

e-hub: an online self-help mental health service in the community

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Online models of mental health service delivery enable consumers to learn more about their health conditions and to undertake self-help programs to improve their health.¹ These models can also facilitate peer-to-peer support. Self-help activity may occur at any stage of recovery and remain an option whether or not the consumer is engaged with professional health care providers.

There are two main forms of online self-help service. The first involves the delivery of web interventions providing information, skills training, and guidance to bring symptom relief or improved coping, or to prevent the occurrence, exacerbation or recurrence of an illness. The second involves mutual support delivered through internet support groups (ISGs).

As Griffiths and colleagues report in this supplement (page S4), there is increasing evidence that internet-based interventions providing cognitive behaviour therapy (CBT) are effective for reducing symptoms of depression and anxiety disorders in users. However, only three of the efficacious interventions they identified are freely available as “first-line” community self-help interventions.² Of these, two are delivered by the e-hub group at the Australian National University. Although other effective automated web interventions for depression exist, most function solely in the context of research trials and do not offer direct services to consumers via the internet. However, current developments within the National Health Service in the United Kingdom³ and in the realm of managed care in the United States⁴ suggest that the direct provision of online self-help tools to the public may increase, as a strategy to provide early intervention for mental health problems.

Although popular, the evidence for the effectiveness of ISGs is limited, particularly for mental health, although there is some evidence of the efficacy of ISGs for depressive symptoms in women with breast cancer.⁵

e-hub is a service model that provides automated self-help interventions and an ISG directly to the public. Here, we outline the nature of the e-hub service, its users, and the best-practice measures used to ensure good outcomes.

The e-hub web service

Nature of the service

The e-hub web service provides mental health self-help materials to consumers in the community through automated websites (BluePages, MoodGYM, e-couch) and an ISG (BlueBoard). Users who access the programs do so anonymously, receiving automated feedback and advice based on their answers to symptom and other self-report measures. These programs are delivered without the use of professional staff, although the ISG moderators are supervised by a clinical psychologist, who also responds to clinical enquiries from consumers.

The development of the e-hub web service has been based on reviews of scientific literature, as well as ethical guidelines relevant to the delivery of online mental health services, such as those of the Australian Psychological Society.⁶ Program structure and practice have been designed to meet the Australian National Standards for Mental Health Services⁷ and to satisfy other relevant standards,

ABSTRACT

- Self-help delivered through online websites has been found to be beneficial for people with mental health problems, and consumers find internet support groups helpful.
- The Australian National University e-hub group delivers automated web interventions (BluePages, MoodGYM, e-couch) and an online bulletin board (BlueBoard) to the public for mental health self-help.
- The evidence-based web interventions require no direct therapist or other human involvement, while the bulletin board is moderated by trained consumers under the supervision of a clinical psychologist. Users may contact the e-hub service by email.
- These web services are used by a large number of users, with and without clinical mental disorders, often over a long period of time.
- These services provide programs for prevention and early intervention and are particularly suited to people who prefer anonymous services, live in rural and remote areas, or have a preference for self-help methods, as well as for use in school and workplace settings.
- A range of best-practice measures have been developed and put in place to ensure high-quality service delivery. Evaluation and quality control are enabled by a database and associated software.

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such as the Quality Framework for Telephone Counselling and Internet-based Support Services.⁸ The ongoing delivery of the service is funded by the Australian Government Department of Health and Ageing.

Service programs

The e-hub web service currently comprises four online programs, which are available free of charge to public users.

BluePages (<http://www.bluepages.anu.edu.au>) provides over 100 pages of up-to-date, evidence-based information about the symptoms, diagnosis, treatment and experience of depression. The site provides reviews of the available scientific evidence for depression treatments (five medical, seven psychological and 36 lifestyle treatments) and provides contact information for Australian and New Zealand resources. The site is designed to be easy to navigate and includes automated depression and anxiety screening tests. Use of BluePages has been found to significantly reduce depression symptoms in a randomised controlled trial (RCT), with effects maintained after 1 year.^{9,10}

MoodGYM (<http://www.moodgym.anu.edu.au>) is an automated self-help CBT program for depression with five modules and 29 exercises. The program was launched in 2001 and is now in its third version. It has been evaluated in four RCTs and two controlled trials, which have demonstrated its effectiveness in reducing depressive symptoms and dysfunctional thoughts in

users,¹¹ and is currently being studied in six additional RCTs (in an Australian crisis telephone counselling setting, in a New Zealand community population, with medical interns in the US, with employees in two large organisations in the UK, and with patients attending general practice clinics in four areas of the UK). A clinician's manual and user's workbook are available to support adjunctive use of MoodGYM.

e-couch (<http://www.ecouch.anu.edu.au>) provides evidence-based information and automated self-help skills training for depression, generalised anxiety disorder and social anxiety disorder. It includes an information module for each disorder, 12 interactive self-help toolkits and 42 workbook exercises. The toolkits, such as those for depression (Box 1), are based on treatments for which there is scientific evidence of efficacy for the target condition. Further streams, including self-help for panic disorder, relationship and divorce problems, and grief and loss, are scheduled for release in the near future, and e-couch is currently being evaluated in an RCT.

