Chapter 6

Study 4: Implementation study of a prototypic e-clinic being integrated into youth mental health services: staff experiences and reported service quality improvements

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Improving access to, and the quality of, mental health services through the use of health information technologies was highlighted as a key strategic recommendation in the 2014 report of the National Review of Mental Health Programmes and Services by the National Mental Health Commission.[1] More specifically, the Commission called for an overhaul of the Australian mental health system, including an integration of e-mental health into face-to-face services.

While an enormous body of literature regarding digital mental health services exists, both nationally (eg, eheadspace, Mental Health Online, MindSpot Clinic) and internationally (eg, Babylon, PlusGuidance, BetterHelp, Talkspace), these services are almost all stand-alone clinics.[2] The successful implementation of health information technologies into face-to-face services, however, has the potential to vastly improve traditional service quality.[3] For example, the use of health information technologies before initial clinical assessment may reduce service entry wait times, especially for those with complex needs,[4] and can go some way to addressing youth mental health service capacity constraints.[5] Although access to these services is rising,[5,6] many young people enter care for the first time with significant functional disability and symptomatic distress,[7,8] and those with higher needs at entry tend to have poorer outcomes at exit.[7,9] Health information technologies hold promise to improve clinical outcomes by enhancing access to more appropriate and timely care for those with chronic and enduring health conditions.[3]

While research regarding the engagement, efficacy and effectiveness of health information technologies is growing, there is currently little research into the implementation of technology-enabled solutions into existing mental health care settings.[10] As with general health care settings, it is crucial that research aims to recognise and understand barriers to and facilitators of implementation. Research must also aim to devise strategies for improving widespread and effective uptake of health information technologies, and promoting their ongoing use.[11] Broadly, implementation barriers can be split into clinician (or health professional) factors and service factors.

Clinician factors

Research has shown that almost all young Australians aged 16–24 years (99%) are online, with 60% using the internet to find information relating to mental health.[12] In contrast, use of online services in mental health clinics has been acknowledged as a challenge to the professional attitudes and values of some health professionals. For example, health professionals may feel unable to trust online service capability,[13,14] they have questioned the effects of technology on establishing and maintaining therapeutic relationships,[15] and they have raised concerns about being able to manage or allay consumer confidentiality and privacy concerns.[14,16]

Recently, a review of the youth mental health workforce found that health professionals consider the assessment and management of risk and safety issues to be critically important and expressed concerns regarding the ability of technology to accurately assess, interpret or communicate such issues back to consumers.[13,17] In situations where doubts about the appropriateness of technology have been expressed by health professionals (eg, regarding the clinical applicability and utility of technology), this influences their engagement with the technology.[17] Consumer factors such as age, personal attitudes and prior use of technology also influence health professionals' perceptions regarding use of technology in service.[13] Education and training of staff that addresses such concerns and perceptions, and emphasises the benefits and utility for consumers and clinicians, is therefore an important component of implementation.[17]

Service factors

Several service-level implementation barriers have been identified. These include an increase in financial and time constraints, the divergent needs of multiple stakeholders and the level of local leadership.[14,16] Leadership has been recognised as important in creating the culture and climate for implementing service innovation and evidence-based practice.[18,19] Advocates have been referred to as "champions", and their key role in supporting implementation has been highlighted.[14] More broadly, congruence of strategy across multiple organisational levels of leadership (corporate, government and unit level) has been cited as a facilitator of implementation.[20] Barriers related to a lack of organisational support and official expectations regarding use of technology have also been highlighted as key influences on implementation in practice.[17] In addition, the importance of building relationships and effective communication in supporting partnerships between health professionals and researchers has been emphasised.[21]

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Prototypic mental health e-clinic

