Developing a tailored implementation action plan for a suicide prevention clinical intervention in an Australian mental health service: A qualitative study using the EPIS framework

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Abstract

Background: Tailoring implementation strategies to local contexts is a promising approach to supporting implementation and sustainment of evidence-based practices in health settings. While there is increasing research on tailored implementation of mental health interventions, implementation research on suicide prevention interventions is limited. This study aimed to evaluate implementation and subsequently develop a tailored action plan to support sustainment of an evidence-based suicide prevention intervention; Collaborative Assessment and Management of Suicidality (CAMS) in an Australian public mental health service.

Methods: Approximately 150 mental health staff working within a regional and remote Local Health District in Australia were trained in CAMS. Semi-structured interviews and focus groups with frontline staff and clinical leaders were conducted to examine barriers and facilitators to using CAMS. Data were analysed using a reflexive thematic analysis approach and mapped to the Exploration, Preparation, Implementation and Sustainment (EPIS) framework and followed by stakeholder engagement to design a tailored implementation action plan based on a ‘tailored blueprint’ methodology.

Results: A total of 22 barriers to implementing CAMS were identified. Based on the perceived impact on implementation fidelity and the feasibility of addressing identified barriers, six barriers were prioritised for addressing through an implementation action plan. These barriers were mapped to evidence-based implementation strategies and, in collaboration with local health district staff, goals and actionable steps for each strategy were generated. This information was combined into a tailored implementation plan to support the sustainable use of CAMS as part of routine care within this mental health service.

Conclusions: This study provides an example of a collaborative approach to tailoring strategies for implementation on a large scale. Novel insights were obtained into the challenges of evaluating the implementation process and barriers to

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implementing an evidence-based suicide prevention treatment approach within a geographically large and varied mental health service in Australia.

**Plain language abstract:** This study outlines the process of using a collaborative stakeholder engagement approach to develop tailored implementation plans. Using the Exploration Preparation Implementation Sustainment Framework, findings identify the barriers to and strategies for implementing a clinical suicide prevention intervention in an Australian community mental health setting. This is the first known study to use an implementation science framework to investigate the implementation of the clinical suicide prevention intervention (Collaborative Assessment and Management of Suicidality) within a community mental health setting. This work highlights the challenges of conducting implementation research in a dynamic public health service.

**Keywords**
Suicide prevention, tailored implementation, EPIS, CAMS, mental health workforce, qualitative methods, implementation evaluation, evaluation, evidence-based, sustainment, determinants of practice

In Australia, suicide is the leading cause of death for people aged 15–44 years, with the national suicide rate increasing over the last decade (Australian Bureau of Statistics, 2018). Suicide prevention is a priority across the Australian health system, as reflected in several federal initiatives (Commonwealth of Australia, 2017; National Suicide Prevention Project Reference Group, 2019). Ensuring the public mental health workforce is equipped to deliver appropriate psychosocial interventions is central to early intervention and treatment for suicidality. As such, access to appropriate psychosocial support is a key strategy in the emerging best practice multilevel approaches to suicide prevention (van der Feltz-Cornelis et al., 2011).

Collaborative Assessment and Management of Suicidality (CAMS) is an evidence-based practice (EBP) for assessing and managing suicidality (Jobes, 2012). Intended for use by mental health professionals, CAMS is one of a relatively limited number of “well supported” (Swift et al., 2021) psychological treatment approaches that specifically target suicidal thoughts and behaviors. Several randomized controlled trials have demonstrated the efficacy of CAMS in reducing suicidal ideation, and there is promising evidence for its impact on reducing self-harm behavior and suicide attempts. A recent meta-analysis demonstrated that CAMS resulted in significantly reduced suicidal ideation and general distress and significantly higher treatment acceptability and hope compared to treatment as usual or alternative therapies (Swift et al., 2021).

Developed by clinical researchers in the United States (US), CAMS has been primarily tested in US healthcare settings including inpatient and outpatient care. There is currently no known research on CAMS in the Australian public health system. Although some research on CAMS has included fidelity monitoring (Gutierrez et al., 2020), there is also no known research on the implementation of CAMS in a naturalistic setting outside a clinical trial.

There is a growing understanding that complex settings such as mental health services need multiple implementation strategies and support to introduce and integrate an EBP. One approach encouraged in implementation literature is tailoring strategies to the local implementation context (Baker et al., 2015) to encourage innovation-fit (Aarons et al., 2011; Powell et al., 2017). Although tailored implementation has shown promising outcomes across a range of health contexts, including in mental health service delivery (Joosen et al., 2019), research specifically on the implementation of suicide prevention initiatives is scarce. A recent review of multilevel approaches to suicide prevention showed less than 10% of published research included a process or implementation evaluation (Zbukvic et al., 2020). Understanding how to effectively implement suicide prevention EBPs is key to ensuring they are embedded in routine care so that services can help to reduce the devastating impact of suicide.