BlueBoard (<http://www.blueboard.anu.edu.au>) is a moderated ISG for people who have experienced or cared for someone with depressive, bipolar or anxiety disorders. e-hub is currently evaluating an ISG model similar to BlueBoard in an RCT that involves Australian participants from rural and city regions.

To access the e-couch and MoodGYM programs, users must agree to the programs' terms of use and privacy conditions, and register on the site with a pseudonym and accompanying password. The information provided on BluePages is available without registration. The posts on BlueBoard can be read without registering, but to post messages and use other functions, users must agree to the BlueBoard rules and join with an anonymous username. The programs do not currently involve email reminders (although this opt-in functionality will soon be introduced), and users can access the programs as frequently and for as long as they choose.

Service staff

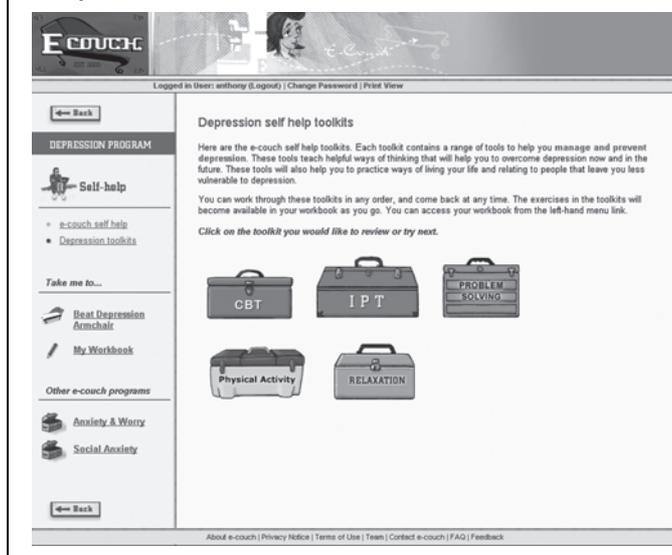
The e-hub web services are overseen by:

- a clinical psychologist, who assesses and responds to emails and posts with clinical content;
- a project officer, who monitors email sent to the programs' addresses, responds to technical or access requests, and forwards emails to the clinical psychologist or other staff members as per e-hub service protocols;
- BlueBoard moderators, who are themselves consumers and who enforce the BlueBoard rules as per the e-hub protocols;
- information technology (IT) staff, who maintain and ensure security, back-up and redundancy of web servers, as well as develop and deliver the required software architectures;
- academic and clinical research staff, who develop and update content for the programs based on available scientific evidence and provide expert input to the activities of the clinical psychologist as required; and
- web development staff, who update and maintain the websites.

Users of the service

Data are collected from users who visit the e-hub web services. Box 2 summarises the demographic characteristics of users who registered on the MoodGYM, e-couch and BlueBoard websites during the 6-month period from 1 November 2008 to 1 May 2009. The number of unique visitors to the BluePages website is also shown

1 Screenshot of the e-couch self-help toolkits for the depression stream



(as users of the BluePages website are not required to register, this information is retrieved from server logs). The data for the MoodGYM and BluePages websites show the potential of these programs, once established, to provide services to large numbers of users. The current BlueBoard service was launched in November 2008, and e-couch has been released in stages from 2007. Twenty-five per cent of e-couch registrants and 35% of MoodGYM registrants logged into the program more than once, with most participants for each program (over 90%) commencing or completing only one module. BluePages users visited the site 1.3 times on average, and viewed an average of 8.0 pages per visit. BlueBoard members made an average of 3.4 posts during the 6-month period.

