Applying quality improvement to clinical practice: primer for psychiatrists

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SUMMARY

Quality improvement (QI) is an evidence-based approach to analysing and improving healthcare systems. QI's success has led it to become a required competency expected of medical professionals in several countries. However, much of the QI literature to date has not focused on mental health. Moreover, many psychiatrists have no formal training in QI. To address this gap, this article introduces key QI concepts, including six dimensions of quality care, the Model for Improvement and plan–do–study–act cycles. Each QI concept is illustrated using a fictitious case study of an out-patient psychiatrist reducing chronic benzodiazepine use in their clinic.

KEYWORDS

Quality improvement; deprescription; continuing medical education; quality of healthcare; mental health services.

LEARNING OBJECTIVES

After reading this article you will be able to:

- understand how to select and analyse a quality problem using process maps and cause–effect diagrams
- describe the steps involved in the Institute for Healthcare Improvement's Model for Improvement, including the development of an aim statement, a measurement plan and plan–do–study–act cycles
- identify practical resources for improvement teams working to implement their own QI projects.

Psychiatrists are increasingly expected to function not only as clinicians, but also as leaders improving the quality of mental health services. One approach to improving healthcare that has gained popularity is quality improvement (QI). This methodology analyses the root causes of quality issues in healthcare, iteratively tests solutions and measures their impact (Institute of Medicine 2000). QI can

successfully be applied at any level of the healthcare system. At the individual level, clinicians may use QI methodology to directly help improve the care of patients in their own clinic. At the national level, healthcare leaders can launch initiatives that improve both population health and clinician well-being (Shah 2022, 2023).

Given QI's potential to strengthen health systems, regulatory bodies for medical education, including those in the UK, the USA and Canada, now require medical trainees to learn about QI with the aim of preparing them for a career participating in and/or leading QI initiatives (Wong 2015; Lane-Fall 2018; Royal College of Psychiatrists 2024). In healthcare institutions, QI projects are increasingly supported by clinician 'champions' with expertise and specialised training in QI. Internationally, many countries have government-sponsored initiatives to promote the use of improvement methodologies in healthcare. Key examples include: NHS IMPACT (Improving Patient Care Together), supporting England's National Health Service (NHS England 2024); the Health Foundation's Q Community, also in the UK (Health Foundation 2024); and the Agency for Healthcare Research and Quality in the USA (Bindman 2017).

Despite the value of QI, many psychiatrists in the global community have no formal training in its methodologies (Institute of Medicine 2000). QI's popularity has grown mainly over the past 20 years, and therefore it could not have been included in the training of many psychiatrists. Limited data exist to compare the uptake of QI in psychiatry with that in other specialties. However, some research suggests that internationally, mental health services underutilise quality measures compared with other branches of medicine (Kilbourne 2018). Moreover, it is unclear whether mental health practitioners and trainees have access to QI education that addresses the unique challenges of their clinical practice (Kilbourne 2018; Brown 2021).

This article aims to help improve the accessibility of QI to mental health practitioners by introducing key principles relevant to psychiatric practice. There are several approaches to conducting QI in a

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systematic way, including the Model for Improvement, Lean and Six Sigma. All of these are used internationally and share common features. We will focus on the Model for Improvement, an approach developed by the Institute for Healthcare Improvement and one of the frameworks most commonly used by healthcare organisations (Boland 2020). We begin by outlining the necessary steps in preparing for a QI project and in using the Model for Improvement.

Preparation and use of the Model for Improvement

Conducting QI using the Model for Improvement can be broken down into seven steps. Before embarking on a QI project, three steps must be accomplished to ensure that there is a clear understanding of your quality problem and the resources you have available to support improvement:

1 identify an opportunity to improve healthcare quality;
2 organise a team to work on improving the quality of care;
3 understand the quality problem: what is the gap in quality? Where in the health system does the problem arise? What is the rationale for addressing the identified quality issue in your specific clinical setting? Why does this problem arise?

At this point you are able to use the Model for Improvement. This is a structured approach to QI that iteratively tests 'change ideas' that will help address the identified quality problem. The model focuses on evaluating three fundamental questions (Courtlandt 2009; Langley 2009): What are we trying to accomplish? How will we know a change is an improvement? What changes can we make that will result in improvement? The steps to address these questions are as follows:

4 identify the aim of the QI initiative;
5 select measures that will show evidence that the QI initiative led to an improvement;
6 select a testable, feasible solution (also called a change idea) that will address the quality problem;
7 iterate plan–do–study–act (PDSA) cycles to rapidly test small-scale interventions to assess whether changes to the care process are achieving the project's goals.

We will use a fictitious case study to illustrate the use of various QI tools at each of the seven steps.

Case study: Part 1

You are a psychiatrist working in a busy out-patient clinic. There are two other psychiatrists, one nurse practitioner and two full-time clerical staff. Recently, you assessed a 60-year-old woman with a history of bipolar I disorder, stable for many years on valproic acid 1000 mg p.o. q.h.s. (by mouth at bedtime), quetiapine 400 mg p.o. q.h.s. and clonazepam 2 mg p.o. q.h.s. Several specialty organisations, including those from psychiatry, geriatric medicine and hospital medicine, recommend avoiding long-term use of benzodiazepines for insomnia, especially in older adults. Simultaneously, it can be hard to prioritise benzodiazepine tapers alongside other patient needs. When you randomly audit 20 records from your clinic for the past month, you identify four patients with chronic benzodiazepine use. You had not documented discussions of benefits and risks of ongoing benzodiazepine use with these patients and at least two could safely begin a taper. You wonder what can be done to support deprescribing in your practice while minimising administrative and clinical burden.

