

# Research Bulletin

## E-mental health: the future of youth mental health?

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The delivery of mental health interventions via technology such as smart phones, computers or the internet is now widespread and can be expected to become more common. Such 'e-mental health' interventions are cost-effective and accessible and therefore have the potential to reach a significant portion of people who require mental health assistance. This may be true particularly in youth mental health. It is crucial, however, that the efficacy and acceptability of e-mental health interventions is evaluated as this area of intervention grows, and that no quality is lost from young people's care by using e-mental health interventions.

This research bulletin presents a sample of the most recent research into the acceptability and effectiveness of e-mental health interventions, along with research into methods for evaluating their quality and usefulness. It then considers how e-mental health may be integrated into clinical practice and identifies questions for future research.

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## Background

Young people shoulder the burden of mental ill-health in our community, yet they often don't seek, or delay seeking, help from mental health services. The reasons for this are many, and include fear of being stigmatised, poor awareness of the signs or symptoms of mental ill-health, a lack of access to youth-friendly services and geographical obstacles (O'Dea et al., 2015). Often, when they do access services, they may not receive adequate care due to a lack of funding and resources, or because they have difficulties engaging.

Given these barriers, and given that internet and smartphone use are almost ubiquitous among young people in Australia, there has been a rise in interest in whether e-mental health interventions can fill this gap in care. E-mental health interventions include smartphone applications, online portals or support groups, social media and interventions delivered via computer.

The use of e-mental health interventions is certainly being met with enthusiasm by providers and policy makers – in November 2015, the Australian government's response to the National Mental Health Commission's national review of mental health programs and services specifically mentioned digital mental health services as a means of achieving reform in mental health care. These services are to be provided through an online mental health gateway that will 'bring together and streamline access to existing evidence-based information, advice and digital mental health treatment' (Department of Health, 2015). To a lesser extent, e-mental health interventions are endorsed by the World Health Organization in its *Mental Health Action Plan 2013–2020*, in which 'self-help and care' that uses electronic and mobile technology is a recommended option to meet the objective of providing 'comprehensive, integrated

## E-mental health has considerable potential. However, some crucial questions need to be answered

and responsive mental health and social care services in community-based settings' (World Health Organization, 2013).

E-mental health has considerable potential for engagement, delivery or facilitation of treatment and delivery of post-intervention resources for improving and maintaining outcomes. However, some crucial questions need to be answered – do e-mental health interventions work, and do young people want to use them? If this is the case, how then are clinicians to integrate new technologies into their existing work with young people and how can they know which interventions are effective?

### Are e-mental health interventions acceptable and feasible in a youth mental health setting?

Montague A, Varcin K, Simmons M et al. **Putting technology into youth mental health practice: young people's perspectives.** *SAGE Open* 2015; 5: 1-10

There is a lack of good evidence for the best way to integrate technology-based mental health interventions into face-to-face care of young people. The authors of this paper therefore sought young people's perspectives on this. They consulted youth participation groups from Australian youth mental health organisations headspace and Orygen Youth Health Clinical Program, focusing on two relevant areas: how technology can be used to better engage young people in their care, and how it can be used to deliver interventions. A mix of youth mental health advocates and young people with a lived experience of mental ill-health and treatment were consulted, 13 female and 8 male.

In general, participants agreed that technology is central to engagement with services – simply, technology is 'part of life now'. However, they

also agreed that which technology to use must be worked out between each young person and their clinician or case manager. Social media was acknowledged as useful for promoting general mental health, for providing information and for enabling youth participation.

Crucially, a theme was that technology should only be used in addition to face-to-face contact, not as a replacement. The participants felt that the therapeutic relationship between them and their treating clinician was more effective than stand-alone technological replacements. Online interventions or mobile applications were seen to be useful complements to in-person therapy, for example helping them manage their treatment between sessions; however, if they were to be integrated into sessions, there should be a clear clinical rationale for doing so, and use should be tailored to each young person's needs and preferences.

