

# Lessons learned from a multiagency community mental health centre quality improvement learning collaborative in New Hampshire

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## Abstract

**Background/Aims** Community mental health centres in the US often struggle to implement the evidenced-based metrics and measurement processes required for quality reporting initiatives. Through the co-design and facilitation of a learning collaborative, all 10 community mental health centres in New Hampshire agreed on the goal of demonstrating measurement alignment and improvement across three behavioural health metrics related to depression and suicide risk, aiming for a screening rate of at least 85% in a year.

**Methods** The learning system framework and Lean Six Sigma define, measure, analyse, improve and control methodologies were used to increase participation and improve quality reporting. Teams were asked to participate in both a group learning collaborative and individual centre facilitation sessions, working with a quality improvement specialist. Reported measures were compared with subsets of the population data and between centres. Outliers were identified for potential reporting inaccuracies and opportunities for improvement.

**Results** All 10 community mental health centres were able to accurately report screening results on all three measures. After 12 months, 70% of the teams were able to reach the group-determined goal of at least 85% of eligible patients being screened in one measure, 40% of the teams met the benchmark in two measures and 20% of the teams were able to meet the benchmark in all three measures.

**Conclusions** Early investment by community mental health centre leadership through the development of a shared aim and project outcomes is essential to support learning and achieve positive outcomes. Quality improvement specialists are vital for facilitation of shared learning and practice across organisations.

**Key words:** Community mental health centres; Depression; Learning collaborative; Learning systems; Quality improvement; Suicide risk; Systems improvement

Submitted: 18 April 2023; accepted following double-blind peer review: 7 June 2023

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### How to cite this article:

Doyle M, Watts D, Umana M et al. Lessons learned from a multiagency community mental health centre quality improvement learning collaborative in New Hampshire. *British Journal of Healthcare Management*. 2023. <https://doi.org/10.12968/bjhc.2023.0043>

## Introduction

The rate of serious mental illness among adults in New Hampshire (US) has increased over the past 10 years (State of New Hampshire, 2021). The prevalence of young adults (aged 18–25 years) with serious mental illness in 2019 was 9.1%, exceeding the national average of 8.1% (State of New Hampshire, 2021), while the proportion of young adults reporting serious thoughts of suicide increased from 8.1% in 2016 to 12.9% in 2019 (State of New Hampshire, 2021). Adults with serious mental illness and children with social emotional disturbances experience higher rates of depression, more suicide attempts and poorer physical health outcomes.

According to the New Hampshire Community Behavioral Health Association (2023), community mental health centres served 55 504 individuals in the 2020 state fiscal year. This translates to providing care to 4% of the state's total population, and approximately 5.3% of children living in New Hampshire (U.S. Census Bureau, 2020).

The New Hampshire Department of Health and Human Services (2022) mental health block grant plan application acknowledged that mental health conditions are likely to

be underreported because of the ‘limited dataset used... consisting of solely community mental health centre data, in contrast with other states’. Underreporting can prevent services from effectively planning and determining appropriate operational and financial models to provide comprehensive care for the populations most in need of it—in this case, those with serious mental illness and social emotional disturbances.

Implementing evidence-based guidelines and measuring process and outcome metrics has been the focus of several national and regional quality measurement and improvement programmes, including the Medicaid Core Set, the Healthcare Effectiveness Data and Information Set and the Medicare Merit-Based Incentive Programme (Morden et al, 2022; Qi et al, 2022). These measures are reported by healthcare entities for payment related to quality. However, research has indicated that data documentation, collection and reporting methods are often time consuming, with frequent errors (Berwick, 2016; Frakt and Jha, 2018). Khullar et al (2020) found that physicians who cared for a higher proportion of socially disadvantaged patients frequently scored lower on incentive programme measures; the link between Medicare Merit Based Incentives Programme outcomes and social risk has yet to be determined.

Community mental health centres across New Hampshire have frequently tried to participate in grant-funded initiatives for better operations, reduced operational variability, improved patient outcomes, increased access and enhanced reimbursement opportunities. However, historically, New Hampshire community mental health centres have been underfunded and faced substantial workforce shortages, leading to barriers to patient access (Carson et al, 2022). Patients at mental health centres also frequently lack consistent access to physical health and community-based services, and have additional social risks (Carson et al, 2022). The 10 community mental health centres in the state are spread across 40 sites, providing a diverse range of mental health services, with varying numbers and types of healthcare professionals. These variations can pose a challenge to the centres, making alignment around data collection and process improvements difficult and time consuming.

Large-scale, statewide New Hampshire healthcare service delivery transformation efforts have been implemented with the aim of developing systems of care and payment that will increase quality and access for clients. These efforts have included: a 5-year statewide behavioural health integration learning collaborative launched in 2015, a 5-year centres for Medicare and Medicaid services practice transformation network funded in 2016, and a centres for Medicare and Medicaid services 1115 Medicaid waiver lasting 5 years starting in 2016 (Baller et al, 2018; Bailit Health, 2020). These efforts have resulted in better education and training of the community mental health centre workforce, additional healthcare services and access points, more effective tracking and monitoring of behavioural, physical and social health screening metrics, and better reporting. The impact of these efforts has been widespread, but not always well documented quantitatively through data measurement, controlling for or explaining variation between centres.