Step 1: Identify an opportunity for improvement

Quality problems may be identified using accreditation standards, institutional strategic plans, coroners' inquests, critical incident reviews, jurisdictional benchmarks or clinical standards, clinical practice guidelines, improvement campaigns (such as Choosing Wisely), performance on patient satisfaction surveys, other feedback from patients, families or caregivers, and clinicians' experiences (Box 1). In the case study, inappropriate chronic benzodiazepine use is the identified quality problem, although there are many others that are common in psychiatric care. To make the QI project more feasible to implement, it can be helpful to narrow the focus to specific populations, such as patients with primary insomnia or anxiety.

Step 2: Organise a team

This article is focused on team-based QI, as opposed to individual practice improvement. QI team members, also referred to as stakeholders or collaborators, are often those who have a depth of understanding of the problem at hand and/or are affected by the quality problem being addressed. Increasingly in the USA, the term collaborators is preferred as the term stakeholders has been associated with violence and power differentials (Centers for Disease Control 2024). In mental health settings, teams might include (but are not limited to) clinicians, administrators, healthcare leaders, patients and their family members. The inclusion of service users such as patients and caregivers deserves additional attention as these are the perspectives not inherently accessible to clinical teams. The inclusion of these voices throughout, from the selection of the quality problem to execution of the QI project, helps ensure that teams

BOX 1 What is quality healthcare?

There is no single definition of quality care, although many of the published definitions share much in common. The National Health Service (NHS) promotes the following definition: 'care that is effective, safe and provides as positive an experience as possible' (National Quality Board 2013: p. 4).

Another framework for analysing the quality of care rests on six dimensions of quality care proposed by the Institute of Medicine (Institute of Medicine 2001). This framework encourages QI projects to solve quality problems that improve care in one or more of the six dimensions:

- *Timeliness*: are patients able to access healthcare when they need it?
- *Effectiveness*: are there measurable improvements in the patient's health?
- *Safety*: are patients harmed (or at risk of being harmed) by the treatments offered?
- *Patient-centredness*: does the care patients receive meet their personal preferences or needs?
- *Efficiency*: does the care provided optimally use the available funding, clinician time, and physical resources available?
- *Equity*: is care affected by the patient's personal characteristics, such as gender, race/ethnicity, sexual orientation, income or geographical location?

address issues important to patients, use measures that are patient-centred and apply strategies that are more likely to work in the target population. A variety of tools exist to support clinicians in effectively engaging with service users, including the Ladder of Co-Production (Think Local Act Personal 2024).

Not all collaborators will be equally invested, and the bulk of the QI project will be completed by a smaller team. It is still important to work with other parties in the workplace to ensure that they are not negatively affected by the initiative, to engage them in sustaining the changes that are introduced and to seek their support for future dissemination/scaling of the QI project. One special type of collaborator is a project champion. This is a senior leader who is often able to help the QI team navigate financial and administrative hurdles. To increase the likelihood that the QI project will be successful in team-based settings, consider using formal 'stakeholder analysis' tools. These can assist teams in systematically identifying collaborators, understanding their likely stance towards the project based on their own priorities, clarifying how they can support you and strategising how to effectively communicate with them (Advancing Quality Alliance 2024).

Step 3: Understand the quality problem

By understanding the factors underlying how and where quality problems arise, clinicians are more likely to be able to (a) explain why the quality problem exists within the current healthcare process and (b) develop solutions that directly address root causes. Without a thorough understanding of the quality problem, the change idea runs the risk of being ineffective because it addresses the wrong problems or, at worst, is counterproductive. There are a variety of QI tools to assist in this step, such as process maps, driver diagrams, Pareto charts, the five whys and cause–effect diagrams (Advancing Quality Alliance 2024). Each of these tools brings a unique lens which can deepen your understanding of the quality problem. Here we will focus on process maps and cause–effect diagrams.

Process maps

Process maps are used to describe existing care processes, clarify which team member is responsible for each task and describe variations in practice (Advancing Quality Alliance 2024). Once completed, the process map can be used to assist in identifying which step(s) should receive the QI interventions (i.e. where a change idea could be inserted, or where unnecessary steps can be removed). It is important to involve multiple collaborators to create a process map that establishes a common understanding of the quality problem and ensures that all steps are accounted for in sufficient detail. Figure 1 shows a 'conventional' process map from the case study's clinic, focused on medication management from the clinician's perspective.

Process maps can be built to highlight different elements and perspectives. For example, an efficiency-focused map might focus more attention on when patients/clinicians are actively engaged in work together and when they are waiting, drawing attention to opportunities to fix inefficiencies. Another type of map is a patient journey map, which documents the healthcare process from the perspective of the patient (Joseph 2020). Further exploration of process mapping and tools to support its use can be found on Advancing Quality Alliance's website (https://aqua.nhs.uk/qsir-tools/).

Cause–effect diagrams

Cause–effect diagrams visually represent important factors that contribute to the identified quality problem. Such diagrams not only expand the team's understanding of the potential causes of a quality problem, but also identify potential sources of failure in a healthcare process that may hinder the team's ability to achieve their desired outcome. To populate a cause–effect diagram, collaborators
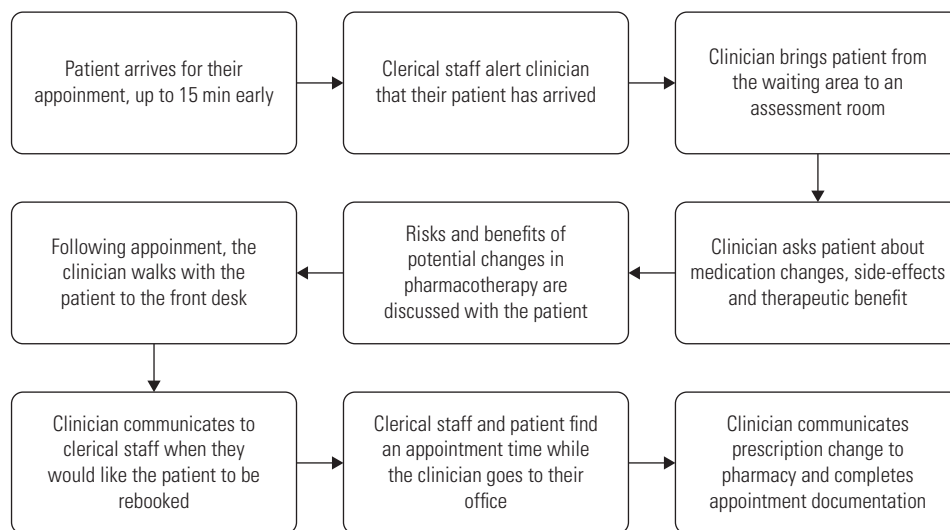
FIG 1 A simplified process map for medication assessment.

