



# Evaluating quality improvement at scale: A pilot study on routine reporting for executive board governance in a UK National Health Service organisation

Kia-Chong Chua<sup>a,b,\*</sup>, Claire Henderson<sup>a,b</sup>, Barbara Grey<sup>b</sup>, Michael Holland<sup>b</sup>, Nick Sevdalis<sup>a</sup>

<sup>a</sup> Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK

<sup>b</sup> South London and Maudsley NHS Foundation Trust, UK

## ARTICLE INFO

### Keywords:

Quality Improvement  
Governance  
Routine reporting

## ABSTRACT

**Background:** Quality improvement (QI) in healthcare is a cultural transformation process. We explored how routine reporting could be developed to aid visibility of the process for QI governance.

**Method:** A retrospective evaluation of QI projects in a large healthcare organisation was conducted. We used an online survey so that the data accrual process resembled routine reporting to help identify implementation challenges. A purposive sample of QI projects was targeted to maximise contrast between projects that were or were not successful as determined by the resident QI team. To hone strategic focus in what should be reported, we also compared factors that might affect project outcomes.

**Results:** Out of 52 QI projects, 10 led to a change in routine practice ('adoption'). Details of project outcomes were limited. Project team outcomes, indicative of capacity building, were not systematically documented. Service user involvement, quality of measurement plan, fidelity of plan-do-study-act (PDSA) cycles had a major impact on adoption.

**Conclusion:** Designing a routine reporting framework requires an iterative process to navigate data accrual demands. A retrospective evaluation, as in this study, can yield empirical insights to support development of QI governance, thereby honing the implementation science of QI in a healthcare organisation.

## 1. Background

A growing number of health care provider organisations in the UK National Health Service (NHS) are adopting quality improvement (QI) strategies across their organisations (Ross & Naylor, 2017). The Care Quality Commission (CQC), an independent regulator of health and social care services in England, noted a trend after recent inspections that NHS provider organisations with outstanding CQC ratings have applied QI at scale (Care Quality Commission, 2018a, 2018b). The systematic application of QI at scale in NHS provider organisations has required concerted investment to sustain a process of cultural transformation. To monitor the developmental stages of this process, an organisation-wide picture of QI applications and their impact is needed. This helps the organisation's executive board commit to a long-term perspective on investments made in QI infrastructure, a critical theme in emerging accounts of QI success in NHS provider organisations (Ross

& Naylor, 2017; Shah & Course, 2018).

With prevailing pressures on NHS resources (Dunn, McKenna, & Murray, 2016; Gilbert, 2015; Smithson, Maguire, Honeyman, & Jabbal, 2015), exacerbated by the COVID-19 pandemic, sustaining long-term commitment of the executive board would require routine reports to increase visibility of the QI success and progress in cultural transformation. Amidst growing literature on hospital board governance for QI (Jones et al., 2017), not much is known about what routine reporting should offer to be useful for this governance. Firstly, routine reporting needs systematic design that addresses staff capacity building in data literacy (Gardner, Olney, & Dickinson, 2018; Zamboni et al., 2020), particularly in developmental stages of embedding a culture of continuous improvement within an organisation. The level of technical skills needed for measurement, data collection and analysis, is commonly underestimated in QI, and generally not sufficient in frontline NHS staff despite some training provision (Woodcock, Liberati, & Dixon-Woods,

\* Corresponding author at: Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK.

E-mail addresses: [kia-chong.chua@kcl.ac.uk](mailto:kia-chong.chua@kcl.ac.uk) (K.-C. Chua), [claire.i.henderson@kcl.ac.uk](mailto:claire.i.henderson@kcl.ac.uk) (C. Henderson), [barbara.grey@slam.nhs.uk](mailto:barbara.grey@slam.nhs.uk) (B. Grey), [michael.holland@slam.nhs.uk](mailto:michael.holland@slam.nhs.uk) (M. Holland), [nick.sevdalis@kcl.ac.uk](mailto:nick.sevdalis@kcl.ac.uk) (N. Sevdalis).

<https://doi.org/10.1016/j.evalprogplan.2022.102222>

Received 24 February 2022; Received in revised form 23 May 2022; Accepted 20 December 2022

Available online 22 December 2022

0149-7189/© 2022 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

2021). Moreover, routinely collected data are often not as clean or well set up as originally anticipated, often requiring extensive effort to bring them up to a standard suitable for use (Woodcock et al., 2021). This means that an organisation-wide picture of QI applications and their impact cannot be readily constructed by aggregating project reports of impact or success. Even for case studies with proper design and adequate analysis, they would not offer an organisation-wide picture of QI success and cultural transformation.

