A practical guide to getting evidence into general practice

What's the purpose of this guide?

This guide offers practical, evidence-based advice on how to implement evidence-based care in general practice.

Clinical research continually produces new evidence that can improve patient and population outcomes. Yet such evidence does not reliably find its way into everyday patient care. There are well-documented variations in the delivery of evidence-based care which cannot be easily explained away by differences in patient populations (e.g. deprivation levels).

NICE guidance promotes treatments of proven benefit and discourages treatments of less value to patients and health services. However, as you already know, getting evidence into practice is generally easier said than done within the everyday constraints and challenges of general practice.

What's our rationale?

Like it or not, a lot of good quality research shows that most interventions to change clinical practice have modest effects. However, repeated small changes can make a big difference. We can make a significant contribution to improving population healthcare and health by:

- general practices combining efforts
- focusing their attention on 'high impact' clinical priorities
- underpinned by a sound evidence based
- associated with scope for improvement

It is entirely feasible to achieve major impacts by using existing quality improvement resources effectively and through targeted, *cumulative* improvements.

Who is this guide for?

This guide is mainly for people leading improvement across small to large groups of general practices. However, some content may be flexible enough to inform both national initiatives and improvements within single general practices.

How can you use this guide?

The first, and only, rule of this guide is that there are no rules on how to use it. If you are planning a big improvement across lots of general practices and have sufficient time and resources, you could use this as a step-by-step guide. However, realistically, you will be working within a tight time frame and with limited support. So, you might prefer to jump straight to making a change. This could involve, for example, adapting some of our illustrative audit and feedback resources.

We don't claim that this is a comprehensive guide. Where possible, we have included links to supporting online resources.

Who developed this guide?

This guide is based upon a major research programme, Action to Support Practices Implementing Research Evidence (ASPIRE). The research was led by the University of Leeds and brought together collaborators including the West Yorkshire clinical commissioning groups, patients and the public, and representatives from the National Institute for Health and Care Excellence (NICE). Over 200 general practices from West Yorkshire took part in the research programme.

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Contents

Ten Top Tips

1. There is seldom one simple explanation for any gap between evidence and practice. Obstacles to (and enablers of) change operate at one or more of system, team, professional and patient levels. Plans to tackle evidence-practice gaps usually need coordinated efforts across different levels.

2. It is unlikely that you will be able to address all barriers. Focus on those you judge most important and are able to change.

3. Lack of knowledge is seldom the main explanation for evidence-practice gaps. Consider wider factors such as 'know-how' (practical knowledge and skills), recall (being prompted to do the right thing at the right time for the right patient), and having sufficient time and resources (of course).

4. Consider what you can stop doing in order to make more time for the evidence-based practices and actions you really, really want to do.

5. Consider the effectiveness and possible unintended consequences when choosing an approach to change practice. For example, computerised prompts can help change specific behaviours (such as prescribing or test ordering) and are more likely to work if users need to provide a justification for over-riding recommendations. But people will circumvent them if they are too intrusive or disruptive.

6. Effective action plans turn long-term goals into small manageable steps; these work best of they are specific, realistic and to the point.

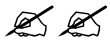
7. Set realistic goals for change which are genuinely achievable, not fanciful.

8. Ensure that any goals for change are within the control of the people who need to change. That sounds rather obvious but is easily overlooked.

9. Focus on making changes to clinical practice which are supported by the strongest clinical evidence.

10. Making continuous and cumulative improvements in evidence-based care can deliver major improvements in population health.

What do we want to achieve?

This is about…	Setting priorities for change		
Applicable to level(s)	Single practice	Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Management		
Likely difficulty			
Likely time commitment			
Do…	Apply some criteria to justify your choice		
Don't…	Get hi-jacked by strong views or vested interests		
Illustrations	Developing 'high impact' guideline-based quality indicators for UK primary care. *This is an example from research which illustrates a structured consensus process.*		
Helpful resources	How NICE prioritises quality standards. A checklist for prioritising clinical practice recommendations for action.		

Identifying priorities

Many clinical guidelines are potentially relevant to general practice. Some guidelines address relatively specialist topics but can include one to two key recommendations where actions in general practice play a critical role in patient care pathways.

However, there are competing priorities for action, over and above your existing service and clinical commitments. You need to make choices within finite time and resources.

Criteria for identifying priorities include:

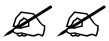
- Strength of evidence underpinning clinical practice recommendations
- Burden of illness, e.g. prevalence, severity, costs
- Fit with explicit national or local priorities and initiatives
- Potential for significant patient benefit, e.g. longevity, quality of life, safety of care
- Scope for improvement upon current levels of adherence, e.g. from perceived current low levels or unacceptably high variations
- Feasibility of measuring progress, e.g. from routinely collected clinical data
- Extent to which following a recommendation is directly within the control of individual practice teams or professionals
- Likelihood of achieving cost savings without patient harm

You might have little or no choice over what to focus on! There is no shortage of national and local priorities. You will struggle to address all of these at the same time and therefore you could focus, say, on a limited number of clinical practice recommendations selected from on clinical guideline.

