Evaluation Research of Measurement and Monitoring of Safety Framework Collaborative

Canadian Patient Safety Institute

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Executive Summary

The Measurement and Monitoring of Safety Framework consists of five dimensions, and a series of prompting key questions, that guide users to comprehensively and conceptually view safety. These five dimensions and related questions address: past harm, reliability, sensitivity to operations, anticipation and preparedness and integration and learning. In October 2018, The Canadian Patient Safety Institute (CPSI) launched a patient safety improvement project under the leadership of Maryanne D'Arpino of CPSI (Executive Lead) and Dr. G. Ross Baker at the University of Toronto (Academic Lead). This program, a learning collaborative with expert faculty and mentorship, aimed to enable the implementation of the MMSF amongst 11 teams from seven provinces across Canada over an 18-month period with the aim of each team developing a more comprehensive approach to safety and the delivery of safer care. This report presents findings from an evaluation study funded by CPSI that aimed to examine the effectiveness of this Collaborative.

Methods

This study used a qualitative approach based on interview, observation and documentary data collection methods. In-depth semi-structured interviews were conducted with team members, one-day site visit observations were conducted at five sites, observations of learning sessions were conducted and relevant documents were collected. Thirty-six team members participated in interviews. A total of 29 hours was spent at site visits; in addition to approximately 33 hours at learning session 3, closing congress and all-team virtual meetings.

Key Findings

- Overall participants provided positive feedback about the in-person learning sessions. They particularly valued the expert presenters, multifaceted approaches used to teach the MMSF, and the structure created for learning within and between participating teams.
- While some participants felt 'overwhelmed' at the amount of information in the first learning session, the majority felt positive about the Framework from the outset. The first learning session set in place the need for a shift in thinking about safety from an absence of harm to presence of safety, to thinking about changing culture, and that it would take time to understand and implement the MMSF.
- The coaching by CPSI Senior Programinsert Managers played key roles in participants' understanding and implementation of the MMSF. The coaches were responsive and accessible in between site visits. They provided ongoing education and support, and were instrumental in providing the feedback necessary for ongoing implementation of the MMSF. Some participants would have wanted more coaching and more clarity about coaching and team accountability expectations.
- Team members used a range of teaching strategies and methods to support the implementation of MMSF into practice. These included teaching about the Framework to groups of stakeholders (e.g. front line providers, senior leadership, QI consultants, physicians, Boards) and teaching about the Framework by integrating its language into day to day communication and using it to discuss specific safety or patient care issues. Team members made decisions about how to teach the Framework to the stakeholder groups, taking into consideration issues such as availability, numbers of people involved, professional roles, and interest. There were different perceptions about the effectiveness of teaching the MMSF, and whether it is necessary to teach the Framework itself or it is sufficient to teach and implement tools/processes informed by the Framework.
- Teams were encouraged to focus on MMSF implementation strategies that were context specific and allowed for the integration of the Framework into the daily clinical and administrative work of the units or targeted areas. Teams consequently used a variety of strategies. These included the use of the MMSF to inform the following processes and activities: safety huddles, health care processes, safety incidents/reports; meetings; communication; patient and family focused initiatives; and board and senior leadership level activities. Each strategy had success in targeting different stakeholders and effecting change in different ways.

- The MMSF teams consisted of individuals with varied professional backgrounds and roles at local, regional and provincial levels. This variability allowed for sharing of diverse perspectives and multiple avenues to teach, implement and spread the MMSF. However, variability in engagement with the Collaborative and movement out and into the teams over the 18 months were challenges. A small number of teams had patient/family and board representation who were seen to bring valuable perspectives to the team and its work. Physicians were a more difficult group to engage.
- The majority of participants were supportive of wider spread of the MMSF yet there was variability in their opportunities for spread beyond their implementation site(s). While a small number remained focused at the original site of implementation, the other teams demonstrated varying levels of spread: unplanned spread; planned individual or team efforts which led to pockets of uptake in the organization or region; planned and coordinated widespread efforts to spread the MMSF across an organization and region. Challenges to spread included limited dedicated resources, uncertain authority to influence spread, the need for alignment with wider-level processes and frameworks and healthcare organizational and regional restructuring.
- The majority of participants reported positive impacts from MMSF implementation. These included changes in thinking about safety which impacted on behaviours and practices; healthcare staff engagement in prevention, identification and management of safety issues; patient/resident and family engagement in safety; and improvements in healthcare processes and patient care.

Conclusions and Implications

The MMSF Collaborative was successful in teaching the teams about the MMSF and coaching them to implement the Framework in their local settings. Participants perceived the MMSF work to be having positive impacts on stakeholder groups' knowledge and behaviours, and on healthcare processes and patient outcomes. These findings support further education and implementation of the MMSF; however, these efforts would need to address the facilitators and challenges identified in this report to ensure a more systematic and comprehensive spread throughout healthcare organizations and regions.

Introduction

In October 2018, the Canadian Patient Safety Institute (CPSI) launched a patient safety improvement project under the leadership of Maryanne D'Arpino of CPSI (Executive Lead) and Dr. G. Ross Baker at the University of Toronto (Academic Lead). This program, a learning collaborative with expert faculty and mentorship, centred on the Measurement and Monitoring of Safety Framework (MMSF or Framework), and took place over an 18-month period. This program followed a prior 12-month demonstration project completed in April 2018. These efforts are an element in the Canadian Patient Safety Institute's strategy of developing new approaches and resources to raise safety awareness and to support healthcare leaders and staff in reducing the incidence of preventable harm and raising awareness of safety. While there is growing evidence of the scale of patient safety events in Canada and elsewhere, progress toward reducing harm has been relatively modest, despite nearly 20 years of investment in safety strategies.

The MMSF, developed in the UK by Charles Vincent, Susan Burnett and Jane Carthey[1], draws together academic evidence and practical experience to provide an expanded framework and approach to safety measurement and monitoring. Building on best practices identified in healthcare and in other industries, the Framework consists of five dimensions, and a series of prompting key questions, that guide users to comprehensively and conceptually address a patient safety issue. These five dimensions and questions are:

1. **Past harm:** Has patient care been safe in the past?
2. **Reliability:** Are our clinical systems and processes reliable?
3. **Sensitivity to operations:** Is care safe today?
4. **Anticipation and preparedness:** Will care be safe int he future?
5. **Integration and learning:** Are we responding and improving?

The MMSF has been piloted in the UK and a range of tools and supports that assist staff in learning and applying the framework have been developed and trialed in both the UK pilots and now expanded upon in Canada. These efforts aim to reorient current efforts to reduce patient safety events from a focus on harm, to a broader effort to embed safety awareness and safety practices in front line teams, leaders and governors.

The 2018-2020 Canadian MMSF Collaborative consisted of 11 teams from seven organizations, representing seven provinces (Appendix A). These teams represented acute (e.g. internal medicine, emergency care, mental health), long term, and virtual healthcare programs. Each team chose their participating members, with representation typically from frontline staff, education and quality improvement consultants/specialists, management, and organizational and regional leadership. Teams participated in three in-person learning sessions (October 2018, March 2019, October 2019) and a closing congress in Toronto (March 2020). In the action periods in between each learning session, teams worked within their local contexts to advance the implementation of the MMSF and develop a more comprehensive view and approach to patient safety. Two coaches assigned to each team conducted regular coaching calls and two to three in-person visits over the duration of the Collaborative. Teams also participated in all-team virtual meetings during the action periods.

The aims of the MMSF Collaborative were to:

1. Learn and apply the MMSF to develop a more comprehensive approach to patient safety
2. Share learning and network with colleagues from across Canada
3. Work with faculty and coaches to successfully implement the MMSF
4. Access, share and adapt advanced patient safety knowledge, tools, and resources within a learning network
5. Improve the team's approach to patient safety while taking action to deliver safer care

1 Vincent C, Burnett S, Carthey J. The measurement and monitoring of safety in healthcare. London: The Health Foundation, 2013.