There is, therefore, a need for constructing a routine reporting framework that can help inform the executive board and sustain long-term commitment in using QI methodology to achieve cultural transformation within a healthcare organisation. This study aims to start addressing this gap. We report a pilot evaluation of QI activity within a large mental health NHS Trust to develop the content of routine reporting. To hone strategic focus in what should be reported, we also compared factors that might affect project outcomes. We review evaluation findings, alongside data quality, to inform on design considerations and implementation challenges of routine reporting for the Trust's executive board.

## 2. Method

### 2.1. Setting

An NHS organisation that provides specialist care for mental health in South London established a resident QI team in 2016 with the mandate to foster a continuous improvement culture. The team supports QI projects led by frontline staff through training and coaching on QI methodology (e.g., Model for Improvement, driver diagrams, measurement plans, Plan-Do-Study-Act (PDSA) cycles). In partnership with an academic institution, the NHS provider organisation also adopted a researcher-in-residence model that embeds an academic faculty in the resident QI team to support measurement and evaluation needs. With a steady rise of QI activities within the organisation between 2016 and 2018, the executive board sought an evaluation of these nascent developments.

### 2.2. Study design

To explore what should be included for an executive board report on organisation-wide QI programme, a scoping exercise was first initiated by the researcher-in-residence to develop a proposal of evaluation content. This involved individual consultations with three improvement specialist colleagues in the resident QI team, coupled with a rapid evidence scan of peer-reviewed and grey literature on what constitutes success for QI in healthcare. Key concerns were raised with time resources, staff turnover, service user involvement, and outcomes like whether project ideas were adopted and spread. The literature also drew attention to the fidelity of PDSA applications and implementation of data or measurement plan.

Following this process, a list of items was generated and circulated among the entire team of six improvement specialists in the resident QI team for formative feedback on content relevance, acceptability, and feasibility issues. This feedback was combined with inputs from two academic colleagues with expertise in implementation and improvement sciences. A revised version was then piloted with two colleagues in the resident QI team. Based on the finalised content, an online form was constructed (online supplement) so that the data accrual process simulated what would be required for routine reporting to the executive. This was intended to surface challenges in routine reporting and guide design considerations.

With over 200 QI projects initiated between 2016 and 2018, retrospective information retrieval was undertaken with a purposive sample for feasibility reasons. Each improvement specialist of the Trust's resident QI team was requested to complete the online form for up to five QI projects that they considered as 'successful' and up to another five that

they considered as 'unsuccessful'. Specifically, they were asked to rely on their own assessment of what did and did not work to maximise the gradient of contrast across the selection of QI projects. We decided on this approach because there is no established definition of 'success' in QI (Morganti, Lovejoy, Haviland, Haas, & Farley, 2012). Instead of imposing a 'work-as-imagined' criterion in the absence of consensus, we thus aim to gain insights on staff perceptions of success in terms of 'work-as-done' (Hollnagel, 2017).

### 2.3. Measures

The online form aimed to serve a dual purpose of accountability and feedback. Accountability measures focus on project outcomes, costs, and benefits. Feedback measures focus on contextual, input, and process factors that may affect project outcomes. To give an overview of a diverse range of QI projects, we operationalised the measures at a conceptual level that allow comparisons between projects despite heterogeneity in scope and size. In doing so, we focus on the organisational impact of QI, rather than project-specific impact of QI on the organisation.

In terms of project outcomes, we studied whether projects: (1) reached formal completion; (2) achieved their aims; (3) led to a change in routine practice (adoption); and (4) triggered similar projects beyond the site of their original conception (spread). To form a picture of cost and benefit amidst considerable variation in documentation, we probed on whether it was possible to quantify improvement in terms of cost savings and whether this had been attempted. As a practical measure of cost, we measured the amount of contact with the resident QI team in terms of meetings, site visits, and email correspondence. In terms of benefit, we sought an estimate of the number of staff and service users who benefitted directly from the change introduced by the QI project. We also probed on two types of project milestones: (1) the extent and form in which project teams disseminated their findings and (2) whether project team members went on to develop new QI projects. These latter measures help provide an account of capacity building across projects. As an organisational management philosophy, QI recognises the critical need to empower frontline staff to learn and participate in continuous improvement in face of escalating complexity and change (Blumenthal & Kilo, 1998). As such, capacity building is a pertinent milestone in efforts to move beyond performance assurance and cultivate an organisational culture of learning.

To enable feedback on what may facilitate or impede QI project success, we explored contextual, input and process factors. Contextual factors refer to organisational conditions that are not within the influence of QI project teams yet can impact on project outcomes and success. Besides setting (inpatient / community care), the resident QI team drew particular attention to contextual aspects such as whether a project was the team's first ever QI project undertaken, and whether protected time for QI activities was officially sanctioned. Input factors comprised team characteristics and staff turnover. Process factors referred to actions or decisions of the project teams. They comprised stakeholder engagement, PDSA cycles and measurement plans implemented.