Grant-funded or state-funded initiatives often focus on use of rapid quality improvement (Baller et al, 2018) efforts using a plan-do-study-act model, known as the model for improvement (Institute for Healthcare Improvement, 2003; Minkman et al, 2007; Crowl et al, 2015). This model is easy to teach and implement for quality improvement work. More complex models, such as the define, measure, analyse, improve, control (DMAIC) Lean Six Sigma process, define the problem and objectives in more depth, with steps based on an empirical, data-driven approach (Zare Mehrjerdi, 2011). DMAIC can be a useful tool for cross-functional analysis and complex problems.

This quality improvement project combined a complex learning system framework approach with a DMAIC Lean Six Sigma measurement system analysis (Shah, 2021). Limited data have been published regarding quality improvement efforts in community mental health centres; a comprehensive literature search yielded no publications using either the learning systems framework or the DMAIC measurement system in these settings, making this study the first of its kind. Therefore, the aim of this study is to provide evidence to support the use of such frameworks when designing large-scale projects in community mental health contexts.

## Methods

In 2021, all 10 of the community mental health centres affiliated with the New Hampshire Community Behavioural Health Association partnered with the Institute for Health Policy and Practice to develop a quality improvement learning collaborative. The aim of the collaborative was to demonstrate measurement alignment, accurate data reporting and improvement of three behavioural health metrics set out by the National Quality Forum (2023):

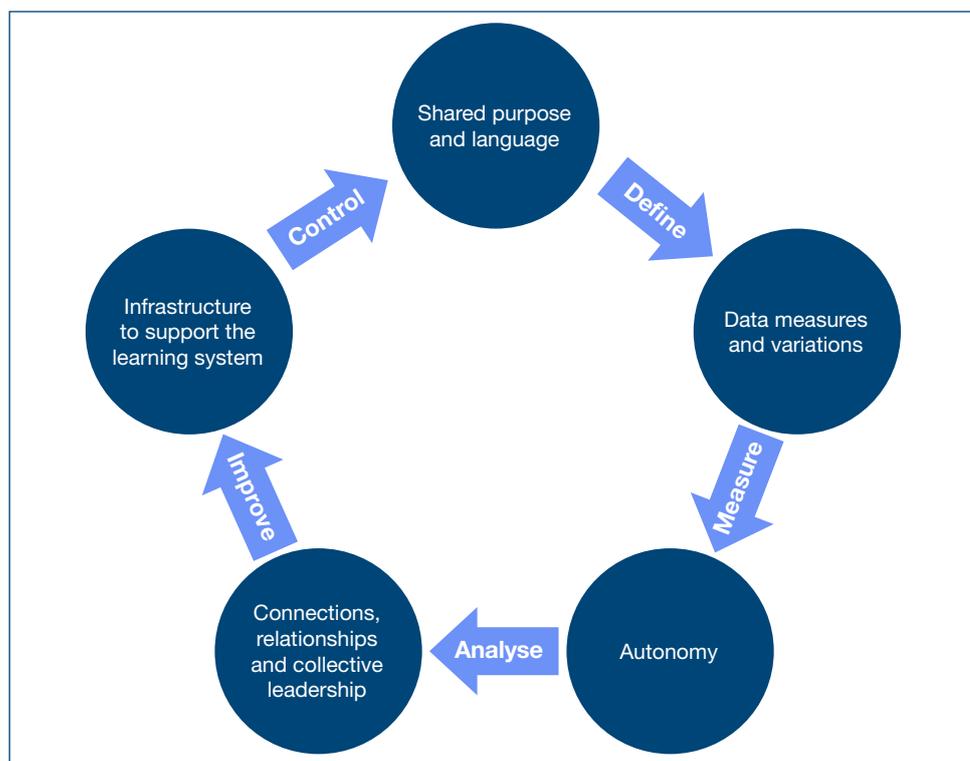
- Measure 0418: service screens patients aged 12 years and older for depression (if they are not already diagnosed with either depression or bipolar disorder) at least once a year. If the screen is positive, there must also be a documented follow-up plan in the patient's electronic health record
- Measure 0104: service screens patients aged 18 years or older and newly diagnosed with major depression for suicide risk. These individuals must have a follow-up plan (if appropriate) and this must be documented in their electronic health record
- Measure 1365: service screens children and adolescents aged 6–17 years who are diagnosed with major depression for suicide risk during any encounter where they are being treated for their depression.

All 10 centres agreed to set an 85% or greater screening rate as a target for each measure.

A quality improvement learning systems framework (Shah, 2021) and DMAIC approach was used to implement system-level changes across the 10 centres over a 12-month period. The components of the learning system are shown in **Figure 1**. The project began in July 2021, with an opening learning collaborative session to establish a project charter. A total of six 1-hour sessions were held via Zoom; session topics and objectives are described in **Table 1**. A quality improvement expert provided individual support to each centre and offered in-person meetings for small groups across centres.

## Shared purpose and language

A stakeholder analysis was conducted during the first month of the project. This included 'what's in it for me'—a continuous improvement activity that helps teams to identify why the project is important to patients, their organisation and themselves. The analysis also included confidence in metrics surveys, which are a series of questions designed to



**Figure 1.** Learning system framework and define measure analyse improve and control learning collaborative model. Adapted from Shah (2021).