The aim of this study was to develop a tailored action plan for implementing CAMS in an Australian mental health service. A stakeholder engagement approach was used based on the “tailored blueprint” methodology developed and trialed by Lewis et al. (2018), and the Exploration, Preparation, Implementation and Sustainment (EPIS) implementation framework (Moullin et al., 2019). The EPIS framework includes key factors related to four phases of implementation: EPIS. These implementation factors are associated with the outer system context, the inner organizational context, the innovation being implemented and the interconnections between these domains, recently articulated as bridging factors (Moullin et al., 2019). Detailed definitions of the EPIS domains and constructs can be found at www.episframework.com. This paper describes the process of developing the action plan and the findings from the tailored blueprint process during the implementation phase.

**Wider context: LifeSpan suicide prevention trial**
This work formed part of a larger Australian suicide prevention trial conducted by the Black Dog Institute, LifeSpan (Shand et al., 2020), a multicomponent suicide prevention approach that implements strategies across health, education and community sectors. The LifeSpan research trial was conducted across four sites in New South Wales from 2017 to
2020, with a total trial period of two years per site. The final trial site, Murrumbidgee Local Health District (LHD), is the subject of the present study. Outcomes from the present study provide insights into the implementation of an evidence-based suicide prevention model and offer invaluable learnings about the challenges of conducting implementation research in complex and geographically large settings.

**Method**

**Setting**

The Murrumbidgee region spans 136,898 square kilometers across southern New South Wales, Australia. The area is serviced by an LHD, which covers a catchment area that is home to approximately 243,228 people in mostly regional and one remote community. This study took place in the Mental Health Drug and Alcohol Service in the Murrumbidgee LHD. This service includes a Mental Health Emergency Consultation Service (MHECS), a Specialist Community Mental Health Service and Specialist Drug and Alcohol services. Murrumbidgee LHD was the only site within the broader LifeSpan trial where the public mental health service decided to embed CAMS as their standard treatment model for suicidal clients and as such, provided a unique opportunity to work with the service on a site-wide implementation plan for CAMS. Training in CAMS was mandatory for Murrumbidgee LHD mental health and drug and alcohol service clinicians across these services (approximately 150 staff). Staff made up of six geographical teams from across the Murrumbidgee region, which varied widely in the population covered per full-time equivalent clinician.

**Innovation**

CAMS is an EBP that provides a flexible therapeutic framework to support a collaborative, suicide-specific approach to assessing and managing suicidality. CAMS offers the opportunity to clinicians and clients to understand the “functional” role of suicidality in the person’s life. Within CAMS, a person’s “Suicide Status” (their experience of suicidal thoughts, urges and behaviors and the factors that drive the suicidality) is collaboratively assessed and recorded on a paper-based Suicide Status Form (SSF) every session to guide assessment, treatment planning, on-going monitoring of risk and disposition of care. The preferred use of the SSF requires the clinician and client to sit side-by-side and clarify the nature of the person’s suicidality through quantitative and qualitative assessments. The aim of CAMS is to achieve clinical “resolution” of the person’s suicidality and the number of sessions can vary (Jobes et al., 1997). In the present study, CAMS was recommended for use with people above the age of 12 years where suicidality was a key feature of their presentation, and where the person had the cognitive capacity and willingness to engage in the CAMS approach.

**Initial implementation strategies**

Training in CAMS in the Murrumbidgee LHD Mental Health Services involved reading the CAMS textbook, completing either a face-to-face workshop or an online course, and participation in at least three team consultation teleconference calls with a CAMS trainer from CAMS-Care based in the US. CAMS training was mandatory for all Murrumbidgee LHD mental health clinicians working across the Mental Health Drug and Alcohol Service in frontline service roles who would use the CAMS intervention in practice, and staff in leadership roles who would benefit from understanding how the CAMS intervention works in practice. A total of 113 clinicians were trained in CAMS (face-to-face) in February 2019 and instructed by executive leadership at the Murrumbidgee LHD to

**Figure 1.** Steps taken to develop a tailored implementation action plan.
start using CAMS as part of routine practice from April 1, 2019. To assist with the sustainment of CAMS, participation in the online course and consultation calls was a requirement for any new team members joining the Murrumbidgee Mental Health Drug and Alcohol Service, which included 30 new staff trained between May to November 2019.

Supporting materials produced by the LHD included an initial information sheet on CAMS and six communiques informing all clinicians of updated clinical guidance in line with the use of the CAMS approach which included outlining the target client group for CAMS, information on how to use the SSF and how to integrate the SSF with existing electronic medical records system, guidance on how to manage specific clinical issues related to the use of CAMS within the Drug and Alcohol and MHECS setting, a tip sheet on how to access the online training and an information sheet for Visiting Medical Officers. Additionally, Black Dog Institute provided guidance documents for the consultation calls and a FAQ document on the CAMS approach.

**Participants**

Participants in this study were Murrumbidgee LHD staff from the mental health drug and alcohol service teams. Participants had a range of professional backgrounds, including psychology, social work, occupational therapy, social welfare and nursing. Each team comprised a manager, a generalist clinical leader and several community mental health clinicians. Generalist clinical leaders for each team were supported by district clinical leaders who provided specialist support across the entire region. One district team was excluded due to reduced staffing capacity which prohibited engagement with CAMS at the time of data collection. Participation in the research was voluntary and no reimbursement was offered. Verbal or written consent was obtained for all participants.

