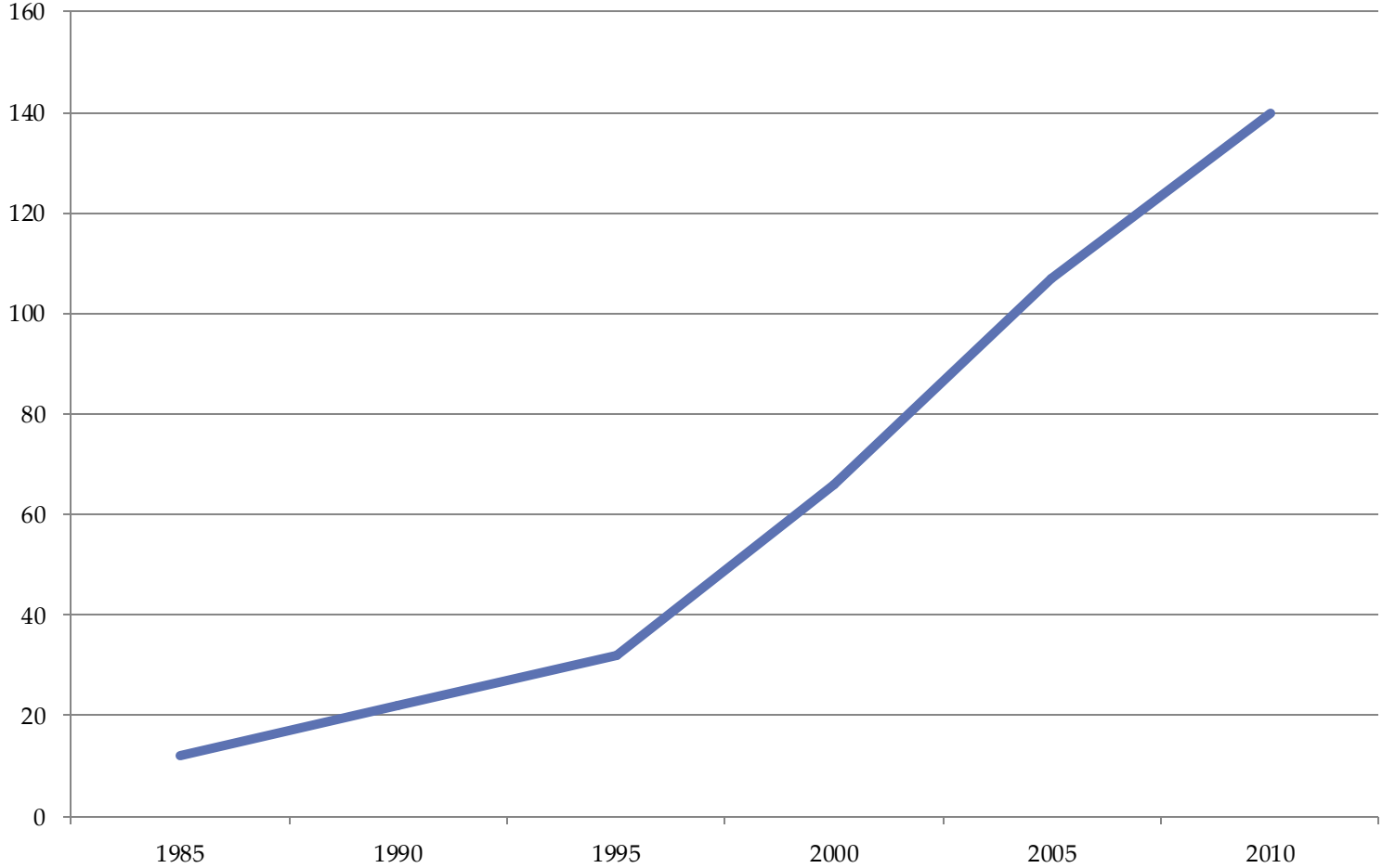
### A&F more effective when:

- the source is a respected colleague,
- delivered both verbally and written,
- provided more than once,
- includes explicit targets and action plan

