Safer Care Victoria

INNOVATION FUND PROJECT
BETTER CARE VICTORIA

CHOOSING WISELY COLLABORATION
TOOLKIT 1

Austin HEALTH

NPS MEDICINEWISE

Choosing Wisely Australia
An initiative of NPS MedicineWise

CONTENTS

INTRODUCTION

BACKGROUND

Previous work undertaken by Austin Health had identified tests that were unnecessary and a lack of dedicated resources to help tackle to the problem. Root causes of this problem included the presence of clinical variation in medical care, a lack of robust data to monitor and support best practice and a consumer expectation of care that more is better. The impact of the problem was two-fold. Firstly, there was the impact on people, inclusive of patients and clinicians. For patients, there was increased exposure to risk of harm from unnecessary tests, treatments, procedures and the associated increased pain and emotional stress. In addition, patients were at risk of longer wait times for discharge or treatment as they wait for these tests to be done, subsequently increasing length of stay which can then impact patient flow and access to other services. For staff, there is an increase in workload, particularly for pathology and radiology staff, in processing these tests and other healthcare staff in following up test results. In terms of process impact, there was variation in care due to non-adherence to guidelines based on the best available and highest quality evidence and there is also an impact on pathology and radiology capacity from the processing of unnecessary tests.

Austin Health was funded under the 2016-17 Better Care Victoria Innovation Fund as a Choosing Wisely Champion Health Service. The Choosing Wisely project at Austin Health took a whole of hospital approach and as a result, impacted care delivery by clinicians and care received by patients across the health service. The project demonstrated statistically significant reductions in the volumes of unnecessary coagulation studies and urine cultures being ordered with no unintended adverse patient outcomes. Auditing of test indications supported this finding and highlighted that clinicians are ordering in line with clinical recommendations as a result of the behaviour change strategies implemented. In addition, clinical costing was undertaken to determine the potential savings derived from reducing the volume of unnecessary tests. Using coagulation studies as an example, reducing unnecessary ordering of the group of test resulted in potential historic savings of $190,000.

WHAT IS CHOOSING WISELY?

Choosing Wisely is a global initiative that seeks to improve the safety and quality of healthcare. This initiative is encouraging health professionals and consumers to question the necessity of tests, treatments and procedures where evidence shows they provide no benefit or, in some cases, lead to harm. The key to addressing low value care in Australia's health care system is reducing unnecessary tests, treatment and procedures.[1]

Choosing Wisely was launched globally in 2012 and Choosing Wisely Australia was launched in 2015. While the ultimate aim of Choosing Wisely is to reduce wasteful care, the immediate goal is to encourage the conversations about what care is truly necessary and to challenge the 'more is better' notion.[2]

Choosing Wisely is governed by the following principles:[3]

- Health profession-led
- Improves quality of care

- Patient-focused
- Evidence-based
- Multidisciplinary
- Transparency.

Choosing Wisely Australia is informed by an international working group framework with four key objectives:[4]

- Change clinician attitudes to practice
- Foster consumer engagement and acceptance
- Change key clinical practices
- Promote alignment with the healthcare system.

THE CHOOSING WISELY SCALING COLLABORATION

The Better Care Victoria Innovation Fund will be supporting 11 health services to participate in a scaling collaboration where the aim is to increase the number of Choosing Wisely Champions Health Services across Victoria that supports health professionals in delivering safe, effective and efficient care for patients.

WHO IS NPS MEDICINEWISE?

NPS MedicineWise is an independent, not-for-profit and evidence-based organisation that works to improve the way health technologies, medicines and medical tests are prescribed and used. Established in 1998 with the primary aim of promoting quality use of medicines, today NPS MedicineWise has grown to connect with health consumers and health professionals nation-wide, changing attitudes and behaviours, and empowering all Australians to make the best possible healthcare decisions when they count.

NPS MedicineWise connects and delivers meaningful information for health consumers, health professionals, government, research and other businesses to enable the best decisions about medicines, health technologies and other health choices for better health and economic outcomes. Evidence-based information is transformed into behaviour change services, digital health and data insights and knowledge transfer products.

Behaviour change methodology is applied to the development and implementation of all NPS MedicineWise therapeutic programs and health consumer campaigns, as well as our commissioned work. Achieving demonstrable positive impact is intrinsic to the design of all NPS work.

BEHAVIOUR CHANGE GUIDE

ABOUT THE GUIDE

What is this guide?

Recently, your health service was selected to use innovative design approaches to introduce change in your hospital. The Collaboration will support your team to identify key areas of focus, define the roles involved in creating change, and choose relevant activities to roll out.

This toolkit serves as an additional resource to the small and large group workshops you will attend. The purpose of this toolkit is to provide a background on behaviour change, considering where problems arise and evidence-based interventions used to meaningfully influence behaviour.

This resource is not intended to be comprehensive review of all behaviour change interventions; it is to be used as a brief introduction to these ideas and concepts with citations of suggested readings to direct you to further reading.

How do I use this guide?

This toolkit is separated into three key sections:

1. Problem definition – how to break down a problem into key elements using three example models.
2. Behaviour change solutions – examples of some key interventions.
3. Implementation framework – supporting structure for documenting and communicating your change activities.

Section 1 is relevant for the half-day small group meeting you attended with your health service change team. During this meeting you will have discussed the problem areas relevant to your hospital, agreed on which specific areas you will focus on, identified the roles involved, and exactly what they need to do differently.

Sections 2 and *3* will be used in the following large group meeting to design and gain feedback from both consumers and your peers.

Before the large group meeting, this guide will enable you to:

1. further reflect on your problem definition considering three example models.
2. begin to think about what interventions you might utilise, and what you need to consider in developing these.
3. read about examples of where others have gone through this journey before you.
4. reflect on the questions provided to deepen your thinking.

WHAT IS BEHAVIOUR CHANGE?

The science of behaviour change is important for improving healthcare performance, system efficiencies and ultimately health outcomes. Behaviour change interventions directed at either health professionals or consumers help to improve the implementation of evidence-based medicine and public health.[5] This area is known by a range of terms (e.g. implementation science, quality improvement, knowledge translation) and while each of these discrete areas may highlight different components of change, all are focused on positively influencing clinician and consumer behaviour.

While we have a colloquial understanding of the term 'behaviour change', this area is more formally defined by Michie et al., as *'coordinated sets of activities designed to change specified behaviour patterns'*.[6] In reflecting on this definition, key terms include:

- *'coordinated'*. This denotes that activities need to be properly introduced or synchronised in an appropriate order to ensure efficiency.
- *'sets of activities*'. This recognises that no single approach will be the right one. Generally, several different activities are required.
- *'specified behaviour patterns*'. Behaviour is not always rational, but it does generally have patterns. These might be at an individual level, across roles, teams or even systematically.
- *'designed to change*'. There are a range of interventions that can be utilised. However, these are not blunt tools. Specific consideration needs to be given to the change desired and how this will be influenced by an activity.

The interesting thing is that much of the evidence relating to human behaviour does not come from medicine, but the domains of psychology (health, social, organisational), management, marketing and adult education. Behaviour change is therefore a naturally multidisciplinary science that draws from theories and techniques from these areas, along with clinical evidence to inform best practice care.

How has behaviour change science evolved over time?

During the 1990s and early 2000s the Institute of Medicine heavily influenced the way the healthcare system views quality through their seminal works, such as *'To err is human'*, and *'Crossing the quality chasm'*.[7,8] These reports outlined the barriers in the health system to meaningful uptake of evidence and processes to support quality in healthcare.

Simultaneously, work by Richard Grol in the Netherlands, the Medical Research Council in the UK and the establishment of the Effective Practice and Organisation of Care (EPOC) Cochrane Collaboration review group[1] in 1994 further supported critical examination of mechanisms to support clinicians in implementing evidence in practice.

Initial work in this period focused predominantly on medical education (e.g. the effectiveness of clinical meetings), but over time began to focus on broader activities to support or otherwise influence (e.g. audit and feedback, decision support). Many of these early reviews saw change rather 'mechanistically', assuming that interventions to influence behaviour were equally relevant to each problem, and therefore their effectiveness could be compared.

Over the mid-2000s and into today the field became more interdisciplinary with fields such as health, social and organisational psychology, human factors engineering, education and policy

[1] http://epoc.cochrane.org/

becoming increasingly involved in research efforts. This has led to a richer understanding of influencing clinician behaviour.

