Workshop overview

Introductions

Framing the conversation on optimizing the design of A&F
- Brehaut et al (2016) and Hysong et al (2016)
- Feedback Intervention Theory as our organizing theoretical model

Optimizing feedback: using an exemplar at your table, we will work through four overarching elements for optimizing feedback:
- Nature of the desired action
- Nature of the data
- Feedback display
- Feedback delivery

Workshop Aims
Consider and practice applying the principles of best practice in A&F design by:
- Assessing the limitations of existing A&F interventions
- Applying and discussing key recommendations for optimizing the design of A&F

About us

Who do we have in the room?

Researchers - 24%

Clinicians - 8%

Other Healthcare professionals – 20%

Government (Non–clinical) – 20%

Trainees/Graduate students- 12%

Research Staff – 8%

Scientists – 8%

Take 5 minutes to introduce yourselves at your tables, and discuss
1. Who you are, where you are from
2. What sort of A&F work/research you are currently involved in
3. A burning question/issue related to optimizing design that you hope we might be able to cover or get advice on

Brehaut's 15 recommendations

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.

Brehaut, Colquhoun, Eva, Carroll, Sales, Michie, Ivers, Grimshaw (2016). Practice feedback interventions: 15 suggestions for optimizing effectiveness. *Annals of Internal Medicine, 164*, 435-441.

Brehaut's 15 recommendations

Low hanging fruit recommendations based on:
- Theory
- International experts
- Data from existing reviews

At first glance, some may seem obvious and self-evident
- When trying to operationalize them, sometimes not as straightforward
- Needs practice, discussion and consideration of what the evidence suggests

Section 1: Nature of the desired action

1. "Recommend actions that are consistent with established goals and priorities"
- If no standard to achieve (or do not agree with standard), nothing to compare the feedback against to assess progress

2a. "Recommend actions that have room to improve for the recipient"
- If provide feedback to everyone, some may be meeting or exceeding performance on one or more actions; may disengage or undermine effectiveness

2b. "Recommend actions that are under the control of the recipient"
- If the recipient cannot do anything about it, at best they disengage and at worst you create frustration

3. "Recommend specific actions"
- Once receiving feedback, if there is no mechanism to support how to act on the discrepancy between the feedback and the goal/priority, feedback may not be effective

Section 2: Nature of the data available for feedback

4. "Provide multiple instances of feedback"
◦ One-off feedback does not allow assessment of progress which is core to maintaining motivation to continue making effort.

5. "Provide feedback as soon as possible and at a frequency informed by the number of new patient cases (or opportunities to enact the behaviour)"
◦ The older the data, the more easily it can be discounted.
◦ Too frequent feedback without time to make changes in between may lead to disengagement/ignoring feedback.

6. "Provide individual rather than general data"
◦ The higher the level of aggregation of the data, the less clear what the recipient is contributing and the easier to discount

7. "Choose comparators that reinforce the desired behaviour change"
◦ Too many comparators = opportunities to focus on the one doing 'best' on
◦ Own behaviour in the past for assessing progress
◦ If comparing to others, need to be seen to be challenging yet achievable ("aspirational"), and people that the recipient identifies with (the more diffuse/broad, the less likely to identify with)

Section 3: Feedback display

8. "Closely link the visual display and summary message"
◦ Speaks to ease and consistency of engaging with the feedback

9. "Provide feedback in more than 1 way"
◦ Multiple modalities presenting the same feedback data may help to address preferences for how data is presented

10. "Minimize extraneous load for feedback recipients"
◦ The more different indicators/behaviours being feedback at once, the more cognitive load and likelihood of disengaging; cannot necessarily presume that recipient will pick and choose/prioritise. They may disengage.
◦ Simple = good. Busy, complex (e.g. 3D graphical elements), difficult to interpret = bad

Section 4: Delivering the feedback intervention

11. "Address barriers to using/engaging with the feedback itself"
◦ If you build it, will they come? Not necessarily. Rolls Royce A&F wont work if the email is not opened, the dashboard not used, or the website not logged into

12. "Provide short, actionable messages followed by optional detail"
◦ Busy recipients may not engage with the detail. Cater first to the busy recipient, but provide option for those that want a deep dive.