Interestingly, none of the participants said they had been directed to any online resources or applications by service providers: all use was initiated by the young person themselves. Resources they had sought out themselves include online support groups, mindfulness or symptom-tracking applications and psychoeducation resources. They felt that using these resources gave them a sense of independence and control over their mental health in between treatment sessions, and that it provided continuity of care.

Another perceived usefulness of these kinds of resources was in after-discharge care. The participants saw a need for more support after leaving a service, describing resources such as online peer support groups or self-guided therapies as good 'background support'.

**Take home messages** The young people consulted were favourable about the use of mobile phone applications and online resources for mental health care. Indeed, many were currently using or had used these kind of resources. However, they were clear that this technology should be in addition

to, and not replace, face-to-face therapy sessions, and that any use of social media to engage young people should be restricted to general mental health and wellbeing information or promotion. The fact that many were using apps, but none had been recommended them by their treating clinician or service, indicates a role for clinicians in becoming familiar with what online interventions are available. They can then guide young people to interventions that best complement the treatment they are receiving in-sessions, or meet their needs outside of sessions.

Lal S, Nguyen V, Theriault J. **Seeking mental health information and support online: experiences and perspectives of young people receiving treatment for first-episode psychosis.** *Early Interv Psychiatr* 2016; doi:10.1111/eip.12317

This paper was a qualitative study of online and mobile mental health resource use by young people who have experienced a first episode of psychosis. Seventeen young people from a Canadian specialised youth service were interviewed in focus groups. Participants were aged between 21 and 35 years, 11 male, 6 female.

The study was primarily concerned with participants' experiences of seeking mental health information or support online (rather than using interventions for mental health problems). Three 'themes' were identified that encompassed the young people's experiences: the need to understand psychosis and its treatment, the problems they found with information they accessed, and how valuable they found online information and support. These themes were then broken down into sub-themes, as summarised in Table 1.

Overall, participants appreciated: access to information about symptoms, diagnosis and medications; access to peer support and experience; and sites that were moderated by mental health professionals. Negative aspects of seeking information or support online included the large amount of irrelevant information on websites and the possibility that incorrect information, worrying information or negative comments might exacerbate their condition.

**Take home messages** Despite a small sample size, this study does indicate that the internet is used frequently to seek information about mental ill-health and to access peer support from people with lived experience. The authors did not explore what effect this information-seeking had on young people's engagement with or decisions about treatment, and suggest this would be a relevant area to investigate further.

The negative experiences relating to the unsuitability of some of the information that the young people accessed indicates a need for clinician involvement in guiding young people to find online resources that are relevant and useful for them. The authors in particular highlight the need for adequate internet search skills and skills for evaluating information found online, citing an earlier study that found a lack of these skills was a significant barrier to young people with early psychosis accessing online support. Given the range of information, misinformation, opinion and advice that can be found on the internet, and the adverse effects these might have on young people, it is important that clinicians discuss this problem with young people.



**Table 1.** Participants' experiences of seeking mental health support online

Core theme	Sub-themes
Striving towards a better understanding of the illness and treatment	Symptoms and diagnosis Medication, particularly in relation to side effects and dose How to cope with illness
Encountering multiple issues with the information found	Concerns regarding the content of information found Concerns regarding the source of information Concerns regarding the impact of information
Valuing online mental health information and support	Features of online information appreciated by participants Access to peers with lived experience Presence of professional moderation

Struthers A, Charett C, Bapuji S et al. **The acceptability of e-mental health services for children, adolescents, and young adults: a systematic search and review.** *Canad J Comm Mental Health* 2015; 34: 1-21

This paper reports on a subset of the findings of a systematic review into the availability, efficacy and acceptability of e-mental health (defined as 'the use of communication technologies that are internet- or mobile phone-based to provide mental health services') for children and young people. The findings reported relate only to the acceptability of e-mental health to children, young people and the clinicians that care for them. Five themes were explored in relation to 'acceptability': satisfaction, expectations (from young people), uptake, adherence and experiences (both clinicians' and young people's).