Now research in this field increasingly focuses on understanding the behaviours and components of the problem, using theory to inform intervention development, and understanding exactly how specific interventions work (and consequently how these can be optimised).

PROBLEM DEFINITION

Why is adequately defining the problem important?

Defining the problem is crucial first step in creating change. Often in healthcare we fall foul to the assumption that humans and human driven systems (e.g. hospitals) are always rational and predictable, which of course, is not the case. For example, we sometimes expect that individual clinicians and teams will alter their care patterns as a result of simple communication about a clinical problem. This assumes a lack of awareness or knowledge, which may or may not be the case.

It is important to not confuse the clinical problem (what outcome are we trying to achieve?) with the behavioural problem (why is the behaviour that causes the evidence-practice gap happening?). The latter question is focused on the moving parts of the system: the various people and structures involved and the role these have in reinforcing the status quo. This is important to understand, as it gives us clues to how we can influence these elements to bring about change.

Additionally, considering a problem from a range of perspectives will help you to better understand the problem you are facing, why it occurs and, ultimately, help to find a solution that is both appropriate and effective at delivering your desired outcome.

By defining the problem, you will be able to:

- understand the broader environment in which this problem exists — what will help you, what will hinder you
- identify things you can leverage or take advantage of — previous programs/campaigns or potential partnerships
- scope the people, their beliefs, skills and assumptions – what are the emotional and attitudinal drivers that influence what they do (or don't do).

Four important perspectives

There is no single way to break down a problem and examine its constituent parts, due to the dizzying number of mechanisms, information, people and processes involved in health care. There are however, a range of models that describe elements such as individual motivation, organisational structures, quality drivers, behavioural barriers amongst others.

Here are several validated behaviour change models and frameworks that have been developed to help better understand behaviour and assist in designing effective interventions. For the purposes of this resource, we have focused on a handful of these frameworks/models that you can use when defining the problem and designing the appropriate intervention for your health service.

The four perspectives to consider in your problem definition are:

1. **systems**, through the Ferlie and Shortell quality improvement framework[9]
2. **behavioural drivers**, through the Michie theoretical domains framework[5,10]
3. **motivation**, through the Proschaska and Diclemente transtheoretical model[11]
4. **pre-requisites to implementation**, through the Glasziou evidence to practice pipeline.[12]

1. Systems Perspective

Quality Improvement Framework

Ewan Ferlie and Stephen Shortell examined the keys components in the US and UK systems to understand what is needed to improve quality in healthcare at a national level.[9] Through this examination they articulated a quality improvement framework that described how the various levels of healthcare influence the ability to engender quality.

Their quality improvement framework emphasises the importance of a multilevel approach to drive quality improvement. They argue that only by looking at implementation across clinical and policy areas will you succeed in growing quality healthcare.

This framework suggests that a multilevel approach is adopted through four levels (**Error! R eference source not found.**): the individual, the group or team, the overall organisation and the larger system or organisation in which the individual is embedded.[7]

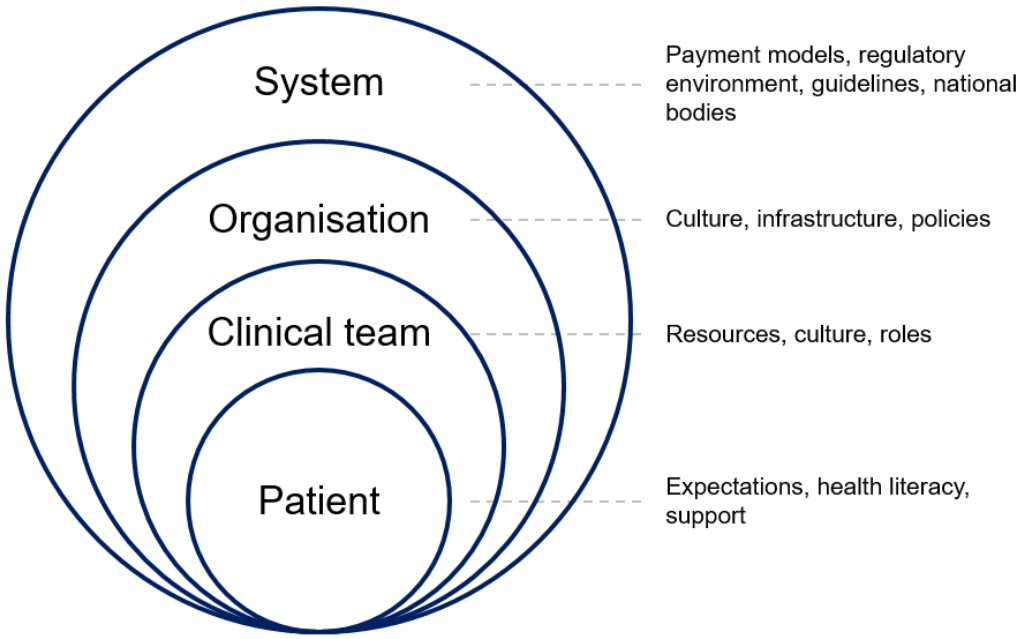


Figure 1. The four levels of change of improving quality

Levels in action – the RACGP quality framework

An example of how the Ferlie and Shortell model can be applied to good effect is the Royal Australian College of General Practitioners (RACGP) Quality framework for Australian general practice.[13] While the framework is specific for general practice, the concrete examples illustrate how the principles can be applied to care provided in a tertiary setting

A copy of the RACGP quality framework can be seen in Appendix A.

The RACGP framed the various levels against six 'domains' of quality, which were identified as six lenses that each layer of the healthcare system could be viewed through. Whilst this is a general practice framework, the domains provide another way to consider what is going on in your health service. The six domains are:

- *Capacity* – at each level, do I have the essential staff and services available to drive high quality care?
- *Competence* – at each level, are people appropriately skilled to deliver high quality care?
- *Financing* – at each level, is there appropriate funding streams or mechanisms to support high quality care?
- *Knowledge and information management* – at each level, is the knowledge and information available to support high quality care?
- *Patient focus* – at each level, is there a focus on the needs and wants of patients?
- *Professionalism* – at each level, do we support the values of the profession?

What does this mean for you?

- In which levels of the system does your problem exist? Why?
- Are there any barriers at any level that restrict your ability to create change?
- Are there any other programs or levers in the broader environment that you can use to your advantage?
- Think about each of these questions through the RACGP domains of finance, knowledge and information management, competence, capability, patient focus and professionalism.

2. Behavioural Drivers Perspective

Theoretical domains framework

The theoretical domains framework (TDF) was developed by Susan Michie and a range of prominent health psychologists in 2005[10] (and later validated in 2012[5]). The purpose of this model was to make sense of the hundreds of psychological theories relevant to influencing behaviour, with the intent of constructing a model more accessible to those in the medical sciences. Michie et al posited that this range of psychological theories could be distilled into a set of discrete domains that can be used to guide behaviour change.

Table 1 outlines each of the theoretical domains, with a description that relates to each one.

Whilst 14 domains (barriers) may feel cumbersome, this model is useful in breaking down commonly cited issues (e.g. I am time poor), into the behavioural drivers that may underpin this. For example, ‘I don’t have time’ upon further examination might mean:

Issue	Domain (barrier)
I do not see this as a high value activity and so do not want to devote time	Beliefs about consequences
I do not feel confident/ have knowledge and I have minimal time to upskill	Knowledge Beliefs about capabilities
I don't see it as my role so will not devote valuable time to it	Social/professional role and identity
I don't have enough staff/ the process of my unit stops me from doing it	Environmental context and resources

The TDF is a useful tool, both as a conceptual map (i.e. how do I think each of these elements might affect my problem area?), and as a practical tool to seek information from end users using the theoretical domains inventory. Example questions that may assist in eliciting information are outlined in Table 1. Using this tool to interview members of your team may shed some light as to some of the driving domains.

What does this mean for you?

- Think about what you anecdotally know about the problem while you look through the list of domains. Which domains do you think relate to your problem? Why?
- Do you think the drivers are the same for each type of role within the clinical team? What are the differences?
- If you are unsure, think about how you might find out. Who would you talk to?