can brainstorm which factors contribute to a quality problem and organise them into themes (Box 2 and Fig. 2). Please note that the aim of root cause analysis is not to ascribe blame, but to build understanding: clinicians and patients do not maliciously contribute to quality problems. Rather, there may be unacknowledged issues, sometimes only visible from each of their perspectives, that contribute to the quality problem.

Step 4: Identify the aim of the QI initiative

An aim statement describes precisely what it is hoped will be achieved through the QI initiative.

BOX 2 Root causes of quality problems

When thematically organising root causes, consider using the following six headers.

- *Providers*: what behaviours and characteristics of the clinical staff contribute to the quality problem?
- *Patients*: what issues arise from the perspective of patients who interact with this quality problem (e.g. knowledge gaps regarding the issue)?
- *Policy*: how do policies in the organisation (or jurisdictional policies) contribute to the quality problem?
- *Procedure*: how does the workplace process (such as those identified in the process map) contribute to the quality problem?
- *Equipment/technology*: how does existing equipment or technology, or the lack thereof, contribute to the quality problem?
- *Place*: sometimes referred to as the environment: how does the physical design of the workplace(s) contribute to the quality problem?

To ensure this is achieved, good aim statements are specific in their intent and typically includes the features of the SMART acronym (Shaughnessy 2018):

- specific: it should be clear from your aim statement what precisely you wish to achieve; this should include contextual details (e.g. location, clinicians involved);
- measurable: change is difficult to assess unless it can be quantified; thus, your team should measure an outcome for which baseline data can be established and specify how much the target measure should change by (e.g. 50% average reduction on a symptom scale, or an increase in remission rates for patients from 10 to 25%) through the QI project;
- achievable: ideally, the change in the measure should be neither so ambitious that it evokes nihilism among QI team members, nor so small that they feel uninspired;
- relevant: a good aim statement is one that the team believes, at face value, would meaningfully improve at least one dimension of quality if achieved;
- time-bound: aim statements should identify a realistic deadline for when the project aim will be achieved; a well-selected timeline will galvanise team members into action without feeling unrealistic or excessively long.

It is not uncommon that even at this step of selecting a quality problem QI teams will already begin to have an aim statement in mind. However, team members should be open to the possibility that the QI project's aim may be further refined or entirely changed as they develop a deeper understanding of the quality problem.
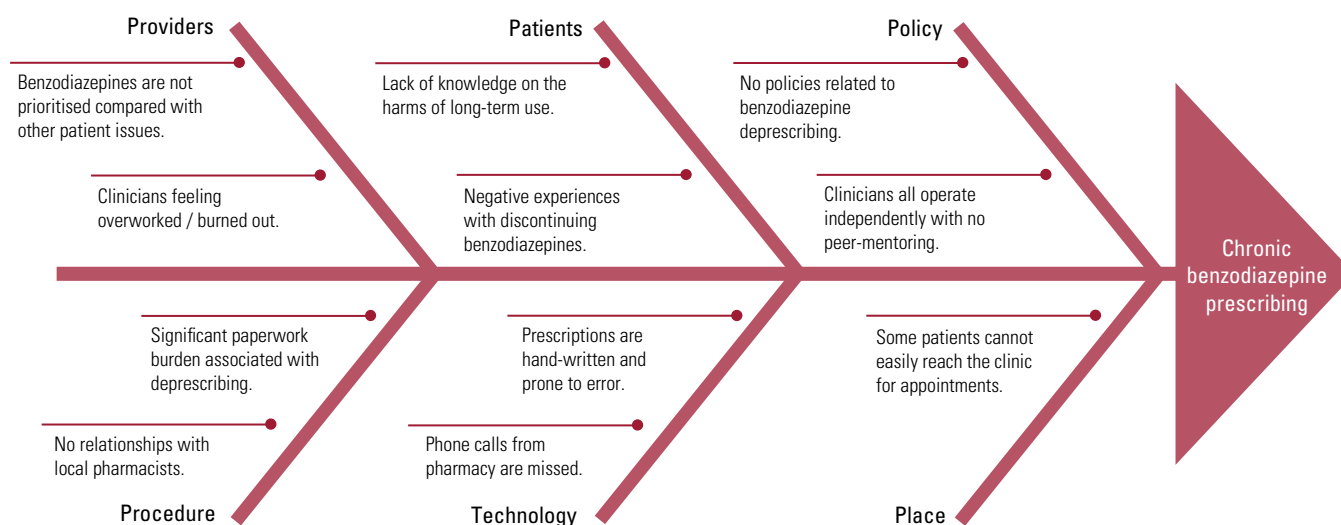
FIG 2 A fishbone diagram depicting root causes of chronic benzodiazepine prescribing.