**Table 1. Learning sessions and objectives**

Learning session	Time point	Objectives
Introduction session	Pre-work period	Identify teams; create team charter; identify 'what's in it for me'
Kick-off session	Month 1	Identify objectives, goals and risks; conduct strengths, weaknesses, opportunities and threats (SWOT) analysis
Learning collaborative session one	Month 2	Define and align National Quality Forum measures
Learning collaborative session two	Month 3	Finalise agreement on National Quality Forum measure definitions
Learning collaborative session three	Month 4	Finalise population and time period being measured
Small group sessions	Month 4	Address data measurement and variation
Learning collaborative session four	Month 8	Measure reporting confidence; review progress; share learning
Learning collaborative session five	Month 11	Measure reporting confidence and review progress; discuss next steps
Individual centre support sessions	Month 1–10	Validate data reporting accuracy; assist with quality improvement tools; address autonomy; provide recommendations

identify which of the centres believed they had a solid understanding of the measurement definitions and that they were reporting accurately. Alongside this, a strengths, opportunity, weakness and threats (SWOT) analysis was carried out to help the teams identify where they might find potential opportunities or risks.

Teams were asked to participate in each of these activities to bring all the community mental health centre teams closer together to identify how this project would be beneficial to all and ways they could use their collective knowledge and experience.

### Define

As part of a DMAIC approach, the 'define' phase was used to develop a project charter to identify stakeholders, team members and project scope in each centre.

### Data measurement and variation

A standardised systems approach was developed to minimise error in clinical operations and reporting, with findings reported at each learning collaborative session. Data were transitioned from a dashboard that only displayed screening percentages to one that displayed the absolute number of patients screened out of the those who were eligible. This allowed the centres to see how their numbers compared with other centres. The centres were also given clarification on which patients, diagnostic codes and visit codes or encounter types to include in their initial study populations, as well as the length of the measurement period.

The New Hampshire community mental health centres had previously set the National Quality Forum measure targets at 65% for screening, based on data collected by the Merit-Based Incentive Payment System. This system measures performance in four areas: quality, improvement activities, electronic health record interoperability and costs. These data are used to calculate the centres' scores, which determine payment adjustments. Blinded quarterly data had been collected at community mental health centre level in 2019–20 had by the New Hampshire Community Behavioural Health Association. The blinded data were given to each centre for viewing on a dashboard. Unblinded data were provided to the collaborative facilitators.

### Measure

A measurement system analysis of the numbers of clients screened and number of clients eligible for screening was performed to identify causes of variations between the centres. The extent to which data could be repeated from one quarter to another ('repeatability')

and the extent to which they could be reproduced between centres ('reproducibility') were also reviewed.

To verify the accuracy of the measures already being reported, baseline data from 2019 and 2020 were collected from each of the centres. These data included the total number of active adult (18 years and over) and child and adolescent (aged 6–17 years) patients each year, the number of patients diagnosed with depression and the number of patients diagnosed with bipolar disorder.

### Autonomy

Research has indicated that a multi-interventional approach can help to overcome implementation challenges (Baskerville, 2012). Ongoing individual and multicentre meetings were held to understand the level of variability in the clinical metrics and how much variability could occur across the centres. This approach encouraged engagement while still allowing for autonomy.

### Analyse

Although only two learning collaborative sessions were initially planned, three additional sessions were delivered to provide supplementary virtual or in-person coaching to each of the centres. The centres were offered monthly meetings with a facilitator to help them reach a clear understanding of the measurement definitions, provide education on quality improvement processes and tools, and identify opportunities to enhance communication and staff education.

### Connections, relationships and collective leadership

The learning collaborative was designed to consistently provide one trained quality improvement practice facilitator, working across all 10 community mental health centres, with support from two other trained quality improvement coaches and researchers between and during sessions.

Each centre was asked to provide a project team, consisting of a quality improvement manager or director, an information technology manager or director who was familiar with the centre's electronic health record system, and a clinical staff member who could facilitate the required workflow changes and engage with senior leadership.

### Improve

Information about each centre's electronic health record system was collected to support teams to share information about how to implement changes in their own systems. Teams were encouraged to share successful workflows, and it was highlighted that the goal of the project was not only for one's individual centre to reach the benchmark screening rates, but for all 10 of the participating centres to reach this goal in all three measures.

### Infrastructure to support the learning system

The project built on previous community mental health centre initiatives, using New Hampshire Community Behavioural Health Association structures to schedule board and quality improvement director meetings, which provided learning collaborative updates and addressed any opportunities for or threats to projects.

The learning collaborative was designed to allow a safe, open and direct environment to be established during the 12-month engagement period through a series of scheduled learning sessions with all of the centres, as well as individual or small group consultation as needed. This allowed everyone to share ideas, troubleshoot problems and create solutions in a blame-free culture.

### Control

During the control phase of the project, teams that had reached their screening goals were offered tools and training to help them to implement long-term, sustainable improvements. These tools included control plans with documented actions related to process ownership and corrective action to be taken if a decrease in screening rates was identified. Additionally, standard operating procedures for the training of new employees were developed.