An evaluation study was commissioned by the Canadian Patient Safety Institute to examine the processes and impacts of the MMSF Collaborative. This study used a qualitative research approach to understand participants' perspectives and experiences of the MMSF and the Collaborative.

The main objectives of this study were:

1. To examine the effectiveness of the learning collaborative in educating participants about the MMSF and guiding their implementation of the MMSF; and
2. To examine the implementation and spread of the MMSF in unit, organizational and regional contexts.

This report presents the findings from this study. The findings can be used to inform future learning collaboratives and initiatives aimed at expanding the use of the MMSF with the aim of improving quality and safety of healthcare across Canada.

Methods

This qualitative study involved the use of observation, interview and document data collection methods. We conducted observations of: 1) Select team sites to observe how the MMSF was being embedded and put into action by the teams; 2) Learning sessions/closing congress and all-team calls to observe the processes of teaching and learning and the information being discussed amongst and reported by the teams. We conducted semi-structured one-on-one interviews, and one small group interview, to gain insights into team members' perceptions and experiences of the learning collaborative and MMSF related experiences. We collected relevant documents at the learning sessions and site visits.

Sampling

Six sites were chosen for observational site visits to obtain a range in geographical location, healthcare setting and MMSF practices; five of these site visits were completed given timeline constraints. Observations of learning session 3, closing congress and all-team calls from November 2019 through to the end were observed. All core team members (n=51) at the time of interview recruitment (December 2019) were invited to participate in an interview.

Data collection and analysis

Observational site visits: One of the two authors conducted each site visit. The site visits were each one day in duration and involved observations of the units and organization where the Framework was being implemented, specific activities where the Framework was being used such as huddles and meetings, and other related activities such as quality and safety meetings. During these site visits, the researchers had conversations with team members and other people at the site about the MMSF, and at two sites, conducted the formal interviews in-person.

Interviews: The interview guide consisted of questions concerning participants' professional roles and roles in the MMSF Collaborative, reactions to and knowledge and perceptions of the MMSF, perceptions of the learning collaborative (e.g. learning sessions, coaching), experiences working in their teams and implementing the Framework, and thoughts about its impact and future spread. Interviews were conducted by telephone (n=29) or in person (n=5). An initial invitation to participate in the interview was sent in December 2020, with approximately two subsequent follow-up emails sent to those who did not respond. Interviews were conducted January through to March 2020. The interviews ranged from 24-64 minutes with an average of 45 minutes. After informed consent was obtained, interviews were audio recorded and transcribed verbatim.

Documents: Documents were collected at site observations, learning session 3 and closing congress. These documents included learning session materials (e.g. academic papers, learning resources), team materials (e.g. toolkits developed, tools being used in MMSF implementation), pictures of huddle boards, and power points of team presentations.

Interview, observational and documentary data were analyzed using a directed content analysis approach informed by the research questions and the MMSF dimensions.

Ethics

Ethical approval for this study was obtained from the Research Ethics Board at the University of Toronto and the participating sites that required independent Research Ethics Board approval.

Findings

Thirty-six team members participated in the interviews; 33 of these were one-on-one interviews and one interview was conducted with three team members due to time limitations. A total of 29 hours was spent at site visits; in addition to approximately 33 hours at learning session 3, closing congress and all-team virtual meetings.

Learning collaborative

The learning collaborative activities consisted of three main components: in-person learning sessions, coaching through in-person visits and conference calls, and all-team virtual meetings.

Learning sessions

Overall, participants provided positive feedback about the in-person learning sessions, commenting in particular on the multifaceted approaches used to teach the MMSF and to allow for learning within and between teams.

The presenters at the learning sessions were highly regarded for their content and teaching expertise. The teaching of the MMSF by Dr. Janet Carthey and Sarah Garrett, who have played key roles in its development and dissemination in the UK, lent credibility to the Collaborative and was highly valued. Participants noted that they effectively taught the MMSF by providing explanations of each dimension and its associated questions, role playing, and sharing of patient safety stories and examples of how it has been used. Many participants also reflected on the effectiveness of experiential learning where participants went to various community spaces to apply their learning about safety risks. Participants also valued the focus of the learning sessions on tools such as the eight types of harm and maturity matrix, which deepened their own understandings of safety and were valuable resources that many used in their workplaces either as launching points for their safety work or that became embedded in their teaching and use of the MMSF over time. Participants reported that they used the resources available in the Sharepoint and hoped to have continued access.

Participants valued the space provided by the learning sessions for the teams to learn and work together, away from the daily demands of their workplaces. The team activities allowed for team interaction, discussion and progress. Participants also emphasized the benefits of networking with, and learning from, teams based in both similar and different healthcare settings, from across Canada. This sharing across teams allowed for participants to hear how other teams were interpreting and using the MMSF, which illuminated the diversity of its potential. This learning between teams was achieved through small group discussions, a 'marketplace' of ideas and initiatives, and team presentations.

> *So that was my favourite. I loved being able to see how other people applied it. I thought that was so wild how we all had the same education from those learning sessions and then we all did something different with it. And I think that's cool because there are so many different ways that you could apply this Framework and no way is the right way. It's just how does it speak to you? How does it speak to your team, your families, the clients that you're serving to make it flow into your system and your processes? (Interview #10, Senior leader)*

> *The biggest thing for me that I took away is I would hear something that another area had done across the country; the nice thing about this is you're bringing people from across the country together and when we brought them together there's so much learning that can happen from other people. I really believe that I don't want to reinvent any wheel and if somebody's done something really well I just want to hear about it and see how we can tweak it for our work. (Interview #12, Senior leader)*

The three learning sessions were structured to allow for the teaching of the MMSF, a more in-depth understanding of its dimensions, and a sharing of experiences and activities over time. Many participants commented on the 'overwhelming'

amount of information in the first learning session. While some initially struggled with making sense of the MMSF, many felt comfortable with it from the beginning, using the following words to describe their initial reactions: 'intuitive', 'makes sense', 'simple but abstract at the same time', 'liked it right away'. Participants noted that they liked that it was proactive rather than reactive and while the concepts were familiar to many, delving deeper into the Framework and its dimensions through the learning sessions allowed for teams to appreciate how it would be relevant to their site and could frame what they were doing. The first learning session was effective in communicating key messages about the MMSF: that the Collaborative required a shift in thinking about safety, particularly from an absence of harm to a presence of safety with past harm being one of five dimensions, and that teams needed to shift from a project orientation to thinking about changing culture which required team members to step back and not rush through the learning and implementation process.

> *So it's a process over time for your brain and your understanding to move through that process and understand how it works and I felt that the first learning session was really that cog in the wheel, "OK, we need to think about this from a different perspective" and it was great to talk it through with people at your table, your own team, and then it was great to hear what the other teams, how they were trying to process it, so I think that was a really good starting point. (Interview #7, Senior leader)*

While participants' input about the learning sessions were largely positive, there were some suggestions for future learning sessions. Teams had to make decisions about who to send to the learning sessions, and one participant suggested that perhaps the first session could be done virtually to lessen the resources required. There was some concern about the amount of learning between teams, such as in the free agenda, sharing of ideas, article review and discussion, when teams themselves were struggling, and some further expert-led teaching and feedback would have been valued. Some participants also noted that the teaching about sustainability was not in line with the teams' readiness for this stage, and that the evaluation component should have been established and communicated from the beginning of the Collaborative with more attention to clarifying understandings of relevant details (e.g., concept of leading indicators).