Table 1. List of validated theoretical domains

	Domain (barrier)	Description*	Relevant questions
1	Knowledge *Do I know what I should do?*	An awareness of the existence of something	Do they know about the evidence/ recommendation? What do they think the evidence/ recommendation says? Do they know why they should be doing x?
2	Skills *Can I perform the task?*	An ability or proficiency acquired through practice	Do they know how to do x? How easy/difficult is performing x to the required standard in the required context?
3	Social/Professional Role and Identity *Do I think it is my job to do it?*	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting	Do they think guidelines should determine their behaviour? Is doing x compatible or in conflict with professional standards/identity? (prompts: moral issues, limits to autonomy) Would this be true for all professional groups involved?
4	Beliefs about Capabilities *Do I think it is important?*	Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation	How difficult or easy is it for them to do (and maintain) x? What problems have they encountered? How confident are they that they can do x despite the difficulties? How well equipped/comfortable do they feel to do x?
5	Optimism *When I do this, the outcome will be positive.*	The confidence that things will happen for the best or that desired goals will be attained	
6	Beliefs about consequences *Do I believe that this is a good/ meaningful thing to do?*	Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation	What do they think will happen if they do x? (prompt re themselves, patients, colleagues, organisation; positive/negative, short and long term) What do they think will happen if they do not do x? Do benefits of doing x outweigh the costs? Does the evidence suggest that doing x is a good thing?
7	Reinforcement *Am I encouraged to do it?*	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus	

	Domain (barrier)	Description*	Relevant questions
8	Intentions *Do I intend to do it?*	A conscious decision to perform a behaviour or a resolve to act in a certain way	
9	Goals *Do I have an idea of what success looks like?*	Mental representations of outcomes or end states that an individual wants to achieve	How much do they want to/ feel they need to do x? Are there other things they want to do/achieve that might interfere with x? Does the guideline conflict with others? Are there incentives to do x?
10	Memory, Attention and Decision Processes *Can I remember to do the task at the right time?*	The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives	Is x something they usually do? How much attention will they have to pay to do x? Will they remember to do x? How? Might they decide not to do x? Why? (prompt: competing tasks, time constraints)
11	Environmental Context and Resources *Does my environment support me doing it?*	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behaviour	To what extent do physical or resource factors facilitate or hinder x? Are there competing tasks and time constraints? Are the necessary resources available to those expected to undertake x?
12	Social influences *Am I socially influenced to (not) do it?*	Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours	To what extent do social influences facilitate or hinder x? (prompts: peers, managers, other professional groups, patients, relatives) Will they observe others doing x (i.e. have role models)?
13	Emotion *Do I have an emotional response to it?*	A complex reaction pattern, involving experiential, behavioural, and physiological elements, by which the individual attempts to deal with a personally significant matter or event	Does doing x evoke an emotional response? If so, what? To what extent do emotional factors facilitate or hinder x? How does emotion affect x?
13	Behavioural regulation *Do I plan to do it?*	Anything aimed at managing or changing objectively observed or measured actions	

* Descriptions are based on definitions from the American Psychological Associations' Dictionary of Psychology.

3. Motivation perspective

Transtheoretical model (Stages of change)

The transtheoretical model or 'stages of change' model is a popular concept in health promotion and behaviour change. The model was developed and published by James Prochaska and Carlo DiClemente in 1983. The cyclic representation of behaviour change is commonly used by health professionals and researchers to tailor interventions to each stage of change.[14] You may be familiar with this model due to its popularity, particularly in relation to smoking cessation.

The model (Figure) has five stages:

- *Precontemplation* – people in this stage are not thinking seriously about changing, or may not even be aware there is a problem, particularly if there are no direct adverse consequences.
- *Contemplation* – people in this stage are able to weigh up the positives and negatives of making a change, but may still feel ambivalent about actually changing.
- *Preparation* – people in this stage have decided to change, and may take some small steps towards changing behaviour. They believe that change is necessary and that the time for change is imminent.
- *Action* – people in this stage are actively involved in taking steps to change their using behaviour. Despite acting on the change, they may still be ambivalent. People at this stage may try several different techniques and are also at greatest risk of relapse.
- *Maintenance* – people at this stage have learned to operate in a new way. They may slip into older behaviours temporarily (relapse) but can self-correct.

Beyond the five stages, the notion of relapse into old behaviours is also inherent. The notion that people will slip into older behaviours (e.g. ordering an image 'just to make sure') is considered the rule and not the exception. Ensuring that relapse is not punished and that preferred behaviours are encouraged is central to the stages of change model.

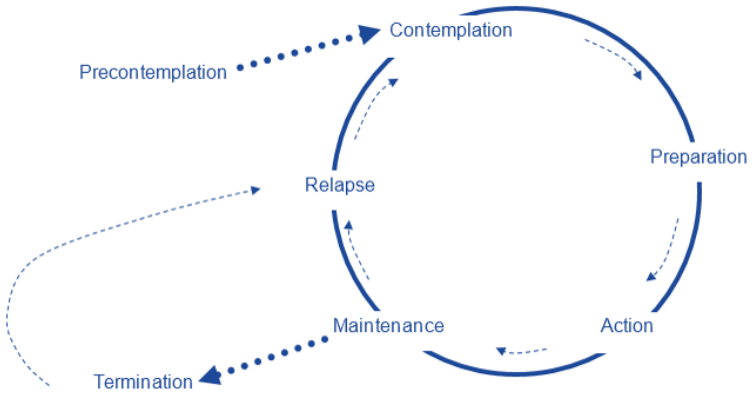


Figure 2. The transtheoretical (stages of change) model is a cyclical model that be entered and exited at multiple points

What does this mean for you?

- Think about each clinical role within your team. Can you identify where you think members of the team might be in the stages of change?
- Can you see why people have been motivated to action? Or why they have perhaps relapsed?

4. Pre-requisites to implementation perspective

Evidence to practice pipeline

The evidence to practice pipeline (Figure 3) was developed by Paul Glasziou, an Australian researcher, based on a two-part process of firstly how evidence is synthesised and summarised (the triangle), and how this evidence is received by health professionals and consumers (the pipeline). This model considers both the components involved in this implementation, but also purports that there is 'leakage' from the pipe, i.e. people 'drop off' at each step due to the barriers and inertia inherent in the system.

The interesting element about this model is that the behaviours outlined through the pipe relate not to clinical guidance, but the messiness of human and/or system behaviours that can block or enable good implementation.

Glasziou suggests that it is particularly important to consider each of these elements because even when you assume a high level of participants moving through each stage (e.g. 80%), that the final outcome may be low ($0.8^7 = 0.21$, or 21%).[12]

This model is another perspective on how to view our health problems to understand where the barriers to change might be.

The evidence to practice pipeline moves through seven key steps:

1. *Awareness* – are users aware of the guidance or evidence?
2. *Acceptance* – do users accept the guidance or evidence as useful and/or important? What else plays into this acceptance (e.g. peer influence, marketing etc.)?
3. *Applicable* – can users apply the guidance to their practice? How is this applicable? Is the guidance and factors clear enough to easily apply it?
4. *Available and able* – do users have the access to services and the skills to carry out the guidance?
5. *Act on* – are users supported to act on the guidance? Do they remember to do it?
6. *Agree to* – does the patient agree to the proposed action? Do they agree to participate?
7. *Adhere to* – does the patient adhere to, or participate in the guidance?

