Advice on Innovative Technologies in e-Mental Health

Briefing Paper for the National Mental Health Commission

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Young and Well Cooperative Research Centre

The Young and Well Cooperative Research Centre is an Australian-based, international research centre that unites young people with researchers, practitioners, innovators and policymakers from more than 70 partner organisations. Together, we explore the role of technology in young people's lives, and how it can be used to improve the mental health and wellbeing of young people aged 12 to 25. The Young and Well CRC is established under the Australian Government's Cooperative Research Centres Program.

youngandwellcrc.org.au

Spark Strategy

Spark Strategy is an agency for strategic thinking, transformation and sustained action. Consulting to public, private and not-for-profit organisations, Spark strives for sector reform through the development and implementation of innovative business models. Mental health has comprised the majority of Spark's portfolio for a number of years, and the organisation currently advises a range of stakeholders in this area, including funding bodies, research organisations, services providers and Governments, both in Australia and internationally.

sparkstrategy.com.au



Biographies

ASSOCIATE PROFESSOR JANE BURNS

Jane is the founder and CEO of the Young and Well Cooperative Research Centre. Its establishment is a culmination of Jane's work in suicide and depression prevention over the last two decades which has focused on international and national partnerships with academic, government, corporate, philanthropic, not-for-profit and community sectors. She holds a Principal Research Fellowship at Orygen Youth Health Research, was a VicHealth Principal Research Fellow and a Commonwealth Fund Harkness Fellow at the University of California, San Francisco. She holds a PhD in Medicine from the Faculty of Medicine (Public Health and Epidemiology) University of Adelaide. Jane was a Victorian Finalist in the 2012 Telstra Business Women's Awards and was listed in the Financial Review and Westpac Group 100 Women of Influence in 2012.

GEORGE LIACOS

George has advised government, not-for-profit and commercial organisations for over 17 years in the areas of new business and funding models, business and digital strategy, and system transformation. Prior to this he grew and sold a \$100 million private sector business; meaning he brings a strong practicality and commerciality to his strategic advice. His experience across a combination of sectors including digital, strategic business models and commercial experience means his advice is specialist, practical and executable. Prior roles have seen George as the National Lead Partner for Transformation at Grant Thornton, Program Director for the Department of Premier and Cabinet as well as Chairman and Non-Executive Director on a number of technology and service businesses.

FELICITY GREEN

Motivated by unearthing unconventional methods of funding, Felicity works with a number of not-for-profit and government stakeholders to develop new models for sustainability. Areas of expertise include commercialisation, ideation stress testing and execution planning. Felicity brings an international perspective to her work, as a result of her work experience and her MBA studies at Peking University. Her work in the mental health field is extensive, ranging from strategy development to process improvement and retained commercial advisory services.

DAWN O'NEIL AM

Dawn has sat on both not-for-profit, community and public sector advisory boards for over 20 years where she has contributed to social and health policy, senate inquiries and think tanks. Dawn takes a wide view and has highly developed strategic skills with strong governance, strategic and organisational development and change management background. As a CEO, Dawn was known as a collaborative, visionary and strategic thinker not only within Lifeline and beyondblue but more broadly contributing to not-for-profit, mental health and suicide prevention reform in a rapidly changing world. Most recently Dawn has led the development of the first Strategic Plan for the new National Mental Health Commission and has recently undertaken a study tour for the Centre for Social Impact into how the Collective Impact Framework could be implemented in Australia to increase the social impact of the social sector and is Chair of the innovative social enterprise STREAT.

ANIL THAPLIYAL

Anil has a passion for improving people's health and wellbeing through the application of information communication technology integrated within people's care in a seamless way. His work is at the interface of the public and private sectors and his career has focused on making tangible improvements in the e-Mental Health and Addictions sector. Based on his longstanding work with the NZ National Depression Initiative, he decided to focus on the broader e-Mental Health and Addictions domain. He is widely regarded as a leader in the implementation and integration of e-Mental Health and Addiction programs in the Public and Primary Healthcare services. He has also led the development of many key pieces of e-Mental Health strategy.



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Executive Summary

There is a very strong evidence base supporting the role of technologies and the effectiveness and cost-effectiveness of e-mental health solutions, and yet that evidence is not necessarily translated to practice and policy.