All e-hub programs include the Goldberg Depression and Anxiety Scales,^{12,13} each comprising nine items coded 0 (no) or 1 (yes) and summed to yield a total score ranging from 0 to 9. Higher scores reflect a greater number of depressive or anxiety symptoms. Users of the e-couch and MoodGYM programs are required to complete the Goldberg scales to progress through their program. Registered BlueBoard users can complete the scales if they wish, and BluePages offers the scales for self-assessment without registration. The mean scores for users of the different services are shown in Box 2 and reflect a high level of depressive and anxiety symptoms. Users' mean scores are classified in the middle to high, or high to very high ranges when compared with relevant age and sex norms.¹⁴ Box 3 shows the distribution of Goldberg depression scale scores for e-hub service users compared with scores from an Australian community sample of 7439 individuals:¹⁵ 88.1% of the general population participants scored less than 6 on the scale, whereas 68.8% of the e-hub service users scored 6 or more.

Best-practice measures

Quality of information in the web interventions

The mental health literacy information included in the e-hub web intervention programs (BluePages and the mental health literacy components of the e-couch streams) is derived from reviews of

2 Registrants on MoodGYM, e-couch and BlueBoard, and unique visitors to BluePages, 1 November 2008 – 1 May 2009				
	MoodGYM	e-couch	BlueBoard	BluePages
Total registrants/unique visitors	46 882	4687	166	59 090
Sex				
Male	14 865 (31.7%)	1441 (30.7%)	50 (30.1%)	not collected
Female	32 017 (68.3%)	3246 (69.3%)	107 (64.5%)	not collected
Not specified	0	0	9 (5.4%)	—
Age				
< 20 years	4 823 (10.3%)	345 (7.4%)	5 (3.0%)	not collected
20–34 years	19 727 (42.1%)	1837 (39.2%)	59 (35.5%)	not collected
35–49 years	14 976 (31.9%)	1594 (34.0%)	62 (37.3%)	not collected
≥ 50 years	7 356 (15.7%)	911 (19.4%)	31 (18.7%)	not collected
Not specified	0	0	9 (5.4%)	—
Location				
Rural or remote	11 534 (24.6%)	986 (21.0%)	36 (21.7%)	not collected
Capital or other city	35 348 (75.4%)	3701 (79.0%)	120 (72.3%)	not collected
Not specified	0	0	10 (6.0%)	—
Country (top 3)				
Australia	11 860 (25.3%)	1587 (33.9%)	115 (69.3%)	372 004 viewed pages (56.1%)
United Kingdom	20 873 (44.5%)	1357 (29.0%)	8 (4.8%)	7 464 viewed pages (1.1%)
United States	7 566 (16.1%)	806 (17.2%)	14 (8.4%)	220 843 viewed pages (33.3%)
Initial Goldberg scale score*				
Depression, mean ± SD (n)	5.95 ± 2.15 (41 695)	6.08 ± 2.27 (4270)	6.72 ± 1.78 (131)	6.28 ± 1.97 (17 230)
Anxiety, mean ± SD (n)	6.23 ± 2.13 (41 100)	5.80 ± 2.23 (4270)	6.88 ± 1.85 (129)	6.69 ± 2.00 (8952)

* On a scale ranging from 0 to 9, where higher scores reflect a greater number of depressive or anxiety symptoms. ◆

published evidence and includes information about symptoms, treatment and modifiable risk factors for different disorders. Ratings of the research evidence are provided and explained in lay terms. All information included in the web interventions is regularly reviewed and updated to ensure currency with available published research.

The self-help techniques incorporated into e-hub web interventions are also evidence-based. The MoodGYM program successfully delivers techniques derived from CBT, which, in its face-to-face form, is an evidence-based psychological treatment for depression.^{16,17} e-couch extends this concept by providing both CBT and other evidence-based skills training drawn from interpersonal psychotherapy, relaxation therapy, problem solving and physical activity for depression; relaxation therapy and physical activity therapy for generalised anxiety disorder; and exposure therapy, attention practice, social skills training and relaxation therapy for social anxiety disorder. The delivery of this material through automated systems allows high-fidelity, transparent and consistent delivery, as well as ongoing evaluation.

Consumers also receive feedback about their responses to symptom self-report measures. This feedback is based on community normative information for specific age and sex groups, collected from longitudinal data.