Twenty-four studies were included, two of which were qualitative, two mixed methods and the rest quantitative, from Australia, the USA, UK, Europe and New Zealand. The e-mental health interventions studied were aimed at eating disorders, depression, anxiety, obsessive compulsive disorder and general mental health. The mode of interventions included:

- online self-help (no therapist interaction)
- online asynchronous therapist interaction (e.g. therapist replying to emails)
- online synchronous therapist interaction (e.g. live chat or webcam sessions)
- online 'classroom'.

Only four studies had a face-to-face component to the intervention. Twenty-one of the studies involved cognitive-behavioural therapy (CBT) or CBT-based interventions. The age of study participants ranged from 7 years to adulthood, although all except six studies, which examined university students, ranged no higher than 25 years.

Generally, satisfaction with e-mental health interventions was moderate-high; there was, however, variation between studies with regard to whether e-mental health interventions were preferred (or not) to face-to-face therapy.

Four studies that reported on expectations of treatment found that young people had positive expectations of e-mental health treatment, and one study found no different expectations of online or face-to-face interventions.

Uptake of interventions ranged from 62-100%, although completion was much more variable, ranging from 29-87%. The highest completion rates were for interventions with synchronous therapist interaction, while the lowest were for mobile phone or self-help programs with no clinician interaction.

Reasons given by participants for not continuing with interventions included being unwell, lack of time, problems with motivation, technical difficulties, the level of difficulty of the course and doubts about the usefulness of intervention.

Reasons given for using online interventions included:

- online interventions were perceived to be more

## Are e-mental health interventions effective?

Bradford S and Rickwood D. **Acceptability and utility of an electronic psychosocial assessment (myAssessment) to increase self-disclosure in youth mental healthcare: a quasi-experimental study.** *BMC Psychiatry* 2015; 15: 305.

Many mental health services require young people to undergo a comprehensive psychosocial assessment on first presentation. While this initial assessment is necessary, it might also be perceived by young people to be invasive, and affect engagement. This paper reports on a trial of the 'myAssessment' electronic tool, evaluating its acceptability to both clinicians and young people and its efficacy in place of usual face-to-face psychosocial assessment. They examined its effect on five areas:

1. acceptability to young people and clinicians
2. rates of self-reporting of personal and risky behaviour
3. young people's feelings of control over treatment and fear of judgemental reactions
4. clinicians' ratings of time efficiency and usefulness of tool to formulate a treatment plan
5. the therapeutic alliance.

The myAssessment tool is an e-version of the usual HEADSSS interview used by clinicians at headspace. 339 first-time users of a headspace centre in the ACT participated and 13 clinicians. The trial lasted over 9 months, with a treatment as usual phase running for 4 months and an intervention phase running for 6 months after that. Participants who experienced the treatment as usual (TAU) phase had a face-to-face psychosocial assessment at their initial appointment, while those in the intervention phase had the same face-to-face assessment, but were given the myAssessment tool to fill out in the waiting room first. Afterwards, all participants were asked to complete a questionnaire that measured self-disclosure, control over session, judgemental reactions and therapeutic alliance. Clinicians completed a questionnaire about time efficiency, the young person's behaviours, formulation of a treatment plan and the therapeutic alliance. A questionnaire about the acceptability of the myAssessment tool was added for those participants in this arm.

accessible and private (however, some young people raised concerns about using online services from non-secure computers)

- they gave participants greater control over treatment
- they were seen as being less 'judgmental'.

Regarding the therapeutic relationship:

- participants were able to share emotions and experiences online
- participants received emotional, informational and appraisal support from therapists online
- a human element was felt to be important, with some participants preferring at least email or telephone contact. Participants in one study thought online services were too impersonal.

The authors note that the high dropout rates in many studies make it difficult to assess users' satisfaction with them. People who complete interventions are perhaps more likely to be satisfied, but the studies reviewed often did not say what proportion of respondents completed interventions.

**Take home messages** The range of disorders and methods may explain why results were quite variable. The fact that mobile applications were evaluated in only one study also means this review leaves out a large section of technology that is used by young people.