The nature and volume of demand for care has moved well beyond any argument that face-to-face clinical systems alone are the answer. Universal access to high quality care is a promise unkept, with the remote, rural and vulnerable often unable to access resources, care and support.

Due to piecemeal funding, sector uncertainty and a lack of a coordinated strategy, strong supported leadership with a focus on cooperation, and exploiting the opportunity that is e-mental health, and its role in the broader system of care, has been lacking. This has led to uncoordinated development and unacceptable levels of duplication and waste.

Compounding this, the increasingly competitive funding landscape has led to an introspective focus on differentiation through online brand promotion and the dissemination of many narrowly focused e-products. Many of these are not built on evidence and do not interoperate to provide individuals with a seamless care experience.

Further, the economic and social costs of system failure (some of which is avoidable in an integrated model) mean that the future unchanged is one of a continual leakage of funds, social exclusion and economic opportunity cost. Demand for services already exceeds supply and is continuing to grow.

Broadly, the e-mental health sector is united and agrees that it is time to rationalise and coordinate. Technologies are available that can build an integrated system of care that entwines both the electronic and face-to-face modes of mental health care, and fuses them both to broader health care.

It is time to rethink what behaviours funding models should encourage. This is less about competition and more about cooperation and a sector re-tasking its efforts towards exploiting the digital opportunity. A more united sector could create a trusted super highway – leveraging the NBN – that guides and fast-tracks new, evidence-based, interventions in reaching those that need them, when they need them

Accelerated research and development; the embedding of evaluation, translation and utilisation; the development of common and shared standards that promote interoperability; the shift towards impact assessment and measurement; and big data capture and use, are all components that will coalesce e-mental health solutions and integrate them with clinical care into a sustainable model.

The **system reimagined** is reoriented around the individual. It enshrines self-managed care, individually controlled data, and mass customisation to deliver a seamless pathway to the appropriate care for each person.

Fortunately for Australia, significant contributions to date have meant that the system reimagined is within our reach. Many of the building blocks exist and need to be coordinated. Where there are gaps, the sector is moving towards partnerships with consumers and stakeholders to design interventions to fill these gaps.

Additionally, the advent of digital business models provide a level of funding granularity that, when combined with other funding models, make what was previously unfeasible, distinctly possible.

Below are six recommendations that support the 25 sub-recommendations from each chapter that will see the realisation of a system reimagined.



MAJOR RECOMMENDATIONS

A 10-year roadmap has been set which ambitiously argues that e-mental health should be considered not just as a complement to face-to-face services, but rather as a means of: a) reducing complexity; b) removing inefficiency; c) promoting accountability and measuring effectiveness; d) providing consumer choice; and e) reducing disparities in access to care.

Integration of e-mental health with face-to-face services would, in one stroke, satisfy three strategic objectives:

- 1. Enable effective performance assessment and governance through the provision of accurate and timely impact data.
- 2. Inform better, more targeted policy that has practical and translational implications for service providers.
- 3. Act to optimise the government's expenditure, reduce duplication and drive self-management to ensure that everyone gets the right help at the right time.

In order for there to be effective performance metrics and governance, reliable and timely data on system performance must be collected. An integrated system, underpinned by e-mental health ecosystems, provides this reliable and timely method for data collection. The e-mental health sector must be encouraged to embrace and unite in the use of such an ecosystem, with a common and shared commitment to reducing duplication, working cooperatively towards improving the mental health and wellbeing of all Australians.

In the same way that consumers choose combinations of apps for their mobile phones as opposed to installing large pieces of software on their computer, the e-world is moving towards bite-sized interoperable components whose data is dynamically aggregated into 'report cards' tailored for each person. This is a cost-effective and contemporary alternative to monolithic, old architecture systems like the Personally Controlled Electronic Health Record (PCEHR). In line with this, the Government prioritised funding for Project Synergy, with an expectation that it would, during piloting stage, showcase interoperability. Synergy is focused specifically on young people but, if effective, could be deployed across all stages of the lifespan.

This review argues that transactional record keeping systems like the PCEHR will do little to reduce the cost of mental illness and improve the wellbeing of Australians. This review argues that the PCEHR has not considered the interests of consumers, is still medically oriented, and fails to encourage the individual to own and use their own data in self-managed care.