**Design**

The present study used a modified version of Lewis and colleagues’ methodology for evaluating the implementation and generating a “tailored implementation blueprint” (Lewis et al., 2018). This approach aims to identify barriers and facilitators that serve as determinants of practice and to select implementation strategies to address the identified determinants. The implementation evaluation and tailored action plan development for CAMS in Murrumbidgee LHD comprised the following steps (Figure 1): (1) stakeholder engagement, (2) determinant identification, (3) barrier prioritization, (4) implementation strategy selection and (5) tailored implementation action plan creation. Authors followed the Standards for Reporting Qualitative Research to report the findings (O’Brien et al., 2014). This study was approved under the LifeSpan suicide prevention trial by the Hunter New England Human Research Ethics Committee.

**Step 1: Stakeholder engagement for CAMS implementation in Murrumbidgee LHD**

Before CAMS training commenced, a steering committee was established as the decision-making body for the implementation of CAMS in the service, and comprised an LHD executive sponsor and executive lead, and representatives of Black Dog Institute’s research and implementation teams. This committee was responsible for making strategic decisions about CAMS training and implementation in the service, including establishing a working group to guide operational implementation. The working group was formed approximately one month after training commenced, with meetings held fortnightly for the first three months and then monthly for another seven months. Membership of the working group consisted of an LHD executive lead, a Black Dog Institute project manager and a Black Dog Institute researcher, and 15 standing members from the LHD including team and district managers, clinical leaders and senior clinicians. The working group assisted in developing the implementation supporting materials, which were distributed to all clinicians. Operational feedback on the use of CAMS from team meetings, training and consultation calls was collated by team managers and fed back to the working group. Weekly meetings to discuss progress of the overall LifeSpan suicide prevention trial and component suicide prevention areas were held with a Central Implementation Team, comprising researchers and implementation personnel at Black Dog Institute, and implementation managers at LifeSpan trial sites (including Murrumbidgee). Black Dog Institute implementation personnel were also directly involved in supporting the coordination of training and had regular email and phone communication with representatives at Murrumbidgee LHD and with CAMS trainers, before, during and after the training was undertaken at the site. Black Dog Institute LifeSpan staff had access to data on how many staff were attending workshops and follow-up consultation sessions, and when these were occurring.

**Step 2: Determinant identification**

Data collection to identify determinants commenced in June 2019, approximately three months after the initial go-live date to start using CAMS in routine practice.

**Determinant data collection.** An online survey was created by the authors to quantitatively assess barriers to using CAMS based on the EPIS implementation framework. A link to the survey was emailed to all staff who completed CAMS training (n = 161); however, only 29 participants
(18%) responded to the survey, with eight of these completing <50% of the survey. Due to the low response rate and despite multiple attempts to encourage participation, a pragmatic decision was made to discontinue data collection via survey and instead only use qualitative methods to identify determinants of using CAMS in routine practice.

Qualitative methods included semistructured interviews and focus groups designed to elicit perceived barriers and facilitators to using CAMS, in addition to self-reported use of CAMS since the go-live date. Semistructured interviews and focus group guides were scripted with questions that explored each of the domains of the EPIS framework; outer context, inner context, innovation factors and bridging factors (see Appendix 1). Prompts were added to ensure that all appropriate implementation factors were explored (e.g., organizational readiness, leadership support, funding, intervention relevance to client) and interorganizational networks. Care was taken to ensure that prompts were appropriate to the participants’ roles within the hospital system.

Mental health drug and alcohol service clinicians, team managers, generalist clinical leaders and district clinical leaders were all invited to participate in interviews. Only frontline clinicians directly involved in using CAMS in practice were recruited to focus groups, to encourage open discussion of certain barriers/facilitators, such as leadership. Participants were recruited to interviews or focus groups, between August and October 2019, through convenience sampling via distribution of study information flyers and/or email invitations by the LHD executive lead. Semistructured interviews were conducted by three members of the research team (HR, DR and JL) via teleconference or face-to-face. Two 90-min focus groups were conducted in person by members of the research team (HR and JL) at Wagga Wagga Community Mental Health Service and Temora Hospital. Focus groups were limited to 10 people to allow all participants to share their perspectives (Fern, 1982). Researchers involved in qualitative data collection identified as women and were employed by Black Dog Institute as Research Assistants through funding for the LifeSpan trial, with postgraduate level education (Honours or Masters level) and experience conducting interviews and moderating group discussions in healthcare settings. Researchers were not employed by the health service, so did not have existing working relationships with participants and did not have a direct role in training or implementation of the CAMS intervention. Information about the purpose of the research and the LifeSpan trial was provided to participants as part of the consent process. CAMS trainers were not present for qualitative data collection.

**Determinant data analysis.** De-identified interview and focus group audio recordings were transcribed using an external transcription service. Data were organized with NVivo Version 12 and analysis guided by Braun & Clarke’s reflexive thematic analysis approach (Braun & Clarke, 2006). Two members of the research team (DR and JL) conducted an inductive analysis which resulted in a complete list of semantic and/or latent codes derived from the transcripts, representing facilitators and barriers to implementing and using CAMS. Any discrepancies were discussed between researchers (DR, HR, JL, KM and LM) until consensus was established. Codes were refined and then systematically mapped against the constructs of the EPIS framework based on researchers’ (DR and JL) judgment. All codes are aligned with elements of the EPIS framework.