Consider:

- Who needs to be involved as you will require different perspectives and skills, e.g. clinicians, practice support staff, patients and carers, commissioning, public health
- How high the stakes are. A one-off, informal meeting will usually suffice for a general practice. Larger organisations or networks, which need to be accountable and transparent, might consider using a structured consensus process.

How well are we doing?

This is about…	Measuring adherence to recommended practice		
Applicable to level(s)	Single practice	Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Administrative Data collection and analysis		
Likely difficulty			
Likely time commitment			
Do…	Think about what routinely recorded clinical data might already be available		
Don't…	Attempt to construct overly complicated indicators		
Illustrations	*From research studies* Variations in achievement of evidence-based, high-impact quality indicators in general practice. Prescribed opioids in primary care. High risk prescribing in primary care patients particularly vulnerable to adverse drug events.		
Helpful resources	Healthcare Quality Improvement Partnership.		

What is already known about variations in practice?

There are well recognised variations in clinical practice across all healthcare sectors. The size of these variations can only partly be accounted for by factors such as demographics and case mix. Where patients are not receiving recommended care and analyses have accounted for differences in patient populations, such variations can be considered inappropriate.

We found that the likelihood of patients receiving recommended care or achieving recommended outcomes depended upon which general practice they were registered at.[1] For processes of care, there were seven-fold differences in the likelihood of high-risk prescribing (typically involving NSAIDs) and two-fold difference in the likelihood of being prescribed recommended treatment for the secondary prevention of myocardial infarction. For recommended outcomes, there was a ten-fold difference in the likelihood of achieving blood pressure control in hypertension and a four-fold difference in diabetes control (combined blood pressure, HbA1c and cholesterol targets). Many of these variations could not be explained away by demographic differences in patient populations (e.g. age, social deprivation) and is likely to be related to differences in clinical behaviour.

Some analyses can also highlight particular 'at risk' patient groups. For example, we found that both long-term and strong opioid prescribing were more likely in women aged over 65 years (compared to women under 50 years), missed appointments and increasing levels of polypharmacy.[2]

Indicator development

Consider:

- Whether there are existing indicators or sets of routinely collected data which will be sufficient for your needs, e.g. prescribing indicators, Quality and Outcome Framework (QOF) data.
- The advantages and disadvantages of measuring processes or outcomes of care (Box 1).
- The advantages and disadvantages of single or composite (combined) indicators (Box 2).
- How reliably and accurately coded routinely collected data are. Some types of data are generally coded reliably in general practice (e.g. prescribing, certain diagnostic tests, diagnoses for patients on disease registers) whilst others are not (e.g. referrals, diagnoses not systematically recorded for disease registers).

Steps in development include:

- Defining the targeted patient ('denominator') population (e.g. all coded type 2 diabetes) or particular sub-populations (e.g. coded type 2 diabetes with recorded poorer control).
- Defining those ('numerator') patients with evidence of a recommended clinical intervention offered or received or meeting defined treatment targets.
- Deciding whether to collect data to understand any likely variations in practice, e.g. patient demographics, co-morbidities.
- Developing or adapting existing searches of electronic patient data.
- Piloting and refining searches prior to large scale data collection.

Data collection

Consider:

- How to include all or sample general practices to ensure the data apply to 'typical' practices which have not self-selected.
- Seeking approval, if required, from general practices for data collection.
- Adherence to information governance requirements.

Analysis and interpretation

What to look for:

- Overall level of adherence for each indicator; if high there may be no need for further action except for positive feedback; if low or lower than expected, consider further action if room for improvement exists.
- Patterns of variation between general practices, e.g. can substantial variation confidently be explained away by known differences in practice population demographics?
- Patterns of variation between any patient sub-groups, e.g. age, gender, co-morbidities.
- Likely chance variation, especially when dealing with smaller numbers of practices or patients.
- Unexpected findings to prompt consideration and investigation of plausible alternative explanations, e.g. errors in searches, limitations of coding.

The analysis of variations can help focus action, e.g. on specific groups of general practices or groups of patients.