13. "Address credibility of the information"
◦ Trusted sources = good! Unknown, mistrusted sources = bad

14. "Prevent defensive reactions to feedback":
◦ For some recipients or some behaviours, feedback (particularly if clearly different from standard or comparator) may be seen as threat to professional identity, livelihood, and pride.

15. "Construct feedback through social interaction"

Table 1 Factors predicted to impact feedback effectiveness by Feedback Intervention Theory and by Cochrane systematic review

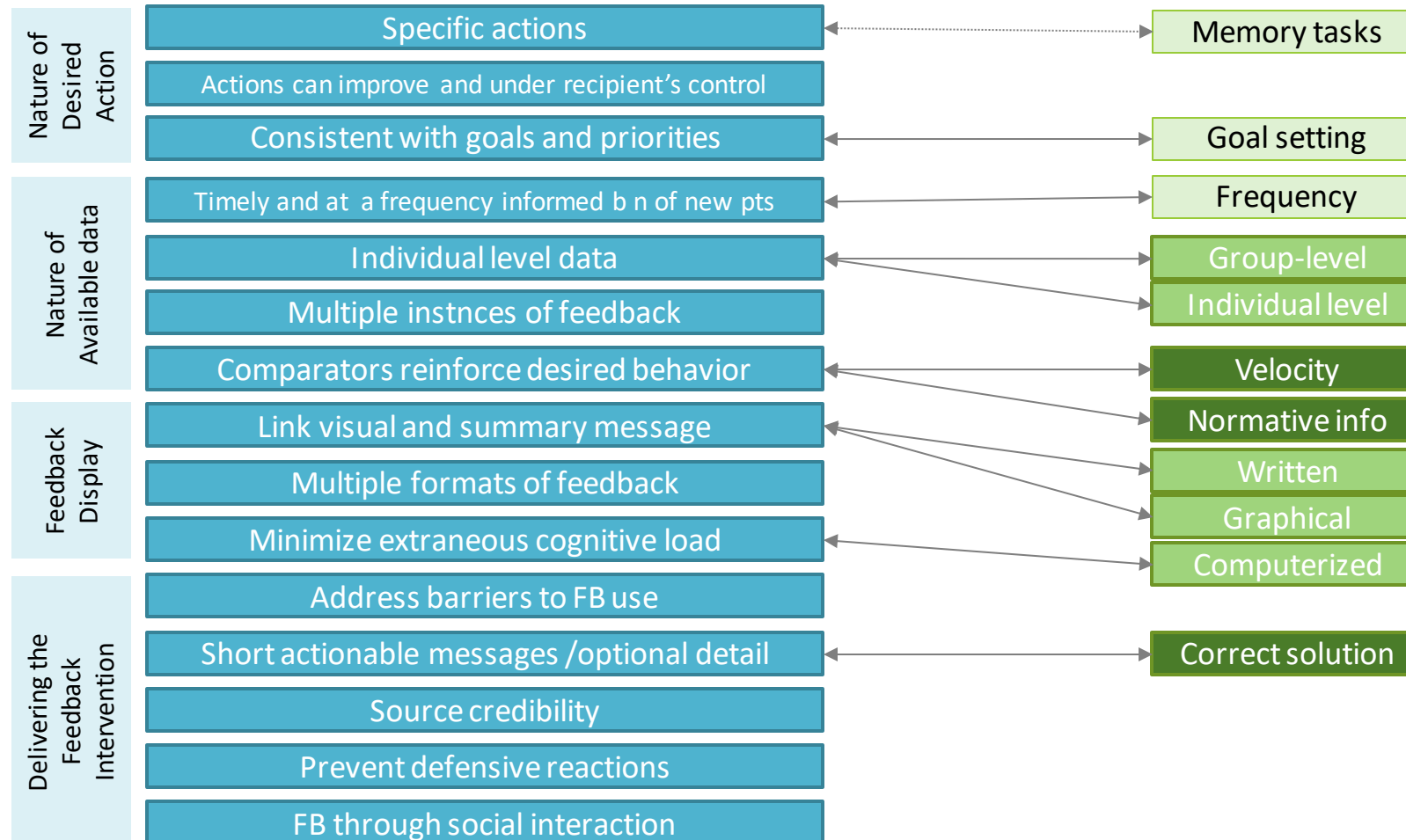| Feedback characteristic	Brief definition	Impact on performance predicted by FIT	Meta-analytic findings from Kluger and DeNisi[11]	Meta-analytic findings from Hysong,[16] (healthcare specific)	Meta-analytic findings from Ivers et al[2] Cochrane review (healthcare specific)
Feedback characteristics—content					
Sign of feedback intervention (FI)	Whether feedback (FB) was positive or negative	FIT has no specific prediction	No significant relation (n.s.)	Not explicitly tested	Not explicitly tested
Correct–incorrect	Whether the task was done correctly or incorrectly		n.s.	Not explicitly tested	
Correct solution*	Information about how to do the task correctly	+	+	+	
Velocity†	Change from previous time period	+	+	+	
Attainment level	Number or things produced	−	n.s.	Insufficient variance to test	
Normative information	Direct comparison with others	−	n.s.	Mixed findings	