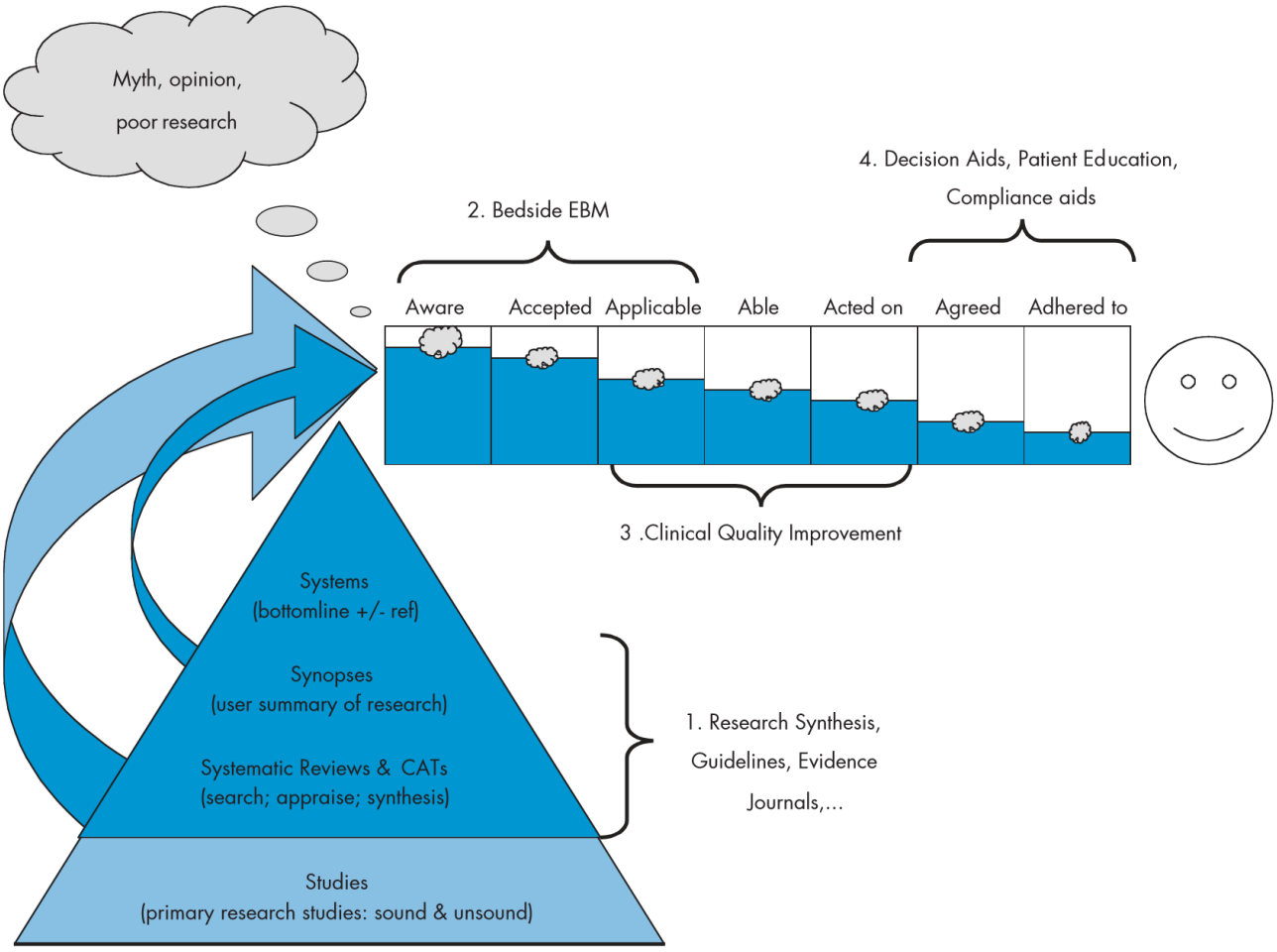


Figure 3. Evidence-to-practice pipeline (Reproduced with permission from Glasziou P and Haynes B. *Evidence-Based Nursing* 2005; 8: 36–38)

What does this mean for you?

- Do you think your problem has moved through each step in the pipeline?
- Where do you think the biggest drop off is? Is this the same for all roles of the team?

Case study: Coagulation Studies at Austin Health

What was the clinical problem?

- High volume of coagulation studies ordered across the hospital as defined by 12 months of data evaluated which was benchmarked against coagulation study volumes from three other hospitals in Victoria
- Anecdotal evidence from ED clinicians that coagulation orders were being ordered routinely and not in line with current Choosing Wisely Recommendations

What were the barriers to change?

- The way coagulation studies could be ordered:
- Coagulation studies were a group of four separate tests (INR, APTT, PT and Fibrinogen). This facilitated the ordering of four tests when only one may have been needed eg. INR in Warfarin management
- Coagulation Studies group on the list of commonly ordered tests which was visible to the ordering user upon opening the electronic ordering system
- No formal documentation, ie. Policy document, to guide clinicians on the appropriate indications for ordering coagulation studies as a group compared to the individual tests within the group

How did you find out?

- Exploration of the process required to order the test and mapping out the steps
- First-hand experience of prescribing clinicians and observations from clinical areas

Methods for testing your questions

Now you have used a few different models to think through your problem, you need to test some of the assumptions and questions that you have arrived at. We all come to these problems with a set of assumptions, and it is important to test these with a range of different roles/personalities in your health service. This can be done in very formal and structured ways or in less formal ways, depending on your and others' available time.

Consider the types of methods below:

Methods	Tips to consider
Interviews	Interviews can be done very formally, or more as corridor conversations. Interviews cover off on many elements: testing assumptions, getting buy-in, getting suggestions for interventions, promotion in signalling upcoming. Look at the questions in the TDF for tips as to how you might explore different barriers.
Process mapping	Process mapping may not be necessary if you have relevant protocols. If you don't have protocols, walk through the process and identify the key steps. You could do this in a group, or solo.
Observation	Particularly if you are a non-clinical role, get out on to the floor and observe elements of the problem you want to work on. Observation can be across a whole chain of the service (what happens from begging to end), or smaller components (how do people order X). Don't assume because a protocol dictates something that people actually do it. Watch them and you will identify the short cuts that people naturally take.
Co-design	This is the more involved area of methodology. Co-design is a formal process, but you can take the flavour of it into a range of activities. Co-design is the process of working with end-users to solve a problem. This can be used to test barriers by co-designing a list of barriers/ enablers to your problem.

BEHAVIOUR CHANGE SOLUTIONS

Why is this important?

Once you have identified why a problem exists, including the behaviours and attitudes that drive it, your health service will be in a good position to choose meaningful interventions to address the issue. Hopefully, in using the four different models to examine your problem you can see that understanding what health professionals and consumers are being asked to change as well as the barriers to this behaviour change is crucial.

These insights will provide a foundation for considering what might be effective in selecting an intervention, communication or other activity. See

Figure **1** below for a simple example of how you might use the information you have to choose an activity.

For example, if the issue was a belief that an individual's performance was already of a high standard (e.g. I don't do that many bloods), then further education about the need to reduce bloods taken would be of little impact. However, an audit and feedback to show that performance was not at the required level would be more likely to create change.

Barrier is . . .	Consider . . .
Lack of knowledge	Education session Decision aids
Perception / reality mismatch	Audit and feedback Reminders
Lack of motivation	Incentives / sanctions
Beliefs / attitudes	Peer influence Opinion leaders
Systems of care	Process redesign

Figure 1. Example of how to match barriers with interventions.[15]

How do you match the problem to the intervention?

The Effective Practice and Organisation of Care (EPOC) taxonomy of health systems interventions can be used to classify health systems interventions into categories based on certain similarities such as conceptual or practical.[16] The taxonomy can be used to prompt ideas for different types of interventions/ activities for your health service.

The taxonomy has since been revised and updated, and has identified four main domains. The four main domains are:[16]

1. **Delivery arrangements** — changes in how, when and where healthcare is organised and delivered, and who delivers the care

2. **Financial arrangements** — changes in how funds are collected, insurance schemes, how services are bought, and the use of targeted financial incentives or disincentives
3. **Governance arrangements** — rules or processes that affect the way in which powers are exercised, particularly with regards to authority, accountability, openness, participation and coherence
4. **Implementation strategies** — interventions designed to bring about changes in health care organisation, the behaviour of healthcare professionals

These main domains include several categories and subcategories that overlap, and some interventions can be classified in more than one category.[17] The full EPOC taxonomy can be found at: https://epoc.cochrane.org/epoc-taxonomy

Below we have selected four interventions that are commonly used in healthcare to great effect.

This section provides information, such as:

- Description of the intervention.
- Considerations when designing the intervention (audience, delivery etc.).
- An example of how this intervention has been used in another health service.

While these examples relate to four specific interventions, the general concepts would remain true when selecting other activities for your local health service.

Intervention 1 – Audit and Feedback

What is audit and feedback?

Audit and feedback involves providing the receiver with a summary of their performance over a specified period. Audit and feedback interventions are commonly used to promote the implementation of evidence-based practices in health care.[18]

Whilst a commonly recognised intervention, the median absolute change when applying audit is 4.3%, with an interquartile range of 0.5 to 16%.[19] This suggests that the mechanisms of audit and feedback need to be carefully considered to increase the likelihood of impact.

There are commonly understood components to audit and feedback processes (Figure 2). An audit and feedback process is often described as a cycle of: establishing standards against evidence, collecting and analysing data, identifying areas for change, providing time to implement change, and ongoing monitoring through further data collection.