Box 1. Considerations in measuring processes and outcomes of care.[3]

Process of care indicators	*Outcome indicators*
Useful if there is strong evidence predicting better outcomes if process of care followed, e.g. reduced stroke risk for anticoagulation in atrial fibrillation	Can assess what are ultimately important to patients, e.g. quality of life
Less useful if patient outcomes not tightly linked to processes of care, e.g. screening or case-finding for depression[4]	Factors other than healthcare provided may influence outcomes, e.g. co-morbidities
Measurement can help understand variations in patient outcomes, e.g. higher levels of asthma exacerbations might be linked to poorer provision of patient asthma plans[5]	May need to adjust statistically for casemix to enable fair comparisons between practices
Often available as routinely collected data, e.g. prescribing, test ordering	Intermediate outcomes can help assess responses to treatment, e.g. blood pressure control

Box 2. Considerations in using single or composite (combined) indicators.[6]

Single indicators	*Composite indicators*
Often simpler to apply, e.g. proportion of people with diabetes whose blood pressure is adequately controlled	Can summarise one or more key aspects of quality of care to help rapid interpretation of indicators, e.g. proportion of people with diabetes who receive all recommended processes of care
Allow detection of specific aspects of care that need attention, e.g. albumin:creatinine ratios in chronic kidney disease	Composite indicators only as good as their underlying single indicators

Why aren't we achieving our goals?

This is about…	Understanding gaps between current and recommended practice		
Applicable to level(s)	Single practice	Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Administrative Management		
Likely difficulty			
Likely time commitment			
Do…	Consider the range of individual, team and organisational level factors that can influence clinical care Focus on identifying the most important factors that you can change		
Don't…	Assume that lack of knowledge is the main explanation for evidence-practice gaps		
Illustrations	*From research studies* A qualitative study to understand adherence to multiple evidence-based indicators in primary care. A qualitative study to understand long-term opioid prescribing for non-cancer pain in primary care. A systematic review of barriers to effective management of type 2 diabetes in primary care.		
Helpful resources	There are many frameworks which set out various ways of grouping factors that influence practice. Some are rather detailed but this sample illustrates a range of approaches. The Behaviour Change Wheel. The Theoretical Domains Framework. Normalisation Process Theory. A checklist for identifying determinants of practice (see Table 1). The Consolidated Framework for Implementation Research: with pdf summary.		

Barriers and enablers

Every clinician and manager knows that changing clinical practice is seldom easy. Change generally takes time, effort and supporting resources. In planning change, you may find it useful to identify and think about barriers to and enablers of change. Then you can consider which of these are important and are feasible to address, or too difficult within limited time and resources. You may decide that the effort-reward ratio is too unfavourable to prioritise a given change and therefore choose to tackle a different priority. (Luckily, there is no shortage of priorities to address in primary care.)

Frameworks to help understand behaviour and guide behaviour change

Frameworks can act as prompts to identify influences on clinical practice. They can help you consider factors that you might otherwise not have thought of. There is quite a variety of frameworks and they all tend to overlap. There is no evidence that one framework is any better than another. The choice largely comes down to whichever you find easiest or most intuitive to use.

Table 1 is adapted from an interview study of primary care staff, which used one framework to understand barriers to and enablers of adherence to a set of evidence-based indicators.[7] The Theoretical Domains Framework is useful because it focuses on beliefs, attitudes and so forth that you can potentially change.[8]

Influences on the achievement of four indicators, categorised using the Theoretical Domains Framework.[7]

	Avoidance of risky prescribing, especially of NSAIDs	**Treatment targets in type 2 diabetes**	**Anticoagulation in atrial fibrillation**	**Blood pressure targets in treated hypertension**
Knowledge	GPs more knowledgeable compared to other staff Awareness of drug interactions and patient history	Variable awareness of recommended HbA1c levels Knowing the rationale and evidence behind recommendations Guidance generally familiar as standard practice	Indicators familiar because of QOF Importance of access to specialist knowledge Treatment often initiated in secondary care Lack of staff experience in starting treatment given relatively infrequent clinical presentation in primary care	Indicators familiar because of QOF Indicators ingrained as “bread and butter” of general practice
Skills	Communication skills for effective patient counselling Limited time to use skills, e.g. communication	Communication skills for effective patient counselling Need for technical skills such as medication initiation and titration	Communication skills for effective patient counselling	Communication skills for effective patient counselling Practice staff typically well skilled in measuring blood pressure and initiating and titrating treatment
Social professional role and identity	Prescribing perceived to be mainly the role of GPs GP autonomy to deviate from guidance Threat of litigation reinforces nurse prescribers’ adherence to guidance Key role of pharmacist in improving prescribing Prescribing practice driven by perceived patient needs than by guidance	Clarity of roles and responsibilities Can refer to practice diabetic lead if patient taking multiple medicines Tailoring care to patient needs more important than achieving strict targets	Tailored patient care can both help and hinder adherence, e.g. in elderly patients and patients with multiple conditions Role more focused on long-term rather than acute care as atrial fibrillation often initially presents to secondary care Contradictory advice from secondary care Clinicians with more cardiac expertise tend to be responsible for most patients	Clarity of roles and responsibilities Professional ethics and threat of litigation promote adherence Tailoring care to patient needs more important than achieving strict targets