- 1. 'Bricks and mortar' solutions will never meet demand. The only feasible, cost-effective solution is to deploy e-mental health to move beyond a treatment-focused medical model to one that directly supports self-management. To achieve this, strong, decisive leadership and good governance in the first two years is critical. The public and private sectors will commit at least \$100 million to align, consolidate and integrate the mental health system around the use of e-mental health technologies.

 \$50 million should be invested by Federal and State governments, and \$50 million by the private sector across Universities, Non-Government Organisations and Industry. Government adopting a seed funding approach will enable the sector to unite and solve the current challenges together. This needs to happen immediately, and is specifically for e-mental health and capability building within the sector. It does not include budget for adjustments to the face-to-face system. It is recommended that this government funding for e-mental health be done through offset where money is wasted (e.g. PCEHR), consolidation (e.g. Lifeline as the gateway service for all telephone crisis support, consolidation of web-enabled chat and online counselling i.e. e-headspace and Kids Helpline see Figure 1) and reallocation, by ceasing to fund duplicative and inefficient services such as mindhealthconnect.
- 2. In the first two years, explore opportunities to leverage new and emerging technologies to deploy a universally available integrated system of care. An integrated system blends both online and offline resources into a comprehensive and seamless experience for the individual. Deploying this system of care would also include establishing the standards and interfaces for the seamless exchange of data between system components (be they online or offline) so as to enable a 'tell it once' philosophy.



- 3. In years 3 and 4, once strong leadership has been displayed by the e-mental health sector, redesign the system of care using new and emerging technologies to re-orient the individual at the centre of the system, as opposed to its current pivot of medical service provider. This approach is best articulated as 'user-centred design'. This would include deploying technology that enables individuals to control the sharing of their data, and offers peer-to-peer and family support, enhanced self-management and customisable treatment pathways. Currently, services like MoodGym, Beacon, THISWAYUP and MindSpot have a strong evidence base but are not user-friendly. A major focus should be on user-centred design across demographics. A 'one size fits all' approach will not address the issues of disparity and access to care.
- 4. Build on Australia's leadership in R&D and leverage new and emerging technologies to enable continuously developing integrated digital products and services that attract PPP (public/private/partner) sector investment with a focus on a vibrant R&D pipeline (research optimisation, rapid prototyping, large scale deployment) and an exploration of the export potential. Hubs of innovation in e-mental health exist across our universities, however the only example of collaborative practice is in youth mental health with the establishment of the Young and Well CRC, which has resulted in multi-disciplinary and cross-sector partnerships such as the Online Wellbeing Centre, Link and the Mental Health Professionals Clinic. R&D innovation is critical to reimagining the e-mental health system, but this must be positioned as partnership opportunities that explore the translation of research to practice and policy, and that critically explores sustainable funding models, including where appropriate commercialisation and licensing to other countries, and/or international cross-country investment in innovation.
- 5. Fill the leadership vacuum. The sector is in need of strategic and transformational leadership across Public, Private and Partners (mental health sector) if it is to stop squandering its decades of investment in e-mental health, and seize the opportunity that new and emerging technologies present. This leadership needs to champion user-centric integrated systems of care.
 - a. Establish an E-mental Health Research Centre Think Tank that builds on the investment of the National Health & Medical Research Council (NHMRC), their Centres of Excellence and program funding. This think tank would be resourced to bring together collective research knowledge across University Centres – which aligns researchers, capitalises on NHMRC and Australian Research Council (ARC) direction and informs policy;
 - b. Build on Project Synergy and create an Office of Digital Transformation in e-mental health research that works in parallel with the Think Tank to enable, guide, assess and oversee the realisation of this digital transformation and integration with face-to-face services, based on new and emerging technologies. The Office would set direction across PPPs, manage stakeholders, fast-track the shift towards user-centric design, and assume responsibility for implementing 'backbone' infrastructure that sits outside of any one organisation and is needed to support the ecosystem (e.g. data plans, PBS subsidies, NBN concessions, funding changes);
 - c. Adopt a global leadership position to leverage local advances. This would include developing funding links to global system and research funders, providers and philanthropists, as well as thought leadership. The vast preponderance of its focus, however, should be on business and system development activities so as to leverage new and emerging technologies and practices globally for both scale and national benefit.
 - d. **Create a reform blue print** that builds on the e-mental health alliance strategy, for the digital transformation of the sector and its participants so as to deliver a user-centric, integrated system of care that maximises the opportunities provided by new and emerging technologies.
 - e. **Develop an aggressive transition plan**, with public/private/e-mental health partnership implementation focus, and against which the PPP's will be assessed and funded.



f. Resource, support and nurture young and early career researchers and practitioners, and grow emerging leaders in the field by encouraging them to think strategically about the transformative potential of technology, and empower them to develop skills in business and strategic development and user-centric design.