However, this paper highlights that young people are open to e-mental health interventions, and that it appears possible to develop a therapeutic relationship online. Young people may prefer online interventions because of their anonymity; however, they may not be appropriate for those who cannot access the internet privately. As found by Montague et al. 2015, there appeared to be a preference for some kind of direct contact with clinicians. Based on their findings, the authors' suggest that development of e-mental health resources or interventions should consider what features will help with adherence. These might include brevity, incentives for completing interventions, targeting interventions and real-time therapist involvement.

The tool was found to be acceptable to the majority of both young people (75%) and clinicians (73%). Young people who used myAssessment were 3-10 times more likely to report behaviours relating to drinking, smoking, use of other drugs such as cannabis or sedatives, sexual activity, including pressure to have sex, unsafe behaviour and self-harming. They were also less likely to report in the post-assessment questionnaire that they had lied about their alcohol or other drug use, sexuality, self-harm or past experiences of bullying.

No significant difference was found between myAssessment and TAU groups for the other three areas examined.

**Take home messages** MyAssessment was acceptable to both young people and clinicians. Importantly, it seemed to be more effective than the face-to-face assessment process at getting young people to report behaviours that people can be reluctant to disclose, such as sexual activity and drug use. For most sessions, the clinicians thought that the clinical summary produced by the myAssessment tool gave an accurate picture of the young person's mental health; however, their perceptions of the standard face-to-face assessment's accuracy in this regard does not appear to have been measured.

Importantly, the e-tool did not seem to have any effect on the therapeutic relationship, but it also did not improve young people's feelings of control in the session or their fear of being judged. The paper suggests that e-tools such as this are useful in a youth mental health setting, and indeed may increase the accuracy of information gathered in an initial psychosocial assessment. However, more research is needed in broader contexts and into what support is needed to incorporate this technology into services.

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Clarke A, Kuosmanen T, Barry M. A systematic review of online youth mental health promotion and prevention interventions. *J Youth Adolesc* 2015; 44: 90-113

This systematic review evaluated the effectiveness of online mental health interventions for young people. It examined interventions that intended either to promote positive mental health or prevent mental health issues among young people - no treatment interventions were evaluated.

Eight studies on promotion interventions and 20 on prevention interventions were reviewed. A range of interventions and modes were used, as summarised in Table 2. The prevention interventions included programs that were general in nature, those targeting at-risk groups and those designed for individuals who are considered to be at high-risk for developing a disorder.

Of the mental health promotion studies, half were assessed to be of low quality, either because of selection bias, inadequate study design or failing to report or control for confounders. Those found to be of high- and moderate-quality showed, variously, that online interventions improved mental health literacy, mental wellbeing and use of support-seeking coping strategies, and reduced use of avoidant coping and psychological distress. One of the moderate-quality studies reported a reduction in aggression and symptoms of depression and anxiety.

Of the 20 studies evaluating prevention interventions, over half were rated as high- or moderate-quality (n=12). The high-quality studies of computerised CBT (cCBT) found significant positive effects on symptoms of depression and anxiety, as well as reduced thoughts of self-harm and hopelessness and increased social support

and sense of control. A mobile mood-monitoring application study, also of high quality, found that using the application improved emotional self-awareness and decreased depressive symptoms in young people who had mild or moderate emotional or mental health issues.

**Take home messages** Limits to the findings, aside from the low-quality studies already discussed, include:

- nearly all participants were self-selected
- samples were skewed to female, well-educated and computer-literate participants
- there was a lack of diversity in terms of ethnicity, socioeconomic status, location and computer/internet access.

Taken with the varied quality of studies and the range of interventions, particularly among the studies of mental health promotion interventions, these limits make it difficult to draw general conclusions about online interventions. However, when looking at the high-quality studies, it appears that the online school-based intervention for mental health promotion had a significant positive impact on mental health, and that cCBT is effective at reducing symptoms for young people at risk of developing depression or anxiety. Areas that need further research include the use of social media platforms and games for mental health promotion, and mobile phone apps and blogging interventions for the prevention of mental ill-health. Research into how to improve adherence to e-mental health interventions is also needed.