			Practice nurses viewed their input as restricted to reviewing medicines if required	
Beliefs about capabilities	Clear guidance and access to specialist knowledge and training Adequacy of information technology system support	Confidence in ability to achieve targets depends on patient factors such as attendance and motivation Many clinicians confident with blood pressure and cholesterol but less so with HbA1c and any associated medication changes Organised links between primary and secondary care Confidence in diabetes lead Practice IT systems able to identify patients not achieving targets	Confidence related to availability of specialist staff, training and updates Supportive, organised links between primary and secondary care	Confidence helped by relative simplicity of guidance and decision support Confidence hindered by patient factors and limited resources for referrals Practice IT systems able to identify patients not achieving targets
Beliefs about consequences	Ensuring quality of care, patient health, and patient safety Reputation for following guidance reflects well on practice and professional Perceived threat of litigation to nurse prescribers if guidance not followed Immediate financial and time costs (prescribing budget, increased appointments, auditing) outweighed by the potential longer term NHS cost reduction	Achieving targets linked to quality of care and better patient outcomes Job satisfaction in achieving targets Perceived pressure to achieve targets undermines rapport with patients Achieving targets requires time and increases workload Costs for patients and side effects from additional prescribing to achieve targets	Ensuring quality of care, patient health, and patient safety Strict adherence to guidance inappropriate for some patients, e.g. elderly and those on multiple medications	Ensuring quality of care and patient health Perceived increased workload associated with following guidance, e.g. consultation length
Motivation and goals	Adherence ensures quality of care, patient health, and patient	Achieving targets associated with short term gains in QOF	Ensuring quality of care, patient health, and patient safety	Ensuring quality of care, better patient health and job

	safety Promoting a positive reputation for the practice Guarding against litigation Incentivisation of good prescribing	income and longer term NHS savings Achieving targets linked to quality of care, better patient outcomes and job satisfaction	Achieving targets associated with short term gains in QOF income and longer term NHS savings	satisfaction Achieving targets associated with short term gains in QOF income and longer term NHS savings
Memory, attention and decision processes	Patient history provides important information for decision making Automatic thinking processes useful in high-risk situations Patient history provides important information for decision making Decision aids and prompts for drug interactions Computerised prompts often not in line with consultation processes, e.g. triggered following clinical decision	Awareness of patient characteristics such as older age can influence decision of whether or not to aim for targets System prompts useful for embedding targets into memory	Relatively infrequent presentation of atrial fibrillation hinders commitment of guidance to memory Prompts and the ability to view guidance support decision making	High prevalence of hypertension helps embed guidance into routine practice Patient characteristics (e.g. older age) can influence tailored care to meet patient's needs Guidance considered easy to retain Prompts useful for supporting adherence to guidance
Environmental context and resources	Practice nurses can pick up medication issues during reviews but lack knowledge and suitable templates Prescribing policies, support and advice available from CCG medicines management teams and pharmacists Limited time (including for training and education) and decision support Limitations of information	External support from CCG, information technology systems and training opportunities Low staffing levels and high workloads Communication between primary and secondary care could be improved to support achievement of targets	Communication systems and established lines of responsibility within the practice needed to identify potential issues around professional adherence Inadequate communication between primary and secondary care Time and workload, especially as current information technology systems do not support easy identification of	Established lines of responsibility, clear templates and access to training and education Limited availability of home blood pressure machines, heavy workload and short duration of consultation makes it difficult to schedule a specific time to measure blood pressure which contributes to difficulties in achieving targets

	technology systems and communications with secondary care		eligible patients	
Social influences	General approach and support of practice team Patient preferences	Pressure from QOF to achieve targets, including comparison with other practices Practice managers aware that achieving targets is linked to practice QOF performance Overall team approach in practice Patient preferences	Pressure from QOF to achieve targets, including comparison with other practices General approach and support of practice team Patient preferences	Pressure from QOF to achieve targets, including comparison with other practices Team factors and support within and outside the practice (e.g. network meetings Patient preferences
Emotion	Discomfort when guidance conflicts with patient-centred care Feeling constrained by guidance Caution and worry when prescribing additional medication Workload-related fatigue restricts ability to have in-depth conversations with patients	Achieving targets lead to job satisfaction Adverse impacts of fatigue on achieving targets Frustration from missing targets and patient factors, e.g. resistance, low motivation Perceived pressure from targets which can generate tension between clinicians and patients	Frustration caused by complicated guidance making treatment difficult to explain to patients Limited time, mood and fatigue result in deferring decisions to further consultations Discomfort with pushing adherence amongst elderly patients	Achieving targets lead to job satisfaction Fatigue and workload influence whether targets were considered at every consultation Unease created by patient reactions to additional prescribing
Behavioural regulation	Computer prompts for drug interactions, templates, audit and medication reviews Problems associated with rapidly accessing and interpreting full patient records Computer prompts not always useful – can be overwhelming	Help from computer prompts, recall systems, clear protocols and templates Habitual action sequences helpful, e.g. reviewing patient medical notes and setting electronic reminders for action to self within patient record	Help from computer prompts, recall systems, clear protocols and templates Limited ability of current computer prompts to support adherence to guidance	Help from computer prompts, recall systems, clear protocols and templates Patient risk factors act as prompts Opportunistic reviews of patient records Computer prompts not always considered useful and potentially distract from main