## Results

### Centre characteristics

Of the 10 participating community mental health centres, four were in rural locations and six were in urban locations. After duplicate records were removed, the number of patients per centre ranged from 1725–11608. The number of children per centre ranged from 529–2077, and the number of adults from 1163–9569. The percentage of patients with depression ranged from 10–77%, with a mean of 38.7% and median of 33.5% (Table 2).

While representation varied between the centres, a total of 37 individuals were involved in the project. Representatives of the centres included a dedicated quality improvement director, information technology director, data analyst and/or clinical staff. Representatives' experience, previous training, level of autonomy and confidence varied considerably. Knowledge of quality improvement also differed considerably across centres and representatives. Centres that were less familiar with quality improvement and those with particularly low screening rates were given additional (bi-monthly) practice facilitation to help them to pinpoint gaps in performance and opportunities for improvement.

### Shared purpose and language

Initially, the teams expressed concerns about significant differences in the way they were collecting and reporting data based on how each of the individual centres were interpreting each of the National Quality Forum measures. It was important for the centres to recognise that they shared more similarities than differences and that there were opportunities to learn from one another. However, there were also differences in levels of confidence in data reporting, experience with National Quality Forum measures and limitations related to the electronic health record systems.

As the work began at each of the centres, there was a focus on increasing teams' confidence and skills, while also exploring ways that centres could support each other by making changes to their electronic health record systems. The teams were reminded of their shared belief that these measures were beneficial to their patients, and that the project could help to prepare them to negotiate with payers and obtain status as a certified community behavioural health centre, which would allow them to demonstrate that they can provide a higher level of care.

**Table 2. Characteristics of 10 community mental health centres (labelled A–J) in New Hampshire in 2020\***

Centres	Location type	Total patients	Adult patients (≥18 years)	Child and adolescent patients (>18 years)	Patients with depression (%)	Clients with bipolar disorder (%)	Medicaid-eligible patients (%)
A	Urban	4101	2626	1455	26	18	65
B	Urban	2490	1572	892	37	13	76
C	Urban	3786	2847	939	53	20	74
D	Rural	5183	3988	1195	77	26	86
E	Rural	2341	1465	825	30	22	75
F	Urban	11608	9569	2077	45	7	32
G	Rural	2589	1812	645	26	18	66
H	Urban	6023	4320	1620	22	15	70
I	Urban	5833	4315	1456	10	4	56
J	Rural	1725	1163	529	61	13	71

\*Self-reported data

### Define

During the first 2 months of the learning collaborative, differences in the interpretation or collection of National Quality Forum measures across the centres became apparent. Centres were provided with a survey in month 1, asking if they agreed with using the three National Quality Forum measures. Centres were asked to submit their answers as a group. The majority of centres were in favour of using the three National Quality forum measures (Table 3). However, only 20% of centres reported having complete confidence in their reporting accuracy in month 1, while 60% reported moderate or limited confidence. By month 8, there was some improvement, with 65% of respondents reporting either complete or high levels of confidence. At month 10, 78% of reported complete or high levels of confidence, and only four respondents reported moderate levels of confidence.

### Data measurement and variation

While some community mental health centres were reporting screening rates at or near the benchmark, others were either unable to report or were reporting very low rates. In response, the number of planned learning collaborative sessions increased from two to five, and all centres required individual facilitation sessions.

As well as looking at levels of agreement with the measures, the survey distributed in month 1 also asked centres about their level of confidence in their reporting accuracy. The latter part of the survey was repeated in month 8 and 10. At first, the centres were asked to work together internally and submit one answer to each question as a group. However, in the follow-up surveys, staff members were able to respond to the question about their level of confidence as individuals; this was done with intention of identifying participants who may need more support to build their confidence.

In the initial survey, two centres reported having complete confidence in their data reporting accuracy at baseline (Table 4). However, on further analysis, the project facilitators identified significant variations between the numbers of patients screened for depression or suicide risk and the numbers of patients who were eligible for screening from each of these centres. To address this issue, a small group facilitation meeting was held with these two centres to explore the variances. This showed that there were differences in interpretation of the measurement period as outlined in the National Quality Forum standard: one centre was using data from the previous quarter or 90 days, while the other was reporting on the previous 365 days. Once this was identified, the centres were able to come to a consensus regarding the reporting timeframe, allowing all centres to agree and use the same criteria. By month six, 90% of the centres were accurately reporting data for each of the three measures.

**Table 3. Responses to poll on whether or not centre agrees with National Quality Forum definitions**

Item	Response		
	Yes	No	Unanswered
Agrees with NQF child and adolescent suicide risk assessment measure	9	1	0
Agrees with NQF depression screening and follow-up measure	8	2	0
Agrees with adult suicide risk assessment measure	7	2	1

NQF=National Quality Forum

**Table 4. Responses to survey on participants' self-rated level of confidence in reporting measures**

Month	Level of confidence			
	Complete	High	Moderate	Limited
1 (n=10)	2 (20.0)	2 (20.0)	5 (50.0)	1 (10.0)
8 (n=20*)	2 (10.0)	11 (55.0)	7 (35.0)	0 (0.0)
10 (n=18*)	5 (27.8)	9 (50.0)	4 (22.2)	0 (0.0)

\*In months 8 and 10, responses were from individuals, rather than whole centres. All 10 centres were represented by individual respondents

## Measure

Most centres submitted their data quarterly. However, because of low screening rates, several of the centres ran their data more frequently, and this information was reviewed during the individual centre facilitation sessions to help them to identify any further variations or reporting inaccuracies. This also allowed for faster changes within improvement initiatives.