Case study: Part 2

Your project team consists of yourself and the clerical staff who manage most of your patients. Together, you brainstorm several aim statements. An initial suggestion to make an aim statement about increasing the number of patients educated about benzodiazepine tapers is discarded because it does not specify clearly what must be achieved and nor does patient education on its own necessarily lead to a meaningful clinical difference. Finally, you establish the following aim statement: 'We will initiate benzodiazepine tapers for at least 50% of eligible patients who are taking benzodiazepines to manage insomnia in the next 12 months'. In analysing this aim statement, 50% was seen by the team as a meaningful reduction given that you have yet to start any patients on a taper. Twelve months is a realistic timeline in your clinic given that some patients may not have a follow-up within the next few months and may need a few additional months to book the appointments necessary to start their benzodiazepine taper. Finally, the chosen outcome measure (percentage of eligible patients being initiated on a taper) was selected since completion of a taper may be an unrealistic short-term outcome for some patients.

Step 5: Define measures

The Model for Improvement emphasises the importance of using data to assess the impact of improvement efforts and to validate that the change made is truly an improvement. The measures collected for QI projects fall into three categories: (a) outcome measures, (b) process measures and (c) balancing measures (Table 1). Teams typically collect data in each category before and after the implementation of each new change. The data are typically quantitative (i.e. how much or how many), but can also include qualitative data (i.e. why something occurred).

Step 6: Selecting a change idea

After carefully considering the causes of a quality problem and the processes within the workplace, the QI team can select a change idea. Features of good change ideas include that they are based on the theory of why the quality problem exists (e.g.

TABLE 1 Types of quality improvement (QI) measure

Type of measure	Case-study examples
Outcomes measures: these data reflect what the QI team ultimately wishes to achieve. Clinically, this might include symptom rating scales, side-effect rates or mortality rates.	Absolute reduction in the percentage of patients taking benzodiazepines for insomnia Number of patients who complete a benzodiazepine taper
Process measures: these are data that reflect a step in the healthcare process that is logically linked to achieving the project's desired outcome. Process measures ensure that each step in the intervention is working and that the intervention has fidelity (i.e. that team members are following the intervention as its creators intended it to work).	Number of patients who attended their follow-up appointments to monitor their benzodiazepine taper Number of patients who received psychoeducation materials about benzodiazepine tapers
Balancing measures: these data reflect a different dimension of the healthcare system to assess whether the change to the process has had an unintended impact on the system. These might include increased staff time spent on the project, expenditure or assessments of patient experience.	Number of additional appointments booked because of the QI initiative Number of patients experiencing any harm (e.g. illness relapse, withdrawal symptoms) due to the taper

from the cause–effect diagram), on an understanding of how the change can sustainably fit into the existing clinic workflow (e.g. from the process map) and on feasibility. That is, they are financially possible, supported by collaborators, and can be realistically implemented and sustained.

Quality problems in healthcare can rarely be solved by a single solution. Thus, it is common in QI to need to test multiple change ideas on different parts of the system. Some change ideas are used repeatedly and are referred to as change concepts that are broadly applicable to QI projects across specialties. Examples of change concepts include removing unnecessary steps/tasks in a clinical workflow, using checklists such as order sets, or requiring all employees to follow specific safety procedures. Langley and colleagues (2009) identified 72 basic change concepts which it may be helpful to review when brainstorming change ideas. Some organisations, such as Deprescribing.org, prepare 'change packages' which include a variety of resources, such as patient handouts and the specific quality measures necessary to carry out a change idea (Deprescribing.org 2023). Our case study presents an example change idea to highlight the principles of feasibility and the use of existing change packages. However, many other change ideas could be equally, or more, effective.

Case study: Part 3

The project team finds several review papers summarising successful strategies other clinicians have used to deprescribe benzodiazepines (Ribeiro 2021). After

reviewing the literature and speaking to colleagues in nearby clinics, the QI team discusses two approaches: option 1: partner with community pharmacists to implement and monitor deprescribing efforts; option 2: provide patients in clinic with psychoeducation both in person and through written resources using an existing Benzodiazepine Receptor Agonist deprescribing change package (Deprescribing.org 2023).

The QI team decides that option 2 is more feasible to implement as an initial change. From the root cause analysis, the team focuses on two factors to address in their proposed solution. First, there is no clear procedure to support benzodiazepine monitoring and deprescribing in the clinic. Second, there is a lack of patient psychoeducation. They propose the following procedure to be applied on the days when you (a single clinician) and one of your full-time clerical staff are working.

- After identifying a patient on chronic benzodiazepine prescription for insomnia for whom a taper could be accomplished safely during routine clinical work, you will give them a benzodiazepine fact sheet from Deprescribing.org and begin discussing the possibility of a taper (Joseph 2020). If time is not available, this discussion and the taper initiation can be deferred to follow-up appointments.

- A tally sheet (Fig. 3) is used to track how many patients are given psychoeducation materials (process measure), a risk–benefit discussion (process measure) and the additional follow-up appointments that the patients need because of this project (balancing measure). This tally sheet takes just seconds to fill out after each appointment.

Week	Number of patients			
	Number of eligible patients seen (including those seen previously but not started on taper)	Discussed AND documented the risks/benefits of tapering	Initiated taper	Unscheduled follow-ups
0–3	⊞⊞⊞ ⊞⊞⊞ |||	||		
4–7	⊞⊞⊞ ⊞⊞⊞ ||	||||			
8–11	⊞⊞⊞ ⊞⊞⊞		|||	|||	
12–15	⊞⊞⊞ ⊞⊞⊞	⊞⊞⊞		⊞⊞⊞		
16–19	⊞⊞⊞ ⊞⊞⊞ ||	⊞⊞⊞		||||	||
20–23	⊞⊞⊞ ⊞⊞⊞		⊞⊞⊞ |||	⊞⊞⊞			
24–27	⊞⊞⊞ ⊞⊞⊞		⊞⊞⊞ ⊞⊞⊞	⊞⊞⊞ ||	||
Patient tracker (added in PDSA 2): underline medical record number if you have discussed risks/benefits. Cross out once they start the taper 3451, 1092, 3604, 6603, 6405, 5033, 899, 2219, 1352………				

FIG 3 An example tally sheet. PDSA, plan–do–study–act cycle.