				purpose of consultation

Methods to explore barriers and enablers

There are a number of ways to influences on practice. How intensive this needs to be inevitably depends on judgment and resources available. For example, you may already have a good working knowledge of factors that influence the care of common clinical priorities, such as diabetes or hypertension. However, you might still find it useful to set out the most important enablers of and barriers to recommended practice before deciding what action to take. The key is to ensure that those targeted by any planned change are involved and agree upon the main barriers and enablers. Table 2 summarises some approaches you could consider.

Table 2. Methods of exploring barriers and enablers.

Method	*Advantages*	*Disadvantages*
Brainstorming team meeting	Simple to organise Allows contributions by all involved (as long as you remember to listen to quieter or minority views)	Risk of 'group think' and fixation on issues the group is comfortable discussing
Interviews with staff or patients	Can be structured to ensure good range of issues covered Allow deeper exploration of views, especially more sensitive issues that people may be less inclined to share in a group	Value depends on interviewer skills and analysis Take time to organise Tricky to ensure the right range of types of participants
Focus group of staff and/or patients	Allows detailed and structured exploration of issues if facilitated well Multiple views can be explored at same time	Needs facilitation skills, e.g. to moderate the impact of dominant views Can be difficult to get the right range of people to participate
Observation (e.g. videoing consultations)	Can allow understanding of 'real world' rather than hypothetical situations (observed actions may speak louder than words)	Logistically difficult to organise Can require a lot of observation to pick out specific clinical practices (e.g. prescribing decisions for hypertension) Intrusive, and people may change behaviour when observed
Surveys	Allow simultaneous assessment of a larger number of views and reported practices	Prone to response bias, resulting in less representative data Low response rates because of 'survey fatigue' What people say they believe and do may differ from actual beliefs and behaviour

Making sense of barriers and enablers

Consider prioritising for action:

- Those which are most important, e.g. frequently encountered, pivotal steps in patient pathways
- Those with strongest consensus amongst team members
- Those most amenable to change, e.g. staff beliefs and processes of care as opposed to structures and wider environmental factors
- Those which can be readily linked to one or more approaches to change practice

Which approaches can help us change?

This is about…	Evidence-based approaches to improve practice		
Applicable to level(s)	Single practice	Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Management		
Likely difficulty			
Likely time commitment			
Do…	Accept that most approaches to improvement practice have modest effects which can accumulate if used consistently over time to produce a significant impact		
Don't…	Waste time on complicated and costly improvement fads		
Illustrations	Education, informatics, and financial incentives for safer prescribing. Pharmacist-led feedback, educational outreach support for safer prescribing. Feedback to high antibiotic prescribers. Posters 'nudging' patients against antibiotics. Brief educational messages for diabetes. A review of computerised decision support. A review of audit and feedback. A review of educational meetings.		
Helpful resources	Cochrane Effective Practice and Organisation of Care. Recommendations on audit and feedback. Examples of audit and feedback.		

A range of approaches can support changing practice. You will be familiar with most if you are on the receiving end of initiatives to improve practice. They include approaches like education, computerised prompts and reminders and financial incentives.

Considerations in selecting approaches:

- **Strength of evidence**. Some approaches have a stronger evidence-base than others. For example, audit and feedback has been tested in randomised trials many times across a range of settings and clinical topics. Whilst there are no guarantees it will work consistently for a given problem, there are ways to improve the chances of success – such as providing repeated rather than one-off feedback and including explicit action plans with feedback. In contrast, there is a much more limited evidence base on financial incentives, suggesting that you should use this approach with caution.
- **The nature of the implementation problem**. You need to apply some judgment in deciding which improvement approaches may work best for a given clinical problem. For example, computerised prompts can reduce errors of omission in prescribing decisions.

However, they are less likely to work when tackling more complex issues, such as counselling patients or reducing emergency readmissions.