Coaching and team-wide webinars

Coaching during site visits and teleconference calls played a key role in participants' understanding and implementation of the MMSF. Participants felt that the coaches' site visits allowed them to understand each team's particular context and therefore provide relevant and meaningful coaching. Participants perceived coaches to be accessible and responsive in between the site visits. Participants reported that they were able to share their feelings, ideas, and experiences with the coaches and that coaches provided valuable responses, whether it was support at the beginning or at points over the 18 months when teams were experiencing frustrations or difficulties; advice at various points to pause and rethink an approach; or encouragement to continue moving forward. The coaches enabled teams to continuously work at their interpretations and understandings of the MMSF and to think deeper or differently.

During the site visits, the coaches were also impactful by teaching people at the sites, ranging from front line healthcare providers to hospital leadership teams, and facilitated learning activities such as people walking around the site to identify and reflect on patient safety concerns. The coaches' presence sent important signals to healthcare providers and leaders at the sites about the legitimacy of the MMSF initiative, which enabled the teams' MMSF work. The movement of coaches amongst sites allowed them to share experiences and ideas amongst the teams. There were concerns that team members would not be able to provide coaching to others as they had received from the CPSI coaches.

> *I think it was really good to have the coaches and have the calls with the coaches as well as having the coaches come up to the site because they really will push you a lot further, like you're doing ok, but then they can pick up on those things that you're missing or if you've interpreted one of the dimensions a bit differently or those kinds of things they really can push you ahead. (Interview #24, Manager)*

> *It was very helpful for them to come out and I just remember they had spoken to all of our staff about it and they also spoke to all our residents about it. And I think that was the first or one of the first introductions that the residents had to the Framework. So having the coaches come out where they were more familiar with it and going over it with the residents, I think that was really great. (Interview #3, Nurse leader/educator)*

The few suggestions regarding the coaching component included more in-person coaching sessions, further clarity about coaching roles and team accountability to support progress over time, and recognition that communication between the coach and one team member from each site can affect other team members' perceptions of access to coaching.

All team calls

The all-team calls were perceived as useful for providing regular contact, enabling learning on varied topics, and increasing awareness of what other teams were doing. Participants noted that they were not always able to attend, and there were a small number that were not as relevant for them, in particular the session on spread, if the teams were not yet at that stage.

MMSF Implementation

MMSF education

The team members were responsible for educating others about the MMSF to enable its implementation into practice. The diversity of the team members meant that each was able to speak about the Framework with different groups within the organization and healthcare system. These groups ranged from front-line healthcare providers to quality improvement or manager groups, to senior leadership and Boards, with the education occurring within clinical units and across regional areas. There was variability in team members' confidence with the MMSF and therefore comfort using the language and educating others; while most became more confident over time, there continued to be some variability towards the end of the Collaborative.

Participants used different strategies for educating others about the MMSF. These ranged from formal education sessions on the Framework or specific dimensions to informally speaking about the Framework through using the language in day to day interactions and huddles. Some participants noted that they were concerned that front-line healthcare providers would not be receptive to 'another framework' and that the unfamiliar language would not engage them, and therefore used other approaches, such as focusing education on the types of harms and adapting the language in the Framework to optimize its relevance and accessibility.

Participants' education approaches were also influenced by the number of targeted learners. For example, those in large clinical units, had the challenge of educating a greater number of front-line staff, and therefore each made decisions on how to do so. Strategies included focusing on one dimension or type of harm numerous times during huddles for a period of time to making use of champion staff to teach the Framework by structuring the huddle around its dimensions and questions. More defined and smaller groups such as a physician group, boards and senior leadership, could be educated about the Framework in a designated learning or meeting session. In a number of teams, team members seized the opportunity to speak about the Framework in whatever meeting they could get the MMSF on the agenda. These could be a resident and family advisory committee, executive director or chief of staff group etc. Even if it was just a short presentation, it was viewed as an opportunity to talk about the Framework, and disseminate the Framework beyond the local setting. Participants adapted their strategies over time to optimize learning and made decisions about who to target with their education, such as focusing on individuals or groups most receptive to learning about, or adopting, the Framework.

Many participants spoke positively about their MMSF educational role and sharing the Framework with others. Some found this responsibility to be challenging given the large number of those that need to be targeted and limited resources for them to do the education and for others to participate in the learning. A small number wondered whether the Framework is able to be taught in a short amount of time, concerned that meaningful dissemination of the Framework is dependent on more intensive education as the teams had received through the Collaborative. However, there were also perceptions that while not everyone might have an explicit or thorough appreciation of the Framework, those that do can still influence healthcare processes that affect all those in the organization. The following table highlights the education approaches used.

Table 1: MMSF education approaches

Education approach	Examples
Education about MMSF during an opportune short period of time	Unit-based leader had short discussions about one or more of the dimensions with small groups of front-line healthcare providers, typically during huddles, to prepare them for future huddles or conversations around the MMSF.
Presentation of MMSF during a scheduled meeting time	Presentation to groups including senior leadership, groups of QI consultants, directors or managers, physicians. One team created a standard PowerPoint presentation with key messages.
Formal half-day retreat to Board about MMSF	Taught the MMSF with presentations by MMSF teams and U of T expert
MMSF Education by CPSI coaches	CPSI coaches during site-visit provided education to front-line staff or senior leadership about MMSF
Education about concepts related to MMSF	MMSF team members taught front-line healthcare providers about types of patient harm and created unit-based resources based on discussions for continued learning
Use of MMSF to work through patient care problems	Physician guided physician group overtime through patient care problems using the MMSF. QI person taught MMSF to QI group and then had discussions about how could use it in incident report reviews.
Integration of MMSF language into day-to day communication	Used MMSF language in conversations and emails. Referenced the MMSF poster on the wall in conversations on the unit.
Integration of MMSF language into safety discussions	Asked for questions in safety huddles related to MMSF dimensions Used real time safety concerns to teach MMSF Categorized staff concerns by MMSF dimension Referenced the MMSF poster on the wall in conversations during senior leadership huddles

The following quotes are examples of participants' perceptions and experiences of educating others about the Framework:

> *Even though it looks very simple, it's a very complex Framework to explain, and trying to translate it to staff of various backgrounds, various understanding, levels of education, that's a huge challenge with this Framework and I think had I not participated in the learning collaborative and had time to hear it from the authors and absorb everything that they were saying from their perspective when they were writing the Framework and thinking about it, I don't think I would have been able to convey it to anyone else. (Interview #30, QI consultant/specialist)*

> *So, to your original question, when I used it with the discrete problem, it went very well. When I used it with a larger problem that didn't have an obvious answer, it didn't go so well. So, my plan is to continue to apply it to kind of more specific discrete problems, and then hopefully we'll hit that reflection point where people will start to understand the Framework better…and then we'll be able to tackle bigger issues with the Framework in mind. But we've essentially, all of our meeting formats, our discussion of cases, we're using the Framework constantly because we're trying to shift their mindset. (Interview #26, Clinician)*

> *So we had an ah-ha moment to say we need to start educating and talking with teams about the different types of harm before we can do anything else. So the first thing we did when we came back was we made up a plan to do exactly that and we spent – I think we did 30? Oh, 36 sessions on the floor just talking about harm. So we just asked the teams honestly to say what are some examples that you have seen? And the conversations that came out of that were mind-blowing because people had major realisations of like oh, I didn't realise that was harm. (Interview #10, Senior leader)*

Implementing MMSF

The teams were encouraged to focus on MMSF implementation strategies that were context specific and allowed for the integration of the Framework into the daily clinical and administrative work of the units or targeted areas. As a result the teams used a range of implementation strategies, with safety huddles being the most common, to engage stakeholder groups including frontline staff, managers, patients and families and senior leadership. The strategies ranged from the informal use of the Framework as a lens to the way staff think and act about safety to more formalized activities and tools informing clinical and administrative work. The table below outlines and describes the strategies applied to support the implementation of the MMSF. As can be observed, the majority of the strategies were targeted at activities and processes at a unit level, with a smaller number apparent at an organizational or board level. Following the table is a summary of participants' experiences with MMSF implementation.