Norms	Information about the performance of others	−	n.s.	Insufficient studies to test	
Discouraging FI	FB containing a destructive message or cues that discouraged the recipient	−	−	Insufficient studies to test	
Praise	FB containing cues that praised the recipient	−	−	Insufficient studies to test	
Feedback characteristics—format					
Verbal FI	FB (FB) delivered verbally	−	−	−	Small +
Written FI†	FB delivered in writing	+	n.s.	+	+
Both verbal and written	FB delivered both verbally and in writing	Not explicitly addressed	Not explicitly tested	Insufficient studies to test	Large +
Graphical FI†	FB delivered in a graphical format	+	n.s.	−	Not explicitly tested
Computer FI†	FB delivered by computer	+	+	Insufficient studies to test	
Public FI	FB delivered in a public setting	−	n.s.	Mixed findings	
Group FI*	FB referring to group performance	+	n.s.	+	
Individual FI	FB referring to individual performance	Assumed in the theory	Not explicitly tested	+	
Group + individual FI	FB referring to both individual and group performance	Not explicitly addressed	Not explicitly tested	+	
Situational and other variables					
FI frequency	How often FB is delivered	FIT has no specific prediction	−	+	Curvilinear relationship
Goal setting	Whether FB included difficult specific goals, moderate or 'do your best' goals or no goals	+	+	Insufficient studies to test	cf. 'explicit, measurable target and action plan'