**Step 3: Barrier prioritization**

Barriers were prioritized through two key steps: initial prioritization based on perceived feasibility to change and further prioritization based on perceived likely impact on the fidelity of the CAMS model.

From the complete list of barriers, the research team isolated barriers perceived as amenable to change through locally tailored implementation strategies, based on their knowledge of the local implementation context (e.g., available resourcing), which was gained by working closely with the Murrumbidgee site for the overall LifeSpan project (see Step 1 above).

To further prioritize barriers, the research team then contacted CAMS experts in the United States, including training facilitators and the intervention creator, who have expert knowledge of how CAMS has been implemented and delivered in US healthcare settings. The CAMS experts were asked to rate barriers for perceived impact on fidelity to CAMS from 1 (low impact) to 5 (high impact). Barriers identified as high impact (score of 3 or above) on fidelity were prioritized as determinants for implementation strategy selection.
Step 4: Implementation strategy selection

A shortlist of feasible strategies to address the prioritized determinants was generated through discussion among the research team through a matching process from literature on evidence-based implementation strategies designed to address specific barriers (Powell et al., 2015, Waltz et al., 2019). Eight strategies were identified and modified for relevance to implementing CAMS in the Murrumbidgee LHD (see Appendix 2 for list of strategies).

Step 5: Tailored implementation action plan creation

Next, LHD staff were asked to rate the proposed strategies on feasibility and importance (see Appendix 2 for rating form for tailored implementation strategies) using a five-point scale (1 = low importance/feasibility to 5 = high importance/feasibility) (Figure 2). Using these data, the research team created a template implementation action plan containing strategies rated highly (score ≥ 4) for both importance and feasibility (see Appendix 3).

A workshop was held with LHD staff to operationalize the proposed strategies, conducted via videoconference and facilitated by a member of the research team (JL). Leadership and frontline LHD staff were invited to participate in the workshop and were recruited via an information flyer distributed through email by an LHD executive leader. Representation from every team was encouraged by the district-level manager. For each strategy, participants generated a list of goals or outcomes which the strategy aimed to achieve in relation to the sustenance of CAMS, as well as actionable steps for implementation, and potential challenges for operationalizing each strategy. Goals for Strategy 1 (Clinical leaders to check in on CAMS at regular staff meetings/during clinical supervision) included for example (1) address issues encountered with using CAMS, and (2) increase the visibility of CAMS. The outcomes of this workshop were collated into a report, which was distributed to LHD team managers and clinical leaders, who invited further review from frontline mental health staff.

On request of LHD leadership staff, the research team provided recommendations about the relative priority of each goal (high, medium and low), based on CAMS expert team ratings of the impact on fidelity of CAMS and the number of key barriers addressed by each goal. High priority goals were recommended for immediate implementation whereas medium and low priority goals were suggested to be considered in the longer term, once high priority goals had been addressed. LHD leadership staff had the authority to determine their own time frames for implementation. The revised report, including prioritized strategies, was delivered to the LHD as a tailored implementation action plan.

Results

Identification of determinants: interviews and focus groups (step 2)

Ten staff (n = 2 frontline mental health clinicians, n = 6 leadership or management staff in clinical roles and n = 2 members of the strategic planning team (nonclinical roles)) participated in individual interviews. Clinicians were from a mixture of the drug and alcohol and mental health teams. Given depth of knowledge participants had of topic of investigation, the relative homogeneity of the sample in terms of profession and context, and concise area of investigation, this was considered sufficient for achieving saturation of themes (Hamilton & Finley, 2019). Across two focus groups, seven community mental health clinicians from the Temora team, participated in one, and 10 community mental health clinicians from the Wagga Wagga team participated in the other. Due to technical issues, the Wagga Wagga team session was not recorded and analysis was therefore restricted to facilitator notes and materials created during that session. The majority of participants across interviews focus groups were female (n = 22, 81%), no other demographic information was collected from participants.

A total of 24 facilitators and 22 barriers to implementing CAMS were identified from interview and focus group data and mapped against domains and constructs of the EPIS framework (Table 1). Table 1 indicates where some domains of the EPIS were associated with multiple barriers and facilitators, and some domains were associated with fewer or no barriers or facilitators. Although the tailored implementation action plan focused on barriers, facilitators were used to assist in the operationalization of implementation strategies where possible. A more detailed analysis of barriers and facilitators, including exemplar quotes from staff, is provided in Appendix 4; however, this detailed analysis was not provided to participants or CAMS experts during the development of the implementation action plan.