Table 2: MMSF implementation strategies

Implementation Strategy	Key points
Safety Huddles	• Most common strategy used for implementation. • Huddles done on a daily or weekly basis. • Structure of huddles varied across sites. For example, some used a series of questions informed by the MMSF to guide the huddle and others were based on a ticket system that were discussed using the MMSF dimensions and language. The huddles were responsive to patient, healthcare provider, unit and organizational factors that day/week. • Huddles were a key venue to teach about the Framework and apply the MMSF language to real practice-based safety issues. • At one site, a new framework was developed, based on the 8 types of harm taught during the Collaborative (physical, psychological, dehumanization, over treatment, delayed diagnosis, under treatment, harm at transition, hospital acquired functional decline), and the MMSF, to guide the huddle. • The huddles targeted front line healthcare providers, often a multidisciplinary group. • Huddles were led by managers and nurse leaders who were part of the MMSF teams, with some sites empowering charge nurses and front line healthcare providers to lead the huddles. • Team members reported that these huddles were either new or were allowing for different types of conversations than previously performed huddles (e.g., more detailed, extensive and structured conversations were happening; see section on impact for further details).
Health care processes	• Some participants described using the MMSF to work on specific healthcare processes such as suicide risk assessment, late patient reports. • Use of the MMSF in this way was seen to require practice over time, optimally beginning with a more defined problem before using it for more complex problems
Safety Incidents/Reports	• MMSF used by team members to guide one-on-one or team discussions about safety related issues with front-line staff, managers or patients/residents/families. • MMSF used by QI consultants to inform formal processes of incident investigations (e.g. post-fall debrief based on MMSF). • MMSF used to categorize organization-wide safety reports.

Table 2: MMSF implementation strategies (cont'd)

Implementation Strategy	Key points
Meetings	• MMSF team members used the MMSF dimensions in a range of types of meetings (e.g. safety and quality meetings, morning rounds, leadership meetings). • The MMSF was being used in a formal way such as in a meeting about safe discharge where it was reviewed at the beginning and then used to guide the discussions throughout the day. • The MMSF was being used in an informal way, with team members using the dimensions to guide their questions and comments during meetings, and using the language during the meeting.
Communication	• Various communication approaches were used to implement the MMSF, ranging from one-to-one conversations to social media campaigns. • Efforts to engage frontline staff in conversations about safety concerns such as an event that brought together front line staff and managers to discuss safety using the MSSF dimensions and associated questions. • A social media campaign that encouraged staff and residents to share "what makes you feel safe?" • Some described using the Framework language every chance they had, such as in email communications and day to day conversations with front-line staff.
Patient and Family focused initiatives	• Teams used a variety of strategies to involve patients/residents and families in the MMSF implementation. These included: – Annual care conference with residents and families that used the Framework guide the part of the conversation about safety. – Staff used MMSF to frame conversations with patients about safety (e.g. "what makes you feel safe?") and brought back answers to safety huddles. – Leadership patient visits applied the MMSF to guide conversations with patients. – At some sites patients/residents/families can either listen to or participate in the safety huddles.
Board and senior leadership level activities	• MMSF informed reports to senior hospital leadership about safety incidents. • Executive safety walkrounds informed by the Framework. • Integrated MMSF language into leadership site wide huddles. • MMSF informed board reports about safety and quality status. • Board members used MMSF knowledge to guide quality and safety board committee meetings to think through the right questions, targets and measures being used to assess safety.

Experience of MMSF implementation

Participants described participation in the Collaborative learning sessions and coaching as critical to successful implementation. Having the Collaborative delivered over an 18 month period provided a needed amount of time to learn, discuss, share and implement the Framework within initial target sites as well as a wider spread for some teams. Many commented on the time needed to let go of a project mentality and grapple with how they were going to embed the Framework into practice to support a broader safety culture change. As one participant noted, it is a "shift in thinking", one could not "over-emphasize how challenging this is" given that it is a "paradigm shift" (Interview #27 QI consultant/specialist). Consistency and repetition of the MMSF language and activities were needed over the implementation timeline to effectively integrate the Framework into daily practice. The 18-month timeline alleviated pressures of having to have new processes in place right away, providing opportunity to thoughtfully apply the maturity matrix and design context specific approaches to safety.

> *I thought it was interesting that it was an 18 month collaborative… I thought yeah, that's a long time. But I can see why now in hindsight you need that, probably 18 months, to really get your head around, figure out how you're going to implement it and work with it…The time was definitely helpful for us. That was probably one of the keys. (Interview #29, Senior leader)*

> *Repeatability, that's when you look at the definition at least, the definition of quality, especially in manufacturing. That repeatability of being able to repeat over and over and over again, and having that conversation. And using that for me was using this language over and over again, and using the maturity matrix, ultimately that's what did it. (Interview #30, QI consultant/specialist)*

Participants discussed the MMSF dimensions that they found either resonated and were easily integrated into practice or were more challenging to implement. Overall, past harm was widely identified as being well established across teams, and integration and learning was perceived as challenging due to limited time and resources to focus on it. There were more mixed perceptions of the ease or challenge of addressing the other domains. For example, participants in some settings, such as acute care settings, tended to perceive themselves as already practicing anticipation and preparedness. Others felt that the new huddles were instrumental in encouraging a new approach to anticipation and preparedness, allowing frontline staff to use their *"spidey senses"* to anticipate potential changes in status or needs to better care for their patients. However, others noted that anticipation and preparedness for larger or longer term safety issues was more challenging. The domains of reliability and sensitivity to operations similarly demonstrated variability in participants' descriptions of their abilities to apply them in practice.

Participants commented on the amount of time and commitment required for the MMSF Collaborative and implementation. Dedicating oneself to this ongoing work was challenging for most given competing priorities for the implementation team and all stakeholders, particularly frontline staff.

> *"The nurses are strapped as it is for time, extremely busy and their time is valuable. So if I kept them for 15, 20 minutes, if I did it every single day and caught them on every single shift, yeah, I think this would move forward relatively fast. But my time is strained sometimes with meetings and everything, competing priorities. So if I didn't put as much as I could into it, it would just disappear." (Interview #32, Manager)*

Many participants described the challenge of engaging frontline healthcare providers who were weary of a QI activity that is perceived as another management requirement or to add to their workloads. Integrating the MMSF into daily work of frontline staff, and not adding work, was viewed an optimal approach to implementation efforts.

> *I'm not asking you to say, in the 20 minutes I have off, review the MMS Framework, I'm saying when you do your check in the room, use the Framework to do it. (Interview #32, Manager)*

Participants also struggled with how to implement 'another' QI Framework amid existing QI processes and practices which might not 'fit' with the MMSF (e.g. existing reporting requirements focused on past harm or LEAN based huddle boards) or within an organization or system still steeped in traditional approaches to patient safety.