Continued

Table 1 Continued

Feedback characteristic	Brief definition	Impact on performance predicted by FIT	Meta-analytic findings from Kluger and DeNisi[11]	Meta-analytic findings from Hysong,[16] (healthcare specific)	Meta-analytic findings from Ivers et al[2] Cochrane review (healthcare specific)
Explicit, measurable target AND action plan	FB included both an explicit target value and specific action steps for improvement	Could be interpreted as variants of goal setting	Not explicitly tested	Not explicitly tested	+
Feedback source	Who delivered the FB	Not explicitly addressed	Not explicitly tested	Not explicitly tested	Supervisor or colleague better than professional standards review
Direction of behaviour change required to improve	Whether the recipient must increase or decrease current behaviour	Not explicitly addressed	Not explicitly tested	Not explicitly tested	Effect size for decrease in behaviour larger than for increase in behaviour
Task characteristics					
Task novelty	Subjective familiarity with the task	−	n.s.	Task characteristics were outside the scope of the Hysong[15] meta-analysis, and thus not tested	Task characteristics were outside the scope of the Ivers 2012 systematic review, and thus not tested
Task complexity	Number of actions and dependencies among actions needed for successful task performance	−	−		
Time constraint	Whether a time constraint existed on performance	−	n.s.		
Time duration	How long it takes to do the task once	−	n.s.		
Creativity	Degree to which successful performance requires creativity	−	n.s.		
Quantity–quality	Whether the measure of performance reflected quality or quantity	FIT has no specific predictions for these task characteristics, as they do not provide adequate information about the amount of cognitive resources required	n.s.		
Ratings vs objective performance	Whether performance was measured subjectively or objectively		n.s.		
Transfer measure	Where the effect of FI on one task was measured on another task		n.s.		
Latency measure	Whether or not the performance reflects latency or speed		n.s.		
Task type	Tasks whose central action requires				
▶ Physical task	▶ Physical action		−		
▶ Reaction time	▶ Fast reaction time		n.s.		
▶ Memory task	▶ Heavy memory load		+		
▶ Knowledge task	▶ Specialised knowledge		n.s.		
▶ Following rules	▶ Strict adherence to following rules (eg, following a recipe)		−		
▶ Vigilance task	▶ Monitoring/vigilance		n.s.		
Baseline compliance	Performer's level of compliance with desired practice		Not explicitly tested	Not explicitly tested	−

*Feedback characteristics predicted by FIT to shift attention to task details and activate task-learning processes, thereby improving feedback effectiveness.
†Feedback characteristics predicted by FIT to maintain attention on task motivation processes, thereby improving feedback effectiveness.

FIT and the 15 Suggestions

Nature of Desired Action
- Specific actions
- Actions can improve and under recipient's control
- Consistent with goals and priorities

Nature of Available data
- Timely and at a frequency informed b n of new pts
- Individual level data
- Multiple instnces of feedback
- Comparators reinforce desired behavior

Feedback Display
- Link visual and summary message
- Multiple formats of feedback
- Minimize extraneous cognitive load

Delivering the Feedback Intervention
- Address barriers to FB use
- Short actionable messages /optional detail
- Source credibility
- Prevent defensive reactions
- FB through social interaction

FIT Feedback Cues:
- Memory tasks
- Goal setting
- Frequency
- Group-level
- Individual level
- Velocity
- Normative info
- Written
- Graphical
- Computerized
- Correct solution

FIT Feedback Cues Legend
- Content
- Format
- Other

Case Example: A&F to Decrease Inappropriate Prescribing for ABU

Nature of Desired Action		
Specific actions		Decrease inappropriate urine culture and Rx for ABU
Actions can improve and under recipient's control		Diagnosis, test orders, prescription orders
Consistent with goals and priorities		Consistent with IDSA guidelines

Nature of Available data		
Timely and at a frequency informed b n of new pts		Feedback delivered no less than monthly
Individual level data		Individualized case feedback
Multiple instnces of feedback		Multiple cases, delivered over course of a year
Comparators reinforce desired behavior		Compare clinician decisions to IDSA algorithm

Feedback Display		
Link visual and summary message		Interactive PPT linking individual behaviors to IDSA algorithm and correct solution info
Multiple formats of feedback		
Minimize extraneous cognitive load		Interactive ppt. highlights correct pathway

Delivering the Feedback Intervention		
Address barriers to FB use		Educational session on IDSA guideline; study PI as champion
Short actionable messages /optional detail		Correct solution info provided IDSA guideline details
Source credibility		Study PI as champion highly respected in CAUTI field
Prevent defensive reactions		Standardized script for feedback
FB through social interaction		No built-in design features

Picking the low hanging fruit

Using the A&F intervention exemplars at your table:

◦ **ASSESS** the extent to which they are consistent with recommendations

◦ **DISCUSS** how the recommendations and theory could enhance the design

We will work our way through 4 different overarching ways of optimizing the…

◦ Section 1: Nature of the desired action

◦ Section 2: Nature of the data available for feedback

◦ Section 3: Feedback display itself

◦ Section 4: Delivering the feedback interventions

For each section, we will spend 15 mins at tables ASSESSING and DISCUSSING
then 5 mins for reporting back
Nominate someone at your table to report
Use the worksheet entitled "Optimising the design of audit and feedback"