For almost every construct of the EPIS implementation framework where a facilitator was identified, there was also a barrier identified. The exception was Bridging Factors, which were reported only as facilitators and not barriers. Most barriers related to the EPIS domain of Inner Context (n = 15 barriers) followed by Innovation Characteristics (n = 8 barriers), with only a few barriers identified for Outer Context (n = 3 barriers). No barriers were identified for the Outer Context elements of leadership, service environment/policies, interorganisational environment and networks, or patient/client advocacy. A summary is provided below of three key constructs of the EPIS framework commonly endorsed as barriers/facilitators—leadership, innovation fit and purveyors—which were utilized in the development of the implementation action plan. This provides an example of how constructs...
Table 1. Barriers and facilitators to use of CAMS mapped against the EPIS framework.

| Domain (definition) | Constructs | Facilitators | Barriers |
|---------------------|------------|--------------|----------|
| OUTER CONTEXT (environment external to the organization, including interorganizational relationships) | Leadership | Service Environment/Policies Funding/Contracting | Available funding to provide ongoing online training/consultation calls | Difficulties with accessing funds to provide training† |
| | Interorganizational environment and networks | | | (Large) proportion of clients with characteristics excluding them from the use of CAMS / complicating the use of CAMS |
| | Patient/client characteristics | | | Low literacy skills |
| | | | | Insufficient proficiency of the English language |
| | | | | Clients with BPD and/or psychotic symptoms |
| | | | | Age |
| | | | | Perceived negative client reactions |
| INNER CONTEXT (characteristics within an organization) | Leadership | | | |
| | Organizational characteristics | | | |
| | Quality and fidelity monitoring/support | | | |
| | Organizational staffing processes | | | |
| | Individual characteristics | | | |
| | Innovation fit: system, organization, provider, patient/client | | | |
| | Innovation developers | | | |
| | Innovation characteristics | | | |
| (Continued) |
could act as both barrier and facilitator, however, is not an exhaustive list of prioritized constructs and further details of all determinants can be found in Appendix 4.

Leadership (Inner Context) in the LHD were supportive, endeavoring to answer questions raised by clinicians about the use of CAMS (facilitator). However, simultaneously there was a lack of buy-in from leadership which hindered the use of the CAMS approach (barrier). Similarly, under Innovation Fit (Innovation Factors), there was a concern raised by clinicians around the appropriateness of the CAMS approach when used in an Emergency Department (ED) setting (barrier); however, participants were also grateful that the approach was rolled out as standardized treatment so clinicians from all areas of the mental health drug and alcohol services had clarity around information transferred with patients and ensuring ongoing patient engagement with CAMS (facilitator). Purveyors (Bridging Factors) was only identified as a facilitator; participants reported the ongoing consultation calls and engagement with CAMS-Care helped address concerns and find solutions to patient-specific issues with the approach.

**Barrier prioritization (step 3)**

Of the 22 barriers identified, 12 were deemed not feasible to change with the available local resources (e.g., LHD systemic factors, amount of CAMS paperwork) and were excluded from strategy development by the research team. A further five barriers were removed as they were deemed to have a limited impact on fidelity of CAMS by the CAMS expert team. These included: perceptions of CAMS as inappropriate for a large proportion of clients, negative client reactions to CAMS, lack of trust in CAMS being able to resolve suicidality, perception of CAMS as inconsistent with recovery-based treatment approach, and relevance to Australian context. Table 1 indicates all barriers that were excluded and Appendix 5 contains CAMS experts’ ratings of barriers. With the CAMS ratings in mind, the research team selected six barriers that were considered feasible to address and likely to have a high impact on fidelity to be addressed by implementation strategies. These barriers were: training requirements beyond CAMS, CAMS appropriateness, perceived lack of autonomy when using CAMS, staff hesitance to change, use of CAMS not formally monitored and lack of team manager/clinical leader buy-in.

**Implementation strategy development (step 4)**

Eight possible CAMS-specific implementation strategies were mapped by the research team to the six barriers. The strategies generated were based on Expert Recommendations for Implementing Change (ERIC) implementation strategies (Powell et al., 2015). Three strategies were rated by Murrumbidgee LHD staff as the
highest for both importance and feasibility (score of 4 or above):

1. Clinical leaders to check in on CAMS at regular staff meetings/during clinical supervision, as per Powell et al. (2015) “develop and organise quality monitoring systems;”

2. Allow and communicate flexibility in the use of CAMS for clinicians/teams where CAMS is less appropriate for certain clients; staff participate in consultation calls to troubleshoot issues around “fit,” as per Powell et al. (2015) “promote adaptability,” “conduct local consensus discussions” and “provide ongoing consultation.”

3. Discuss reasons for reluctance to use CAMS/change practice; provide feedback, information or education regarding the benefits of change, as per Powell et al. (2015) “conduct local consensus discussions” and “conduct ongoing training;”

A pragmatic decision to focus on strategies with the highest score was made by the research team based on Lewis’ (2018) methodology that includes prioritization of strategies considered most important by key stakeholders in terms of likely impact on fidelity and feasibility. Notably, each strategy addressed multiple barriers (Table 2).

**Development of tailored implementation plan: Workshops (step 5)**

To operationalize the strategies, 14 participants (n = 11 female, 79%) attended an online workshop. Of these, 50% (n = 7) had also participated in an interview or focus group. All teams from across the LHD mental health drug and alcohol services were represented, as well as one executive member with decision-making power.