Step 7: Plan–do–study–act cycles

Plan–do–study–act cycles, also referred to as PDSAs, are an approach that iteratively implement 'small tests of change' that progressively bring a team closer to achieving the full aim statement (Leis 2017). Rather than developing a large-scale intervention from the outset (e.g. a planned comprehensive benzodiazepine describing programme implemented for all clinicians in across multiple clinics), a PDSA-based approach might first start with a more limited intervention, with a single clinician, on a single day of the week. After each PDSA cycle, the team can iteratively add in more complexity. PDSA cycles need not focus on implementing a single change idea. Some teams, especially when working on QI projects at levels larger than an individual clinician/clinic, may find it necessary to dedicate multiple PDSAs to ensuring that specific measures are feasible, teaching team members how to successfully implement the change idea, testing different hypotheses about why the quality problem exists, and more. There are four stages to this cyclical approach:

1 *Plan*: at this stage, the QI team develops a clear plan of what they will work on next that advances the project towards achieving the overall aim statement. Each PDSA cycle should have its own goal. For example, as a QI project evolves, project teams may implement PDSA cycles that focus on: (a) the development of a component of the project such as gathering new knowledge about the quality problem, or (b) piloting a change or (c) implementing a change more broadly. PDSAs follow the standard scientific method: teams should generate hypotheses about what they expect to see occur once the change is implemented. Additionally, the planning stage should delineate which team members will be involved, how long the PDSA cycle will last and how data will be collected.

2 *Do*: at this stage, the change idea is implemented; outcome, process and balancing measures are collected; and the QI team assesses whether the change was implemented correctly. There may be important lessons learned during this stage. For example, you may identify unanticipated barriers that must be addressed in future PDSAs, such as difficulty collecting data.

3 *Study*: once the brief test of change is completed, the measures are analysed to assess whether your goals have been achieved and to identify opportunities to further refine the change idea. Teams should pay particular attention to findings that are unexpected as they often lead to a better understanding of the healthcare process and the quality problem's root causes.

4 *Act*: based on the experiences in the previous three stages, QI teams can choose to start a new PDSA cycle (returning to the 'plan' phase) that adopts the changes made, abandons the changes or expands the change to a greater number of patients or clinicians. It would not be advisable to expand the change until your team is confident that there is a high-quality implementation that has addressed the original quality problem.

A simplified example of using PDSAs is presented in Box 3.

Case study: Part 4

Seven months after beginning the QI project, you are quite comfortable using the tally sheet and educational tools. In each PDSA, small tweaks improve the effectiveness of your interventions. Overall, you identified 56 eligible patients. You discussed tapers with 38 (68%) of these, initiating tapers with 26 (46%). Although this narrowly does not meet your aim statement target of initiating tapers with 50% of eligible patients, you recognise that QI is about pursuing continuous improvement and that your team can continue to tackle the quality problem in future PDSA cycles. Your results are graphed using a run chart and are shared with your colleagues (Fig. 4), showing that as time went on, you more frequently discussed and initiated tapers with your patients. There are many issues your team could tackle in the next PDSA, including (a) why you did not discuss benzodiazepine tapering with many of the eligible patients or (b) what barriers prevented some of the patients with whom you discussed tapering from initiating their taper. After discussion with a colleague, you decide to make issue (a) the focus of your upcoming PDSA cycle.

Sustaining and scaling QI projects

One-third of QI initiatives do not result in sustained improvements 1 year after project completion, leading some to consider sustainability to be the most important aspect of QI (Ham 2003). The NHS and others have created sustainability models to help clinicians working on QI projects that are to be expanded and maintained by a service (Maher 2010; Health Quality Ontario 2013; Lawson 2018). These models recognise that successfully sustaining QI involves not only dedicated clinicians, but also organisational support and dedicated time to work on the project. Factors influencing sustainability that are common across these models can be broadly categorised at the level of people, clinical processes and organisations.

Staff

Interventions are more likely to be sustained, irrespective of which employees are working, if: a diverse range of collaborators have been involved

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BOX 3 Quality improvement (QI) project progression over three plan–do–study–act (PDSA) cycles

PDSA 1

Plan: Over the next 4 weeks, discuss benzodiazepine deprescribing with qualifying patients seen in routine follow-ups. The purpose of this PDSA is to ensure you can effectively track and begin the tapering process.

Do: You did not discuss this project with many patients, finding that you were running out of appointment time. Overall though, patients do seem interested in learning more.

Study: Although the tally chart effectively tracks the number of eligible patients seen, it did not identify which patients booked a follow-up appointment with you.

Act: Your change idea should be modified to track which patients need risk–benefit discussions and/or to start taper.

PDSA 2

Plan: Over the next 8 weeks, have your clerical staff (a) review the tally sheet once a week to contact patients who do not book a tapering appointment after an initial discussion and (b) ensure they are seen within 12 weeks of the initial appointment.

Do: One patient who you intended to start on a taper informed you that they did not do so, having forgotten the instructions of how much to taper each week.

Study: About 90% of patients were successfully reached and scheduled for follow-up.

Act: Your change idea should be modified to help patients remember what dose to take.

PDSA 3

Plan: Over the next 12 weeks, (a) encourage use of blister packs for your patients and/or give patients the Sleepwell sleep medication handout, which helps track which benzodiazepine dose to take each week (Sleepwell 2023).

Do: there is one serious adverse event – a patient experienced a depressive episode which may have been influenced by worse sleep and you are now seeing that person every 2 weeks.