## Autonomy

Review of the data submitted by the centres highlighted the importance of autonomy. Throughout the project, autonomy was supported in decisions related to which screening tools each centre used, as well as workflows and processes that supported their individual staffing levels and clinical input from their teams. Additionally, the ways in which individual centres shared screening results with their leadership bodies and teams varied based on their specific culture and established communication processes. The improvement strategies and tools applied to increase screening rates varied depending on the level of knowledge and experience. Some of the centres focused on training and competency documentation, while others used scorecards and results reporting as a method of motivating staff to improve their screening rates. Another method was to implement changes within the electronic health record that prevented the clinician from moving forward with the rest of the appointment until the screening was completed.

## Analyse

The three National Quality Forum measures were reported quarterly by each of the community mental health centres, and data were analysed by the project facilitators for accuracy and changes (Table 5).

The number of children and adolescents who were screened for suicide risk versus the total number of children and adolescents eligible for screening (measure 1365) rose by 361%. This measure initially experienced the highest level of variation in screening rates between centres and required the most extensive changes to be implemented. Initially, nearly all centres were screening patients quarterly or annually, rather than at each encounter with the service. Because of this, some centres saw substantial decreases in their screening rates during the project, as they did not need to screen patients so often (Appendix 1). Some centres had workflows and processes already in place to screen at each encounter, but were unsure which visit types to include. Once they better understood the definitions, centres were able to improve their screening rates through better reporting accuracy. One centre (J) was initially unable to report data, so this team worked closely with a facilitator and was eventually able to submit screening rates. A second centre (A) was unable to make any changes to their reporting until the final quarter of the project (quarter two, 2022) and thus was not able to implement any improvement opportunities during the study period (Appendix 1).

Initially, variations in screening for suicide risk in adults with major depressive disorder (measure 0104) were highly varied, with some centres not reporting screening rates at all and others overreporting (Appendix 2). Reported data indicated that over-screening was a result

**Table 5. Quarterly data on number of patients screened versus number of patients eligible for screening from the 10 participating community mental health centres**

NQF measure code	Number of patients screened/number of patients eligible for screening (%)					
	Pre-intervention data		Post-intervention data			
	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
1365	4408/5746 (76.7)	2134/3590 (59.4)	20777/32109 (64.7)	17302/28793 (60.1)	15756/26523 (59.4)	15428/24952 (61.8)
0401	5962/7775 (76.7)	6029/7791 (77.4)	3244/4527 (71.7)	3121/4346 (71.8)	2865/4022 (71.2)	2682/3886 (69.0)
0418	6795/11641 (58.4)	6894/11692 (59.0)	14501/21255 (68.2)	13983/20645 (67.7)	12970/18801 (69.0)	12574/19055 (66.0)

NQF=National Quality Forum; Q=quarter.

of centres not understanding the measure definition, which only required patients with a new diagnosis of major depressive disorder to be screened. After the correct definition was implemented, the number of patients who were recorded as eligible for screening decreased substantially (Table 5).

Screening rates for depression and the implementation of a follow-up plan (measure 0418) increased from 58.4% at baseline to 66.0% in the eighth month of the learning collaborative. The overall number of eligible individuals screened increased from 6795 out of 11 641 (58.4%) in the first quarter of 2021 to 12 574 out of 19 055 (66.0%) in the second quarter of 2022. While this only demonstrate an overall increase of 7.6%, this equates to 5779 more eligible patients being screened for depression. Two centres that had been unable to report data before the learning collaborative were able to collect and report screening results with guidance from a facilitator (Appendix 3).

### Connections, relationships and collective leadership

By month 4 of the learning collaborative, all 10 centres could recognise that many similarities existed between them, such as similar workflows or use of the same electronic health record, and they appreciated the opportunities to share information and collaborate on ideas to make improvements. They also continued to share strengths in leadership support and commitment to the project.

However, they still experienced variations related to workforce shortages and limitations within their electronic health record systems, such as inability to make changes to reporting structures or implement modifications that would allow the screening process to be carried out at a more convenient time or place.

### Improve

By the end of the learning collaborative, all 10 centres were able to reach the aim of reporting accurately on all three National Quality Forum measures. The improvements implemented by each centre are shown in Table 6. Based on the adopted benchmark of 85%, the following results were achieved by the second quarter of 2022:

- 20% of the centres were able to achieve the benchmark on all three measures

**Table 6. Improvements implemented and achievements made by the 10 community health care centres during the project**

Achievement	Centre									
	A	B	C	D	E	F	G	H	I	J
Achieved reporting accuracy in all three measures*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Implemented staff training	Yes	No	No	Yes	No	Yes	No	Yes	No	No
Implemented workflow modifications	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Enhanced electronic health record systems	No	Yes	Yes	No	Yes	No	No	Yes	Yes	No
Showed improvement of >20% in at least one NQF measure	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Achieved goal of >85% in one NQF measure	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Achieved goal of >85% in two NQF measures	No	Yes	Yes	No	Yes	No	No	No	Yes	No
Achieved goal of >85% in three NQF measures	No	Yes	Yes	No						

\*Defined as reporting in line with the NQF definitions. NQF=National Quality Forum

- 40% of the centres were able to achieve the benchmark on at least two of the measures
- 70% of the centres were able to achieve the benchmark on at least one measure.