Table 2. Summary of intervention types and modes of delivery

Intervention aim	Intervention	Mode of delivery
Mental health promotion	Stress management (n=2)	School internet-based course, facilitated by teacher or psychologist
	Education about relationships (n=1)	Presentation in lab followed by weekly email exercises
	Mental health literacy (n=1)	Social media campaign
	Mental health promotion (n=2)	Interactive games
Mental ill-health prevention	Computerised CBT (cCBT) for depression or anxiety (n=12)	Self-directed online modules, with and without help from mental health professionals
	Depression information (n=1)	Personalised 'health e-cards' containing information about depression and finding help
	Stress management (n=1)	Online program
	Mood monitoring (n=1)	Mobile phone application used in consultation with GP
	Peer support or group therapy for young people at risk of developing mental health problems (n=3)	Online bulletin boards, forums or chat rooms
	Improving social difficulties (n=1)	Participants write blog posts about their social difficulties





## More high-quality research is needed ... to examine the specific contribution of peer support to online interventions for young people with mental health problems

Ali K, Farrer L, Gulliver A et al. **Online peer-to-peer support for young people with mental health problems: a systematic review.** *JMIR Ment Health* 2015; 2: e19

This systematic review examined the evidence for the effectiveness of online peer-to-peer support for young people aged 12–25 with mental health problems. Six studies were identified (3 randomised controlled trials, 2 pre-post studies and 1 randomised trial without a control group), which targeted a range of mental health problems including depression and anxiety (n=2), general psychological problems (n=1), eating disorders (n=1) and substance use (tobacco; n=2).

The included studies investigated online peer-to-peer support modalities of internet support groups, bulletin boards or forums (n=4) and virtual reality chat sessions (n=2). In all studies except one, the peer support intervention was moderated, either by health professionals or consumers. The interventions were implemented in the United States, Australia, England and Ireland. The majority of participants were university students, but rural teens and adolescent smokers were also included. Intervention length varied from 3 to 10 weeks.

Two of the randomised controlled trials demonstrated a significant positive outcome for the online peer support group in comparison with the control group. Woodruff et al. (2007) found that adolescent smokers randomised to seven 45-minute intervention chat sessions in a real-time virtual world moderated by a trained cessation counsellor were significantly more likely than controls to report reduction or abstinence in smoking at post-intervention. This effect persisted at follow-up twelve months later. Ellis et al. (2011) compared the effects of an online CBT program ('MoodGYM') to an online support group with message boards moderated by volunteers who had experienced mood disorders ('Mood Garden') on decreasing symptoms of depression and anxiety in undergraduate students with elevated

psychological distress. Both intervention groups had therapist guidance and both were effective in reducing anxiety scores on the DASS compared to the control condition. However, no significant effects were observed for depression scores in either intervention group, compared with control. Online peer support was not found to be effective in young people with mental health problems in the other four studies, whether as a stand-alone treatment or as an addition to online interventions.

**Take home messages** While peer support is often used as an adjunct to online interventions, the current evidence base for this is limited. The review found some evidence for the efficacy of online peer support alone or as an adjunct to other treatment programs for mental health problems in young people, when compared to control groups who did not receive an intervention. The positive results from the two RCTs are promising, but their generalisability might be limited due to their limited sample sizes, high numbers of female participants, large variations in dropout rates, and their specificity to the treatment of anxiety and tobacco use. In general, studies were of low quality. Furthermore, none of the studies recruited participants with a clinical diagnosis of a mental disorder. The field of online peer support is still in its infancy and high-quality research is needed, particularly to examine the specific contribution of peer support to online interventions for young people with mental health problems.