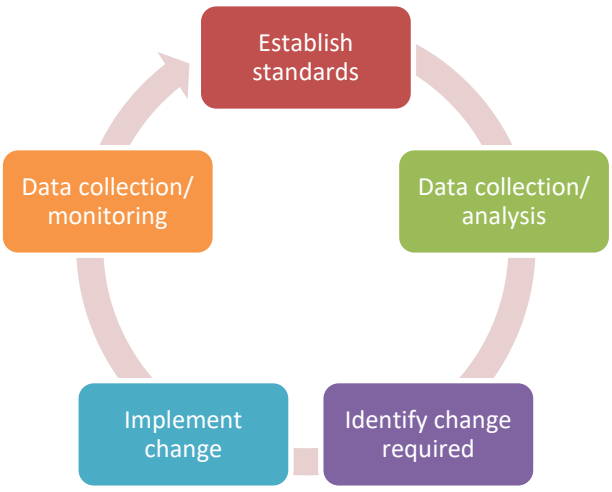


Figure 2. Example of a common audit and feedback loop

Should I choose an audit and feedback activity?

When designing audit and feedback, the two key decisions that you need to make are:

1. is audit and feedback likely to address the issue? and
2. who is in control of the change?

The benefit of audit and feedback is that it can provide objective data regarding discrepancies between current practice and target performance, along with social comparisons to peer performance. For those who are underperforming, this can provide motivation to act assuming that the change is within the control of the person participating in the audit. For example, it may be difficult to change the test ordering patterns of junior doctors, if these tests are requested by their consultants. In this instance, a peer influence activity focused on the consultant may be more effective.

Another consideration is whether there is a clear and agreed standard of behaviour, as this will drive the motivation to change. If:

- there is no agreed standard (e.g. we don't know what the baseline should be) it can be difficult to get participants to value changing behaviour.
- the standard or baseline is too aggressive (e.g. reduce testing to 2% from 50%) participants may view the task as unreasonable or impossible.
- there is an unclear standard with variable performance (e.g. opioid prescribing is low with some providers, and higher in other providers) it can have the unintended outcome of pushing participants to the mean.

WHEN IS AUDIT AND FEEDBACK A SUITABLE CANDIDATE FOR YOUR PROGRAM?

- If the problem relates to clinicians overestimating their performance (or underestimating the problem)
- If there is a clear standard or baseline that you would like to achieve
- The participants receiving the feedback are in the position to create change

What are some of the things to think about when designing an audit and feedback?

Signals from recent research suggest that there are a range of factors that may increase the impact of audit and feedback activities. These are succinctly summarised into fifteen suggestions for optimising effectiveness as suggested by Brehaut et al. (Table 2).[20] This list nicely exemplifies the other components that are not commonly described by audit and feedback process diagrams, such as participant learning styles (e.g. multi model presentation), actionability of recommendations and data face validity/ acceptability (e.g. comparisons).

Table 2. Suggested mechanisms to optimise audit and feedback design.[20]

Suggestion for Designers of Practice Feedback	Examples of Implementation Strategy
Nature of the desired action	
1. Recommend actions that are consistent with established goals and priorities	Consider feedback interventions that are consistent with existing priorities, investigate perceived need and salience of actions before providing feedback
2. Recommend actions that can improve and are under the recipient's control	Measure baseline performance before providing feedback, establish that the action is under the recipient's control
3. Recommend specific actions	Include functionality for corrective actions along with feedback, require recipient-generated if–then plans to overcome barriers to target action
Nature of the data available for feedback	
4. Provide multiple instances of feedback	Replace one-off feedback with regular feedback
5. Provide feedback as soon as possible and at a frequency informed by the number of new patient cases	Increase frequency/decrease interval of feedback for outcomes with many patient cases
6. Provide individual rather than general data	Provide practitioner-specific rather than hospital-specific data
7. Choose comparators that reinforce desired behavior change	Choose 1 comparator rather than several
Feedback display	
8. Closely link the visual display and summary message	Put summary message in close proximity to the graphical or numerical data supporting it
9. Provide feedback in more than 1 way	Present key messages textually and numerically, provide graphic elements that mirror key recommendations
10. Minimize extraneous cognitive load for feedback recipients	Eliminate unnecessary 3-dimensional graphical elements, increase white space, clarify instructions, target fewer outcomes
Delivering the feedback intervention	
11. Address barriers to feedback use	Assess barriers before feedback provision, incorporate feedback into care pathway rather than providing it outside of care
12. Provide short, actionable messages followed by optional detail	Put key messages/variables on front page, make additional detail available for users to explore
13. Address credibility of the information	Ensure that feedback comes from a trusted local champion or colleague rather than the research team, increase transparency of data sources, disclose conflicts of interest
14. Prevent defensive reactions to feedback	Guide reflection, include positive messaging along with negative, conduct "feedforward" discussions
15. Construct feedback through social interaction	Encourage self-assessment around target behaviors before receiving feedback, allow user to respond to feedback, engage in dialogue with peers as feedback is provided, engage in facilitated conversations/coaching about the feedback

Intervention 2 – Educational outreach

What is educational outreach?

Educational outreach refers to the use of a trained facilitator who meets with clinical or practice teams in their setting of care. The purpose of these visits may be multi-factorial and include feedback on practice, fictional case-based discussions, knowledge (e.g. guideline updates, clinical evidence summary), team or action planning, or other elements to address barriers to best practice care.

This type of face-to-face visit is also called academic detailing and educational visiting. The intervention may be tailored based upon previously identified barriers to change or combined with other interventions, including reminders or interventions targeted directly at patients, such as recall clinics.

Facilitators of educational outreach are often external to the organisation receiving the feedback. However, this is not a pre-requisite.

Along with audit and feedback, educational outreach is the most well researched intervention in healthcare settings with an absolute effect of 4.8% improvement (prescribing; IQR 3.0 to 6.5%) or 6.0% (non-prescribing; IQR 3.6 to 16%) on practice.[21]

Should I choose an educational outreach activity?

In considering your program, two key questions to ask is:

- Are the barriers that I have identified knowledge gaps or
- Are they other barriers that are best addressed socially, for example in a group discussion?

The benefit of educational outreach is that it is an open forum, flexible enough to enable tailored discussion for the participants involved. By identifying barriers when defining your problem, you can design materials and the meeting outline to address these common problems (e.g. knowledge, beliefs about consequences), and tailor the conversation with participants to their learning style and speed.

Another factor in choosing educational outreach is who will facilitate the conversation. It is best to use a non-judgemental and independent facilitator.

WHEN IS EDUCATIONAL OUTREACH A SUITABLE CANDIDATE FOR YOUR PROGRAM?

- Members of the team do not believe the problem is important
- The team lacks knowledge on the topic
- The team lacks relevant skills (e.g. procedural, communication)
- The problem cuts across members of the team, and they need to develop a shared understanding of how to address the problem.

What are some of the things to think about when designing an educational outreach activity?

Like audit and feedback, educational outreach design needs to be considered in light of best practice recommendations to ensure a consistent effect. The design for an educational outreach meeting needs to reflect the barriers identified and the facilitation needs to reflect key methods for generating buy in with audiences. The table below provides an example to match barriers to meeting strategies.

Barrier	Consider techniques such as
Members of the team do not believe the problem is important	Persuasive peer level communication from a credible source (e.g. emphasise positive behaviour, frame negative behaviour as undesirable). Use of data to clearly elucidate the size of the clinical problem. Comparative imagining of future outcomes (e.g. model consequences if test ordering keeps increasing at current rate).
The team lacks knowledge on the topic	Re-attribution by eliciting perceived cause from participants and clarify real causes of issue. Clinical updates.
The team lacks relevant skills (e.g. procedural, communication)	Demonstrate the behaviour (e.g. role-play, scripts, indirectly through graphics). Rehearsal with participants practicing the skills.
The problem cuts across members of the team, and they need to develop a shared understanding of how to address the problem.	Action planning and/or goal setting with the team. Consider plan that includes context, frequency, duration and intensity (e.g. I will not order test X in any patient under 60 for the next three months). Team members sign a behavioural contract, which specifies their commitment to the change.

Intervention 3 – Clinical decision support

What is clinical decision support?

Clinical decision support can take a myriad of forms including, but not limited to:

- Alerts, prompts and reminders
- Use of electronic medication or test ordering (i.e. computerised physician order entry, order sets)
- Electronic decision support systems
- Sharing of patient information across settings (i.e. health information exchange)
- Administrative or system changes (e.g. changes to order sets or formularies at a setting level)

The evidence to support each of these interventions is varied, and like with much implementation literature the heterogeneity of the examples research restricts a clear understanding of each options' effectiveness.