### Infrastructure to support the learning system

All 10 centres attended an introductory session, in addition to six 1-hour learning collaborative sessions via Zoom (Table 1). Individual practice facilitation varied by centre, but all centres received individual facilitation at some point during the learning collaborative via Zoom. These sessions were typically concentrated around October and November 2021.

### Control

All 10 centres were able to achieve varying levels of success during the project, but only two (B and C) had reached the benchmark of 85% across all three measures and were thus able to reach the control phase where they could focus on sustaining change.

To help all centres, a dashboard was developed by the New Hampshire Community Behavioural Health Association so that teams could monitor run charts for results and variations. Examples of these charts are shown in Appendices 1–3. Data were available for review by the individual centres if their screening rates fell in comparison to other centres, prompting them to consider taking action. Common cause variations were seen in many of the centres following the start of the intervention, and were largely a result of new staff members not being fully trained on screening processes or documentation protocols.

Centres that had less support from leadership and/or saw smaller improvements experienced minimal changes to the data they reported each quarter. However, the majority of the centres saw substantial changes in the data reported following the start of the intervention in the third quarter of 2021, as they had gained a clearer understanding of measurement definitions and made changes to their reporting methods. Examples of these variations were shared across the centres, and they were taught how to use control plans to identify different types of variations and when intervention was required.

### Discussion

The initial learning collaborative session began with active participation from the 10 centres. The centres formed small groups and completed collective analysis of the project's strengths, weaknesses, opportunities and threats. This step in the process fostered connections between participants while also allowing comprehensive stakeholder input and encouraging project buy-in and group sharing during initial stages of the learning systems framework and DMAIC.

In the project's first month, there were substantial variations between the number of patients screened and the number of patients deemed eligible for screening across the centres. For example, one centre reported having only 280 eligible patients, while another centre of a similar size reported over 12 000. Other centres had significant variation from one quarter to another, while some were not reporting data at all. The extent of the variation was unexpected given the amount of collective work done across the centres around adoption of evidence-based practices for National Quality Forum measures. As previously described, the centres had a long history of participating in several large-scale initiatives, which required them to report data relating to the selected National Quality Forum measures over several years. To overcome the measurement variation, a brief time period was allotted for each centre's internal team to clarify their interpretations of the measures. After three 1-hour learning collaborative sessions, one small group facilitation meeting and 16 independent practice facilitation meetings, the 10 centres came to a full agreement on every component within the National Quality Forum metric definitions. All centres also individually met with a facilitator to confirm complete understanding and acceptance of the measure definitions.

At the beginning of the study, two centres reported being completely confident in their data reporting accuracy. However, the project facilitator identified that, although one of these centres was much larger than the other, it was reporting much lower numbers of both screened patients and patients eligible for screening. The subsequent small group facilitation meeting was pivotal in providing a safe space for the two centres to respectfully discuss and explore each detail of the other's process, while allowing for centre autonomy and mutual identification of the underlying reasons for the difference. Both centres were shown

to have accurate data but different reporting measurement periods. This meeting allowed them to come to an agreement on how to align themselves. These two high-performing centres could then speak together at the learning collaborative sessions, meaning that the other centres heard a clear and united message from respected colleagues. This prompted them to join in with a group discussion to achieve a shared understanding.

The learning collaborative also focused on increasing the confidence and skills of team members in communication and quality improvement, while also exploring how each centre could contribute to the collective success of the whole. The authors polled the participants at three distinct time points. The results indicated an increase over time in the number of centres individuals who considered themselves to have high or complete confidence in National Quality Forum measure definitions.

Centres were evaluated based on their ability to achieve reporting accuracy, reach benchmarks and implement improvement strategies, such as training, workflow changes and electronic health record system modifications. Centres that solely relied on training or retraining made limited gains. Notably, two centres that were able to meet the benchmark of 85% across all three measures before the end of the learning collaborative (centres B and C) made modifications to their electronic health record systems, but did not implement staff training. While training can help staff to understand the importance of a task, it does not necessarily ensure that the task will always be remembered or carried out in practice. This indicates that modifying electronic health record systems to prevent screenings from being missed was key to success.

To improve their measurement accuracy, centres needed their quality improvement teams to work closely with clinical leadership to ensure that they would support implementation of effective changes that would allow screening data to be captured at each patient encounter. This work was often difficult, complicated and time intensive. The 12-month project timeline produced only partial implementation of process changes and benchmark attainment. However, eight of the 10 centres had reached the 'improvement' level of the DMAIC process through implementation of change projects by the end of the learning collaborative.