- **Fit with available resources and skills**. You need to make the best use of existing resources, such as practice pharmacists in auditing prescribing and educating the team.
- **Unintended consequences**. Some approaches may not work as intended or even have undesired side effects. For example, feedback on clinical performance showing a large gap between actual and recommended practice can be demotivating, or prescribing safety prompts which appear on-screen after you have made a clinical decision and counselled a patient on treatment can de-rail a consultation.
- **The balance of costs and benefits**. The effects of interventions may not always pay for themselves. For example, for educational outreach visits to reduce prescribing, the costs of educator and staff participation time may eclipse any savings. However, if the same approach of education outreach was even only modestly successful in improving your practice's use of clinically effective strategies to promote weight loss or reduce smoking, the longer term population health benefits could outweigh the upfront costs.
- **Single versus combined approaches**. It is often possible to combine different approaches to improve practice, for example, educational outreach with audit and feedback. In some cases this can make sense if the approaches are complementary, e.g. if the outreach meetings aim to reinforce action planning following feedback. However, combined approaches can be more costly. Furthermore, there is no convincing evidence that combined approaches are more effective than single approaches – although this may be because evaluators have 'thrown in the kitchen sink' in efforts to address more difficult improvement problems.

Table 3 summarises some key evidence and considerations in choosing improvement approaches. Table 4 sets out 15 suggestions for effective feedback based upon evidence synthesis and interviews with experts.[9] Approaches to improve practice generally have modest impacts. Such modest impacts might be worthwhile because:

- Effects are in the range, if not better, than those of many recommended clinical treatments.
- Effects can be worthwhile in relation to costs of improvement approaches.
- Effects of improvement approaches can be complementary and cumulative over time.

Table 3. Key evidence from systematic reviews for a selection of improvement approaches.

Approach	*Key findings*	***More** likely to be useful when…*	***Less** likely to be useful when…*
Printed educational materials - Distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audio-visual materials and electronic publications.[10]	When used alone and compared to no intervention, printed educational materials may have a small beneficial effect on professional practice. Effect on patient outcomes not known.	Limited resources available Large target audience Using persuasive communication methods to make content, language and presentation more engaging	Recommending challenging or complex changes in clinical behaviour
Continuing education meetings and workshops - Participation of healthcare providers in conferences, lectures, workshops or traineeships.[11]	Educational meetings alone or combined with other interventions, can improve professional practice and patient outcomes. Effects most likely to be small and similar to other approaches, such as audit and feedback, and educational outreach visits.	Using strategies to increase attendance at educational meetings Using mixed interactive and didactic formats Focusing on outcomes that are likely to be perceived as serious	Used alone to change complex behaviours
Educational outreach visits - Use of a trained person who meets with providers in their practice settings to give information with the intent of changing the providers' practice. The information given may have included feedback on the performance of the provider(s).[12] Also known as academic detailing.	Used alone or when combined with other approaches, effects on prescribing are relatively consistent and small, but potentially important Effects on other types of clinical practice vary from small to modest improvements		
Local opinion leaders - Use of providers nominated by their colleagues as educationally	Opinion leaders alone or in combination with other interventions may successfully	Existence of intact and relatively stable social networks	

influential. [13]	promote evidence-based practice, but effects can vary a lot. Roles of the opinion leader seldom clearly described in most studies. It is therefore not possible to say what the best way is to optimise their effects.	Condition-specific opinion leaders available	
Audit and feedback - Any summary of clinical performance of healthcare over a specified period of time.[14]	Generally leads to small but potentially important improvements in professional practice	Resources available for data collection and analysis Meaningful routine data available for feedback Baseline performance is low, source a supervisor or colleague, provided more than once, delivered in both verbal and written formats, and includes both explicit targets and an action plan – more effective	
Computerised reminders - On screen point of care computer reminders designed or intended to prompt a health professional to recall information.[15]	Generally achieve small to modest improvements in clinical practice Most studies examined the effects of relatively simple reminders	Computerised decision support systems providing advice for patients in addition to clinicians – three times more likely to succeed[16] If requiring clinicians to supply a reason for over-riding advice – over 11 times more likely to succeed	More complex decision support less successful, especially for chronic disease management
Financial incentives – Changes in the level or method of payment to improve the quality	Mixed effects although evidence has serious methodological limitations and needs judged	Improving processes of care, referrals and admissions, and prescribing cost outcomes –	Improving compliance with guidelines – generally ineffective For improving patient outcomes -

of care.[17]	with caution.	generally effective	no evidence of effects
Patient-mediated approaches - Aimed at changing the performance of healthcare professionals through interactions with patients, or through information provided by or to patients[18]	Mixed effects on clinical practice with variable quality of evidence.	For patient-reported health information (e.g. information obtained from patients about patients' own health, concerns or needs before a clinical encounter) and patient education (e.g. increasing patients' knowledge about their condition and treatment options) - probably small to modest effects on clinicians' adherence to recommended practice For patient information (e.g. informing or reminding patients to attend recommended care) - may also improve clinical practice	For patient decision aids providing patients with information about treatment options including risks and benefits - may make little or no difference to clinical practice
Reducing medication errors in primary care[19] - Professional approaches (e.g. computerised decision support) and organisational (e.g. medication reviews by pharmacists)	Based on moderate- and low-certainty evidence, approaches in primary care for reducing preventable medication errors probably make little or no difference to the number of people admitted to hospital or the number of hospitalisations, emergency department visits, or mortality.		