Study: You are increasingly efficient at discussing risks and benefits with patients and find it easier to do so in the same initial appointment as before the project began. Most patients with whom you discussed tapering have been started on a taper. Your volume of taper initiations picks up as you see more patients from PDSA 2 in follow-up.

Act: Your team pivots towards focusing future PDSAs on improving the engagement of eligible patients with whom tapers have not yet been discussed or initiated.

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in understanding the problem from the inception of the project (Trbovich 2017), the intervention broadly engages healthcare team members affected by its implementation or results (Burke 2021), there is a perception the change has made a positive difference and these benefits have been regularly communicated (Health Quality Ontario 2013). Engaged clinical and organisational leaders also play a pivotal role in removing potential barriers to sustainability (Maher 2010; Health Quality Ontario 2013). Further, teams who have proactively engaged patients and carers in the design of QI interventions benefit from continued engagement to leverage their involvement in sustaining the intervention (Burke 2021).

Healthcare delivery processes

Changes that simplify workflow are more readily adopted and tend to be more sustainable. If teams deploy multiple change ideas, it is recommended that they undertake PDSA cycles that will delineate the 'active ingredients' of the intervention such that resources can be deployed to sustain the essential components of the intervention over the long run (Burke 2021).

Organisational processes

In planning for sustainment, QI teams should ideally ensure that there is sufficient infrastructure for ongoing real-time measurement to assess progress and to direct improvement efforts (i.e. quality control) and ongoing communication with collaborators to ensure QI project aims continue to be achieved (Maher 2010; Sampath 2021). At the organisational level, there may be dedicated personnel with expertise in QI to help support QI teams in their implementation efforts. Moreover, sustainability is more easily achieved if the improvement initiative aligns with the healthcare organisation's vision and/or strategic plan (Health Quality Ontario 2013).

Comparing QI with related terminology

Having established how QI using the Model for Improvement is conducted, it now can more clearly be differentiated from related terminology (Box 4). The relationship between QI, research and audits deserves additional attention as it is commonly misunderstood. All three share common features: they use established scientific
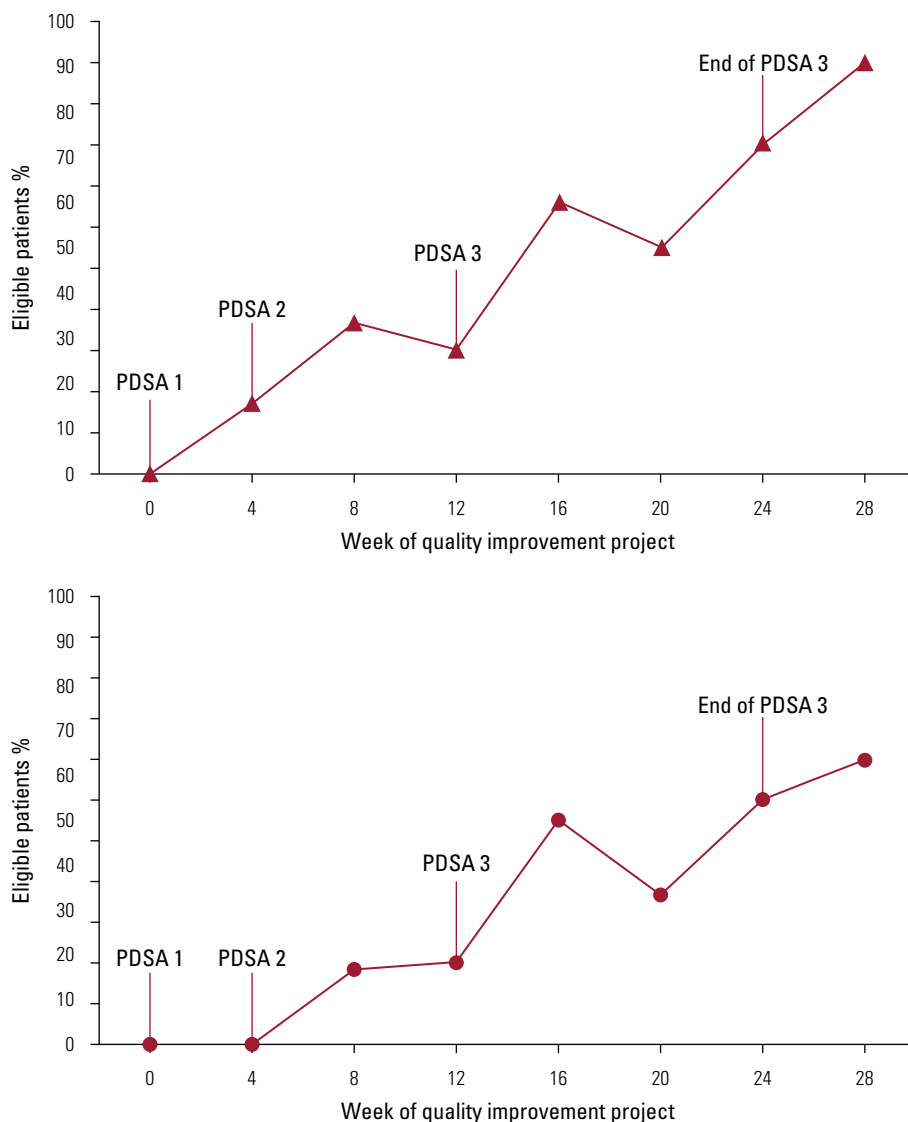
FIG 4 Run charts of the number of eligible patients with whom tapers are (a) discussed and (b) initiated. PDSA, plan–do–study–act cycle.

BOX 4 Approaches to improving healthcare quality

Quality improvement (QI) alone does not ensure that whole health systems operate effectively and continue to achieve high levels of quality. Below are several terms that have been popularised in the literature on healthcare quality that expand beyond QI-based approaches (Shah 2020).