> *...the news is showing up like the past harm and somebody went there and they didn't get this and therefore, we're going to change and add this new support. But it's not what they need, it's only a reaction to a past harm. Nor will that support prevent that same harm from happening again. It's a false sense of security. So I think with the Framework we've opened up their eyes, but we haven't changed how we're prioritizing the risks... (Interview #7, Senior leader)*

> *But as an organization, I think it needs to be bigger...in order for this to be successful, it can't just be one or two areas. And then the Ministry has to be onboard as well, because their language for critical occurrences or critical incidents is different than ours. And so if we want to focus on this Framework and the data they're asking us for, it just doesn't match....If I go to talk about a critical incident with the emergency department, they have no clue what I'm talking about, if I bring up any of this information. (Interview #4, Senior leader)*

Finally, participants described various experiences with senior or executive support. There were numerous examples of highly engaged executive sponsors and other leaders that provided the support, visibility and resources to push the Framework into practice. High levels of executive support was identified as one of the most important enabling factors to successful implementation. In those situations where support was limited or lacking, teams felt that they had less opportunity to systematically embed and spread the MMSF and ensure its sustainability over time. In addition, some perceived pressure for deliverables to senior leadership although time was needed to observe these changes, and even with time, many impacts may not be measurable, which is what tends to be valued.

> *When we started this the – our CEO and other leadership were very much engaged and wanted to make this successful so, it's really easy to do those things when you have the support...the engagement of the staff in this work was great, but the support from the top down was really good and the other thing that the leadership team didn't do was really meddle in the work too much and allowed it to be driven from the staff on the units which was I think really important. (Interview #12, Senior leader)*

Many of the participants described the unit, organizational and/or regional/provincial level changes and restructuring that was occurring during the 18 month period of the MMSF Collaborative. Staff turnover required continual education of new staff about the MMSF related processes. Changes, such as those at an executive leadership level or in a region, contributed to new people in leadership positions who might not have an awareness of the MMSF Collaborative and the team's involvement in the initiative, as well as broader level changes which involved many competing priorities and constant change and flux.

MMSF teams

The MMSF teams consisted of individuals with varied professional backgrounds and roles at local, regional and provincial levels. This variability in team members' backgrounds, expertise and roles allowed for the sharing of diverse perspectives and multiple avenues to teach, implement and spread the MMSF. However, there were also team challenges, particularly with variability in engagement with the Collaborative given its time demands and movement out and into the teams over the 18 months. The composition of the team allowed for different approaches to MMSF implementation. For example, numerous individuals from one clinical context allowed for a committed team to implement the Framework in a focused way in the specific setting. Individuals from a range of settings within the unit, organization and region allowed for dissemination across different spaces. Each approach provided opportunities and was contingent on the existence of effective communication and collaboration amongst team members and an understanding of each other's contexts, which was variable across the teams.

> *I think it really depends on who was on the team. So, I think we were fortunate enough here to have a lot of different perspectives on the team, but that trust relationship was there so that we were able to move through those different perspectives and learn from each other. I think that happened for us...I think we were fortunate that that happened. So I can see that potentially might not happen for other teams, especially if they were like covering a bigger area and not potentially working in the same facility. (Interview #7, Senior leader)*

Below we highlight some categories of team members and their significant MMSF team roles.

Team members routinely interacting with front line healthcare providers: Team members who had regular interactions with and responsibilities to front line healthcare providers, such as clinical practice nurses and managers, were seen as playing essential roles in the implementation of the Framework. Teams that did not have such a person on their team due to changes in personnel, commented on the challenge of not having this person to support Framework implementation. Individuals who were perceived to be effective in this role, which was particularly relevant to successful huddle practices, were those who had strong knowledge and confidence in teaching and using the Framework. These clinical practice leaders, educators and managers played important roles in teaching, rolling out, and reinforcing MMSF related practices.

> *We had a really amazing care manager…who also had… [a] very similar understanding and hands on approach with her staff. So the same thing. She's out there promoting the model, talking about the model, using it everywhere and anywhere she can. So really between these two (care manager and …) …they kind of pushed the model at the site and did a lot of work in terms of coaching and then trained their staff. (Interview #30, QI consultant/specialist)*

Quality and safety consultants/specialists: Individuals in quality and safety roles played important supportive roles in the MMSF teams, although their involvement varied due to restructuring that occurred during the Collaborative as well as the variability in the scope of their roles, whether they operated at the organizational or regional level. The Framework tended to resonate for individuals in quality and safety roles which helped in their translation of the Framework into practice. In some cases, these individuals had more flexibility to support the project work. These individuals not only supported local initiatives, they also used the Framework in their individual work roles. In some cases, individuals in quality and safety roles brought their learnings from the Collaborative back to their own QI group and could impact on their activities such as incident reporting and executive walkrounds. However, they were limited in their abilities to inform efforts across the region. A participant noted that a regional quality improvement group would be in a better position to spread the Framework across a region.

Senior leadership: Team members who occupied senior leadership roles in the organization, region or province played essential roles in enabling the teams and also in teaching and promoting the Framework at a leadership level. These individuals recognized their responsibilities to "get the environment right" for the teams to do their work locally, to inform leadership of the Collaborative, and to provide leadership oversight.

> *I think our biggest challenge was to have so many people with different understandings and different perspectives on safety. So having to go out and teach the model and we had a really fantastic director of care who was part of our core team and signed on and she was very in touch with the steps. She had massive influence as well. Like my perspective is that they really respected her just because she was hands on, so accessible to staff. (Interview #30, QI consultant/specialist)*

However, not all individuals in these leadership roles felt that they had the environment conducive to enabling them to do this work. Teams that did not have an engaged executive sponsor found it more difficult to implement and spread the Framework.

Physicians: Physician engagement with the teams and the Collaborative ranged from an absence of physician engagement to physicians who were supportive and informed but not actively involved to one physician who was deeply engaged and a leader of the MMSF. Challenges for physician engagement were that they were not financially compensated for time spent at the learning sessions, were not consistently on-site, and had limited time to attend team meetings. One site had a physician team member that attended the learning sessions and effectively brought the Framework to the physician group and led its use for a number of quality issues, and another site had a physician integrate the MMSF into the safety work of a clinical network she leads after learning about the Framework from a QI consultant in the region. For units where physicians played a significant role in patient care delivery, participants noted that physician involvement and support is essential to this work.

> *We have a physician lead as well – but she's spread very thin. So I do actually have a great working relationship with her, so if I need to go to her I can but she hasn't been as highly involved in this as I know she would've liked. But when I do need her she's there to support. (Interview #29, Senior leader)*

Patient representatives and healthcare board members: A small number of teams had patient representatives or healthcare board members on their teams. These individuals brought unique perspectives. For example, the board members were able to see how the teams were utilizing the MMSF and bring their learnings about it back to the quality improvement work being done at the board level. The patient representative brought unique perspectives to the team discussions about safety and how they could use the MMSF, with one participant noting how useful it was to hear the patient representative's reflections on the ideas presented in the marketplace and what she would have wanted to have in place at the team's site. A healthcare board member made the following comment:

> *The teams have actually expressed that it was good for us to be there in that regard. I think it was also very beneficial for my colleague and I to see what they're doing on the floor, where the work is actually taking place and it was beneficial to us as board members. Like I said, it really has changed my way of thinking of how I want to view targets and measures and future work. So I believe it was a two-way street. (Interview #15, Senior leader)*

The turnover in team membership, whether due to individuals leaving their positions in the organization or moving to a new position, was a major challenge for many of the teams, especially when this person played a key role in day to day implementation such as leading huddles, or was an executive leader for the initiative. The loss of team members was a challenge to the continued implementation process, particularly when only one or two team members were consistent throughout the 18 months. The addition of new team members part way through the Collaborative was also challenging given the need for them to 'catch-up'. In a small number of cases, movement to a new position resulted in an opportunity to spread the MMSF in a different capacity and context. There was also talk about who was not at this Collaborative, such as regional quality and safety groups, frontline staff, and healthcare providers not typically represented at such forums such as health care aids.