### 2.4. Analysis

We first enumerated project outcomes in terms of whether they reached formal completion, achieved their aims, introduced change ideas that were adopted in routine practice (adoption), and triggered similar projects at other sites (spread). Thereafter, we focused on adoption as the dependent variable in univariable logistic regression models that compared the odds of adoption for each contextual, input, and process factors. An odds ratio (OR) smaller than 1.5 was considered to be a small effect size, whereas OR > 5.0 was considered to be a large effect size (Chen, Cohen, & Chen, 2010).

### 3. Results

The resident team of six improvement specialists reported 52 QI projects across five boroughs of London (UK) served by the NHS provider organisation (Table 1). Thirty projects were conceived by community mental health teams and the remaining (n = 22) by inpatient care teams. Of the three Quality Priority themes (South London and Maudsley NHS Foundation Trust, 2017: patient safety, clinical effectiveness, and patient experience) improving clinical effectiveness was the most common focus in project aims (29 / 52). A minority of projects focused on multiple priorities at once (6 community mental health and 7 inpatient care projects).

Before making recommendations on which accountability and feedback measures could be reported to the executive board, we reflect in this section how each result may offer potentially actionable insights for QI governance.

As a result of purposive sampling, approximately half of the 52 projects were reported by the QI resident team to have reached formal completion (Table 2). In the remaining half of the projects that were terminated prematurely, most were at the planning stage. Among 23 projects that reached formal completion, 12 achieved their aim, but 13 were reported to have led to a change in routine practice (adoption). We observed a similar inconsistency among projects that were terminated prematurely. A plausible explanation could be that some projects were organisation-wide directives that were adopted or spread across services despite not completing or achieving their aims at specific sites. This reflects a gap between “work-as-imagined” and “work-as-done” (Hollnagel, 2017). In terms of QI governance, such a gap may be a useful reference point to mark the stage of cultural transformation amidst growing applications of QI within the organisation.

Adopted = led to a change in routine practice, Spread = triggered similar projects.

Table 3 shows project duration and amount of contact with the QI

**Table 1**

Study sample (n = 52) of quality improvement projects in South London and Maudsley NHS Foundation Trust (2016 – 2018).

	Community Mental Health	Inpatient
No. of QI Projects	30	22
Borough		
Croydon	8	10
Lambeth	7	4
Lewisham	7	4
Southwark	7	3
Wandsworth	1	1
Job role (Lead)		
Clinical	26	18
Non-Clinical	2	4
Administrative	2	0
Job band (Lead)		
> 8	5	1
8	6	2
7	12	8
6	3	4
4	1	2
1	3	5
Team size		
5	1	1
4	3	1
3	5	3
2	17	11
1	4	6
Project status <sup>+</sup>		
Closed	15	8
xP	9	9
xD	2	2
xS	2	2
xA	2	1

+Project formal completion (Closed) or terminated at Plan (xP), Do (xD), Study (xS), Act (xA) stage

**Table 2**

Project outcomes.

Status <sup>+</sup>	n	Aim not achieved	Aim achieved	Adopted	Spread
Complete	23	11	12	13	5
xP	18	18	0	0	0
xD	4	4	0	0	1
xS	4	3	1	2	0
xA	3	0	3	3	1

+ Project formal completion (Complete) or terminated at Plan (xP), Do (xD), Study (xS), Act (xA) stage

resident team. Projects typically lasted almost 6 months whether they reached formal completion (median = 5.8 months) or terminated prematurely (median = 5.1 – 6.0 months). The only exceptions were those that terminated at the planning stage (median = 1.8 months). Similarly, meetings and site visits typically took place monthly regardless of project trajectories. The resource burden incurred by projects that terminated prematurely is significant given their numbers. In terms of QI governance, formulating gatekeeping policy directives may help ensure that competing demands for the QI resident team do not wear down available resources.

In contrast to time use data, retrospective estimates offered sparse data across various indicators of project benefit. Approximately two-thirds of the projects did not have estimates of the number of service users and staff who directly benefitted from the change introduced. For a similar proportion, it was not possible to quantify improvement in terms of cost savings. In the remaining one third, it was possible but not attempted. It was not known for three quarters of the projects whether they disseminated their results. Only a small number of projects disseminated their results in a form of newsletter publication locally or beyond (n = 4 and 6, respectively). Team members of 8 projects were known to have developed 12 new projects. This was unclear for the remaining 44 project teams. Limited visibility of the growth and impact of QI in the organisation may erode long term commitment of the executive board. In terms of QI governance, our retrospective data at large points to a need for systematic monitoring to offer routine visibility.

Table 4 shows how the odds of adoption were influenced by each contextual, input, and process factors. Of the 52 QI projects led by frontline NHS staff, 13 achieved this goal. However, in light of the gap between “work as imagined” and “work as done”, we used a more stringent definition of adoption by labelling projects as successful (n = 10) only if they met all three conditions: (a) formal project completion; (b) achieved project aims; and (c) led to adoption.