Barriers for centres that were unable to begin quality improvement work was captured during the individual centre facilitation sessions, and included inconsistent clinical representation on quality improvement teams and lack of senior leadership sponsorship for improvement initiatives. Centres with executive leaders who supported their teams with time, resources and encouraged change found better outcomes. The authors observed that higher-volume, urban community mental health centres were able to consistently report outcomes and facilitate change more rapidly. Meanwhile, the three rural centres (F, G and J) often experienced major workforce shortages, which impacted their capacity to make changes to processes. One of these centres (G) stated that they were unable to make any changes, as they were concerned that doing so would lead to them losing more staff.

Throughout the learning collaborative, it was necessary to remind centre representatives that the metrics and associated evidence-based practices were beneficial to their patients, and that this project had the potential to better equip them to negotiate with payers and obtain status as certified community behavioural health centres. One centre's quality director recognised that using the data from their patients' screening scores could demonstrate improved outcomes for their clients. As a result, these data are now being reported to the centre's clinical leadership at monthly meetings.

Literature suggests that outpatient psychiatrists have lower Medicare Merit Based Incentives Programme scores (based on National Quality Forum measures) when compared to other outpatient providers, and are penalised more frequently for not meeting benchmarks (Qi et al, 2022). Psychiatrists' caseloads include patients with more social risk factors, but Medicare Merit Based Incentives Programme measures do not adjust for patient complexity (McGinty, 2020). Further work needs to be done to understand benchmarking in mental health care; although 85% was the target for this learning collaborative, additional research is warranted (Qi et al, 2022). The Medicare Merit Based Incentives Programme score average of 65% could potentially be used as a tolerance threshold, representing the lowest acceptable screening rate (Khullar et al, 2020).

The positive impact seen in the learning collaborative justifies additional studies of the combined learning systems framework and DMAIC. Widescale sharing of the findings from this project could benefit other community mental health centres regionally and nationally.

## Limitations

The relatively short project duration and limited number of reporting cycles mean that it is difficult to assess whether the improvements seen in the centres would be sustained in the long term. The self-reporting of data and lack of outside quality assurance audits are also limitations, which contributed to the limited data integrity, and the fact that there were not enough data or data collection cycles to determine if the changes were statistically significant. Additionally, the low numbers of participants who responded to the confidence surveys further limited data integrity around understanding of the measures.

## Conclusions

Early investment by community mental health centre leadership in the development of a shared aim, project outcomes, staff buy-in and capacity is essential to achieve changes both at a local and state level. This investment goes beyond allocating staff time to the project; executive leaders also need to reinforce project goals and fully grasp why these goals are important.

Careful selection of learning collaborative participants is also vital. Selecting centre representatives who had existing knowledge of quality improvement principles, as well as the drive and support to make organisational decisions, was imperative to this project. The degree of measurement variation was unknown at the project's outset, so centre representatives' willingness to work towards measurement clarification through shared visioning was essential to achieving accurate reporting.

High-volume community mental health centres located in urban areas were able to consistently report outcomes and facilitate change more rapidly than rural centres, suggesting that more investment is needed in the latter. Centres that are able to make changes to their electronic health record systems were most likely to see ongoing improvements in National Quality Forum measurements, which also suggests the need for digital investment. Bringing in quality improvement specialists to provide facilitation within and across organisations was vital in this project. This type of facilitation allows and appreciates autonomy, recognising cultural differences between centres. It can also help to identify patterns in data and workforce capacity, while still reinforcing the power of collective and supportive leadership.

## Conflicts of interest

The authors declare that there are no conflicts of interest.

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## Acknowledgments

The authors would like to thank the New Hampshire Community Behavioral Health Association and the 10 community mental health centres, which thoroughly committed to selecting and funding this project above many other initiatives. Each participant was an important contributor to the results seen to date.

## Declaration of funding

The collaborative was funded by the New Hampshire Community Behavioural Health Center Association. The funding for the open access license for this article was provided by the Institute for Health Policy and Practice.

## Data sharing statement

The data that support the findings of this study are available from the corresponding author on reasonable request.