6. Reorganise and focus the sector

- a. Implement a sector-led, collective impact, innovation and integration framework for research, design, development and rollout of new interventions, integrations to other systems and closure of any system gaps. Implementing the blueprint will require the collaboration of multiple experts and organisations. Create a distribution framework model that divides e-mental health into six 'components' (Gateway and Information Services, Crisis, Web and Telephone Support, Telehealth and Therapist Assisted Support, Online Self Directed Therapies (CBT, IPT etc.), Peer-to-Peer and Online Forums, New and Emerging Technologies). Appoint a champion for each component who is funded, tasked and assessed on their delivery of the e-mental health transition plan, innovation, and integration associated with their component. It is envisaged that this would be delivered using a collective impact framework, with these appointed component leaders acting as the backbone for a collective of specialist subject matter experts in their component. Component leaders would be accountable to the overarching transition framework.
- b. Transform how the sector is funded through innovative business and funding models for sustainability. Provide large-scale block funds for five years and then deploy models that leverage government investment and share the burden of funding outside government alone. Develop capability within the sector to be able to understand and innovate their business models, so that their funding models ultimately transform into sustainable funding models within five years.
- c. Give the sector transitional security whilst it undertakes the business model transformation. Provide seed capital to enable both the capability building and the development of sustainable models, while holding participants accountable for outcomes against this support through practical governance and standards.



A SYSTEM FRAGMENTED

While some steps have been taken towards remediating and reforming Australian mental health care, the current system remains fragmented.

A variety of online mental health interventions and mobile applications have been developed as an adjunct to this system rather than as a key transformational element for increased reach, access, and engagement. Both the face-to-face and online models are fragmented and operate separately.

At present, Australia lacks an 'end-to-end' system design, with the mental health care landscape populated by government, university and not-for-profit organisations, but not appropriately integrated to provide a streamlined pathway of care for the user.

The most common rationale for online support has been an economic justification: it is cheaper to deliver services online.

This review argues for a reframing of that rationale and purports that an integrated service is optimal for mental health outcomes. While there will always be a need for face-to-face services for those who are severely unwell and those with complex needs, best practice would dictate this approach is supplemented by around-the-clock support provided through technologies.

While technology can be used as an adjunct to clinical care, it is becoming clear that there are a number of conditions that can be effectively self-managed, and that technology provides the perfect low-cost vehicle to do this. In addition, because of its reach, the incremental cost per person of receiving this care reduces.

Australia has a universal health care system that aims for equal care and access for all individuals. The reality is that we currently have disparities in access to mental health care, with those most vulnerable least likely to receive evidence-based and timely services. In the field of mental health, current thinking generally leads to funding of face-to-face mental health service providers.

This, however, is not only financially unsustainable, but in practice will never achieve the reach and impact required to live up to the vision of universal care. Services are being stretched, waiting lists are long and clinician time is being spent on a disproportionate

number of cases that could be addressed through selfmanaged and online modalities. As a result, those living with a mental illness often receive sub-optimal treatment.

For the purposes of this review, e-mental health is an ecosystem of purpose built, digital tools (such as online interventions, mobile apps, multimedia content, digital campaigns, biometric devices, and so on), that individuals and clinicians can organise into cohesive, combinations, which meet specific needs of the consumer in the way they want them met. It enables information and services to reach those who are remote or disadvantaged, like never before. At the heart of selfmanaged care is respect for the individual and a philosophy that blends mass customisation with economic prudence so as to yield multiplied social benefit.

It is important to note that e-mental health is not a single large application or portal that individuals 'log into'. Past investments have focused on electronic record keeping (Personally Controlled Electronic Health Record) for efficiency purposes, or standalone solutions (such as Telemedicine) for reach. Rather, we are imagining an ecosystem of agile and mobile technologies that bridge the digital divide, making the most of small data plans and public internet access at places such as libraries, cafés and hotspots.