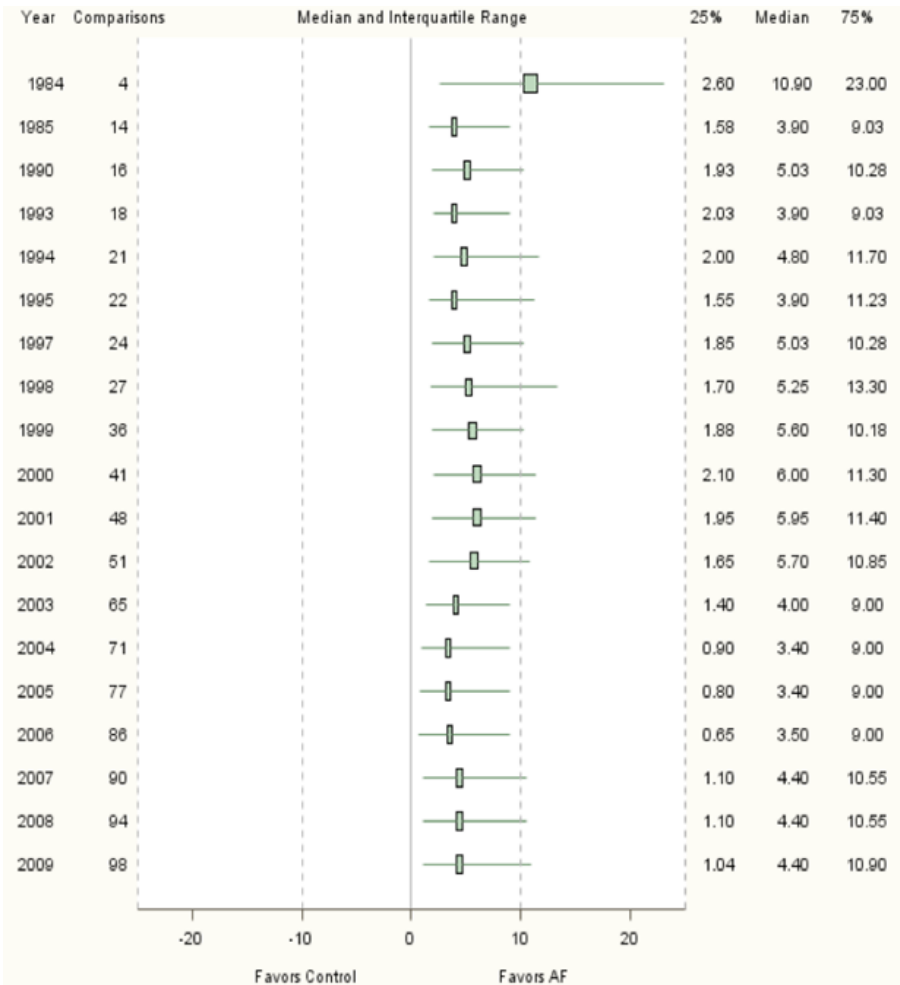
Targeted behavior plays an important role

- more effective when baseline performance is poor

# Growing literature...



# ...Stagnant Science



**Table 3. Factors Explaining Variability in Effectiveness of Feedback: Serial Meta-Regressions**

Characteristic of feedback	Estimated effect size*, (no. studies)		
	2010	2006	2002
<b>Format of feedback</b>	<i>p</i> =0.386	<i>p</i> =0.731	<i>p</i> =0.729
Verbal	12.77, (15)	14.85, (14)	17.02, (12)
Written	20.70, (50)	19.94, (41)	23.76, (19)
Both verbal and written	19.05, (27)	19.19, (26)	16.98, (18)
Not clear	16.90, (6)	13.58, (5)	2.94, (2)
<b>Source of feedback</b>	<i>p</i> =0.006	<i>p</i> =0.034	<i>p</i> =0.300
A supervisor or respected colleague	25.22, (10)	23.49, (8)	24.48, (4)
Standards review org. or representative of employer	9.16, (3)	9.38, (3)	0.90, (1)
The investigators	15.19, (52)	14.71, (42)	17.85, (13)
Not clear	19.85, (33)	19.99, (33)	17.47, (33)
<b>Frequency of feedback</b>	<i>p</i> <0.001	<i>p</i> <0.001	<i>p</i> <0.001
Frequent (up to weekly)	27.58, (5)	28.50, (3)	28.64, (2)
Moderate (up to monthly)	18.51, (10)	16.73, (9)	18.31, (4)
Infrequent (less than monthly)	14.04, (26)	13.32, (22)	1.06, (10)
Once only	7.49, (52)	7.75, (47)	9.96, (30)
Unclear;	19.15, (5)	18.17, (5)	17.92, (5)
<b>Instructions for improvement</b>	<i>p</i> =0.044	<i>p</i> =0.068	<i>p</i> =0.325
Explicit, measurable target, but no action plan	10.88, (5)	10.45, (5)	8.48, (1)
Action plan, but no explicit target	17.16, (32)	16.69, (31)	11.37, (18)
Both	23.19, (4)	23.06, (4)	22.01, (4)
Neither;	18.18, (57)	17.37, (46)	18.84, (28)
<b>Nature of change required</b>	<i>p</i> =0.025	<i>p</i> =0.028	<i>p</i> =0.510
Increase current behavior	15.55, (40)	15.65, (36)	19.34, (17)
Decrease current behavior	22.46, (11)	22.30, (11)	12.61, (4)
Change behavior to similar alternative or unclear	14.05, (47)	12.73, (39)	13.58, (30)
<b>Profession of recipient (Physician yes/no)</b>	<i>p</i> <0.001	<i>p</i> <0.001	<i>p</i> <0.001
Physician	10.99, (82)	10.19, (72)	4.80, (45)
Not physician	23.72, (16)	23.60, (14)	25.55, (6)
<b>Risk of bias</b>	<i>p</i> =0.375	<i>p</i> =0.564	<i>p</i> =0.281
Yes (low risk of bias)	14.85, (32)	14.92, (27)	21.34, (8)
Unclear	15.79, (51)	15.33, (48)	10.06, (34)
No (high risk of bias);	21.42, (15)	20.43, (11)	14.12, (9)
<b>Baseline performance (continuous variable)</b>	<i>p</i> <0.001	<i>p</i> =0.003	<i>p</i> =0.021

\*Absolute difference in compliance with intended professional behaviors

DEBATE

Open Access

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

Noah M Ivers<sup>1\*</sup>, Anne Sales<sup>2</sup>, Heather Colquhoun<sup>3</sup>, Susan Michie<sup>4</sup>, Robbie Foy<sup>5</sup>, Jill J Francis<sup>6</sup>  
and Jeremy M Grimshaw<sup>7</sup>

## 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.