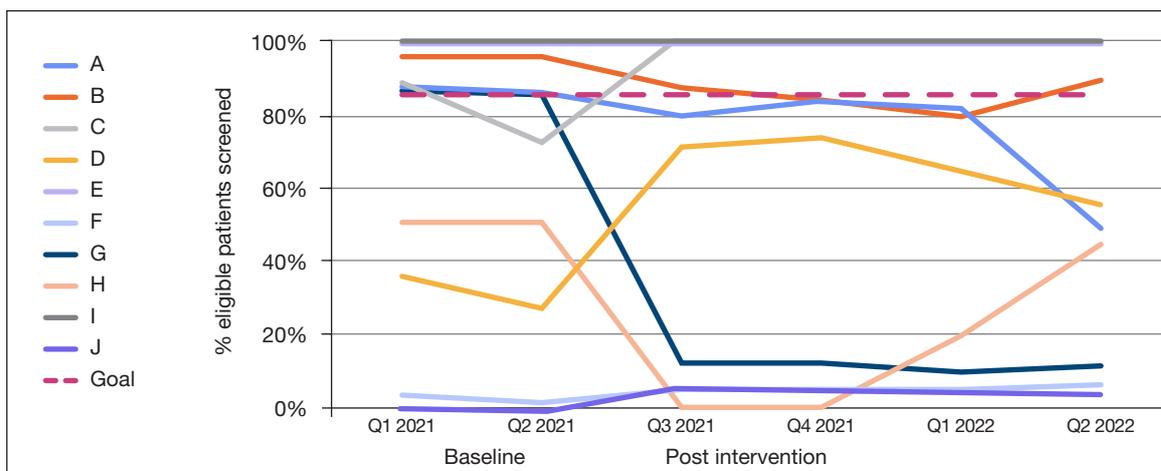
## Key points

- Clear documented measurement definitions, an understanding of measurement requirements and possible deviations, and the ability to accurately and consistently report data are all essential prerequisites for implementing improvements.
- Complex projects, especially those that involve changes across departments or organisations, require a higher level of leadership buy-in and support.
- Training and education are important, but support from leadership and the implementation of an error-proof electronic health records system were more effective in this study.

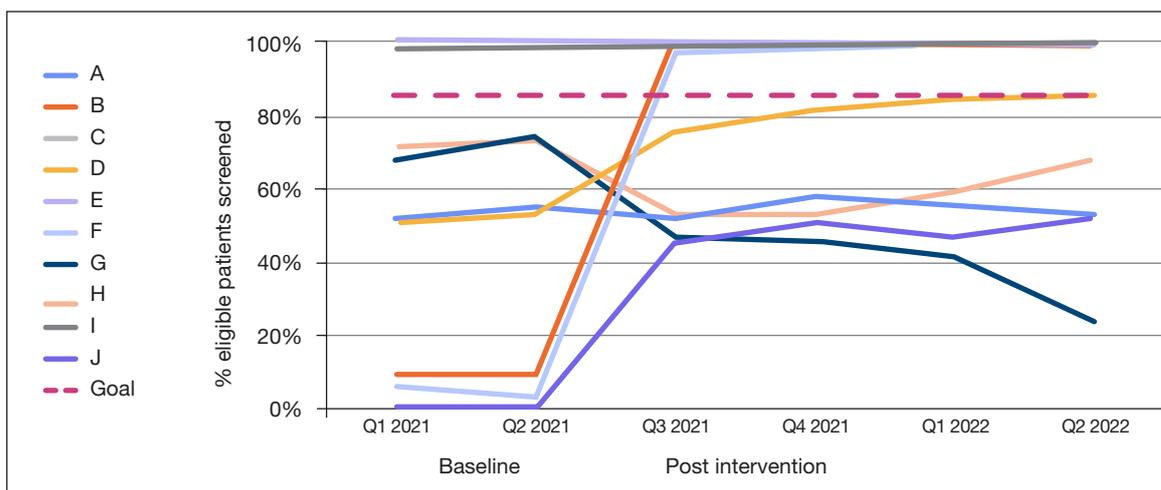
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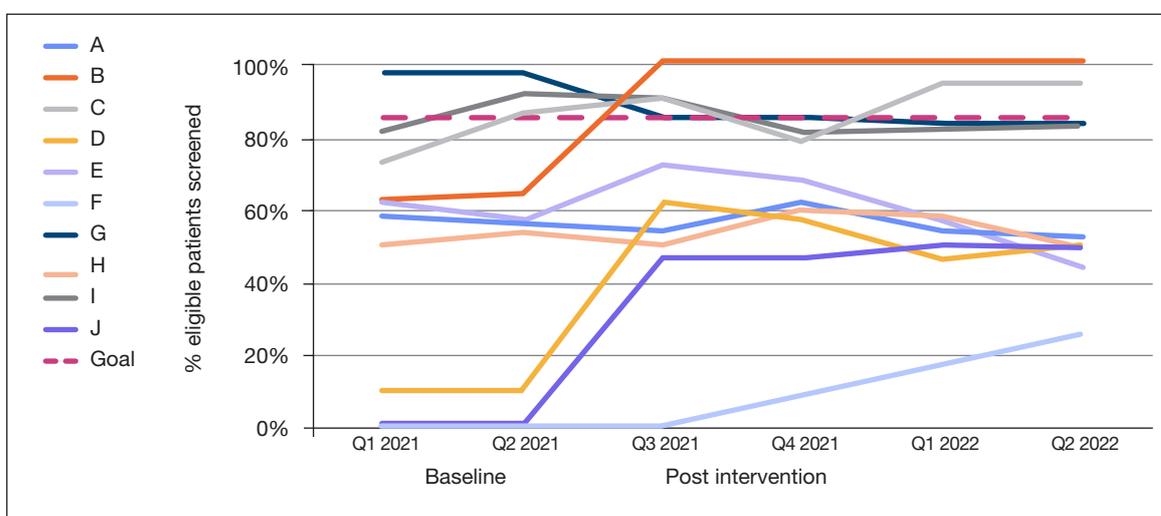
## Appendices



**Appendix 1.** Run chart for the National Quality Forum 1368 measure (child suicide risk assessment) with pre- and post-intervention data. A–J=centres; Q=quarter.



**Appendix 2.** Run chart for the National Quality Forum 0104 measure (adult suicide risk assessment) with pre- and post-intervention data. A–J=centres; Q=quarter.



**Appendix 3.** Run chart for National Quality Forum measure 0418 (depression screening and follow up) with pre- and post-intervention data. A–J=centres; Q=quarter.