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# Integrating digital interventions with clinical practice in youth mental health services

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## **Abstract**

### **Objective**

Integrating digital technologies with clinical practice promises to improve access and enhance care in the context of high service demand and constrained capacity.

### **Method**

We outline the emerging research in the integration of digital tools in clinical care, known as blended care, and provide case examples of mental health technology platforms currently in use, summarise findings regarding novel technologies such as virtual reality, and outline real-world implementation challenges and potential solutions.

### **Results**

Recent evidence shows that blended care approaches are clinically effective and improve service efficiency. Youth-specific technologies such as MOST are achieving a range of positive clinical and functional outcomes, while emerging technologies like virtual reality have strong evidence in anxiety disorder, and accumulating evidence in psychotic conditions. Implementation science frameworks show promise in helping overcome the common challenges faced in real-world adoption and ongoing use.

### **Conclusion**

The integrated, blended use of digital mental health technologies with face-to-face clinical care has the potential to improve care quality for young people while helping overcome the growing challenges faced by youth mental health service providers.

In Australia, the need for mental health services is high and service capacity is low, resulting in excessive waiting times for care, mainly driven to workforce shortages<sup>1</sup>. It is becoming increasingly clear that traditional youth mental health service delivery models cannot meet current, let alone future, demand. New tools for clinicians and services are urgently required to meet the dual challenge of rising volume of demand and limited workforce capacity<sup>1,2</sup>.

Use of experience of digital technology in daily life fundamentally reshapes expectations of consumers. These same expectations generalise to mental health care where technology is actively transforming the relationship between patient (young person) and their clinicians. While highly trained clinicians remain essential in the provision of safe and effective healthcare delivery, augmented use of digital technologies enhances care and care access.

COVID-19 has accelerated service adoption and familiarity of technologies such as telehealth. When interviewed about their experiences of telehealth during the pandemic, young people perceived more of an improvement in overall service quality than their clinicians, though nearly all clinicians expressed an intention to keep using the technology after the pandemic<sup>3</sup>. In general, young people are open and interested in using a range of digital technologies for mental health support, and many clinicians are already using these tools as part of routine care<sup>4</sup>.

### **Blended care: the integration of digital interventions with clinical care**

While digital tools employed in health and mental health care are primarily designed to improve access, engagement, efficiency, and satisfaction, they can also improve treatment continuity, intensity, potency, and personalisation. These technologies can either have a clinical or administrative focus (figure 1). The clinical focus is known as 'blended care'<sup>5</sup>. Blended care most commonly involves the use of a treatment program that combines elements of both face-to-face and digital interventions, including both the integrated and the sequential use of both treatment formats across all phases of treatment<sup>6</sup>. It offers a range of advantages, including the use of rich and engaging clinical content, real-time feedback on the fidelity of interventions, reinforcement of therapy homework and real-time assessment and monitoring<sup>2</sup>. The human element maintains fundamental features of care delivery, such as the therapeutic alliance, clinical oversight, and personalisation.

There is emerging evidence that blended care is clinically efficacious and improves service quality by saving clinicians time and reducing drop out rates<sup>6</sup> as well as decreasing waitlists, allowing clinicians to spend more time delivering sophisticated in person clinical techniques and provide greater support for those with complex needs<sup>7</sup>. A recent study showed that

young people receiving blended care for depression used on average one-third of the therapy sessions of those who received either face-face CBT alone or treatment as usual<sup>8</sup>.