The odds of success were lower for projects in inpatient settings and those that were first attempts of the team undertaking them. However, only the latter showed a statistically significant impact with a large effect size (OR = 0.2, i.e., odds were five times lower). Project funding (need / availability / planning) appeared to have little impact, but there were too few funded projects for stable estimates. The odds of success were five times higher when time was officially sanctioned for the project (OR = 5.2). This suggests that whilst the initial years of QI applications presented major challenges, this might be mitigated by time commitments that were officially sanctioned. In terms of QI governance, advancing the organisational culture of QI practice is likely to require formal commitment of resources like staff time for training and project development.

The type of staff role in team leadership, team size, and disruption due to staff turnover did not show a reliable impact on project outcomes. Support available from the resident team of QI specialists might have mitigated the influence of these input factors. Relative to contextual and input factors, process factors showed more consistency in having an impact. Projects that engaged service users had much higher odds of success (OR = 7.4). At problem definition stage, careful application of the driver diagram methodology showed a similar impact. For instance, the odds of success increased with the number of primary drivers

**Table 3**  
Project duration and amount of contact with QI resident team.

Status <sup>+</sup>	n	Duration (Months)			Meetings			Site Visits			Emails		
		Md	M	SD	Md	M	SD	Md	M	SD	Md	M	SD
Closed	23	5.8	5.1	3.6	5.0	5.2	3.3	4.0	5.5	5.3	25.0	25.3	20.6
xP	18	1.8	2.1	1.6	2.0	1.5	1.2	1.0	1.6	1.9	7.5	8.2	4.6
xD	4	5.1	5.0	3.1	3.5	3.5	1.3	4.5	5.0	4.7	20.0	22.8	16.1
xS	4	5.8	5.7	1.5	4.5	4.5	1.3	4.0	4.3	3.0	20.5	29.8	27.8
xA	3	6.0	5.8	1.2	4.0	4.7	3.1	4.0	4.7	3.1	20.0	28.3	28.4

<sup>+</sup> Project formal completion (Closed) or terminated at Plan (xP), Do (xD), Study (xS), Act (xA) stage  
Md: Median, M: Mean, SD: Standard Deviation

identified (OR = 2.7), particularly when drivers were clearly tagged with measures (OR = 6.0 – 7.0). At PDSA stages, implementation fidelity of rapid learning cycles was crucial. For instance, the odds of success were much higher for projects that completed more than one PDSA cycle (OR = 7.5), particularly when accompanied by documentation (OR = 85.5). Projects that collected data before and after implementing change ideas also had much higher odds of success (OR = 7.5. – 9.5). The processes that underpin a QI project drive the culture of continuous improvement. In terms of QI governance, a routine view of process factors can illuminate on organisation-wide training priorities and strategies.

#### 4. Discussion

In this study, we explored what could be routinely reported to the executive board of a UK mental health Trust to give an organisation-wide picture that offers accountability and feedback for advancing QI practice across diverse specialist care services.

In terms of project outcomes, we recommend tracking whether projects led to a change in routine practice (i.e., adoption). As a fundamental goal of QI (Batalden & Davidoff, 2007), adoption rates offer a conceptually sound summary across heterogeneous projects. They can be compared between organisational units and monitored over time. Our retrospective data also underscores the value of tracking basic outcomes such as project completion and whether project aims have been achieved. The rates of these outcomes suggested that some projects in the Trust led to premature adoption, reflecting a gap between ‘work as imagined’ and ‘work as done’. Amidst growing number of projects, the principled application of QI may serve as a useful milestone for QI governance to gauge the extent QI is making inroads across the organisation.

We found that overall project duration and time invested in meetings and correspondence are data with minimal information retrieval burden. Across a diverse range of projects, time invested by staff is an opportunity cost that could serve as a common denominator for return on investment. In contrast, we encountered major challenges in measuring benefits. For instance, not every project captured cost savings because it is often not an immediate focus of QI in mental health services (which was the context of the NHS Trust of this study). On the other hand, while all projects arguably contributed to capacity building in a culture of continuous improvement, these broader benefits were poorly captured retrospectively. To show if QI is ‘worth the time’, systematic data accrual is needed for QI governance to weigh potential organisational benefits against the costs of increasing QI engagement.

With data on what might have an impact on project outcomes, our findings illustrated how feedback measures may offer a way to steer the focus when accountability measures are reported. For instance, whilst project failure raises accountability questions, feedback measures (e.g., lack of officially sanctioned time commitments) can focus attention on an organisational need in resource allocation planning. This shift has strategic benefits as accountability data tends to be used for performance management and thus is rich in potential for blame (Armstrong et al., 2018), which in turn can undermine psychological safety for

engaging with QI (Carmeli, Brueller, & Dutton, 2009; Nembhard & Edmondson, 2006). Data from routine feedback measures may also help underpin an organisational mandate for service user involvement in QI. Consistent with the wider literature on QI in mental health (Robert, Hardacre, Locock, Bate, & Glasby, 2003), our data showed that service user involvement has a large impact on project outcomes. However, different models of involvement exist (Armstrong, Herbert, Aveling, Dixon-Woods, & Martin, 2013). Thus, there is value for more granular data to identify optimal engagement.