A prototypic mental health e-clinic was co-designed with young people, health professionals and researchers.[22,23] It aimed to deliver best practice clinical services online to young people experiencing mental health problems. The content (including the questionnaires used) and initial testing of its assessment functionality has been reported previously.[24] In summary, the prototype offers an online self-report assessment across a range of health domains (eg, overall health, mental health, everyday function, suicidal thoughts and behaviour, and social connectedness) that can be completed at any time on any smart device (including computers). The results of the assessment are summarised and made immediately available via a "dashboard of results" to both the young person and their health professional(s) via the service provider. The dashboard provides a multidimensional profile of the young person's health and wellbeing that in turn facilitates person-centred care, self-management, early intervention, shared decision making and routine outcome monitoring.[25] Importantly, the online dashboard is based on a clinical staging model which has been validated in a youth mental health service setting.[24,26] Clinical staging is a refinement to traditional diagnostic practice which allows health professionals to provide more personalised and responsive care for consumers who present with mild, subthreshold or full-threshold severe disorders.[7,27]

The aim of this study was to identify health professional and service-level facilitators of and barriers to implementation of the prototypic mental health e-clinic integrated into five youth mental health services. It also reviewed service quality improvements as reported by staff and observed by researchers during implementation into existing service models and clinical pathways.

Methods

Setting

The prototype was integrated into five headspace centres in the Central and Eastern Sydney Primary Health Network: Ashfield, Bondi Junction, Camperdown, Hurstville and Miranda. Formerly known as the National Youth Mental Health Foundation, headspace provides early intervention mental health services to 12–25-year-olds in Australia, along with assistance relating to employment and education, use of alcohol and other substances, and physical health.[28]

Sampling strategy

Staff from the five headspace centres were invited to participate in the study, and those who gave consent for participation were provided with a comprehensive education and training program that included modules on how to use the prototype plus the clinical and service elements of the prototype (Supporting Information, chapter 6, table 1). Two implementation officers were employed to provide regular and ongoing "on-the-ground" support to each headspace centre, to address implementation concerns and to collect in-situ feedback on the use of the prototype during attendance at multidisciplinary team review meetings and staff workshops.

Participating staff invited young people to use the prototype when they first entered the service. Young people who gave consent for participation were sent an invitation to the prototype, where they created an account and completed the online assessment. As described above, their results were then immediately available via a dashboard of results.

This research was approved by the Sydney Local Health District Human Research Ethics Committee (Protocol No. X16-0297; HREC/16/RPAH/380).

Participants

Forty staff across the five centres participated, including youth access clinicians (allied health professionals), mental health nurses, psychiatrists, general practitioners, service managers, and reception and administration staff. With regards to young people, 671 consented to participate, of whom 549 used the prototype as part of their care.

Data collection

Quantitative data collected consisted of demographic, clinical and behavioural characteristics of the young people who used the prototype. Responses to staff surveys about the usefulness and accuracy of the dashboard of results were also collected.

Qualitative data relating to implementation experience were also collected. These included quotes and feedback from participating staff during initial and ongoing education and training sessions, multidisciplinary team review meetings and staff workshops, as well as observations made by implementation officers when they were providing on-the-ground support.

Data analysis

Descriptive and frequency data were prepared for all quantitative data using SPSS, version 22 (IBM Corporation). Basic qualitative coding was carried out using NVivo 10 software (QSR International). For the qualitative analysis, a form of inductive and thematic coding[29] was applied to a variety of resources such as notes from education and training sessions and staff workshops, as well as implementation officer observations of clinical processes. Coders reviewed resources and noted relevant concepts in the applicable individual's own words. Key concepts were then reviewed across all resources and an initial coding framework was developed. The information was coded in NVivo 10 using this framework. Importantly, the coding followed an iterative process of reading, coding, and discussing the patterns and content of coded data. Similarities and differences in opinion were examined, and differences were discussed until consensus was reached, which is a common analysis method in mental health qualitative service evaluation research.[30,31]

Results

Quantitative data

The mean age of young people using the prototype was 20 years (SD, 2.6 years), and two-thirds (67% [366 participants]) were female. Most (57% [313]) reported severe levels of psychological distress on the Kessler Psychological Distress Scale,[32] and 40% (219) had moderate or greater psychosocial impairment on the self-report Social and Occupational Functioning Assessment Scale.[33] More than half (51% [280]) completed the online assessment outside of service opening hours (5pm–9am), with the mean time to complete it being 42 minutes (SD, 12.8 minutes).