For example, in a meta-analysis of two studies exploring the effectiveness of alerts (e.g. patient-specific letter, electronic reminder message) there was an improvement in bone mineral density testing rates (risk ratio 4.75, 95% confidence interval [CI] 3.62 to 6.24; 3047 participants) and osteoporosis medicine prescribing rates (risk ratio 1.52, 95% CI 1.26 to 1.84; 3047 participants).[22]

However, the certainty of evidence was downgraded because only two studies were included, due to the relatively low number of patients and events in one review, and also due to the considerable statistical heterogeneity observed.

In a more general meta-analysis, relating to the general effectiveness of on-screen, point of care computer reminders, the result of change on clinical endpoints showed a median absolute improvement of 2.5% (IQR 1.3 to 4.2%).[23]

Should I choose clinical decision support?

As noted above, it is difficult to say with certainty the effectiveness of various clinical decision support strategies. The likelihood of impact should be considered based on the context of the issue to be addressed, the current workflow and systems in place, and the culture of your local health service.

If we take those three elements and examine them further, using one to two examples:

Element	Questions to consider	Program considerations
Context of the issue to be addressed	Is the change you would like to achieve broad scale, or relevant to specific patient groups?	Broad scale changes may benefit more from administrative changes (e.g. order sets change), whereas if the change is more specific prompts may be beneficial.
	Which roles will be responsible for the change?	If the change is instigated by a role that does not commonly use technology, there will be minimal impact.
Current workflow and systems in place	Is it easy to make changes to your medical records system?	If there is a long development timeline, consider this against the likelihood of impact.
	When in the workflow does the behaviour occur?	The decision support needs to be present at the time the change is required (e.g. if the order occurs during a conversation with a nurse, the opportunity to change needs to be present).
Culture of your local health service	Are there a lot of prompts and reminders in place already?	The level of reminders may cause 'prompt fatigue', which may result in clinicians ignoring reminders and messages.
	Have previous changes to clinical decision support been well received?	Consider your activity in light of previous experiences.

WHEN IS CLINICAL DECISION SUPPORT A CANDIDATE FOR YOUR PROGRAM?

- If clinical decision support can be integrated into current workflow and systems
- If clinical decision support does not create 'prompt fatigue' within the health service
- If the culture of your health service is receptive to clinical decision support

Intervention 4 – Patient mediated interventions

What is patient mediated interventions?

Patient mediated interventions are those activities or tools that are used to engage patients in acquiring knowledge or decision making. They can loosely be considered to work to *inform* patients, *activate* patients or *collaborate* with patients. They include a range of options such as interventions that are delivered immediately before (e.g. question prompt lists), during (e.g. summaries, decision aids) or upon conclusion (e.g. self-monitoring guides or templates, summaries) of the consultation.[24]

Patient mediated interventions can be printed or offered via web, mobile or other digital means.

While some patient mediated interventions are relatively general (e.g. fact sheet), other interventions such as decision aids, or shared decision-making tools have specific design and application. For example, decision aids are tools designed to help patients make specific and deliberate choices among healthcare options. They provide information on the available options and help patients clarify and communicate the personal value they associate with different features. They are most helpful when a range of options are more or less equal.

Should I choose a patient mediated intervention?

In considering your program, two key questions to ask are:

- What is the nature of my problem and how much consumer engagement is required?
- Is there the opportunity for meaningful consumer education, activation or collaboration?

It is important to remember that all healthcare processes impact on consumers at some point. However, there are a range of issues that may not require active involvement of consumers in the decision making process. For example, removing one test from a set of tests may not require in depth consumer engagement. However, opting to not provide a test that is anticipated will require conversation and engagement.

Consider what opportunities there are for education of patients, activation, or collaboration. Examples are outlined in Table 3 below.

What are some of the things to think about when designing a patient mediated intervention?

The first element in designing consumer interventions is to incorporate the consumer early and often in the process. Consumer engagement will give you important information, such as how much they care about the problem, what level they would like information pitched at, and how they would like to receive it.

WHEN ARE PATIENT MEDIATED INTERVENTIONS A SUITABLE CANDIDATE FOR YOUR PROGRAM?

- Consumers anticipate a specific outcome (e.g. I will need a scan for my back).
- There are a number of relatively equal options to choose between.
- There is low health literacy in the area, or the patient is newly diagnosed.
- Good health outcomes require the patient to adhere to an ongoing treatment.

In considering how to design a patient mediated intervention for your program, choose an intervention type based on the problem and how central it is to patient preferences (e.g. high priority, low priority), consider the patient flow through the health service (as it relates to your problem area). Think about where both the health professionals and the patients have available time (e.g. together, separately), and this will give you an indication as to where, how and with whom the intervention could be delivered.

Some additional design characteristics and examples of interventions are outlined in the table below.

Table 3. Characteristics of patient-mediated knowledge translation (PKT).[24]

Type of engagement	Type of support	Examples
Inform Text based information that provides patients with knowledge about their condition and an understanding of how to manage it	Condition and treatment	Information and evidence about the condition, prognosis, what to expect and its management
	Activities of daily living	Information and advice on how to undertake generic activities such as hygiene, dressing, preparing meals and transportation
	Lifestyle advice	Information and guidance on lifestyle behaviours that support disease management
Activate Text based prompts or tools to prompt action for actively managing the condition and enhancing quality of life	Decision aids	Informational resources that help people consider the benefits and harms of treatment options
	Lifestyle monitoring	Reminders, diaries or other prompts to support adherence to medication or recommend lifestyle behaviours
	Action plans for condition	Guidance specific to medical condition, providing signs of worsening condition, how to self-adjust treatment and response if deterioration continues
	Physiological monitoring	Self-evaluation tools to log and monitor physiological measures for personal assessment and to share with clinicians
	Psychological strategies	Mechanisms for problem-solving, goal-setting, reframing and relaxation
Collaborate Text-based links, prompts or tools that lead to interaction and engagement	Communication with providers	Guidance and prompts to facilitate communication with health care professionals
	Available resources	Links to or contact details for organizations that offer information, psycho-social support or financial aid
	Social support	Links to or contact details for organizations that offer support, mentoring or socializing

Case study: Coagulation Studies at Austin Health

What intervention was developed?

Three intervention types grouped into four categories were developed and implemented in line with best practice evidence that identifies power of multi-faceted and inter-disciplinary behaviour change strategies.

1. Audit and Feedback

- The top 10 units that ordered coagulation studies across the hospital were identified using an established pathology test dashboard
- A personalised report was developed for the medical director of each of the top 10 units containing data on:
    - Volume of weekly tests ordered each week in the previous 12 months
    - The volume of all pathology tests ordered during this time
    - The overall volume of coagulation studies ordered during this time compared to other units in the hospital
- A second report was developed that contained the results of 100 consecutive patients from each of the top 10 units audited for the indications for why the coagulation study was ordered (in line with evidence based indications)
- This process was repeated after three months

2. Educational Outreach

a. Policy & Guideline development

- An organisation-wide guideline document was developed that outlined specific clinical scenarios and indications appropriate for the coagulation studies group and individual test components
- All clinical specialties across the hospital were consulted during this process
- A decision support tool was developed as a quick reference guide and summarised the content of the policy into a single document

b. Education & Peer Support

- The contents of the guideline document was presented during a number of established education sessions including:
    - **i.** Intern and resident lunch time education sessions
    - **ii.** Grand rounds
- Educational resources were made available via a dedicated intranet page promoted via various mechanisms (posters, QR codes) around the hospital

3. Clinical decision support

- The electronic order for coagulation studies was removed from the quick list of tests
- A pop-up message was developed for instances when the coagulation studies group was ordered that outlined that there were few clinical indications for all four tests and