Ongoing service evaluation

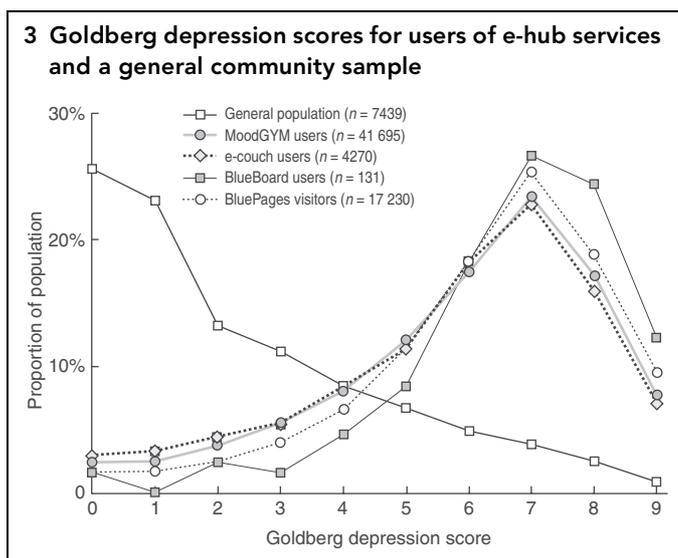
As part of the ongoing evaluation of the e-hub service, data, including demographic and repeated symptoms measures for users, are routinely recorded on e-hub databases. This informa-

tion, along with user feedback, is analysed for reporting to the Department of Health and Ageing on a regular basis as part of e-hub's service delivery contract with the department.

Protocol for responding to users and duty of care

e-hub staff do not form traditional treatment relationships with users, and a service protocol for responding to users has been implemented. Staff do not provide individual virtual or face-to-face psychological treatment, but the service does assist consumers to identify relevant treatment providers and resources as required. This is primarily achieved through the provision of information about emergency resources and listings on the websites. As part of informed consent procedures, users are also informed of the limits of the services and the importance of seeking professional help.

In addition, we respond to indications that users may be experiencing high levels of distress. For example, users who score high levels on automated assessments receive immediate automated feedback that includes information about crisis assistance. We also have a detailed protocol for detecting and responding to posts on BlueBoard which indicate that a user may be experiencing severe distress or may pose risks to their own safety or that of other people. This protocol has been developed to consider the well-being not only of the person posting the material, but also of other people who are reading the posts, since the display of material relating to self-harm and other harm may precipitate symptoms in those reading it.¹⁸ Such material is removed from public display, and a message left for the person who wrote it explaining why the post has been moderated and providing contact details of emer-



agency services. Posts that indicate imminent risk of serious harm are triaged according to risk assessment procedures, and the clinical psychologist oversees responses to all posts that relate to severe distress and self- or other harm.

The bulletin board service emphasises peer-to-peer support rather than expert involvement, and moderators do not actively participate in the board except as set out by protocols designed to maintain the rules and safety of the board.

Although we clearly state that the e-hub service cannot provide direct personal treatment, we do respond to people who contact us through the email addresses provided on each website and refer them to appropriate resources. All incoming emails are read by the project officer, and enquiries of a clinical nature are referred to the clinical psychologist. Standards have been set to monitor and evaluate our responses to these users (eg, in terms of timeliness), forming part of our ongoing service audit. In addition, all e-hub web staff are trained in how to respond to telephone calls from distressed individuals who may be at risk of self-harm.

Protection of privacy and anonymity

The e-hub protocol emphasises the protection of privacy and anonymity of e-hub web service users. It is likely that this is particularly important to users who may avoid seeking help due to the stigma surrounding mental health problems. The BlueBoard rules include strict bans on posting material that is potentially identifying, and these rules are enforced by the moderators for the safety of all members. In addition, telephone numbers and email addresses are automatically removed from posts by automated filters.

In extreme emergencies, or when legally compelled to do so, the e-hub protocol provides for appropriate disclosure of information in a manner similar to that which occurs in face-to-face interactions (eg, as per the Australian Psychological Society *Code of ethics*¹⁹).

Emphasis on secure IT systems

The ethical delivery of any web service is underpinned by a high standard of IT, and the e-hub group prioritises the security and mission-critical delivery of its servers and software systems. The

group includes in-house IT staff who specialise in the design, development and delivery of e-health web applications. The e-hub group develops and supports IT staff as part of its multi-disciplinary web service team, so as to successfully deliver web applications that reflect the explicit and inherent requirements of an e-health service.

Conclusion

The Australian National University e-hub group delivers mental health services directly to a high volume of users in the community. We see the e-hub web service as providing first-line assistance to the public for early intervention and prevention of mental health problems, as well as providing adjunctive interventions to people who are engaged in face-to-face professional treatment. Anecdotal feedback from e-hub site users and referrers suggests that these services may be particularly useful in supporting relapse-prevention activities for people who have completed face-to-face treatment. The e-hub web service provides accessible, evidence-based interventions that are particularly suited to people who prefer anonymous services, for use in school or workplace settings, and for use in rural and remote communities.

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Competing interests

We are the developers and service providers of the BlueBoard, BluePages, MoodGYM and e-couch web programs.

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SUPPLEMENT

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