Staff evaluation ratings of the prototype's dashboard of results showed that most agreed that it was useful and accurate. Specifically, results from 117 separate surveys from staff indicated that 52% (57 staff) "agreed" or "strongly agreed" that the

dashboard was useful, while 27% (32) "neither agreed or disagreed", 19% (21) "disagreed" or "strongly disagreed", and the remaining 6% (7) did not answer the question. In addition, 64% of staff (70) "agreed" or "strongly agreed" that the dashboard was an accurate representation of their young person consumer at the time of completion, while 19% (23) "neither agreed or disagreed", 16% (17) "disagreed" or "strongly disagreed", and the remaining 6% (7) did not answer the question.

Qualitative data

Implementation facilitators and barriers. Implementing a prototypic mental health e-clinic into existing service models and clinical pathways at participating headspace centres provided an opportunity to understand the factors that acted as facilitators and barriers. Facilitators, which ultimately aided the implementation of the prototype into each centre, related to the organisational approach to implementation and the factors which supported this process (Box). Nearly twice as many facilitators of implementation were reported compared with barriers to implementation. The barriers theme did not include recommendations of suggested improvements to the mental health e-clinic prototype, which we collated elsewhere – rather, the facilitator and barrier themes focused on service implementation.

Service quality improvements. Several observed service quality improvements were reported as a result of the implementation: reduction in duration of face-to-face assessment; earlier response to risk; efficiency of senior health professional-supported treatment planning; and real-time assessment feedback and immediate provision of clinical resources. Qualitative data collected while implementation officers were providing on-the-ground support were gathered from centre staff. Summaries are presented here according to each observed service quality improvement.

Reduction in duration of face-to-face assessment. Staff who engaged with a young person's dashboard before their initial face-to-face assessment reported a reduction in overall assessment time. They reported that the dashboard provided a "guide" or "enhancement" to their face-to-face assessment and enabled them to quickly provide basic intervention strategies for issues that the dashboard had categorised as being of possible or probable concern. However, trust was an important factor in this process, and this was particularly evident in the early phases of implementation. For example, it was reported in the early stages of implementation that some staff were "still doing a full face-to-face assessment, due to their distrust of the dashboard" (source: headspace centre meeting notes, February 2017).

Earlier response to risk. Online assessment identified risk and safety issues earlier, and the use of our suicide escalation protocol[34] enabled staff to respond to identified risk faster. Every dashboard generated by a young person completing the online assessment that indicated high suicidality (≥ 21 on the Suicidal Ideation Attributes Scale)[35] was escalated and reviewed by staff before the young person's face-to-face appointment. Escalation due to reporting of high suicidality in the online assessment occurred for 82 young people (16%). Access to the young person's dashboard before their face-to-face assessment with a health professional enabled earlier detection of suicidality and follow-up. Staff subsequently liaised internally to determine an appropriate response via a follow-up phone call or by bringing forward the young person's face-to-face appointment. Further, the dashboard was generated immediately after the young person completed the online assessment, so it provided the young person with suggestions of face-to-face, online and telephone resources to support their identified needs. The introduction of our suicide escalation protocol,[34] and the subsequent changes in processes made by services to respond to risk, was reported by staff as enabling faster and more efficient responses to young people at risk of suicide.