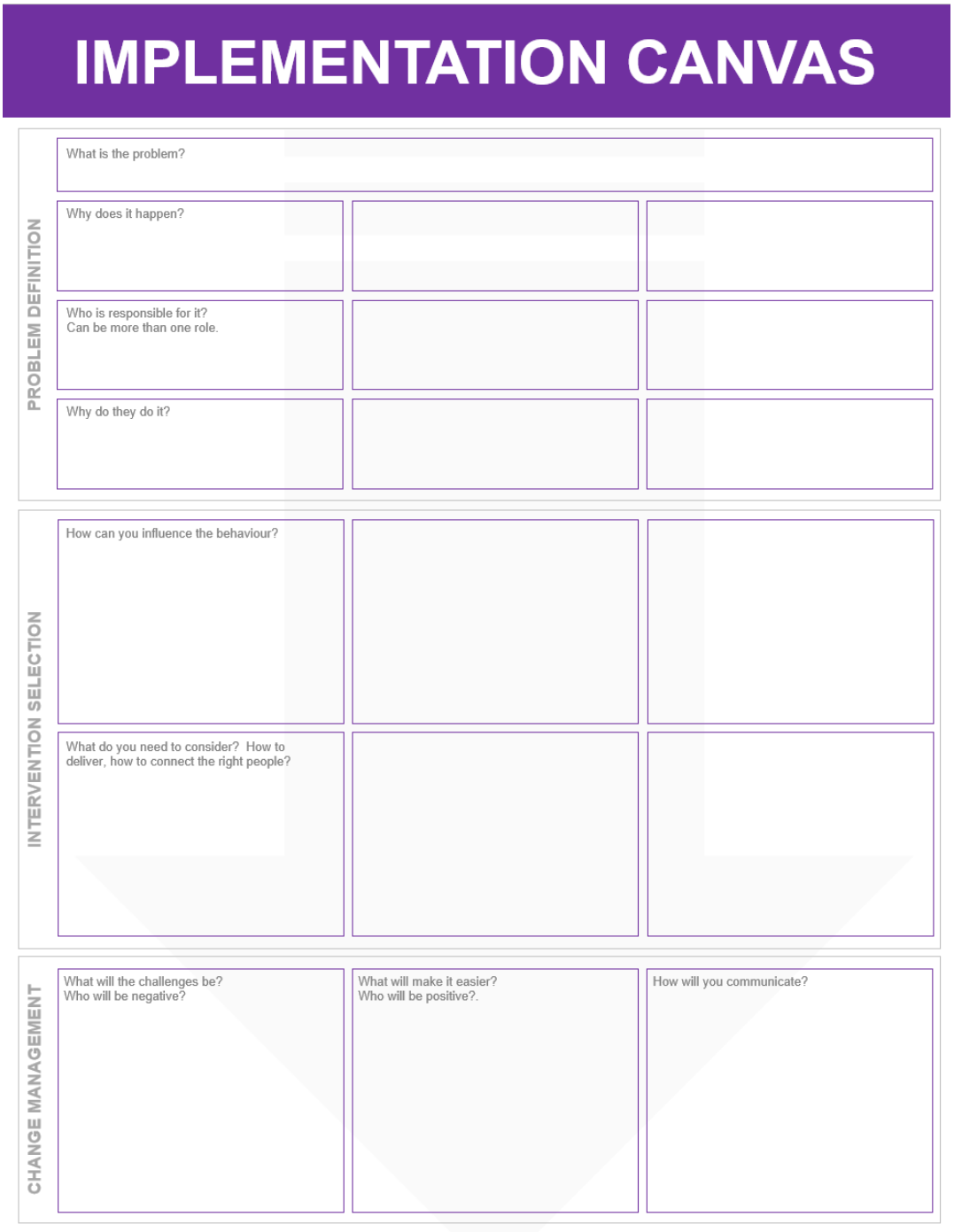
that a guideline was available to guide appropriate ordering (link to guideline was also provided)

- At a later stage, the coagulation studies group was split (with the exception of when it appeared in appropriate order sets such as the Massive Transfusion Protocol)

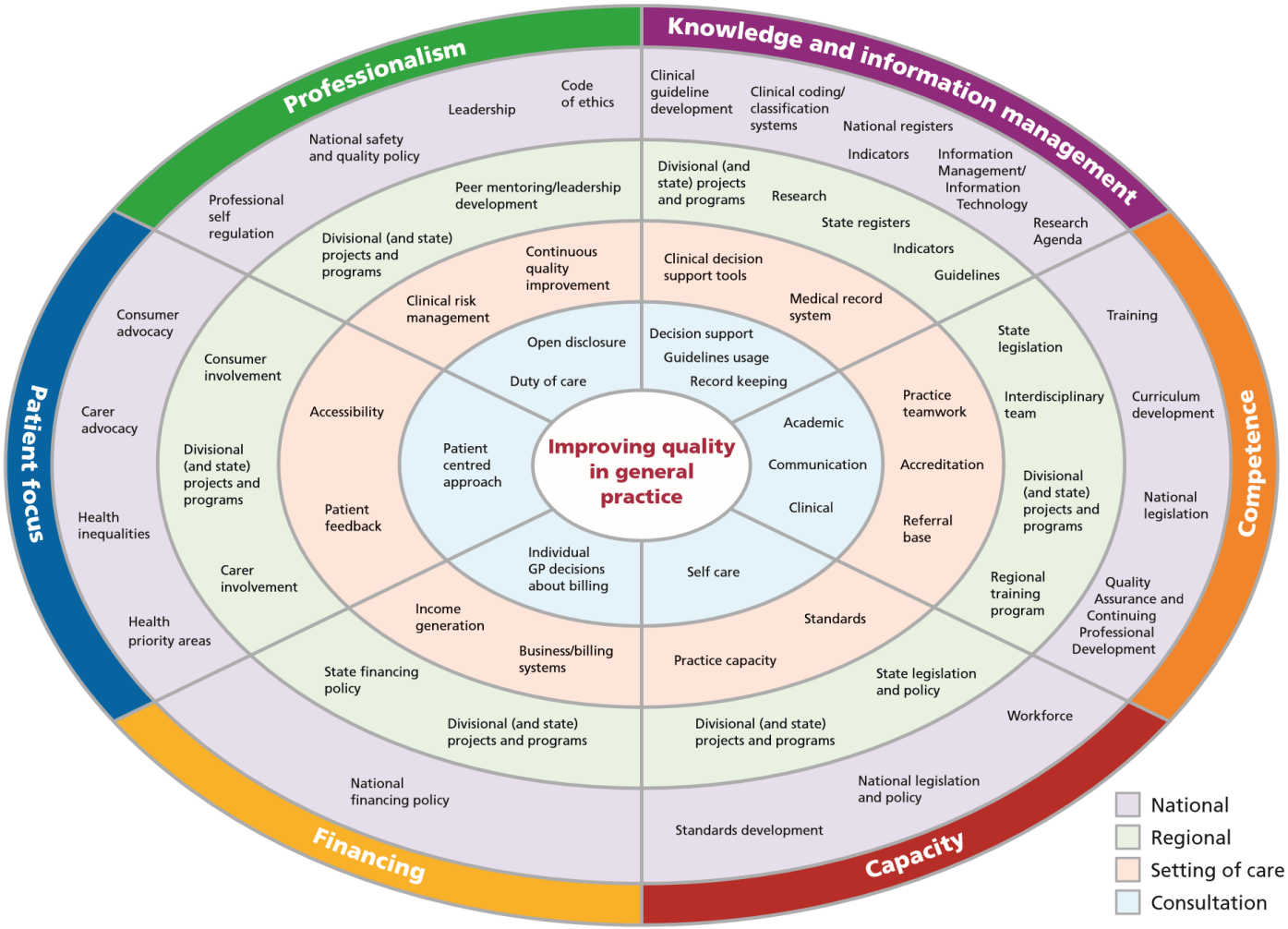
IMPLEMENTATION CANVAS

Below is a copy of the implementation canvas that will be populated through the development workshops. This succinctly captures the problem definition, target audiences, interventions and rationale. You will complete one canvas for each problem that your local health service wishes to tackle.

Copies of the implementation canvas will be available at the workshops.