For each of the three prioritized strategies, workshop participants identified two or three specific goals, with corresponding practical and realistic steps to achieve the goals. Actions under Strategy 1 (Clinical leaders check in on CAMS at regular staff meetings/during clinical supervision) included CAMS case discussions between team leaders and frontline staff during regular team meetings, the district clinical leader to create a centralized document for CAMS-related information (e.g., number of clients using CAMS), and the district manager to add CAMS to the desktop checklist on electronic medical records. Actions under Strategy 2 (Allow and communicate flexibility in the use of CAMS for clinicians/teams where CAMS is less appropriate for certain clients; staff participate in consultation calls to troubleshoot issues around “fit”) included the district manager to attain funding to sustain ongoing consultation calls with a CAMS expert, and team leaders and frontline staff to discuss the suitability of CAMS for clients during weekly team meetings.

Actions under Strategy 3 (Discuss reasons for reluctance to use CAMS/change practice; provide feedback, information or education regarding the benefits of change) included the district manager and team leaders to ensure that frontline staff feel supported in delivering CAMS and are provided with further CAMS training opportunities.

The tailored implementation plan incorporated the use of existing systems and/or processes as much as possible to minimize additional workload. For example, using daily intake meetings and clinical review meetings to discuss CAMS-related cases. Foreseeable challenges to putting into action the implementation strategies included limited time, heavy workload and limitations to clinicians’ ability to seek supervision regarding CAMS given that some supervisors/clinical leaders may be unfamiliar with CAMS. Across the three prioritized strategies, four goals were deemed high priority, three were deemed medium priority and one was deemed low priority. The full plan outlines the suggested prioritization of each implementation goal, barriers addressed by each goal, actions to take, parties responsible, how to track progress, and likely operational challenges (Table 3).

**Discussion**

This study details the process for developing a tailored implementation plan to support the implementation and sustainment of a new clinical approach to managing suicidality in an Australian public mental health service. This study provides novel insights into implementation facilitators and barriers to using a clinical suicide prevention EBP within an Australian mental health service and provides a case study of the collaborative development of a tailored implementation plan to support ongoing sustainment of the EBP after research support ceases.

By using the EPIS framework, we were able to systematically identify a range of implementation barriers. Most identified barriers related to the EPIS domain of Inner Context, followed by Innovation Characteristics, with only a few barriers identified for Outer Context and none related to Bridging Factors. This likely reflected participants’ primary focus on overcoming immediate barriers to using CAMS in routine care such as associated paperwork. Prioritized barriers and associated strategies related to Inner Context align with previous studies (Deane et al., 2006), for example, developing a positive implementation climate whereby managers and team leaders communicate the value of CAMS, conduct regular progress reviews and supervision in using CAMS and establish structures to review fidelity (Aarons et al., 2017).

Another study, conducted in US community mental health settings, similarly found that implementation success correlated with active leadership, where barriers were addressed as they arose and workflow was redesigned for changes in practice (Torrey et al., 2012). The relatively
low focus on Outer Context in the present study also likely reflects the profile of participants, who were predominantly frontline workers whose primary role is to care for clients, rather than consider broader systemic factors that may have a more indirect effect on care delivery. By combining research expertise with local service and care delivery expertise, the present study was able to identify implementation strategies that were perceived as important for fidelity as well as feasible to implement.

Lewis et al. (2018) methodology provided a structured, collaborative way to engage stakeholders to integrate both empirical research and practice expertise. The large geographic areas covered by stakeholders in the present study and the CAMS trainers based in the United States meant that it was cost-prohibitive to arrange in-person meetings for all project activities. By using digital solutions to collaboration (via email, phone and videoconferencing), the present study adds to growing evidence for the remote development of tailored implementation strategies and plans that are both evidence- and practice-informed (Kwok et al., 2020). This methodology may therefore be useful in guiding future implementation efforts, with appropriate modifications based on the innovation, setting and stage of implementation.

Table 2. Tailored implementation strategies matched to identified barriers.

| Tailored implementation strategy | Implementation strategy—(Powell et al., 2015) (definition) | Barriers targeted by strategy |
|---------------------------------|----------------------------------------------------------|-------------------------------|
| 1. Clinical leaders to check in on CAMS at regular staff meetings/during clinical supervision. | Develop and organize quality monitoring systems (Develop and organize systems and procedures that monitor clinical processes and/or outcomes for the purpose of quality assurance and improvement) | Use of CAMS not formally monitored (Large) proportion of clients with characteristics excluding them from the use of CAMS / complicating the use of CAMS |
| 2. Allow and communicate flexibility in use of CAMS for clinicians/teams where CAMS is less appropriate; staff participate in consultation calls to troubleshoot issues around “fit.” | Promote adaptability (Identify the ways a clinical innovation can be tailored to meet local needs and clarify which elements of the innovation must be maintained to preserve fidelity) Conduct local consensus discussions (Include local providers and other stakeholders in discussions that address whether the chosen problem is important and whether the clinical innovation to address it is appropriate) Provide ongoing consultation (Provide ongoing consultation with one or more experts in the strategies used to support implementing the innovation) | Lack of team manager/clinical leader buy-in Perceived lack of autonomy when using CAMS CAMS appropriateness • Provider skills • Setting • Relevance to Australian context |
| 3. Discuss reasons for reluctance to use CAMS/change in practice; provide feedback, information or education regarding the benefits of change. | Conduct local consensus discussions (Include local providers and other stakeholders in discussions that address whether the chosen problem is important and whether the clinical innovation to address it is appropriate) Conduct ongoing training (Plan for and conduct training in the clinical innovation in an ongoing way) | Staff hesitance to change Lack of trust in effectiveness of CAMS in resolving suicidality CAMS appropriateness • Provider skills • Setting • Relevance to Australian context |

Note. CAMS = Collaborative Assessment and Management of Suicidality.
### Table 3. CAMS tailored implementation action plan.