Efficiency of senior health professional-supported treatment planning. In one headspace centre, dashboards were used regularly in multidisciplinary team review meetings. The summary results for each young person were projected onto a screen to enable discussion with senior health professionals. Previous team-based review processes relied on verbal summaries provided by youth access clinicians. Several occasions were observed whereby a senior health professional provided clinical advice to a youth access clinician to take more immediate action regarding features of risk or acuity. Although there was one occasion where staff suggested that young people may "under-report online" (source: implementation officer feedback), there were more frequent occasions where young people disclosed information in their online assessment that they did not disclose in their face-to-face assessment. In the latter cases, the online disclosure facilitated further discussion with health professionals. The staff who were fully using the prototype to complement their clinical review process reported that it resulted in more thorough and accurate decision making that was based on data and combined with clinical expertise, thus minimising variability in the provision of care. Headspace centres that had greater trust in the prototypic mental health e-clinic, and had a more evident culture of innovation stemming from their leadership team, were earlier adopters of this method of combining data to inform decision making.

Real-time assessment feedback and immediate provision of clinical resources. The dashboard and recommended resources were made available to the young person as soon as the online assessment was completed, which was often 2–4 weeks before their first face-to-face appointment with a health professional. In addition to the in-centre care provided, the provision of online resources (apps, e-tools, fact sheets, breathing and mindfulness videos, tips and advice) and the dashboard of results offered more immediate support, particularly outside of service opening hours. Staff reported that some young people felt empowered by receiving their dashboard and the online resources, and subsequently requested no additional care from the service. At one headspace centre, a health professional reported that a young person who had recently completed an online assessment felt "empowered by the assessment and was able to make some changes in their life in accordance with the information they received in their dashboard". Further, after discussing results from the dashboard in their initial face-to-face assessment, the young person "reported not to need further counselling after that due to being able to make the changes necessary for their wellness". Applied more broadly, such instances may result in a reduction in wait times, and provide those with milder concerns the option of receiving appropriate care outside the restrictions of a face-to-face service. However, it is important to acknowledge that this implementation process took time to integrate into the centres due to the prototypic nature of the mental health e-clinic. The iterative co-design processes allowed for continuous improvement of the prototype. For example, multiple health professionals reported that the early version of the initial assessment was "too long" for some young people (source: implementation officer feedback). This feedback led to streamlining of the initial assessment.

Observed facilitators of and barriers to implementation of a prototypic mental health e-clinic into headspace centres