MMSF Spread

As demonstrated in the section on MMSF implementation, the teams varied in whether their implementation strategies were focused on one unit or in multiple areas (e.g. senior leadership in addition to unit level) within an organization. The majority of participants were enthusiastic and supportive of spreading the MMSF beyond original target areas, though there was variability in their perceptions of having the resources and being at the stage to effectively spread the Framework. A small number of teams continued to be focused on their original implementation sites. The other teams demonstrated varying levels of spread: 1) unplanned spread leading to pockets of uptake in organizations or regions; 2) planned individual or team efforts to adapt the MMSF to other contexts or processes; and 3) planned and coordinated widespread efforts to spread or scale the Framework to organization or region wide impact. The number of teams was distributed relatively even across each of the above categories, with the exception of the final category of planning or undertaking some type of planned spread, which included a larger number of teams.

For teams that had begun thinking about spread, the sessions dedicated to spread and scale up delivered during the third learning session and two of the monthly all-team webinars, were seen as valuable in providing strategies to spread the Framework.

Unplanned spread

Word of mouth and expressions of interest, and changes in team members' positions, led to the unplanned spread of the activities or tools associated with the MMSF. For example, one team reported that their original plan was to implement the safety board and huddles with health care aides and nursing teams, but soon realized that other teams were interested in and would benefit from similar initiatives and therefore made the decision to increase the scope of their implementation.

> *And we did try to [implement on one unit] at the beginning but then as people got more interested, we were kind of just like, oh why not, and it just kind of kept growing. So we did start with one unit at this facility but then eventually it became the whole facility because staff work on all the units and they started sharing it with their colleagues…Then the site made the decision to have it at the whole site. (Interview #16, Manager)*

Similarly at other sites, managers from units other than the original target unit became aware of the MMSF safety board and huddles and expressed interest in replicating them on their own units. In addition, participants described focusing their MMSF advocacy efforts, such as amongst senior leadership, towards those who demonstrated interest and therefore were more likely to take up the MMSF.

Sites also experienced unplanned spread when a team member changed positions within the organization or region. For example, at one site, a team member left her position in the targeted unit and took on a manager role in a different unit. She therefore brought her knowledge of the MMSF and experience implementing the safety huddles into the new context, and initiated the same huddle process there. However, in situations where individuals replicating the huddles did not have formal training in MMSF or individuals were implementing the safety huddles without the support of a MMSF team, it was more difficult to implement the Framework and associated processes.

Planned isolated individual or team efforts

There were examples of isolated deliberate efforts to spread the MMSF or process and tools developed through the MMSF implementation. In many cases, these spread efforts were spearheaded by the QI consultants/specialists participating in the MMSF Collaborative who held regional or organizational roles, and therefore well positioned to think about how the MMSF could be used in other contexts or processes beyond the local unit.

> *And so now we've taken the model from the RPN [Registered Practical Nurse] team and now we're starting to shift that model into other areas; but using that question [is care safe today?]...it's a generative question, it's a question that gets people thinking and it starts to break away at the existing culture. Of all the things in the Framework that I take away, it's a bit of a catchphrase but it's a good one. (Interview #19, Senior leader)*

For example, one regional MMSF QI team member ensured that all QI consultants were educated about, and confident to use, the MMSF. The consultants were encouraged to share or teach the Framework with different groups, and if a group was interested in using the Framework, they were able to support the implementation of the Framework in a new context, as noted in the quote below. As a result of this effort, a clinical care group expressed interest in the Framework and was using it to structure safety efforts.

> *[Operational leader] would like to ensure that there's enough capacity built within our quality team that if a program director came to somebody, because we have different people attached to different program areas as quality consultants... if it was presented to them and they jumped on it, then we have the ability within our team to be able to take the Framework, share, educate and start shifting thinking. (Interview #13, QI consultant/specialist)*

Though QI consultants/specialists played a role in this type of spread, so did other individuals such as a physician in one setting and a senior leader in another setting. While these efforts highlight the potential of the Framework to be spread to a variety of contexts and provide a lens to a number of different clinical and safety processes, there were concerns that these types of efforts resulted in a piecemeal approach to the spread of the Framework. One QI consultant described the spread as "little pockets happening all over the place. I don't feel like any of them are super evolved...it is still a journey" (Interview #9, QI consultant/specialist) For a more meaningful impact more deliberate spread and scale efforts were felt to be required.

Deliberate spread and scale

About half of the teams were at the stage of either planning or already undertaking deliberate and wider spread of the MMSF and associated tools and processes. Two of the long-term care sites discussed the desire or early planning to spread the MMSF safety huddle process to similar institutions with which they had pre-existing relationships, such as sharing nursing staff or QI consultants. Similarly, one regional executive who held the role of executive sponsor on one of the teams had begun the process of spreading the huddles and other MMSF related activities from the local site to another institution.

We're moving [MMSF] to one of the community hospitals that reports up to me. So we're looking at – right now we're starting to put the model in this 80 bed hospital right from when you walk in the door to the top, so all services in the building from infrastructure to food to care…We're integrating the model across entire operations in this one small hospital. So that would be a good test of the model as we try to, we take it from a small program to a community-based hospital and putting a model in place throughout all services that are provided there. (Interview #19, Senior leader)

At two other sites, the daily safety huddles were being implemented widely. At one site, the success of the daily safety huddle in the participating unit spurred the organization quality and safety leadership to begin the process of spreading the huddles to all units across the organization. Each unit was being trained on how to deliver the safety huddle with a standardized huddle boards and script. Once the huddles were well established organization wide, they were to be used as the venue to teach the Framework to the frontline staff. Similarly, at another site, the initial implementation of a safety huddle that used a new model based on the 8 types of harm and MMSF led to the development of a toolkit that was shared with other managers within the same long term care facility and in facilities across the region to support broader implementation of the same safety huddles. The director leading the toolkit initiative encouraged managers to adapt it to their own settings and to provide feedback so that she could continuously revise and improve the toolkit.

So it's exciting to get more feedback from different areas of how they incorporate it and things that we can do to improve it going forward. So it's never really like 'this is the end document'. I always want to be getting feedback from different areas and I'd be so excited to try it on a different service line. Like we're all in nursing right now, but to see how that could be utilized outside of clinical I think would be exciting too. (Interview #10, Senior leader)

Challenges to spread

A number of challenges to spreading the MMSF were noted by the team members.

Dedicated resources: The amount of time and dedicated resources required to meaningfully embed the MMSF into the participating units was seen as a challenge to spreading the Framework. Participants noted the amount of time need to effectively teach the Framework to frontline staff and to make changes to the culture on the unit. The value of participating in the Collaborative, and the coaching provided by CPSI, in successful implementation were noted. Extending this level of time and resources across an organization or region was seen as outside the capacity for the participating teams. Many teams struggled to dedicate resources to the implementation on their own units, and questioned their capacity to also spread the Framework.

Focus on MMSF versus tools/processes: Some participants differentiated between spreading the MMSF (i.e. changes in thinking about safety and in safety culture, teaching the Framework) and tools/processes informed by the Framework. There were different opinions as to whether everyone, "from the top down and bottom up" needed to be formally educated about the Framework for there to be widespread implementation with meaningful change or whether it was sufficient for people to be using tools and processes that were relevant to one's particular role.

Authority to influence spread: Participants described challenges to influencing others, ranging from people in other units to lead huddles to changing the thinking of administrators and decision makers.

Need for wider-level changes: A lack of alignment between the MMSF and organization and system level language, processes and frameworks was perceived as a barrier to more systematic uptake of the Framework. Participants noted that they could work on issues such as reliability in their specific units, but could not account for reliability in other spaces in the organization. Other participants noted the existence of multiple improvement efforts with usage of different frameworks, which competed with each other. Many described discrepancies between the MMSF and the prevalent documentation and reporting processes based on past harm at unit, organization and system levels. These factors made it difficult to consistently address and enable wider implementation of the MMSF and its multiple dimensions.