Alvarez-Jimenez M, Bendall S, Lederman R et al. **On the HORYZON: moderated online social therapy for long-term recovery in first episode psychosis.** *Schizophr Res* 2013; 143: 143–49

This paper describes a pilot study of an online social networking and therapy platform designed specifically to address the needs of young people who have experienced a first episode of psychosis. The platform was conceived as part of a stepped

down model of care, a way to keep young people engaged with care while they transition from specialised services to community treatment.

The authors first developed a model for online interventions, Moderated Online Social Therapy (MOST). The three core elements of MOST are:

- peer-to-peer online social networking
- individually tailored psychosocial interventions
- moderation by expert mental health workers and peers to ensure user safety.

The social networking site, HORYZONS, was then designed based on the results of focus groups of young people and clinicians at Orygen, and on the input of clinical psychologists, computer programmers, human-computer interaction experts and professional writers.

The study aimed to evaluate the feasibility, acceptability, safety and potential clinical usefulness of HORYZONS for young people experiencing a first episode of psychosis. Twenty young people aged 15–25 years took part in the trial. Participants were in remission from positive symptoms of psychosis, had low levels of aggressiveness and were assessed as being at low suicidal risk. Participants were assessed at baseline and at 4-week follow-up for safety and symptoms.

At the end of the 4-week trial, 60% of participants had used the platform over 4 weeks, and 70% for at least 3 weeks. Most (75%) said they had a positive experience of using it and 90% would recommend other use it. No one reported negative experiences from using the platform. Ninety percent of young people felt that the moderation provided by clinicians and vocational workers on the site was supportive, and 95% finished at least one of the therapy modules available on the site. No incidents of adverse events or inappropriate use were reported, and overall there was no worsening of symptoms of psychosis. All participants felt the platform was safe and confidential.

Regarding the clinical implications, there was a moderate to large improvement in depressive symptoms among participants at the 1-month follow-up point. The majority of participants said that using the platform had increased their social connectedness and empowered them in their recovery process. They also said it they felt safe using the intervention, and 70% found it to be useful after they had been discharged from the service.

**Take home messages** Although only a pilot, this study suggests that the HORYZON intervention is feasible, acceptable and safe for young people experiencing a first episode of psychosis. The zero drop-out rate is particularly encouraging, and the favourable perception of clinician moderation again highlights the importance of clinician input in such interventions. There are indications that the platform may also have benefits for clinical outcomes, but this needs to be evaluated in controlled studies. It is also important to note that participants were in remission of positive symptoms, and at low risk of aggression and suicidality, meaning the suitability of this kind of intervention for acutely unwell or high-risk users needs to be assessed.

## How do I choose the best interventions for young people in my care?

Stoyanov S, Hides L, Kavanagh J et al. **Mobile App Rating Scale: a new tool for assessing the quality of health mobile apps.** *JMIR mHealth and uHealth* 2015; 3: e27

The Mobile Application Rating Scale (MARS) was developed to evaluate mobile applications for health. The scale was based on a review of all published criteria for rating websites or mobile apps.

Three categories of assessment criteria were identified from the literature: 'classification', objective 'quality' and subjective 'quality'. 'Classification' includes descriptive (price, software) and technical (password protection, sharing capabilities) information about an app; 'objective quality' includes engagement, functionality, aesthetics and information quality; and 'subjective quality' incorporates user-rated experiences of using an app. Only the two quality categories were used to develop the MARS items, which are divided into 23 subcategories (see Table 3).

Following development of the scale, it was tested and revised by applying it to 60 currently available apps that were designed to promote mental health in some way. The scale was found to have excellent inter-rater reliability and internal consistency.

**Take home messages** The MARS is a comprehensive tool for evaluating existing apps, and it is easy to use, although the authors recommend that users complete a training exercise before using it. Because of its high internal consistency, it can be considered a reliable objective indicator of application quality, and can also help identify the features that make a good-

quality app (see Box 1). It may also have its uses in ensuring quality in the development of new apps. However, it is important to note that none of the apps used to test the MARS in this study had any published evidence base; therefore, the item 'evidence base' was not tested, and the use of the MARS for assessing efficacy is limited.