	Illustrative quote	Sub-themes
Observed facilitators		
Leadership support	"Leadership presence within clinical meetings helped with the utilisation of the [prototype]" (source: implementation officer log, January 2017)	• High-level endorsement and coordination support by the Central and Eastern Sydney Primary Health Network • Leadership present during initial education and training • General commitment, support and advocacy by leadership in all meetings • Presence and engagement by leadership to assist staff to solve clinical and implementation challenges • Effective communication and engagement between leadership and implementation officers to support the implementation
Co-design	"The feedback received from headspace clinicians regarding the dashboard has been valuable, and each piece of feedback has been documented to further improve and inform the build of the [prototype]" (source: headspace centre communication circular, October 2017)	• Staff were involved in the co-design of the prototype and resultant service model and clinical pathway changes from the outset • Ongoing feedback from staff regarding prototype improvements that resulted in tangible changes to the technology
Technology-implemented service models and clinical pathways	"We did implement a staging model, we used to do reviews ourselves. Bring young people in every three months and meet with clinician. Did it every three months, but there was a lot of paperwork, following … chasing … Most of the time you weren't getting everyone there every three months. If it was all technology based, it would take away that clunkiness, it would allow for better indicators as to whether a person has improved or they are deteriorating. If we can get something that can do that, that would reduce a hell of a lot of time. And get us to do our other clinical work." (source: staff feedback, January 2017)	• Online self-report assessment was introduced to each young person as an option at first contact before a face-to-face clinical assessment • Young person's dashboard of results was used before and during the initial intake appointment • Young person's initial dashboard of results was reviewed in multidisciplinary team review meetings, to assist with triage, shared decision making and routine outcome monitoring • Service models and clinical pathways were altered to allow for the benefits of the prototype to be realised
Culture of innovation	"When the research culture is supported by the leadership team it is helping the engagement with the study, but if there is a lack of clarity regarding the centre's research capacity it is resulting in a less clear integration of the [prototype]" (source: implementation officer log, January 2017)	• Culture of research and desire for quality improvement evident in the service and reinforced by leadership team
On-the-ground support	"Discussed ideas with the team about how to assist with this, and decided … [implementation officer] to attend a clinical review meeting once/fortnight." (source: headspace centre meeting notes, February 2017)	• Implementation officers employed to provide firsthand on-the-ground support at each centre, including: provision of education and training; collection of quantitative and qualitative staff feedback; and problem solving to address centre-specific issues
Centre-specific education and training	"Follow up training focus is on centre-specific aspects of delivery… we are working with clinical staff to respond to centre-specific issues" (source: implementation officer log, January 2017)	• Education and training provided in relation to digital, clinical and service elements of the prototype to optimise effective engagement with all stakeholders at each centre with follow-up centre-specific and/or needs-based sessions provided as necessary (eg, due to staff turnover) • Centre-specific education and training resources tailored to centre needs, including handbooks and online demonstration videos
Recognition of benefit of prototype	"Treatment is an hour a week, what happens rest of the time? Having technology helps them throughout the rest of their life. If you can stay connected to service, without having to be engaged in full on therapy, it improves the outcome" (source: staff feedback, January 2017)	• Leadership and staff recognised the benefit of technology-enabled assessment and follow-up for young people • Endorsement of technology-enabled assessment by health professionals, with prior experience of using technology in clinical practice
Observed barriers		
Limited service capacity	"Well established headspace centres appeared more able to integrate the [prototype]" (source: implementation officer log, January 2017)	• Limited staff numbers and high staff turnover (especially of those performing intake functions), affected young person recruitment numbers and capacity to maintain the implementation • Staff experienced tension between already established work demands and the introduction of new technology-related processes and tasks

Continues

Continued	Illustrative quote	Sub-themes
Variation in timing of offering an online self-report assessment	"Centres that offer the study prior to intake (vs after a phone intake) have higher recruitment. This might be because there is more incentive for the young person to engage with it. Especially as longer waiting lists means that the [prototype] is used by a young person during this interim." (source: implementation officer log, January 2017) "You have a limited number of sessions ... Having the ability to access information from home, rather than them having to travel 30 mins to an hour on the bus" (source: staff feedback, January 2017)	• Introduction of the option to complete an online self-report assessment after a young person had undertaken an intake assessment (over the phone or face-to-face) resulted in lower recruitment numbers compared with introducing the prototype before an intake assessment
Perceptions and beliefs of technology	"Clinicians are looking at the dashboard, but are still doing a full face-to-face assessment, due to their distrust of the dashboard" (source: headspace centre meeting notes, February 2017)	• Staff with expectations of the functionality and capacity of the prototype in a clinical setting beyond its current capability, and related misunderstanding of the limitations (cost and time) of technology design and development • Staff with negative attitudes towards incorporating the prototype into their practice • Concerns about technology replacing clinical care • Staff with a distrust of the prototype's accuracy were less likely to engage with the technology

Discussion

This study provided initial evidence on factors supporting successful implementation of health information technologies in youth mental health services, as well as the effects on service quality for young people accessing these services. Consistent with findings from previous implementation research,[20] engagement of both levels of leadership (local service level and higher commissioning level at the Primary Health Network) and their involvement in co-design greatly facilitated successful implementation into established service models and clinical pathways. Where service leaders and staff engaged early and actively in the implementation of the prototypic mental health e-clinic at their centre (including active communication with on-the-ground implementation officers), greater service integration occurred, and higher levels of centre-specific recruitment were observed. However, two key barriers to implementation were observed — a lack of internal organisational support and direction regarding use of the prototype in service delivery, and variation in the ability of leaders at various levels to promote and integrate the prototype into existing service models and clinical pathways. In addition, under-staffing and high staff turnover resulted in broader service disruption, which had flow-on effects relating to how the prototype was implemented.