Well I think all the way up, like from the board to frontline. I think everybody needs to have the opportunity to learn this, but it's going to take a while, because that's a huge culture change. I also think the Ministry has to adopt it as well. If there's a missing piece and the expectation is different, then how do you sustain something? So if the Ministry expects something differently from us, how do we continue to do this when they're telling us to do something else? So I think it has to be a whole system initiative. (Interview #4, Senior leader)

MMSF impact

The majority of participants were positive about their experiences of implementing the MMSF and noted a number of ways the Framework has had an impact on the local contexts and to a lesser extent at the organization or system level. Impacts were experienced through a) changes in thinking about safety, b) staff engagement with quality and safety efforts, c) patient/resident and families' engagement in safety efforts and d) improvements in clinical care processes and outcomes.

Changes in thinking about safety

Participants described the significant changes in their understandings of safety, moving from viewing safety as the absence of harm to the presence of safety.

So, it changed us – it changed it from thinking, "Well, yes. We don't want the harm. How can we look at it from the perspective of – instead of retroactively always looking at things – how can we look forward to ensure that we have a presence of safety around us, so that in fact we don't see the harm occur, or experience it? (Interview #20, Senior leader)

The understanding of what could be considered a patient safety concern also broadened. The definition of harm extended beyond physical harm to include multiple types of harm that included experiences such as dehumanization and loneliness. Participants shared examples of staff reporting and discussing not only harm that had already occurred, but early signs that something could become a problem and requires ongoing monitoring. Further, things that previously would have been thought about simply as irritants, or getting in the way of doing one's job, were re-conceptualized as safety issues, placing greater urgency on finding solutions.

It also created some excitement and I think it absolutely created some recognition of things that you normally treated as an irritant or some kind of issue. People really came to identify them as safety problems, which was a shift. It's a shift in thinking. And an important shift in thinking. (Interview #27, QI Consultant/specialist)

This isn't all new stuff, it's not like creating this whole new paradigm of safety but it's ensuring that we're thinking of it in a comprehensive way and that we're not missing some of those major components, that we're not just hyper-focused on what happened yesterday. (Interview #16, Manager)

Attention to the different domains of the Framework expanded stakeholders' views of how to understand and address safety concerns and events. Participants shared examples of the way applying the Framework as a lens allowed them to approach the investigation of an incident in different ways. For example shifting attention from past harm to the reliability dimension in the investigation of safety events allowed unit leaders or QI consultants to ask frontline staff to identify processes that should have stopped an event from happening; this approach engaged staff to think about potential solutions to ensure the incident would not re-occur. In another example, a unit leader noted an incident where they became aware of two different forms of charting being done by nurses who came from different units and the resulting discussion using the MMSF:

We sat down this morning and we had this big chat about what could have gone wrong with two forms of charting, whose responsibility it is to do these and how we switch our nurses' notes. We walked through those domains, and that was a great example to go through with them. (Interview #8, Nursing leader/educator)

These changes in discussions about safety were also happening at senior leadership levels, such as in the case of a team that had embedded the Framework into senior leadership huddles:

And we do it every morning and as we go around the table everyone speaks to any issues on the unit and so, we embedded all the language, we gave each person on the team a sheet of paper which describes the trajectory through the petals of the Framework and ask questions and as we go through everyone is to talk about the risks on their unit and all those elements. (Interview #12, Senior leader)

Working with the MMSF led many participants, including managers, directors, QI consultants and board members to develop a more nuanced understanding of the types of information that can be collected to create a more holistic understanding of safety processes and outcomes.

It's taught me that measuring refers to metrics and data, audits and count; whereas monitoring refers to the questioning, observing, listening, paying attention to people's perceptions. One of the big aha moments for me is in the past you set targets and so you're watching those targets and questioning when they're not being met and it really can lull you into a false sense of security when you're meeting those targets. (Interview #15, Senior leader)

The MMSF training allowed for participants to bring their attention to a particular dimension that they had routinely tended to neglect. For example, some participants talked about having greater focus on sensitivity to operations now that the MMSF brought validity to thinking this way rather than always looking at the 'hard data' and had prompted reflection on the fact that in the past they tended to have a more reactive approach. Other participants noted that the reliability dimension provided a new way of thinking about improvement work or that they now brought greater appreciation for processes that they had usually done out of routine, but now recognized as important to reliability. Many noted that integration and learning was most commonly neglected and now they were being pushed to bring greater attention to it.

Healthcare staff engagement

Participation in the MMSF safety huddles, which support frontline staff from many different professions in learning and applying the MMSF, was viewed as a key strategy to enhance frontline staff engagement with safety and quality efforts. Participants noted an increase in staff completing safety tickets, sharing safety concerns sooner and engaging in in-the-moment discussions about those concerns. One nursing leader felt that the nurses on her unit demonstrated a better understanding of why reporting incidents and speaking about safety concerns are important to the overall safety of staff and patients/residents.

They're not just doing their tasks…now they're actively more engaged in thinking about, oh that might be an issue, maybe we need to talk about that issue. (Interview #14, Manager)

When safety concerns or events were brought forward the focus moved from simply reporting to thinking about how the concern or event could be prevented in the future.

OK everybody's in the room, let's talk about this right now and let's come up with a plan. And [nurse leader] said that that happens way more often now than what they ever had done before. And it increased their awareness and attention to take care of concerns and just do it now. Don't expect someone else to come in and do this for them. (Interview #13, QI consultant/specialist)

Some participants described deeper and more open and collaborative conversations about safety occurring in their settings given that the Framework provided the leaders with questions to ask and frontline healthcare providers with an expanded understanding of, and a common language to engage and speak about patient safety.

It roots the discussion in patient safety, it can really minimize conflict or issues where you come to a standstill because people are digging their heels in, in their position. If you use a framework of patient safety, I find it softens people…It makes them more open in considering different points of view…it's not about your personal opinion it's about patient safety. Like everybody here wants the patients to be safe, so it gets people out of their towers or their silos and I find it stimulates good discussions. (Interview #26, Clinician)

And I think the conversation's been very helpful. It's interesting we're coming towards the end of this project and although, some days I feel like we've barely accomplished anything because on paper it's hard to see. I see it every day when I talk with people when I walk around when we're having discussions at leadership team or when we're having discussions in staff meetings with frontline staff that the language and the conversation has changed. (Interview #12, Senior leader)

Staff have also begun to take greater ownership of efforts to address safety concerns. In some units, the managers were encouraging leadership of the huddle by front line healthcare providers. Across all teams, the leadership aimed to facilitate greater front-line responsibility and ownership. For example, if a front line healthcare provider identified a problem with falls for a resident in a long term care facility, that individual was encouraged to identify and implement a solution such as obtaining grip socks for the resident.

> *So basically, from my perspective or what I'm seeing, is it kind of empowers staff to take the lead when they observe... or participate in something that they feel isn't necessarily safe and what they can do to resolve that as a team. So there's team building there of course with that and empowering team members to feel like they can say and participate. (Interview #14, Manager)*

Patient and family engagement

Some participants described increased involvement of patients/residents and families in discussions about safety. Having a broader understanding of safety has allowed the teams to recognize the importance of integrating patient/residents' perspectives of what makes them feel safe into safety efforts. The Framework was seen as providing a structure to having better conversations and asking a greater breadth of questions.