Integrating digital technologies (for example, apps, data warehouses and websites) with face-to-face care is not a pathway to cost reduction, but rather to greater accessibility and a more integrated and effective sector. E-mental health should not be seen as a substitution for face-to-face services, rather it is able to deliver greater value through redistribution of demand.

Of even greater impact, however, will be its role in empowering individuals with choice and enabling self-management through early stages of illness to recovery, and in doing so making space in the system for those needing assistance.

In the field of mental health, current thinking generally leads to funding of face-to-face and mental health service providers. This, however, is not only financially unsustainable, but in practice will never achieve the reach and impact required to live up to the vision of universal care.



EXISTING ONLINE RESOURCES: WORLD LEADERS YET UNCOORDINATED AND DUPLICATED

The development and launch of new technologies to address issues around mental health and wellbeing is staggering. At the time of writing there were over 100,000 apps targeting health and wellbeing worldwide.

In Australia, a number of current providers offer a range of e-mental health services from self-managed care through to relapse prevention. The following list is by no means exhaustive, however provides an introduction:

- beyondblue (accessed by 2.5 million unique users per annum) and ReachOut.com (accessed by 1.5 million unique users per annum) provide health promotion and some early intervention and prevention activities (for example, SAFEMinds online training for teachers and school staff at youthbeyondblue.org; beyondblue 24-hour infoline and ReachOutCentral.com).
- e-hub at the Australia National University
 (accessed by 828,000 unique users per annum)
 provides prevention and self-care in depression,
 anxiety, social anxiety and facilitates peer-to-peer
 support through BlueBoard, BluePages, Beacon
 and MoodGym, the world's first online CBT
 program.
- Lifeline Australia and Kids Helpline provide online and telephone counselling support. Lifeline helps more than 674, 321 Australians with crisis support services for suicide. eheadspace and Butterfly Foundation provide web-enabled chat, and Reachout.com have a facilitated chat room.
- Black Dog Institute (accessed by 1.25 million unique users per annum) provides information, prevention, self-care and telemedicine for mood disorders.
- Mindhealthconnect (accessed by 100,000 users per annum) provides an online portal to mental health services.
- Virtual clinics such the National eTherapy Centre, MindSpot and VirtualClinic provide either automated or clinician-guided services, or both. Research is currently underway by the Young and Well CRC to develop a University Clinic and an online multidisciplinary e-mental health clinic.
- A range of models exist for the use of e-mental health systems within general practice such as Black Dog Institute.
- Innovative online communities have evolved such as Hello Sunday Morning and internationally Big White Wall and headspace.com.



There are also providers from the non-university or public health sector, such as private psychologists and psychiatrists who provide online therapy, and increasingly insurers and the telecommunications providers are exploring commercial opportunities for emental health.

As they stand currently, these services do not achieve the level of benefits that might be obtained in a united and coordinated system of mental health care. Significant investment has been made in start-up but little resource is dedicated towards implementation. Although these services promise to reduce demand on the health workforce, the evidence for this has not been established.

Key messages

- 1. There is no overarching design or picture of how current services interact, or the role that each should play.
- 2. There is no overarching guidance as to what service gaps need filling, so organisations build what they want, based on perceived need, often with public funding.
- There is no public register of what has been publically funded or how effective it is. This is one of the prime reasons for duplication and waste.
- 4. There are no widely available quality or accreditation standards to ensure consumers are getting evidence-based online help.
- There is no overarching technical framework to guide interoperability between products, so data is rarely shared and used in aggregate to help individuals.
- There are only a small number of locations individuals can go to get advice about emental health options, and there is little incentive for professionals to use and prescribe use of these interventions.



A SYSTEM REIMAGINED

E-mental health is both a prerequisite for an effective, universally accessible mental health care system from this point forward, as well as being a positive disrupter of the current system with its many challenges.

As a fundamental enabler of access to information and self-management, e-mental health by its very nature conforms to the World Health Organisation (WHO) views and acts to both build mental wellness and puts the individual at the centre and control of their health and wellbeing.