Table 4. Fifteen suggestions for effective feedback.[9]

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

What action can we take?

This is about…	Developing a plan of action		
Applicable to level(s)		Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Management		
Likely difficulty			
Likely time commitment			
Do…	Think logically about how you might link different barriers to and enablers of best practice to improvement approaches		
Don't…	Make this more complicated than you really need to		
Illustrations	This is how we developed an approach to change practice. It is fairly complex because it was used for research purposes. This study is from secondary care but shows how an approach to change practice was developed based upon barriers and enablers.		
Helpful resources	This is a list of 93 behaviour change techniques[20]: we do not suggest that you learn it! However, you might wish to look through if you are looking for new ways to help change the behaviour of health professionals (or patients).		

Earlier sections addressed 'Why aren't we achieving our goals?' and 'Which approaches can help us change?' This section brings these together and considers how to develop an improvement package comprising one or more approaches to improvement based upon identified barriers and enablers and available resources.

Considering behaviour change techniques

Approaches to change practice can work in a number of different ways. For example, educational outreach visits can include various combinations of 'active ingredients:' being delivered by a credible source; shaping knowledge about a clinical topic; highlighting the positive (and negative) consequences of following a guideline recommendation (or not); providing comparative feedback on clinical practice; and developing an action plan for the practice.

These active ingredients, or behaviour change techniques,[20] can be useful in designing interventions:

- Developing approaches to improve practice can sometimes become complicated and challenging within limited timelines and resources. Behaviour change techniques offer a checklist of active ingredients to consider.
- Behaviour change techniques can be linked to different barriers and enablers. For example, limited abilities to recall all relevant clinical information when making a prescribing decision can be helped by prompts and reminders. There is no rule book (yet) on how to match behaviour change techniques to barriers and enablers; some degree of judgment is usually needed.
- Different improvement approaches can include similar behaviour change techniques. For example, audit and feedback can also include all or most of those mentioned earlier

for educational outreach visits. This is useful to bear in mind if resources are available for audit and feedback but not for educational outreach visits. Therefore, it may be possible to deliver similar active ingredients but within different improvement approaches. However, if you are using more than one improvement approach (e.g. both educational outreach visits and audit and feedback), some degree of duplication may help reinforce any critical behaviour change techniques.

Building approaches to improve practice

Key considerations in developing approaches to improve practice:

- Known evidence of effectiveness of the improvement approach (e.g. educational meetings), including what factors are likely to make them more, or less, effective
- Known barriers to and enablers of improvement
- Available resources and skills (e.g. routinely collected data for audit and feedback, skills in designing computerised prompts)
- Likely feasibility – how confident you are that the approach will work as intended

Table 5 illustrates how to combine the various components of an improvement approach.

Table 5. Illustrative components of an improvement approach

Barriers and enablers	*Behaviour change techniques*	*Evidence-based approaches*		
		Audit and feedback	*Educational outreach visits*	*Computer prompts*
Limited awareness or recall of treatment goals	Inform and prompt recall of clinical goals	●	●	●
Limited awareness of clinical benefit	Emphasize positive consequences of changing clinical practice (and negative consequences of not doing so)	●	●	
Limited insight into scope for improving practice	Comparative feedback	●	●	
Inability to recall all relevant clinical information at time of consultation	Triggered prompts and reminders			●
Risk of good intentions to change fading	Action planning	●	●	

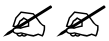
Piloting and refining your improvement approach

An improvement approach may look good on paper but one or more rounds of piloting and refinement are likely to help before it goes 'live.' This is particularly important if you are scaling up for a network of practices.

Suggestions for pilot work:

- Meet with practice staff, in a group or individually, your improvement approach is designed to help. Ask them to think aloud as they work through any instructions, processes or materials. Let them know that you particularly want to hear about problems that they might think that you don't want to hear! Ask if they can suggest any solutions to these problems.
- Then probe people on (how likely is it to work in real life, seriously?), coherence (does the overall improvement approach make sense to them?), comprehensiveness (are all of the most important barriers addressed?) and fit (are there opportunities to embed the intervention within existing routines and resources?)
- Make adjustments as you proceed. If this is important enough, it is worth investing time in further meetings to get it right.
- Pilot the whole improvement approach or its separate components (e.g. computerised prompts) in a small number of practices. Again, actively probe for issues, especially around feasibility and fit with routines and resources.