#### Strategy 1: Clinical leaders check in on CAMS at regular staff meetings/during clinical supervision.

| Priority | Implementation goals | Actions to take | Parties responsible | Tracking progress | Operational challenges |
|----------|----------------------|----------------|---------------------|------------------|------------------------|
| High     | Address issues encountered with using CAMS | Team Clinical Leaders to prioritize discussing and tracking progress of CAMS use with frontline staff during existing meetings (e.g. clinical review meetings, daily intake meetings, Clinical Review and Support Process known as “CRASP Clinical Supervision”). During these meetings, the team can discuss:  
- Caseload  
- Complex presentations  
- How they are implementing CAMS and their experiences with it (including success stories and challenges along the way). | Team clinical leaders  
Frontline staff | Meeting minutes can be added to a CAMS spreadsheet on SharePoint. This spreadsheet will be accessible by any team across the Murrumbidgee district. | Clinical leaders have very limited time to implement new procedures, so changes need to be integrated with processes that are already in place.  
Clinical leaders who do not feel comfortable with using CAMS themselves may find it challenging to address some of the issues raised. |
| High     | Create a comprehensive resource for CAMS that is continually updated | Create spreadsheet on SharePoint to record and share notes on:  
- Meeting minutes relevant to CAMS  
- Tally of clients CAMS has been used with  
- Audit of number of CAMS sheets used, how far frontline staff got through with it, and whether they completed CAMS | District Clinical Leader  
Team Clinical Leader  
Frontline staff | The District Clinical Leader will be responsible for monitoring the progression of this spreadsheet, ensuring that each team in the district are providing ongoing updates. | Maintaining the spreadsheet would add onto workload. |
| Medium   | Increase visibility of CAMS | Add CAMS to a desktop checklist. E.g. a drop-down box on electronic records for frontline staff to mark whether CAMS has been completed. Disseminate reminder cards/practical resources/reference guides for CAMS. | Murrumbidgee district manager  
IT support  
Clinical leaders | Use of CAMS can be audited during daily risk register. |  |

(Continued)
Table 3. (Continued)

| Strategy 1: Clinical leaders check in on CAMS at regular staff meetings/during clinical supervision. | Priority | Implementation goals | Actions to take | Parties responsible | Tracking progress | Operational challenges |
|------------------------------------------------|---------|----------------------|-----------------|---------------------|-----------------|----------------------|
| Low                                           | Maximize the utility of consultation calls with CAMS-Care | Discuss with CAMS-Care about providing an agenda/list of topics for the consultation calls. Suggest that these calls can also be used to provide education on an aspect of the model. Consultation calls to be opened to all staff regardless of teams so that attendees may benefit from sharing experiences. Frontline staff to attend consultation calls. Pair teams up to join consultation calls to share knowledge and discuss cases. Set up a reminder for upcoming calls. | CAMS-Care District Clinical Leader Frontline staff Murrumbidgee LHD coordinator | Continue to monitor attendance to consultation calls using the spreadsheet that has been created and record on My Health Learning. | Potential technical difficulties with joining consultation calls with other teams. |

| Strategy 3: Discuss reasons for reluctance to use CAMS/change in practice; provide feedback, information, or education regarding the benefits of change, Increase confidence in using CAMS; provide feedback, information or education regarding the benefits of change. | Priority | Implementation goals | Actions to take | Parties responsible | Tracking progress | Operational challenges |
|------------------------------------------------|---------|----------------------|-----------------|---------------------|-----------------|----------------------|
| High                                          | Upskill staff to ensure they are equipped to implement CAMS | Ensure that staff have completed all components of the CAMS training. This can either be the 1 day of face-to-face training or the online training course. Staff must also have read the CAMS textbook to complete the training and attend a minimum of 3 CAMS consultation calls. Provide opportunities for staff to attend further training or refresher workshops for CAMS. Additional training could focus on specific parts of the model. Schedule time for teams to practice using CAMS with each other. This could occur on days when staff are gathered in the office. | Murrumbidgee district managers Team clinical leaders Frontline staff | Completion of additional training can be noted in the CAMS spreadsheet on SharePoint or recorded on My Health Learning. Team practice can be recorded on the CAMS spreadsheet on SharePoint. | Limited time, heavy workload, constraints on human and service resources could limit the capacity to run additional training. Team practice with CAMS would have to be added as an additional meeting which would take up time. Geography—trainings are predominantly held in Wagga. Localised trainings would be beneficial. |
| Medium                                        | Ensure frontline staff feel supported when implementing CAMS | Clinical leaders or supervisors can assist frontline staff in building skills. Frontline staff could be paired up and work on the same client when starting to use CAMS. Provide each other peer feedback and modeling. Reinforce that implementing CAMS is a learning process and to give permission for frontline staff to be a beginner and make mistakes. This could be achieved through sharing stories amongst staff and being supportive about experiences with using CAMS. Frontline staff should also clarify this with their clients too and collaborate with them. E.g. staff could ask clients “should we trial this new framework?” Share stories and challenges in using CAMS | Team clinical leaders Frontline staff | This information can be recorded in the CAMS spreadsheet on SharePoint. | Reluctance from staff—need to provide support and encouragement to ensure that staff feels that it is worthwhile. Patience and persistence of staff—changes will take time and positive outcomes are not immediate, responsibilities will need to be distributed. Team Clinical Leaders play a key role in implementing each of these tailored strategies with their team and may be strained on time and resources to do so. |