The system re-imagined will:

- Put the individual at the centre, enabling choice and delivering a customised pathway for each person's needs. Further, it will enable selfmanagement of care as well as personal control of who sees each individual's data.
- 2. Be available to all individuals everywhere when they need it.
- 3. Reallocate demand to the most cost effective and appropriate modality for the need.
- 4. Work alongside and enhance face-to-face services both in-between and during sessions.
- Be an ecosystem rather than a portal, or individual application. The ecosystem will be interoperable enabling a 'tell it once' experience for the individual.
- 6. Comprise components that are authorised, based on evidence, accessibility and financial sustainability.
- 7. Be developed and promoted by blending and leveraging public funds with private and philanthropic funds.
- 8. Be managed on a day-to-day basis along market principles.
- Ensure universal access with adjustments to the Medicare Benefits Schedule (MBS) and other means-tested assistance. Further incentives will be aligned to desired service delivery and sector behaviour.

In short, the pathway to a comprehensive and progressive model involves integrating on and offline systems and developing standards and interoperability between online offerings.

This will create a universally available, personalised and empowered end user experience, with solutions that scale to support an individual across their life and no matter where they live. This will ultimately transition Australia's mental health landscape away from a patchy programmatic approach without requiring entire system reform.

E-mental health does not require system-changing investment, but it does require intelligent investment and coordination. There are well-funded, disruptive and strong e-health ecosystems, involving some of the world's largest brands, already emerging from a number of private and philanthropic funded sources. This confirms that e-health and e-mental health are inexorably moving away from being small scale 'cottage industries'.

There is a role for government to set the agenda, help translate these developments into the mental health field and help integrate the same into face-to-face models.

There is a coordinative role for government to help build the standards and interoperability frameworks that, if adhered to, will enable new interventions to quickly be deployed to meet need.

By directing, seed funding and maintaining this translation and integration, the potential social and economic return – particularly if done so under sustainably designed funding models – will be significant.

E-mental health does not require system-changing investment, but it does require intelligent investment and coordination.



NEW AND EMERGING TECHNOLOGIES: NOT IF OR WHEN, BUT WHICH ONE AND WHY

A focus on examining whole-of-life, whole-of-population and the importance of self-managed care.

There can no longer be any doubt about Australians' use of technology and their adoption of new technology alternatives. Eighty-six percent of Australians access the internet daily, with 44 percent of Australians using the internet more than five times a day.

Further, the vast majority of access is via smartphone and mobile devices. With the NBN rollout, the falling cost of data plans and the mainstreaming of more internet-connected devices, the gap between those that do and do not use technology daily is diminishing.

Some are simply a digitisation of existing processes or services, others are innovative and enjoy rapid user uptake.

Some innovative examples of emerging tech in emental health include:

- myStrength: mystrength.com offers a range of resources to improve mental health and overall wellbeing.
- ThriveOn: thriveon.com offers personalised online programs enhanced by professional 'coaches'.
- Empower Interactive: empower-interactive.com
 offers web and mobile behavioural health solutions
 and teaches individuals specific coping skills for
 managing stress, anxiety and depression through
 an interactive e-learning application, ReThink,
 offers access on mobile devices. Clinicians can
 track clients' progress as they use the program and
 structure their sessions and highlight key issues.
- Bio and ambient data SMS, social media posts, location, heart beat, blood flow - to spot patterns that indicate poor emotional state. These include ginger.io (ginger.io), Biobeats (biobeats.com) Argus Labs (arguslabs.be) and the Durkheim Project with US veterans.
- Carepass (carepass.com) is a private sector funded health portal that links apps into a wellness plan.

- Open mHealth (openmhealth.org) offers non-profit illness specific portals that link apps into a treatment plan.
- TicTrac (tictrac.com) and its alliance with Samsung, provides self-managing websites that consolidate data from an individual's many health apps and biometric devices into one dashboard.
- Recently the Department of Health funded the Young and Well CRC to begin development of such common standards and data sharing interfaces via Project Synergy.