- *Quality control*: a process that ensures services meet quality standards over time. An example in healthcare are quality-focused data dashboards, which facilitate prompt detection of changes in quality indicators and provide opportunity for timely corrective actions through team huddles and/or involvement of healthcare leaders.
- *Quality planning*: a process that involves identifying and analysing healthcare service needs, and then designing and managing services to meet those needs. In healthcare, planning may occur at the level of clinical services, within or across organisations or agencies, or at the level of administration of the healthcare system.
- *Quality assurance*: a process that assesses whether a healthcare service is meeting an established standard or threshold. Examples in healthcare include periodic audits, licensing, accreditation programmes and inspections.

methodologies, gather and analyse data and generate findings that clinicians can use to improve patient care.

An audit measures how a healthcare service's processes or outcomes compare with established quality standards (Dixon 2011). For example, if a region defined the target waiting time for psychiatric consultation to be 80% of patients seen within 1 month, an audit might reveal that only 60% of clinical assessments meet this target. Quality assurance (QA) is a broader term that describes the efforts made in a health system to ensure that particular standards or thresholds are being met, often conducted periodically. Regular auditing, accreditation, licensing, credentialing and inspection are all examples of QA in healthcare (Sampath 2021). QA is built into some health systems, such as the UK's National Clinical Audit Programme, which routinely audits the care provided in priority areas of the health system (Healthcare Quality Improvement Partnership 2024). Shah (2020) provides a model that delineates the role of quality assurance and its interplay with quality planning, quality improvement and quality control to achieve a quality-focused management system in healthcare.

QI differs from audits and QA as there may not be an established standard associated with an improvement initiative. Moreover, even in cases where a clinical team is achieving the standard, QI approaches can be used to improve the quality of care even further. QI and audits can also be complementary: for example, an audit could reveal the need for a QI project if it demonstrates there is a quality gap. QI methodology could subsequently be used to understand the quality problem more deeply and generate ideas for change, as the audit on its own will not generate innovations in care that enhance performance (Shah 2020).

Although both QI and research methods test hypotheses, research is typically conducted using an established protocol and it generates new knowledge that can then be used by clinicians or other researchers. In contrast, QI uses scientific methods to iteratively improve the delivery of healthcare quality at a specific time, in a specific context. QI can be used to bring interventions shown to be effective in research settings into clinical practice. For example, QI would not be an appropriate methodology to develop a new benzodiazepine tapering protocol. However, if a new benzodiazepine tapering protocol was published that was shown to be more effective than existing approaches, it can be adopted by a clinic using QI methodology. Conversely, a QI initiative could generate an exemplary model of care that could be evaluated using research methodologies to encourage other jurisdictions to adopt the same model.

Next steps for clinicians

Clinical QI often is informed not only by the problems clinicians see in their day-to-day work, but also by health system priorities. To ensure that time and any health system resources are optimally used, consider the following recommendations.

- Identify high priority quality problems: in the case study, the focus on benzodiazepine deprescribing was selected based on clinician preference. However, there may be higher priority issues in your clinic. Co-designing with patients/families/carers at this stage is recommended to help ensure that their priorities are taken into consideration. Further, many countries have national, regional and/or organisation-specific standards that identify common and important quality problems facing mental healthcare. Alignment with strategic priorities increases the likelihood of project success as it can facilitate access to funding, personnel, data infrastructure and leadership support. This also increases the opportunity to spread QI initiatives shown to be effective in other settings, for example through the adoption of a change package to more readily achieve the project's goals.
- Collect baseline data: although the existence of a quality problem can often be identified from clinician/patient experience alone, baseline data that quantify the severity of a problem (e.g. percentage of patients in a clinic on chronic benzodiazepine prescription) can inspire collaborators and provides a baseline for future improvement efforts.
- Utilise existing strategies and resources: many important quality problems in mental healthcare have established toolkits published online. Other approaches include using strategies published by other clinical teams or speaking to colleagues with similar concerns. In the case study, the use of established change packages would have saved numerous hours and likely multiple PDSA cycles.
- Seek mentorship and support: carrying out QI in isolation can be challenging both emotionally and technically. In some jurisdictions, there may be established pathways to access coaching or support with conducting audits or QI, wheras other settings may have limited availability of mentorship. Thus, there is a need to build an international community of practice supporting psychiatrists interested in pursuing QI. Moreover, a culture that promotes QI in psychiatry would recognise QI activity in faculty promotions, provide opportunities to engage in QI scholarship and include QI project participation as an expected part of clinical roles.

BOX 5 Quality improvement (QI) resources for psychiatrists

Publishing QI

- Journals: common journals include *BMJ Quality and Safety*, *BMJ Open Quality* and the *Journal of Patient Safety*.
- Preparing manuscripts: the Standards for Quality Improvement Reporting Excellence (SQUIRE) version 2.0 are a commonly used guideline for formatting QI projects for journal submission (Goodman 2016).

Presenting QI

- Conferences: the Royal College of Psychiatrists' Quality Improvement Conference; the International Forum on Quality and Safety in Healthcare; the American Psychiatric Association (APA) Annual Meeting; the APA Mental Health Services Conference; the Canadian Psychiatric Association's Annual Conference

Free online tools to learn about conducting QI

- *Advancing Quality Alliance (Aqua NHS) Quality, Service Improvement and Redesign (QSIR) Tools*: this is a comprehensive overview of QI tools and templates for each stage of a QI project (Advancing Quality Alliance 2024).
- *Quality Improvement: An Introductory Guide for Trainees & Trainers*: this document, published by the Royal College of Psychiatrists, was designed to introduce core IQ principles to UK trainees, but may be helpful for introducing learners internationally to QI and their role in contributing to an improved health system (Gibson 2019).
- Institute for Healthcare Improvement Open School: this platform provides comprehensive videos and handouts by international leaders in QI education, covering basics to specialised topics (Institute for Healthcare Improvement 2024).