Note. CAMS = Collaborative Assessment and Management of Suicidality; LHD = Local Health District.
The present study modified Lewis et al.’s (2018) implementation blueprint methodology in two main ways. First, instead of creating a plan prior to implementation, the present study identified facilitators and barriers during the implementation phase. Although this meant a less rigorous approach to preparation, it had the advantage of exploring facilitators and barriers to implementation based on participants’ actual experiences of using a new approach to care rather than their anticipated experiences. Second, rather than using a mixed-methods approach to action planning, the present study used only qualitative data due to low response rates to the quantitative survey. However, these meant less data were collected, interviews and focus groups were able to provide a rich and nuanced understanding of barriers.

Despite the known challenges of implementing new models of care into healthcare settings and Australia’s focus on national mental health and suicide prevention strategies, there is surprisingly little research on the implementation of suicide prevention programs in Australian care settings. Findings suggest that mental health organizations seeking to implement new programs or approaches to care should ensure that internal organizational structures and processes are adequately prepared and that the EBP being implemented is appropriate for the local context in terms of client profile and staff skills. Having a clear plan for developing implementation strategies, which includes contingency procedures, is key to ensuring rigorous implementation efforts are sustained in practice.

The implementation action plan developed through this study provides feasible, tailored strategies for embedding CAMS in routine practice in Murrumbidgee LHD, acknowledging that having a plan is an important but not a sufficient step toward sustainability of EBP. The notable finding that Leadership and Innovation Fit acted both as a barrier and facilitator to CAMS implementation suggests that strong buy-in from service leaders and appropriateness for the local client population are key to encouraging uptake. Strategies should also be integrated with existing systems and procedures to avoid adding burden to an already heavy workload. These findings are consistent with existing research that shows the importance of leadership for the implementation of complex behavioral treatment approaches, such as collaborative care (Wood et al., 2017). Although ongoing monitoring beyond the implementation phase was not included in the action plan, this can be a useful way to encourage commitment from staff and leaders in order to achieve sustainment. Importantly, steps were taken to achieve organizational-level buy-in early, including the establishment of an implementation steering committee and working group to support implementation. Such stakeholder engagement strategies would be useful for supporting the implementation of suicide prevention or other health interventions in complex mental health settings, with stakeholder engagement comprising a key component of implementation science (Lobb & Colditz, 2013).

There are several limitations to the present study. Firstly, the initial prioritization of barriers by the research team without direct involvement of Murrumbidgee LHD staff means that key barriers may have been missed. However, the involvement of Murrumbidgee LHD staff in strategy prioritization and tailoring meant that this aspect of the study was collaborative. It should be noted that some of these barriers are also likely to be challenges for mental healthcare delivery in general for this region, rather than being specific to CAMS. Second, data collection identified both facilitators and barriers to implementation; however, implementation strategies focused on barriers. Facilitators were used to aid in overcoming barriers in a few cases. In future facilitators might be considered in a more in-depth manner and used to assist in the selection of implementation strategies. Finally, the extent to which the implementation strategies were applied or their effectiveness on outcomes is not yet known. The initial research design included follow-up interviews to investigate progress on the proposed strategies; however, these plans were not fulfilled as bushfires in New South Wales in late 2019 and early 2020 reduced participants’ capacity to participate in this research, which was further complicated by the COVID-19 pandemic. These real-world unanticipated events are a reality of applied implementation research. It would be valuable to conduct further research in the Murrumbidgee LHD to both evaluate the tailored implementation plan and to understand how the dynamic outer context factors have influenced the implementation and adaptation of the CAMS intervention.

Conclusion

The present study offers an example of a collaborative approach to tailoring strategies for the implementation of a suicide prevention intervention in a geographically large and varied mental health setting. Findings from the current study reflect the difficulties of both implementing new approaches to care and evaluating the process on a large scale and in a complex, dynamic environment. Future studies should ensure time and resources for participants to effectively engage with evaluation strategies and ongoing implementation activities. Further implementation research focused on suicide prevention in real-world settings will be invaluable for building understandings of how best to sustain the EBP in this space.

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**Availability of data and materials**

The datasets analysed for the current study available from the corresponding author on reasonable request. Study materials including interview and focus group guides, scoring sheets and workshop worksheets are available as Appendices/Supplemental material.

**Trial registration**

This study was conducted as part of the LifeSpan suicide prevention trial. Trial registration for LifeSpan in Australia New Zealand Clinical Trials Register, ID: ACTRN12617000457347. Prospectively registered on 28 March 2017.

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**Supplemental material**

Supplemental material for this article is available online.

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