**Table 3.** MARS subscales and items

Subscale	Items
Engagement	Entertainment Interest Customisation Interactivity Target group
Functionality	Performance Ease of use Navigation Gestural design (touchscreen usability)
Aesthetics	Layout Graphics Visual appeal
Information	Accuracy of app description Goals Quality of information Quantity of information Visual information Credibility Evidence base
Subjective quality (user-rated)	Would you recommend this app? How many times do you think you would use this app? Would you pay for this app? What is your overall star rating of the app?

**Box 1. Evaluating apps in practice**

Although being a great potential resource to enable self-care, mobile phone applications for mental health number in their thousands, and their quality is not assured. In a review of mindfulness apps, Madhavan et al. (2015) used the MARS to evaluate their quality.

Following a systematic search of Google and the App store, 23 apps were found that matched criteria for mindfulness-based apps. Although only one could be rated according to the level of evidence, the median MARS score was 3.2 and all but three scored 3 or over (the minimum acceptability score).

Features of apps that rated highly in this review include:

- guided meditation
- mindfulness education
- timer
- reminders for users to practise
- tracking

Other questions that can help you evaluate the usefulness or validity of apps include:

- Who is the app produced by? (E.g. who are the authors? Is it produced by a reputable medical publisher or institution?)
- Are the authors or developers of the app listed?
- Is the content peer-reviewed and is it referenced?
- Has the app been recommended by your service, or by a university or health care provider?

(Visser & Bouman, 2012)

Wentzel J, van der Vaart R, Bohlmeijer E et al. **Mixing online and face-to-face therapy: how to benefit from blended care in mental health care.** *JMIR Mental Health* 2016; 3: e9

The authors sought to develop a tool would help mental health clinicians decide whether or not to set up personalised 'blended care' plans, and how to best to do this for each individual. 'Blended care' was defined as care involving both face-to-face and online components that are 'interconnected'. Their aim was to develop a tool that created a tailored treatment plan that integrated online and face-to-face interventions as needed, rather than a treatment where online interventions are merely added on to conventional therapy.

Based on previous research into e-health, e-mental health and blended health care implementation, the authors identified five 'postulates' for blended care (Box 2). These postulates, along with focus groups involving therapists and people being treated for mental health conditions, were used to develop the 'Fit for Blended Care' instrument.

**Box 2. Postulates for blended care**

- 'Blended' care means online and offline components are integrated with each other, not stand-alone.
- Online and offline components both contribute substantially to treatment.
- Online components should be carefully chosen and adapted to needs of the individual treatment plan.
- Blended care needs to consider treatment protocols, usefulness of technologies to help each individual engage in treatment, and how capable each individual is to participate in online treatment.
- The use of blended care should be discussed with the individual receiving treatment to ensure it fits with their needs.

The instrument is designed to support shared decision making, and has four main items that ask the clinician to consider:

1. Prerequisites to starting blended treatment (e.g. are there online interventions available that are appropriate to the individual's needs or condition? Is the individual in crisis or acutely unwell? Do they have computer and internet access?)
2. Possible barriers (e.g. is the individual motivated, at risk of crisis, or have cognitive or psychosocial problems that might make participation difficult?)
3. Possible facilitators (e.g. is there a good therapeutic relationship? Are there benefits, such as saving time or money?)
4. Advice overview – a written list of barriers and facilitators that the clinician uses with each individual to decide on the treatment format.

**Take home messages** It is important that if online interventions are used increasingly that they are integrated into practice, rather than used as add-ons to conventional therapy. It is also likely that the best configuration of online and face-to-face interventions is one that is developed based on each person's individual needs. This tool is an aid to decision making about blended care that considers people's needs and helps provide a rationale for integrating online interventions into each person's care. However, the tool has not been trialled, and it is worth noting that only two out of the 26 people interviewed in the focus groups to develop the tool had experience of mental health treatment (the remainder were therapists).