How can we put our plan into action?

This is about…	Preparing for the launch		
Applicable to level(s)		Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Administrative Management		
Likely difficulty			
Likely time commitment			
Do…	Consider whether you have the commitment and resources to embed changes within your practice or network		
Don't…	Choose a launch period that clashes with competing initiatives or known busy periods		

Preparing for roll out

Some practical considerations:

- Timing to avoid interference (or even align) with any other major initiatives or known peak periods (e.g. winter flu)
- Whether to go for a phased or 'big bang' start; the former is suitable if you have limited resources and allows more for continuing refinement following feedback whilst the latter allows clarity around a launch date
- Whether this is a one-off campaign or you can embed and sustain your improvement approach

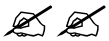
Fidelity checklist

Fidelity is the degree to which a plan is followed as intended. One common reason for improvement approaches not achieving hoped for impacts is loss of fidelity. There are different ways to look at fidelity, which can be considered throughout the planning stages and subsequent evaluation.

- Is the approach designed as intended, i.e. to address all or most major known barriers by embedding relevant behaviour change techniques?
- Are those responsible for delivery sufficiently trained, e.g. are staff delivering educational outreach visits trained to a sufficient standard, or are those people nominated as local opinion leaders 'on message?'
- Are arrangements in place to ensure that the improvement approach can be delivered on time to all practices and staff targeted?
- Do targeted practices and staff actually receive all components of the improvement approach?
- Do targeted practices and staff actually take any subsequent action prompted or supported by the improvement approach?

It is highly unlikely that all of these will go as planned. It is useful, however, to build in planned time for adjustments and running repairs to the design and roll out of the improvement approach.

How will we know we have improved?

This is about…	Evaluating impact		
Applicable to level(s)	Single practice	Network of practices	Regional or national networks
Likely skills and resources needed	Clinical Management Data collection and analysis		
Likely difficulty			
Likely time commitment			
Do…	Remember that cumulative, small changes can make a big difference		
Don't…	Over-complicate your evaluation		
Illustrations	Here is a simple audit of asthma plans carried out at one practice in Leeds. Please send us any examples of quality improvement projects and clinical audits you would like to share. If you are interested in research and want to see what a rigorous, 'real world' randomised trial looks like, see the randomised trial findings from ASPIRE[21]. General practices were randomly assigned to receive an implementation package targeting diabetes control or risky prescribing (Trial 1); blood pressure control or anticoagulation in atrial fibrillation (Trial 2). The main outcomes were respectively: achievement of all recommended levels of haemoglobin A1c, BP, and cholesterol; risky prescribing levels; achievement of recommended BP; and anticoagulation prescribing. The implementation package produced a significant clinically and cost-effective reduction in one target only: risky prescribing. We concluded that an adaptable implementation package was cost-effective for targeting prescribing behaviours within the control of clinicians, but not for more complex behaviours that also required patient engagement. Given known associations between risky prescribing combinations and increased morbidity, mortality, and health service use, a scaled-up risky prescribing implementation package could have an important population impact.		
Helpful resources	RE-AIM.		

What is the aim of evaluation?

The main aim of an evaluation is to find out whether the improvement approach achieved its intended goals. This will involve measuring any change in the processes of care, in patient outcomes, or both. There also are opportunities to address other evaluation questions, such as why the approach worked (or not) and how can it be improved or adapted for another problem.

Whilst this manual may also be of interest to those planning improvements as part of a research project, with the aim of generating new, generalisable knowledge, it does not cover

research designs. There are resources available to understand and guide research evaluations.[3 22-26]

Did the improvement approach work?

Essentially, this involves conducting an audit cycle to assess any differences in care or outcomes before and after the improvement approach. Considerations include:

- Agreeing key outcomes in advance
- Using the same method to collect and analyse data before and after implementation of the improvement approach
- Timing of data collection to capture any short term or longer term impacts – processes of care are more likely to change before patient outcomes

> *No battle plan ever survives contact with the enemy.*
>
> Helmuth von Moltke the Elder

Why did the improvement approach work (or not?)

There are many explanations as it why improvement approaches don't work as planned. Possible explanations include:

- Unrealistic expectations about predicted or hoped for effects
- Loss of fidelity ('How can we put our plan into action?')
- Timing of data collection – did you miss any transient but important early effects, or is it too early to detect any important longer term impacts
- The data collected did not capture effects (although beware of rationalising too much after the event)

There are a number of ways to get an indication of why an improvement approach did or did not work as planned. These are similar to methods outlined earlier in 'Why aren't we achieving our goals?'

Deciding the next step

If the improvement approach largely worked as planned, you will need to decide whether to continue or repeat it in order to maintain your achievement. Having learned from this experience, you may also wish to move on and select the next priority to tackle…

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