> *We have pockets where we utilize patient voices very well, and then we have pockets where I think we can do better, and so I think really kind of shifting that to see patients as partners is really kind of key. (Interview #29, Senior leader)*

> *They've moved from a retrospective to a prospective model, and they've definitely engaged the clients, the patients in the model. (Interview #19, Senior leader)*

The various implementation approaches (e.g. huddles, communication, meetings with patient and family representatives) have provided different venues to share and amplify patient/residents and family perspectives across the local units. For example, at one long term care facility the healthcare aides have been encouraged to ask their residents what makes them feel safe on a regular basis and report back at the safety huddles. At another hospital site, the MMSF team member in a senior leadership role has begun approaching patients to ask them about the care that they are receiving.

Healthcare processes and patient care

Participants perceived their MMSF work to be having impacts on healthcare processes and patient care. In some cases, participants were able to identify measurements that indicated changes in behaviours and outcomes, such as reductions in numbers of staff injury, resident harm, safety events and amount of harm, and use of medications such as antipsychotics.

In many cases, participants described improvements in healthcare processes impacting on clinical and safety outcomes. It was noted that these impacts were more difficult to quantify, either due to limitations in available data, widely distributed effects or the low occurrences of the harm being prevented. For example, huddles have allowed for more in-depth discussions about safety issues and details related to patients/residents and families (e.g., care needs, medication issues) unit-based issues (e.g., equipment concerns, visitors to the unit that day), and hospital-level or system-wide issues (e.g., change in medication labelling, hospital process), that informed day to day patient care in multiple ways. These huddles, and the sharing of information, were impacting on healthcare providers' and leaders' behaviours. For example, in one unit, the huddles involved a discussion about a medication administration concern which led the manager to report back to the manufacturer which in turn responded to the concern and changed the packaging which improved the process of providing that medication.

Participants described using the MMSF to work on specific processes of care. For example, at one site, the team had used the Framework to inform an initiative on suicide risk assessment, bringing attention to details such as integration and learning to ensure nurses were implementing the processes accurately and receiving the support needed. In another site, the physician group used the MMSF to address the problem whereby reports such as laboratory or diagnostic imaging test results came back after the physician ordering them had left. Using the MMSF to guide their work, the team created a new process to ensure reliable follow-up of late reports. This intervention has resulted in improvements in rate of responses

to results that could potentially be harmful to patients, and to improved patient satisfaction given the follow up care provided. This same group also used the MMSF to guide debriefs and reflections following mock codes, leading to greater staff confidence and competence in patient care. The results of these activities were harder to measure given the rare occurrence of the actual codes.

> *The majority of participants perceived the MMSF, Collaborative and team work to have had positive impacts at the various levels described above. While impacts could not always be measured, they were perceived to exist and to be meaningful.*

> *And that's the big take away for me. Whether or not there's anything – and there's measurable items in some of the work that we've done, but it's less about those measurable items to me and more about how the conversation's changed and it's changed some of the focus. I'm a tough sell on some stuff but I'm kind of sold. (Interview #12, Senior leader)*

Future Recommendations

This evaluation study demonstrated that the MMSF Collaborative was successful in teaching the teams about the MMSF and coaching them to implement the Framework within their local settings. Participants perceived the MMSF work to be having positive impacts on stakeholder groups' knowledge and behaviours, and on healthcare processes and patient outcomes. Based on the reported findings, it is timely to build on the existing momentum. The following are future recommendations aimed at both longer term timelines and the current healthcare system demands given the COVID-19 pandemic:

- Uptake of the MMSF requires investment in education of individuals with commitment, authority and resources to support change within their workplaces. This could be done via a new learning collaborative that uses virtual, or a mix of virtual and in person, sessions.
- Coaching is critical to enabling individuals and teams to implement the Framework. Consideration to different coaching models to support wider MMSF spread is needed. Development of local coaches, including some Collaborative participants would enable scale up of coaching. Coaching could also be done virtually. Coaches could be trained to carry on province or region level activities.
- Continue to support learning across teams and provinces given the variability in use of the MMSF and importance of learning from each other. A virtual learning series that uses some of the resources/tools from the learning sessions and engages local examples from the Collaborative could be launched.
- Target different professional (e.g. physicians) and stakeholder groups (e.g. QI networks, senior leadership, boards) to support wider spread, addressing the particular factors needed to optimize their involvement in and support for MMSF work across all levels of an organization, region and province. This could ideally be done in partnership with groups such as regional health authorities and/or quality councils.
- The teams used varied strategies of teaching and implementing the MMSF, demonstrating the opportunities to adapt the MMSF to various stakeholder groups and contexts. Further attention to, and research of, these variable teaching and implementation approaches are needed to support the adaptability of the Framework while also ensuring its rigorous implementation.
- Continue to collect and compile impacts/outcomes of the MMSF work, both measurable and non-measurable to support buy-in to the Framework. A resource that identifies various metrics, both quantitative and qualitative, could then be developed.

The above recommendations could all be performed through a combination of virtual and in-person approaches, depending on the circumstances. Creation of tools and resources outlined above (e.g., metrics resources, local examples, adaptations of framework for different audiences) would be done in collaboration with MMSF teams. Given the imperative of strategizing for the current COVID-19 pandemic, the following are more specific recommendations:

- As demonstrated through this report, the MMSF can be used to address a wide range of quality and safety issues. It is therefore timely to draw upon it to guide activity in priority areas such as infection control, social distancing, re-opening of medical activities, virtual care etc. Similarly, given the range of strategies used to address different stakeholders and levels of activity (e.g., front line huddles, senior level meetings, clinical processes), it would similarly support the different spaces within healthcare organizations needing quality and safety attention (e.g., huddles, screening, regional policies, etc.).
- The in-person and virtual education and coaching in the Collaborative were key factors in its success. Given the current healthcare service demands and the restrictions in day-to-day working, traveling and communication, teaching and coaching resources could be adapted to address current needs and opportunities (e.g. one page education resources, virtual coaching available as needed, quick sharing of successes and obstacles of using MMSF, COVID related webinars etc.). This teaching and coaching would also be tailored to the specific groups (e.g. managers, QI consultants, senior leaders, physicians).

- Learning between teams was highly valued in the Collaborative. The creation of learning opportunities between MMSF teams across the country would support rapid sharing of successes and challenges of using MMSF for COVID-19 related priority areas.
- Follow up with MMSF Collaborative teams to gather additional data about their use of the MMSF with the onset of COVID-19 planning and response would provide valuable insights for this work. These individuals who were particularly successful with MMSF implementation during the Collaborative would have expertise to inform use of MMSF in long term care, emergency, and virtual care settings, all essential to COVID-19 responses. Ongoing partnership with these individuals would be a priority to building local and national expertise.
- A continued focus on patient partnership is essential. This is particularly relevant given the current challenges, including limited visitors in healthcare and long term care settings and communication barriers between healthcare providers and patients (e.g. wearing of personal protective equipment, limitations on in person interactions, etc.).

Appendix A

MMSF Collaborative Teams

Alberta Health Services – Seniors Calgary Zone	Prince of Peace - Supportive Living
Alberta Health Services – Seniors North Zone	Edson Healthcare Centre – Long Term Care Unit
Alberta Health Services – South Zone	Cardston Health Centre – Long Term Care Unit
B.C. Interior Health Authority	Royal Inland Hospital – General Surgical Units
Winnipeg Regional Health Authority	St Boniface Hospital – Cardiac Sciences Program – The Heart Catheterization Laboratory (HCL), as well as the Acute Coronary Care Unit
Winnipeg Regional Health Authority	Victoria Hospital – Sub-acute Medical Unit
Eastern Health – NL	Remote Patient Monitoring
Nova Scotia Health Authority	Colchester Hospital – Emergency Department
William Osler Health System – ON	Etobicoke General Hospital - General Internal Medicine
Saskatchewan Health Authority	Regina General Hospital – Adult Psychiatric Inpatient Unit
Saskatchewan Health Authority	Yorkton and District Nursing Home – Long Term Care