## Where to from here?

### Summary of the evidence

Although the evidence base is still in its early stages, it does appear that e-mental health interventions have promise. They are acceptable to potential users, both among young people in the general population and those with a clinical diagnosis, due to their flexibility, convenience and perceived anonymity. The one caveat raised across the studies reviewed here is that online interventions are used in conjunction with, rather than replace, face-to-face therapy or intervention.

Electronic tools are acceptable and effective for assessing young people on entry to a mental health service (Bradford et al. 2015). There is also evidence that online interventions can improve mental health outcomes for a range of disorders, including tobacco use and psychological distress, as reviewed by Clark et al. (2015) and Ali et al. (2015). Alvarez-Jimenez et al. (2013) observed improvement in depressive symptoms and feelings of social connectedness and empowerment among young people experiencing a first episode of psychosis who used the HORYZONS social networking platform. However, many of the reviews highlight the need for more high-quality studies in this area.

### What does this mean for clinical practice?

Ideally, online interventions should be integrated with and enhance face-to-face care, rather than used in parallel with standard treatment. We note the range of skills and perspectives that were used to develop the moderated online social therapy platform in Alvarez-Jimenez et al. (2013). This suggests the need for a multidisciplinary, integrated approach, where online interventions are designed and moderated with clinical input.

If online interventions do become better validated and more common, the role of services and clinical staff in their implementation needs to be considered. In addition to the young people in Montague et al. (2015) and Struthers et al. (2015) saying they preferred some face-to-face contact, a paper by Farrer et al. (2015) (not reviewed here) suggests that 'virtual clinics' may be acceptable and effective, where people do have direct contact with a mental health professional, but only through an online platform. It is also noteworthy that Struthers et al. (2015) found that young people seem to engage better with interventions that have a real-time component of interaction

with clinicians online, either through live chat or webcam sessions, rather than with less immediately responsive modes.

Young people already are using the internet to access mental health information, and smartphone applications to help with self-care; however, a point raised in Montague et al. (2015) was that young people tend to seek these out of their own accord, without direction from treating clinicians. Furthermore, they can find the abundance of information available online difficult to navigate or use helpfully.

It seems therefore, that a central role of clinicians and services will be one of determining quality or vetting e-mental health interventions and providing support and motivation to young people to use interventions effectively. Clinicians can be more proactive in helping young people find resources that are useful, and guiding them to use them. As with any intervention, adherence is an issue, and it is here that direct clinician involvement can have an effect, as shown in Struthers et al. (2015).

Tools are available to evaluate the quality of e-mental health interventions, such as the MARS developed by Stoyanov et al. (2015). The four items that make up the Fit for Blended Care tool developed by Wentzel et al. (2016) can help engage young people with online interventions by providing a rationale for the intervention, ensuring an informed choice, and reassuring young people that they have received appropriate advice and support regarding which online resources or interventions to use.

## Questions for future research

For the next generation of e-mental health interventions to be engaging and effective, an increasing amount of interactivity and support from peers and moderators will likely be required or possibly even expected by users.

- What do young people expect in terms of intervention moderation?
- Are there different expectations of different kinds of moderation (i.e. clinician, peers)?

We need to work towards a better understanding of the specific effective ingredients of online interventions

- What works for whom?
- Which baseline factors best predict longer-term adherence and engagement?

Further development and refinement of online moderation models is needed to ensure interventions maintain longer-term treatment engagement, are undertaken with sufficient fidelity, and maximise the likelihood of effectiveness.

- What are the most effective models of moderation?
- How can we start to refine and enhance models of moderation?

Given the rates of drop-out seen in online interventions, it is suggested that future studies provide detailed temporal usage statistics. This should include the proportion of users being engaged over time, as well as frequency of usage.

- What can be done to reduce the high drop-out rates of e-mental health interventions?

Finally, online interventions are embedded in an environment of technological innovation.

- How can we better harness innovative technology for the next generation of e-mental health interventions?



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Research bulletins are designed to so that clinicians and researchers can access an overview of recent research on a specific topic without having to source the primary articles. The implications of the research for clinical practice and opportunities for future research to advance knowledge in the particular topic area are also canvassed.

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