Key Messages

- 1. Eighty-six percent of Australians access the internet daily.
- 2. Society's movement towards mobile computing has enabled the transition from concept to mainstream of the biometric device (such as wristband, watch, glasses or chest strap formats, however, recent products have seen biometric sensors placed in shirt fabrics and digestible wafers). All of these 'smartech' devices are paired with software to retrieve the data and then interpret it for the user.
- Algorithms, data analytics and search results are all being monitored so as to enable systems to mass customise individual experiences and predictively serve relevant content.
- 4. Apps and algorithms have evolved so as to provide a person with real-time prompts and suggestions for behaviour change in response to changes in biometric feedback, social media content or application usage patterns.
- The next evolution of this domain is where organisations are enabling data to flow between apps and technologies or they are stringing together sequences of apps and technologies into a process flow, which is augmented by faceto-face services.



POTENTIAL FUNDING MODELS REQUIRED TO SUPPORT AN INTEGRATED E-MENTAL HEALTH SYSTEM OF CARE

Depending solely on the public purse is not a funding model. It is simply not sustainable.

Investment models (for example, public private partnerships, innovative models such as social impact bonds, and private sector risk-taking investment) are unlocked and strengthened by evaluation. Effective and robust evaluation of the impact of a particular service or technology leads to an accurate assessment of the social and economic return on investment of that service or technology. It helps companies assess their future income streams when considering investment in technologies such as apps. It helps government assess the payback of funding and make choices between services and technologies. It helps consumers understand which services and digital product combinations deliver results. It helps service providers build packages of services and digital products that improve their effectiveness and reach.

Just as e-mental health is not a single platform or portal (but rather an ecosystem of linked services and technologies), ongoing e-mental health funding is not a single monolithic model that covers all services and digital tools.

E-mental health sustainability calls for the coordination of smaller funding models that align to meet both the interest of funders and the demands of consumers for specific services and interventions. The challenge is to ensure universal accessibility. Put another way, what is needed is a level of granularity of funding that is based on not only the individual, but also the individual's specific consumption and circumstances. The very nature of digital technologies such as apps, mean that e-mental health would be well placed to offer this granularity as every interaction and transaction can be tracked.

The Australian Government has already shown leadership in the exploration of this space with an investment in Project Synergy.

Further, there is a significant international movement whereby health care insurers are reducing the cost of care by using wellness treatments and tools. This is in line with the now commonly accepted evidence that investment in prevention has a disproportionately positive impact in reducing an individual's cost of care.

Given the factors outlined above, there are several combinations of funding models that will deliver sustainability and enhanced self-managed care.

There exist two special components of any funding that should be maintained and expanded: Leveraged Funds and tighter integration with the MBS.

- Leveraged Funds: Playing the role of correcting market imperfections, there is a significant opportunity to greatly expand and accelerate the investment in, and integration of e-mental health in Australia by the private sector, NGOs and philanthropists matched with government funds. If the sector invested wisely and created a model of Social Return On Investment (SROI) and Economic Return On Investment (EROI), we would see models of sustainability extended. If articulation of possible sustainable commercial models were required of each applicant for these funds (as discussed above) and drafted as a condition of the funding, then these leveraged funds could be 'reused' for multiple purposes over time.
- MBS and PBS: In order to support universal accessibility, whilst shifting the burden of funding, the sustainable commercial models outlined should be complimented with an enhancement of the MBS and PBS to include coverage of e-mental health interventions. Capping and cost containment should be examined.

Key Messages

This paper proposes e-mental health funding models based on:

- Combinations of PPP's, Social Impact Bonds, matched and leveraged funds, and subsidies to fund research and development.
- A combination of micro-payments, transactionbased subsidisation, health insurance premium offsets, freemium models and monetisation of digital assets (for example, access to deidentified data) be deployed to fund ongoing operations.
- 3. An evaluation-based mechanism that directly links impact of the service or tool to funding based on SROI/EROI principles. Further, that this mechanism calls for regular reviews so as to enable close measurement of effectiveness as well as cater for the rapidly changing digital landscape.



A FUTURE VIEW OF THE E-MENTAL HEALTH LANDSCAPE

There are five core activities (outlined below) required to develop an ecosystem of e-mental health that interfaces with face-to-face service offerings and that understand the intersection between mental health, health and other areas such as housing, employment and social services. Principles that underpin this are integrated technology systems and usercentric self-management, right through to clinical care. An example of how these could look is demonstrated in Figure 1:

- Development of shared technology platforms linked via common standards and open Application Programming Interfaces (APIs);
- Models of sustainable funding that build on government investment;
- Innovation of existing and new user-centric services using emerging and new technologies;
- Integration of e-mental health interventions with face-to-face mental health services across states and territories:
- 5. Consideration of integration within the broader health and other contextual domains for example, housing, employment, social service, and so on.