As structured interventional experiments for testing changes, iterative learning cycles in PDSA help translate ideas into action (Reed & Card, 2016). Improvement work is less likely to succeed if iterative cycles are too few (Ogrinc & Shojania, 2014), as project teams may get stuck in the ‘Do’ phase of a PDSA or reach no actionable insight in the ‘Study’ phase (Reed & Card, 2016). Our findings concur with the literature that PDSA fidelity and a transparent, data-driven approach are paramount (Birdas et al., 2019). Routine monitoring of these factors can aid QI governance in enacting a gradual and negotiated process, that does not over-emphasise the conceptual simplicity of PDSA (Reed & Card, 2016), and foster new ways of working and achieving high fidelity (McNicholas, Lennox, Woodcock, Bell, & Reed, 2019).

##### 4.1. Study limitations

The present findings have been submitted in an Executive Board report to initiate an extended process of engagement and feedback. As such, the recommendations we made in this study must be considered as preliminary. Of note, it remains crucial to gain insight on the Executive Board’s perceptions of what is useful, unnecessary, missing, or of most value, to address tensions in the use of data in assurance and improvement-oriented performance management systems (Gardner et al., 2018).

This study set out to explore an organisation-wide picture of QI projects and their impact. The study was carried out within a single UK mental health Trust, which may limit its generalisability to other healthcare systems or clinical care settings for physical health. While we defined adoption as bringing about a change in routine practice, the process of retrospective information retrieval posed major challenges in obtaining a wider range of indicators to illuminate the impact. Furthermore, the absence of an established definition of ‘success’ of in QI (Morganti et al., 2012) meant that the resident QI team had to rely on their own judgement when selecting a purposive sample. Coupled with retrospective recall difficulties, sampling bias is likely to have an impact on study findings. Notably however, our survey-based findings resonate with those from in-depth qualitative studies in terms of the process factors that matter for project outcomes (McNicholas et al., 2019; Reed & Card, 2016; Taylor et al., 2014; Woodcock et al., 2021). This suggests that the skilful application of QI can be routinely monitored as an indication of cultural transformation and QI success.

While several process factors showed an apparent impact on project outcomes, contextual and input factors generally showed little impact. This is likely to be due to limitations in the scope of our survey rather than evidence that these latter aspects are not important. It is well-



**Table 4**

Univariable logistic regression models for association between project outcome of adoption (dependent variable) and contextual, input, and process factors (independent variables).

	n <sub>1</sub>	n <sub>2</sub>	Odds Ratio	95% CI
<b>Contextual factors</b>				
Inpatient	22	3	0.5	0.1 – 2.3
First QI project <sup>+</sup>	27	2	0.2	> 0.1 – 0.9
Time officially sanctioned <sup>+</sup>	20	7	5.2	1.2 – 23.4
Funding required	10	3	2.1	0.4 – 10.4
Funding available	5	0	#	#
Made budget plan	5	1	1.1	0.1 – 10.6
<b>Input factors</b>				
Project lead: non-clinical staff	8	1	0.6	0.1 – 5.1
Project lead: non-managerial staff	18	3	0.8	0.2 – 3.4
Team size	–	–	1.4	0.7 – 2.7
Staff turnover	22	4	0.9	0.2 – 3.6
<b>Process factors</b>				
Engaged clinical team lead	28	6	1.4	0.3 – 5.5
Engaged stakeholders (staff not in project team)	14	5	3.7	0.9 – 15.5
Engaged service users <sup>++</sup>	10	5	7.4	1.6 – 34.9
No. of outcome measures <sup>+</sup>	–	–	3.2	1.1 – 9.8
No. of primary drivers <sup>+</sup>	–	–	2.7	1.3 – 5.9
No. of secondary drivers <sup>+</sup>	–	–	1.5	1.1 – 1.9
Aims quantified	35	10	#	#
Primary drivers tagged with measures <sup>++</sup>	13	6	7.5	1.7 – 33.7
Secondary drivers tagged with measures <sup>+</sup>	11	5	6.0	1.3 – 27.2
Balancing measures <sup>++</sup>	10	5	7.4	1.6 – 34.9
No. of PDSA completed <sup>+</sup>	–	–	1.5	1.1 – 2.2
PDSA that completed > 1 cycle <sup>++</sup>	13	6	7.5	1.7 – 33.7
PDSA with documentation <sup>++</sup>	13	9	85.5	8.5 – 860.2
Data collected before implementing change idea <sup>++</sup>	9	5	9.5	1.9 – 47.6
Median value of random variation in outcome measures <sup>+</sup>	12	5	5.0	1.1 – 22.0
Median value of random variation in process measures	4	4	#	#
Median value of random variation in balancing measures	2	2	#	#
Data collected after implementing change idea <sup>++</sup>	13	6	7.5	1.7 – 33.7

n<sub>1</sub>: total number of projects that satisfy the condition described by the independent variable

n<sub>2</sub>: total number of projects in n<sub>1</sub> that led to a change in routine practice (adoption).