Example A&F to work from

At your table, **pick one** of the following to work through:

➢ Beck et al (2005), *JAMA*, Hospital-based, QI for acute myocardial infarction

➢ Thomas et al (2006), *Lancet*, Primary care lab test ordering

➢ Tierney et al (1986), *Medical Care*, internal medicine preventive care

➢ Wadland et al (2007), *Annals of Family Medicine*, primary care referral to smoking cessation

Section 1: Nature of the desired action

"Recommend actions that are consistent with established goals and priorities"
- ◦ **ASSESS**: Have the recipients set an internal goal to improve OR was the feedback that was presented consistent with an external priority?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Recommend actions that have room to improve for the recipient"
- ◦ **ASSESS**: What evidence do we have that there is room for improvement in the recipients? Does that evidence apply to everyone who will receive the feedback?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Recommend actions that are under the control of the recipient"
- ◦ **ASSESS**: Is it reasonable that the feedback recipient is responsible for acting on the feedback?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Recommend specific actions"
- ◦ **ASSESS**: Does the feedback intervention make suggestions for improvement of behaviour or support developing an action or coping plan?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

Section 1: Nature of the desired action

Reporting back

Section 2: Nature of the data available for feedback

"Provide multiple instances of feedback"
- ◦ **ASSESS**: How many times did the recipient receive feedback on a given behaviour?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Provide feedback as soon as possible and at a frequency informed by the number of new patient cases (or opportunities to enact the behaviour)"
- ◦ **ASSESS**: What was the time interval between receipt of each feedback report? Was that appropriate?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Provide individual rather than general data"
- ◦ **ASSESS**: Did recipient receive feedback on their own performance, feedback aggregated to a group level, or both?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Choose comparators that reinforce the desired behaviour change"
- ◦ **ASSESS**: Is there a comparator? If so, is it 'aspirational'? For all feedback recipients?
- ◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

Section 2: Nature of the data available for feedback

Reporting back

Section 3: Feedback display

"Closely link the visual display and summary message"

◦ **ASSESS**: Are the visual display and any summary messages in visual proximity of another another?

◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Provide feedback in more than 1 way"

◦ **ASSESS**: In how many different ways was the feedback provided? (verbal; text; numerical; figures; graphs; tables; other?"

◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Minimize extraneous load for feedback recipients"

◦ **ASSESS**: How many different behaviours/indicators did the feedback address? How much cognitive load does the feedback provoke?

◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

Section 3: Feedback display

Reporting back

Section 4: Delivering the feedback intervention

"Address barriers to using/engaging with the feedback itself"
◦ **ASSESS**: Were the barriers/enablers to engaging with the feedback materials assessed and addressed?
◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Provide short, actionable messages followed by optional detail"
◦ **ASSESS**: Are there summary messages? Are they directive/actionable?
◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Address credibility of the information"
◦ **ASSESS**: Who is providing the feedback? Is it clear that they are seen as credible by the recipient?
◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Prevent defensive reactions to feedback":
◦ **ASSESS**: Was there reassurance that feedback would not trigger punitive measures? Is the nature of the feedback likely to provoke a defensive reaction is 'doing poorly'?
◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

"Construct feedback through social interaction"
◦ **ASSESS**: Was the FB designed to be received and discussed in a social setting? Is there opportunity for self-assessment first before group discussion?
◦ **DISCUSS**: How could the design of this element be improved? What would improvement look like?

Section 4: Delivering the feedback intervention

Reporting back

Applications to your own A&F initiatives

At your tables, discuss how you might apply these principles to your own setting

Anything that you are already applying that might be further optimized?

 -examples of how it has worked (or not!)

Anything not yet applying, but could?

Q&A