Resources on sustaining QI projects

Implementing and Sustaining Changes: this primer outlines the core steps in sustaining QI changes and can be used in conjunction with the worksheet below (Health Quality Ontario 2013)

Sustainability Planner Instruction Sheet & Tool: this worksheet identifies key steps in sustaining QI initiatives (Health Quality Ontario 2024).

- Disseminating findings: spreading effective QI initiatives within an organisation or to other organisations is a critical aspect of the QI cycle as it is necessary to achieve population-level QI goals. Traditional academic dissemination forums, such as conferences or academic journals (Box 5), should be considered in addition to community-based dissemination such as through media stories, online blogs or videos.
- Pursue additional QI training: for psychiatrists who have not had extensive QI training during residency, free and paid programmes are available to learn more about QI. We have highlighted in Box 5 some of the highest value resources identified in our own experiences training junior clinicians in QI.

Conclusion

Psychiatrists have an essential role in improving their clinics, hospitals and healthcare systems through QI. This article introduces core concepts and tools clinicians can use, centred on the Model for Improvement. The case study demonstrates how QI can be accomplished by clinicians with limited data informatics infrastructure and minimal administrative and clinical burden through the prudent selection of measures, change ideas and change packages. Further work is

necessary to support psychiatrists in their QI training and to build a larger community of practice for QI work in mental healthcare.

Data availability

Data availability is not applicable to this article as no new data were created or analysed in this study.

Author contributions

A.N., A.E.W. and T.A.B all contributed to the planning, drafting and review of this paper.

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Declaration of interest

None.

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MCQs

Select the single best option for each question stem (the answers to the MCQs are explored in Box 6)

1 In an in-patient mental health setting, which of the following would be a balancing measure for a QI project aiming to reduce the rates of constipation among in-patients by improving the usage of laxatives when required (p.r.n.)?
a Number of p.r.n. laxatives given by the nursing team
b Number of physician-written laxative orders
c Number of adverse medical events caused by laxatives (e.g. severe diarrhoea)
d Percentage of patients who have constipation on the unit at any given time
e Number of patients who develop severe constipation requiring enemas or suppositories.

2 Which of the following best defines a 'change package'?
a The group of measures used to conduct a quality improvement (QI) project
b A collection of tools that can be used to implement and evaluate a specific QI initiative
c The information gathered after a team understands a problem's root cause and clarifies current processes
d Standardised solutions that have been implemented by others to solve similar quality problems
e The process by which a QI team selects a specific change idea.

3 Which of the following would be the strongest aim statement?
a Our out-patient clinic will reduce no-show rates from 20% to less than 10%
b Over the next 4 months, our clinic will reduce no-show rates by 15%
c Applying the change idea, two clinicians in our clinic will work on reducing no-show rates in the next 4 months
d Two clinicians in the out-patient clinic will reduce their average no-show rate from 20% to less than 10% in the next 4 months
e The clinic will reduce its no-show rates using patient reminders, achieving a reduction of no-shows from 20% to less than 10%.

4 Which of the following best defines quality improvement?
a An approach that proactively identifies and solves healthcare service needs
b A process for detecting changes in an indicator and taking corrective actions
c A process that involves collecting, organising and analysing evidence to increase understanding of a topic, with attention to controlling sources of bias and error
d An approach to improving the quality of services or processes through cycles of planning, testing, data collection and evaluation
e An approach to evaluating whether a service or process meets defined standards, often conducted periodically.

5 A plan–do–study–act (PDSA) cycle in a project aiming to deprescribe benzodiazepines for a single psychiatrist's patient roster in a group out-patient clinic found during the 'study' phase that their most recent intervention minimally improved deprescribing rates. What would be the QI project team's next step?
a Select new process measures
b Revisit the root causes of the quality problem to develop a new change idea
c Expand the intervention to include more clinicians in the clinic
d Select new outcome measures
e Re-evaluate the QI project's aim statement.

BOX 6 MCQ answers

MCQ 1

Option (c) is the correct choice: balancing measures are used to monitor for the unintended consequences of a QI project. In the case of an initiative that will ultimately lead to increased laxative use on an in-patient unit, we would expect that adverse reactions to laxatives might occur at an increased rate. Thus, this would be a good balancing measure. The number of p.r.n. laxatives given (option a) or physician-written orders (option b) would both be process measures since they are steps that must necessarily occur before constipation is treated. The number or percentage of patients with constipation (options d and e) could both be an outcome measure of interest.

MCQ 2

Option (d) is the correct choice: change packages typically include a variety of interventions or tools packaged together that have been shown to help address specific quality problems.

MCQ 3

Option (d) is the correct choice: a good aim statement is specific to context (two clinicians in the out-patient clinic), has a clear target and measure (reducing the no-show rate from 20 to 10%), and timeline (4 months). The other options lack one of these three aspects. It is worth noting that aim statements do not necessarily need to specify the specific mechanism through which the goal will be achieved, as is done in option (e).

MCQ 4

Option (d) correctly defines QI. Option (a) defines quality planning, (b) defines quality control, (c) defines research and (e) defines quality assurance.

MCQ 5

Option (b) is the correct choice: after the 'study' phase in a PDSA cycle the next step is to take action on the data the QI team gathered. Given that the most recent change idea did not work, it is possible that the QI team might not have focused on addressing the right root causes and this could be revisited. There is nothing in the question's stem to suggest that the outcome measure, process measure or study aim is inappropriate (options a, d and e). At this point there would be no role in involving other clinicians in the project if success has yet to be seen with the single psychiatrist (option c).