# independent variables for which odds of project outcome could not be calculated

+ independent variables that show statistically significant odds ratio

++ independent variables with a large effect size (OR > 5.0, or in opposite direction: OR < 0.2)

established in improvement science literature that contextual factors play a prominent role (Kaplan, Provost, Froehle, & Margolis, 2012). However, the sheer number of variables and the unpredictability of their interactions make it hard to predict the distal impact of contextual factors on project outcomes (Braithwaite, 2018). Consequently, the need to minimise data accrual burden led to a narrow scope of contextual and input factors. Instead, we prioritised the scope of process factors (e.g., fidelity of data and measurement plans), to illuminate proximal influences that are potentially amenable to staff training and interventions.

## 5. Lessons learned

To advance with a long-term perspective of QI success and cultural transformation, healthcare organisation executive boards need an organisation-wide overview that can be routinely made visible with minimal technical expertise. Setting up a routine monitoring framework can offer more timely vigilance than designing an elaborate retrospective evaluation, which some argued, is akin to attempting to “drive by looking in the rear-view mirror” (Hamblin & Shuker, 2021). Practically, routine monitoring can also improve data quality by alleviating information retrieval difficulties and ensuring systematic data accrual. Operationally, respondent burden can be alleviated by spreading data collection over multiple occasions. Short and well-timed surveys can optimise relevance and thus the acceptability of data collection. Data can also be collected from different types of respondents (e.g., project team lead, sponsor, resident QI team). Well-targeted respondents will provide the most accurate data if only the most relevant questions are asked, thereby also minimising respondent burden.

Designing a routine reporting framework is an iterative process involving continual dialogue with frontline staff and improvement specialists to navigate data accrual demands (Gardner et al., 2018). Across diverse project aims, there is a need to identify themes that hold core relevance in QI. For an executive board, this framework should generate strategic insights that can inform resource commitments in QI. For staff and improvement specialists, routine reporting should offer a feedback loop to support engagement and learning, finding the right focus (Soong, Cho, & Shojania, 2020) and applying QI with fidelity (Knudsen et al., 2019; Reed & Card, 2016). Developing routine reporting can be an asset for improving practice (Dixon-Woods, 2019), and honing the implementation science of QI in healthcare.

## Funding

NS’ research is supported by the National Institute for Health Research (NIHR) Applied Research Collaboration (ARC) South London at King’s College Hospital NHS Foundation Trust. NS and KC are members of King’s Improvement Science, which is part of NIHR ARC South London and is based at King’s College London. Its work is funded by King’s Health Partners (Guy’s and St Thomas’ NHS Foundation Trust, King’s College Hospital NHS Foundation Trust, King’s College London and South London and Maudsley NHS Foundation Trust), and Guy’s and St Thomas’ Charity. The views expressed in this publication are those of the author(s) and not necessarily those of the NIHR, the charities, or the Department of Health and Social Care.

## CRedit authorship contribution statement

**K.-C.C.:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **C.H.:** Writing – original draft, Writing – review & editing. **B.G.:** Conceptualization, Writing – review & editing. **M.H.:** Conceptualization, Writing – review & editing. **N.S.:** Conceptualization, Writing – review & editing.

## Competing interests

NS is the director of the London Safety and Training Solutions Ltd, which offers training in patient safety, implementation solutions and human factors to healthcare organisations and the pharmaceutical industry. The other authors have no conflicts of interest to declare.

## Data availability

The data that support the findings of this study are available upon reasonable request and with permission of Dr. Barbara Grey.

## Acknowledgements

Colleagues in the QI resident team of the South London and Maudsley NHS Foundation Trust gave formative feedback on evaluation design and conducted project reviews to generate the study data. They include Rachael Leaton, Cassie Philpin, Polly Ragoobar, Sasha Persuad, Nirusha Nicholas, and Devon Elliott. Academic colleagues in King's Improvement Science, Dr Lucy Goulding, and Barbora Krausova, also gave formative feedback on evaluation design. Author contributions were reported using <https://rollercoaster.shinyapps.io/tenzing/> from Holcombe, A.O., Kovacs, M., Aust, F., & Aczel, B. (2020). Documenting contributions to scholarly articles using CRediT and tenzing. *PLoS ONE*, 15(12), e0244611.

## Ethics approval

According to the policy activities that constitute research at the South London & Maudsley NHS Foundation Trust, this work met criteria for operational improvement activities exempt from ethics review.

## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.evalprogplan.2022.102222](https://doi.org/10.1016/j.evalprogplan.2022.102222).

## References

- Armstrong, N., Brewster, L., Tarrant, C., Dixon, R., Willars, J., Power, M., & Dixon-Woods, M. (2018). Taking the heat or taking the temperature? A qualitative study of a large-scale exercise in seeking to measure for improvement, not blame. *Social Science & Medicine*, 198, 157–164. <https://doi.org/10.1016/j.socscimed.2017.12.033>
- Armstrong, N., Herbert, G., Aveling, E. L., Dixon-Woods, M., & Martin, G. (2013). Optimizing patient involvement in quality improvement. *Health Expectations*, 16(3), e36–e47. <https://doi.org/10.1111/hex.12039>
- Batalden, P. B., & Davidoff, F. (2007). What is "quality improvement" and how can it transform healthcare. *Quality & Safety In Health Care*, 16(1), 2–3. <https://doi.org/10.1136/qshc.2006.022046>
- Birdas, T. J., Rozycki, G. F., Dunnington, G. L., Stevens, L., Liali, V., & Schmidt, C. M. (2019). "Show Me the Data": A recipe for quality improvement success in an academic surgical department. *Journal of the American College of Surgeons*, 228(4), 368–373. <https://doi.org/10.1016/j.jamcollsurg.2018.12.013>
- Blumenthal, D., & Kilo, C. M. (1998). A report card on continuous quality improvement. *Milbank Quarterly*, 76(4), 625–648. <https://doi.org/10.1111/1468-0009.00108> (511).
- Braithwaite, J. (2018). Changing how we think about healthcare improvement. *BMJ*, 361, k2014. <https://doi.org/10.1136/bmj.k2014>
- Care Quality Commission. (2018a). Quality improvement in hospital trusts: Sharing learning from trusts on a journey of QI. Retrieved from <https://www.cqc.org.uk/publications/evaluation/quality-improvement-hospital-trusts-sharing-learning-trusts-journey-qi>.
- Care Quality Commission. (2018b). The state of care in mental health services 2014 to 2017. Retrieved from <https://www.cqc.org.uk/publications/major-report/state-care-mental-health-services-2014-2017>.
- Carmeli, A., Brueller, D., & Dutton, J. E. (2009). Learning behaviours in the workplace: The role of high-quality interpersonal relationships and psychological safety. *Systems Research and Behavioral Science*, 26(1), 81–98. <https://doi.org/10.1002/sres.932>
- Chen, H. N., Cohen, P., & Chen, S. (2010). How big is a big odds ratio? Interpreting the magnitudes of odds ratios in epidemiological studies. *Communications in Statistics-Simulation and Computation*, 39(4), 860–864. doi:Pii 920967562 10.1080/03610911003650383.
- Dixon-Woods, M. (2019). How to improve healthcare improvement—an essay by Mary Dixon-Woods. *BMJ*, 367, l5514. <https://doi.org/10.1136/bmj.l5514>
- Dunn, P., McKenna, H., & Murray, R. (2016). Deficits in the NHS 2016. The King's Fund Retrieved from <https://www.kingsfund.org.uk/publications/deficits-nhs-2016>.
- Gardner, K., Olney, S., & Dickinson, H. (2018). Getting smarter with data: Understanding tensions in the use of data in assurance and improvement-oriented performance management systems to improve their implementation. *Health Research Policy and Systems*, 16(1), 125. <https://doi.org/10.1186/s12961-018-0401-2>
- Gilburt, H. (2015). Mental health under pressure. The King's Fund Retrieved from <https://www.kingsfund.org.uk/publications/mental-health-under-pressure>.
- Hamblin, R., & Shuker, C. (2021). Well spotted: But now you need to do something. *BMJ Quality & Safety*, 30(3), 177–179. <https://doi.org/10.1136/bmjqs-2019-010659>
- Hollnagel, E. (2017). Why is work-as-imagined different from work-as-done? In R. L. Wears, & E. Hollnagel (Eds.), *Resilient health care* (Vol. 2) London: CRC Press.
- Jones, L., Pomeroy, L., Robert, G., Burnett, S., Anderson, J. E., & Fulop, N. J. (2017). How do hospital boards govern for quality improvement? A mixed methods study of 15 organisations in England. *BMJ Quality & Safety*, 26(12), 978–986. <https://doi.org/10.1136/bmjqs-2016-006433>
- Kaplan, H. C., Provost, L. P., Froehle, C. M., & Margolis, P. A. (2012). The Model for Understanding Success in Quality (MUSIQ): Building a theory of context in healthcare quality improvement. *BMJ Quality & Safety*, 21(1), 13–20. <https://doi.org/10.1136/bmjqs-2011-000010>