The importance of ongoing co-design with young people and health professionals, as well as supportive others and service staff, was evident. Our research process allowed for such feedback to inform the continued co-development of the prototype, and progressive changes to the technology were made based on this iterative process. Negative feedback about the usefulness and accuracy of the prototype that was obtained at the beginning of the study was used to improve the technology. These improvements included: replacing clinical language with consumer-friendly plain language; adding to and clarifying existing clinical information to improve usability; and transferring critical clinical information into the service's electronic medical records.

The importance of leadership support for implementation was also highlighted in the study. Leadership support is essential for the successful implementation of technology into services and can enable a culture and climate of service innovation.[18–20]

Leaders are required to take an active role in the process by engaging with staff and maintaining a consistent and integrated service approach to using the technology. Strategies for future implementation must include emphasis on a top–down approach with service management at initial implementation (primarily to engage and drive change from a senior level) in parallel with a bottom–up approach that involves staff and consumers at each stage of the process.

Ongoing education and training of all staff, and a culture of continuous staff feedback regarding prototype improvements, was also observed to be critical to implementation success. A mix of team-based learning and feedback, individual health professional support and feedback from implementation officers proved to be beneficial. In addition to the initial education and training provided, it was clear that ongoing education and training at group and individual levels was vitally important for successful implementation. Where common needs were identified, group-level education and training was provided. Where individual-level concerns were uncovered (eg, individual health professionals lacking familiarity with technology in general or holding negative beliefs about the prototype), these were often best addressed through one-on-one support sessions. Follow-up staff workshops also served as an opportunity to demonstrate that previously reported feedback about the prototype was prioritised and resulted in tangible changes to the technology.

These preliminary findings indicate that health information technologies can have a positive effect on mental health service delivery. Broadly, the prototype appeared to have positive effects on service efficiency, access to service, response to risk and collaborative care. Safety was greatly enhanced via the use of a suicide escalation protocol,[34] collaboration was improved via technology-enabled team-based treatment planning, and greater efficiencies were observed in terms of quicker access to assessment feedback for young people and more effective use of time in face-to-face intake assessments.

The most positive effect of implementing the prototype appeared to be its impact on access to care. Despite adhering to one overarching framework for youth mental health service delivery,[28] significant variations in service models and clinical pathways existed between the five headspace centres. In some centres, access

to care was facilitated quickly by well trained reception staff who directly booked an initial appointment with a health professional, whereas other services required young people to engage in multiple phone calls and assessments before accessing face-to-face care. The time taken and the number of discrete steps, between seeking help and receiving a clinically informed treatment plan, varied significantly between centres. There was preliminary evidence that use of the prototype, as close as possible to a young person's request for help, resulted in reduced wait times and fewer transactional steps for the young person to obtain an initial treatment plan. Resource limitations may continue to result in considerable wait times for face-to-face mental health services. However, the study showed that innovative health information technologies can go some way to improving efficiency for young people, health professionals and youth mental health services.

Limitations

The study was limited by its use of qualitative rather than quantitative data to report on service quality improvements.

The qualitative feedback was collected through multiple channels and, although we applied standard qualitative analytic techniques, the data collection process was not in the form of a structured qualitative interview. Future research should seek to quantify metrics of service quality (Chapter 7) and compare them with a control condition to assess the direct impact of health information technologies on service quality. The findings are also limited to staff and young people who consented to participate in the study. We are yet to see how these findings would generalise to all staff and young people in a full implementation.

Conclusion

Future research should aim to use these significant implementation and service quality improvement findings, and apply them more broadly to other settings and populations. It should focus on how health information technologies can be used to improve service quality for all consumers.

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Supporting Information

Additional Supporting Information is included with the online version of this article.