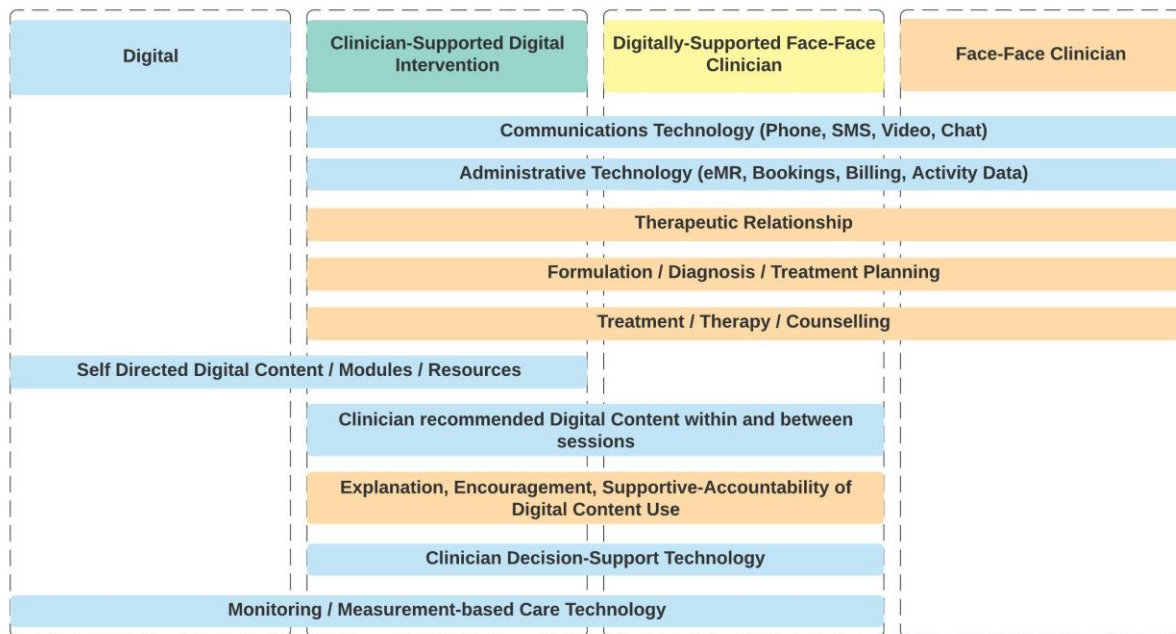


Figure 1: the spectrum of technology use in youth mental health services, and the interaction between clinician-supported digital interventions with digitally-supported face-to-face clinicians

### **Moderated Online Social Therapy (MOST): an example of blended care in youth mental health**

Moderated Online Social Therapy (MOST) was developed in Australia by a multidisciplinary team intended as a seamless digital solution adopting a user-centred design model. It combines guided, interactive, evidence-based therapy content with a social network of peers and virtual clinicians, with vocational and peer support. It is safe, engaging, and effective, shown to improve vocational recovery, emergency services use and yields significant improvements in depression, anxiety, psychological distress, social functioning, and wellbeing across diagnostic categories<sup>9-12</sup>.

Currently embedded in over 80 primary and secondary youth mental health services in Australia (including over 200 clinics), MOST has been designed to integrate with and enhance clinical practice and youth mental health services (both primary and specialist), across all phases of treatment (waitlist, face-to-face, and post-discharge). Evaluation data is forthcoming. Clinically, MOST blends human and digital support by allowing face-to-face clinicians to tailor therapy content to the unique needs of the young person and provide therapy tasks to be completed before, between and after sessions.

Through successive iterations, MOST has been adapted for a range of populations, including first episode psychosis<sup>9</sup>, ultra-high risk for psychosis<sup>10</sup>, depression<sup>11</sup>, mental ill-health<sup>12</sup> and relatives<sup>13</sup>.

### **Emerging novel technologies with potential for blended use**

Virtual reality (VR) involves immersion within interactive, computer-generated real-world environments via a headset. The ability to control and adapt environments and experiences offers compelling capabilities for real world learning and assessment within supervised clinical contexts<sup>14</sup>. Evidence from RCTs supports the efficacy of VR-based psychological treatments, particularly for exposure therapy and skills training<sup>15</sup>. The strongest evidence to date exists for anxiety disorders, with accumulating evidence in psychotic conditions<sup>16</sup>. However, the application of VR treatments beyond exposure-based approaches and in youth mental health conditions is currently limited. The use of Augmented Reality approaches in mental health where digital environments are superimposed on real environment has potential but has not been fully explored. Early research has also supported the use of 'virtual worlds' to deliver therapy or therapeutic content, whereby users can meet and interact with others within 3D virtual environments via a computer or VR headset, to provide engaging and accessible care for young people<sup>17</sup>. Beyond VR, there is also potential for advanced analytic technologies to aid in assessment, monitoring and personalisation of treatment. Smartphone apps can provide treatment in real time, real world contexts, tailored to individual based on relevant contextual variables<sup>18</sup>. Real time data based on sensors (e.g. biofeedback from heart rate variability or skin conductance) or momentary self-report can also provide clinically meaningful information that may otherwise be missed in traditional assessment methods<sup>19</sup>. Artificial intelligence and machine learning approaches such as individual-level treatment planning and prediction as well as using natural language processing to improve motivational interviewing are also at the forefront of digital health development and are likely to become commonplace over the next decade<sup>20</sup>.

### **From research to clinical practice: the implementation challenge**

Despite the mounting evidence for digital interventions and blended approaches in trials, examples of successful blended care integrated into mainstream youth mental health services are less common. Where digital tools have been integrated into youth clinical care, the preliminary results have been encouraging. For example, adding comprehensive online assessment tools to service pathways, particularly at service entry, significantly improved service efficiency, increased the range and depth of assessment, improved responsiveness to suicide risk, and improved multidisciplinary team treatment planning<sup>21</sup>.

Key to the success of any integrated digital intervention is the development of a structured implementation plan which is often lacking<sup>22</sup>. MOST is currently being implemented within youth mental health services across Australia using a plan-do-study-act framework<sup>23</sup> and strongly guided by implementation science<sup>24</sup> and behaviour-change principles to promote sustained adoption<sup>25</sup>.

## **Conclusion**

The emerging evidence suggests that the integrated blended use of digital mental health technologies with face-to-face clinical care has the potential to improve care quality for young people while helping overcome the growing challenges faced by youth mental health service providers. Translating and implementing these evidence informed practices into routine clinical care and service delivery remains an ongoing area of focus.

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