- Knudsen, S. V., Laursen, H. V. B., Johnsen, S. P., Bartels, P. D., Ehlers, L. H., & Mainz, J. (2019). Can quality improvement improve the quality of care? A systematic review of reported effects and methodological rigor in plan-do-study-act projects. *BMC Health Services Research*, 19(1), 683. <https://doi.org/10.1186/s12913-019-4482-6>
- McNicholas, C., Lennox, L., Woodcock, T., Bell, D., & Reed, J. E. (2019). Evolving quality improvement support strategies to improve Plan-Do-Study-Act cycle fidelity: A retrospective mixed-methods study. *BMJ Quality & Safety*, 28(5), 356–365. <https://doi.org/10.1136/bmjqs-2017-007605>
- Morganti, K. G., Lovejoy, S., Haviland, A. M., Haas, A. C., & Farley, D. O. (2012). Measuring success for health care quality improvement interventions. *Medical Care*, 50(12), 1086–1092. <https://doi.org/10.1097/MLR.0b013e318268e964>
- Nembhard, I. M., & Edmondson, A. C. (2006). Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior*, 27(7), 941–966. <https://doi.org/10.1002/job.413>
- Ogrinc, G., & Shojania, K. G. (2014). Building knowledge, asking questions. *BMJ Quality & Safety*, 23(4), 265–267. <https://doi.org/10.1136/bmjqs-2013-002703>
- Reed, J. E., & Card, A. J. (2016). The problem with Plan-Do-Study-Act cycles. *BMJ Quality & Safety*, 25(3), 147–152. <https://doi.org/10.1136/bmjqs-2015-005076>
- Robert, G., Hardacre, J., Locoek, L., Bate, P., & Glasby, J. (2003). Redesigning mental health services: Lessons on user involvement from the Mental Health Collaborative. *Health Expectations*, 6(1), 60–71. <https://doi.org/10.1046/j.1369-6513.2003.00209.x>
- Ross, S., & Naylor, C. (2017). Quality improvement in mental health. The King's Fund Retrieved from <https://www.kingsfund.org.uk/publications/quality-improvement-mental-health>.
- Shah, A., & Course, S. (2018). Building the business case for quality improvement: A framework for evaluating return on investment. *Future Healthcare Journal*, 5(2), 132–137. <https://doi.org/10.7861/futurehosp.5-2-132>
- Smithson, R., Maguire, D., Honeyman, M., & Jabbal, J. (2015). Workforce planning in the NHS. The King's Fund Retrieved from <https://www.kingsfund.org.uk/publications/workforce-planning-nhs>.
- Soong, C., Cho, H. J., & Shojania, K. G. (2020). Choosing quality problems wisely: Identifying improvements worth developing and sustaining. *BMJ Quality & Safety*, 29(10), 1–2. <https://doi.org/10.1136/bmjqs-2020-011054>
- South London and Maudsley NHS Foundation Trust. (2017). Quality Account 2016/2017. Retrieved from [https://m.slam.nhs.uk/media/481802/slam\\_quality\\_report\\_201617.pdf](https://m.slam.nhs.uk/media/481802/slam_quality_report_201617.pdf).
- Taylor, M. J., McNicholas, C., Nicolay, C., Darzi, A., Bell, D., & Reed, J. E. (2014). Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Quality & Safety*, 23(4), 290–298. <https://doi.org/10.1136/bmjqs-2013-001862>
- Woodcock, T., Liberati, E. G., & Dixon-Woods, M. (2021). A mixed-methods study of challenges experienced by clinical teams in measuring improvement. *BMJ Quality & Safety*, 30(2), 106–115. <https://doi.org/10.1136/bmjqs-2018-009048>
- Zamboni, K., Baker, U., Tyagi, M., Schellenberg, J., Hill, Z., & Hanson, C. (2020). How and under what circumstances do quality improvement collaboratives lead to better outcomes? A systematic review. *Implementation Science*, 15(1), 27. <https://doi.org/10.1186/s13012-020-0978-z>

**Kia-Chong Chua** is a lecturer in applied health statistics. He is also embedded in the South London and Maudsley NHS Foundation Trust as a staff member to support measurement and evaluation in quality improvement.

**Claire Henderson** is a Clinical Reader in Public Mental Health. She is also an honorary consultant psychiatrist in the South London and Maudsley NHS Foundation Trust, and joint Academic Director of the King's Health Partners Quality Improvement & Implementation Science Clinical Academic Group.

**Barbara Grey** is the Director of Quality Improvement in the South London and Maudsley NHS Foundation Trust.

**Michael Holland** is the Medical Director in the South London and Maudsley NHS Foundation Trust.

**Nick Sevdalis** is a Professor of Implementation Science and Patient Safety, Director of the Centre for Implementation Science at King's College London, joint Academic Director of the King's Health Partners Quality Improvement & Implementation Science Clinical Academic Group, and Deputy Director of the NIHR Applied Research Collaboration South London.