APPENDIX A. RACGP QUALITY FRAMEWORK



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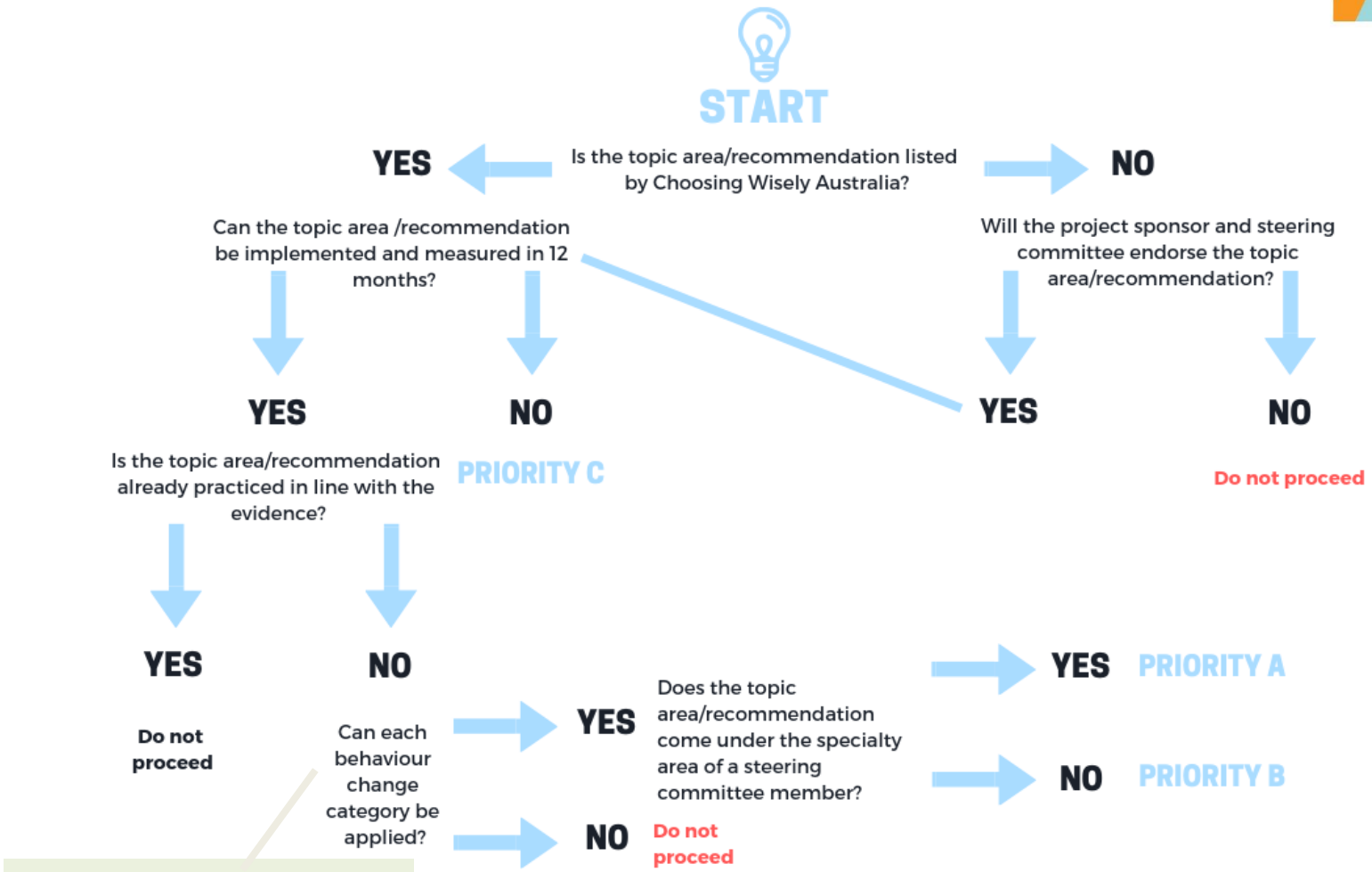
INNOVATION FUND PROJECT

BETTER CARE VICTORIA

Appendix B. Choosing Wisely Topic Priority Setting Flowchart



Behaviour Change Categories:

i. Audit and Feedback
ii. Guideline development
iii. Education and Peer Support

Priority A = Consider this recommendation/topic area as a primary topic

Priority B = Consider this recommendation/topic area for a secondary topic

Priority C = This recommendation/ topic areas is better suited for implementation as part of a scaling initiative

REFERENCES

1. Lindner RA. Choosing Wisely Australia: changing behaviour in health care. Med J Aust 2018;208:105-6.
2. Wolfson D, Santa J, Slass L. Engaging physicians and consumers in conversations about treatment overuse and waste: a short history of the choosing wisely campaign. Acad Med 2014;89:990-5.
3. Choosing Wisely Australia. Join the conversation. 2017. http://www.choosingwisely.org.au/getmedia/042fedfe-6bdd-4a76-ae20-682f051eb791/Choosing-Wisely-in-Australia-2017-Report.aspx. [Accessed 11 May 2018].
4. Levinson W, Kallewaard M, Bhatia RS, et al. 'Choosing Wisely': a growing international campaign. BMJ Qual Saf 2015;24:167-74.
5. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. Implement Sci 2012;7:37.
6. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implement Sci 2011;6:42.
7. Institute of Medicine. *To err is human: Building a safer health system*. Washington, DC: The National Academies Press, 2000. https://doi.org/10.17226/9728.
8. Institute of Medicine. *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: The National Academies Press, 2001. https://doi.org/10.17226/10027.
9. Ferlie EB, Shortell SM. Improving the quality of health care in the United Kingdom and the United States: a framework for change. Milbank Q 2001;79:281-315.
10. Michie S, Johnston M, Abraham C, et al. Making psychological theory useful for implementing evidence based practice: a consensus approach. BMJ Qual Saf 2005;14:26-33.
11. Prochaska JO, DiClemente CC, Norcross JC. *In search of how people change: Applications to addictive behaviours*. In Marlatt GA, VandenBos GR (eds) Addictive behaviours. Washington DC: American Psychological Association, 1997: 671-96.
12. Glasziou P, Haynes B. The paths from research to improved health outcomes. Evidence-Based Nursing 2005;8:36-38.
13. Booth B, Portelli R, Snowdon T. A quality framework for Australian general practice. Melbourne: The Royal Australian College of General Practitioners, 2005.
14. Whitelaw S, Baldwin S, Bunton R, et al. The status of evidence and outcomes in Stages of Change research. Health Educ Res 2000;15:707-18.
15. French S. Using the Theoretical Domains Framework to design interventions: Designing a practice improvement strategy. https://ktcanada.ohri.ca/workshop_tdf/tdf_french.pdf. [Accessed 11 May 2018].
16. Effective Practice and Organisation of Care (EPOC). The EPOC taxanomy of health systems interventions. EPOC resources for review authors. Oslo, Norwegian Knowledge Centre for the Health Services, 2016. http://epoc.cochrane.org/sites/epoc.cochrane.org/files/public/uploads/EPOC%20taxonomy%20guidance_2016%2006%2017.pdf. [Accessed 11 May 2018].

17. Effective Practice and Organisation of Care (EPOC). EPOC Taxonomy. 2015. https://epoc.cochrane.org/epoc-taxonomy [accessed 5 April 2018]
18. Ivers NM, Sales A, Colquhoun H, et al. No more 'business as usual' with audit and feedback interventions: towards an agenda for a reinvigorated intervention. Implement Sci 2014;9:14.
19. Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, O'Brien MA, Johansen M, Grimshaw J, Oxman AD. Audit and feedback: effects on professional practice and healthcare outcomes. Cochrane Database of Systematic Reviews 2012, Issue 6. Art. No.: CD000259. DOI: 10.1002/14651858.CD000259.pub3.
20. Brehaut JC, Colquhoun HL, Eva KW, Carroll K, Sales A, Michie S, et al. Practice Feedback Interventions: 15 Suggestions for Optimizing Effectiveness. Ann Intern Med. 2016;164:435–441. doi: 10.7326/M15-2248
21. O'Brien MA, Rogers S, Jamtvedt G, Oxman AD, Odgaard-Jensen J, Kristoffersen DT, Forsetlund L, Bainbridge D, Freemantle N, Davis DA, Haynes RB, Harvey EL. Educational outreach visits: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD000409. DOI: 10.1002/14651858.CD000409.pub2.
22. Tzortziou Brown V, Underwood M, Mohamed N, et al. Professional interventions for general practitioners on the management of musculoskeletal conditions. Cochrane Database Syst Rev 2016 (5):CD007495.
23. Shojania KG, Jennings A, Mayhew A, Ramsay CR, Eccles MP, Grimshaw J. The effects of on-screen, point of care computer reminders on processes and outcomes of care. Cochrane Database of Systematic Reviews 2009, *Issue* 3. *Art. No.: CD001096. DOI: 10.1002/14651858.CD001096.pub2.*
24. Gagliardi AR, Légaré F, Brouwers MC, Webster F, Badley E, Straus S. Patient-mediated knowledge translation (PKT) interventions for clinical encounters: a systematic review. Implementation Science 2016;11:26.