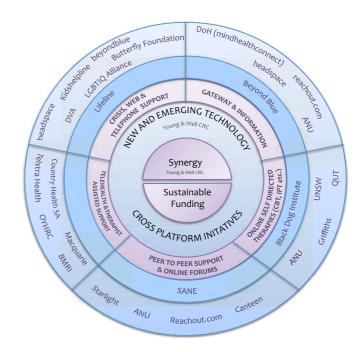


Figure 1: E-mental health innovation and integration

Under this model, a spotlight is placed on the e-mental health domain so as to identify natural, divisible component parts. It is suggested that these components are then assigned to expert 'backbone' organisations whose responsibility it is to:

- 1. Deliver parts of the blueprint and transition plan that relate to their component.
- 2. Utilise collective impact practices (Appendix 4), coordinate and support the activities of other domain experts to deliver innovations and integrations for their components.
- 3. Provide policy and other advice with regards to their components.
- 4. Ensure collaboration with other e-mental health backbone organisations.

The spotlight has identified six major components of the e-mental health ecosystem:

- 1. Gateway and Information Services
- 2. Crisis, Web and Telephone Support
- 3. Telehealth and Therapist Assisted Support
- 4. Peer to Peer Support and Online Forums
- 5. Online Self Directed Therapies (Cognitive Behaviour Therapy (CBT), Interpersonal Psychotherapy (IPT), etc.)
- 6. Underpinning new and emerging technologies and cross-platform initiatives

Using the three filters of Capacity, Awareness and Reach, data from the sector online survey undertaken as part of drafting this paper (and contained in Appendix 1) identified some candidate backbone organisations for each of the six components.



This picture does not provide a recommendation of which organisations should or, indeed, have an interest in becoming backbone organisations. It merely illustrates a way of:

- 1. Segmenting the body of work to be undertaken to deliver a user-centric integrated system.
- 2. Aligning the expertise of the sector with the work required.
- 3. Coordinating sector participants in a collective impact approach so as to leverage impact and drive efficiency.
- 4. Reduce reform timelines by running the reform program along parallel, yet coordinated, streams.

The final slice of this diagram is at the centre alongside the underpinning and new and emerging technologies component: funding. It is expected that the design of the funding component will be innovative and sophisticated and will be coordinated out of the recommended new Office of Digital Transformation. It is not expected that the funding will come solely from government. It is expected that funding will be linked to performance as either a backbone or supporting organisation within each component.



Introduction

This paper consolidates evidence and recommendations from recent rapid reviews of e-mental health, both in Australia and internationally. The primary documents included, "Strategies for adopting and strengthening e-mental health: a review of the evidence" (Burns et al., 2014) and "E-mental health in Canada: Transforming the mental health system using technology" (Mental Health Commission of Canada, 2014).

This paper also draws on a range of discussion papers created across the sector, such as, "Australia's Mental Health System: Can we achieve generational change?" (Medibank Health Solutions and Beyond Blue, 2013), "E-mental health: A Rapid Review of the Literature" (Lal, 2014) and "E-mental health Services in Australia 2014: Current and Future" (Christensen et al., 2014).

In addition to this material, a number of face-to-face and telephone interviews were conducted with government departments and key industry leaders. An online survey supplemented the telephone interviews.

PROGRESSING THE CONVERSATION FROM 'THE PROBLEM' TO 'THE SOLUTION'

The case for mental health reform has been made clear in numerous reports and academic publications. Australia spends in excess of \$28.6 billion per year to support people with a mental illness, equating to approximately 2.2 percent of Australia's Gross Domestic Product (Medibank Health Solutions and Nous Group, 2013).

The system is fraught with fragmentation and insufficient coordination, and supply is not meeting demand. Where the current conversation falls short, however, is that in suggestions of system redesign, leveraging technology to develop solutions to these problems is overlooked. This paper aims to demonstrate that, in fact, it is capitalising on these new and emerging innovations and integrating them with each other and offline systems, which will deliver the greatest value and most effective reform.

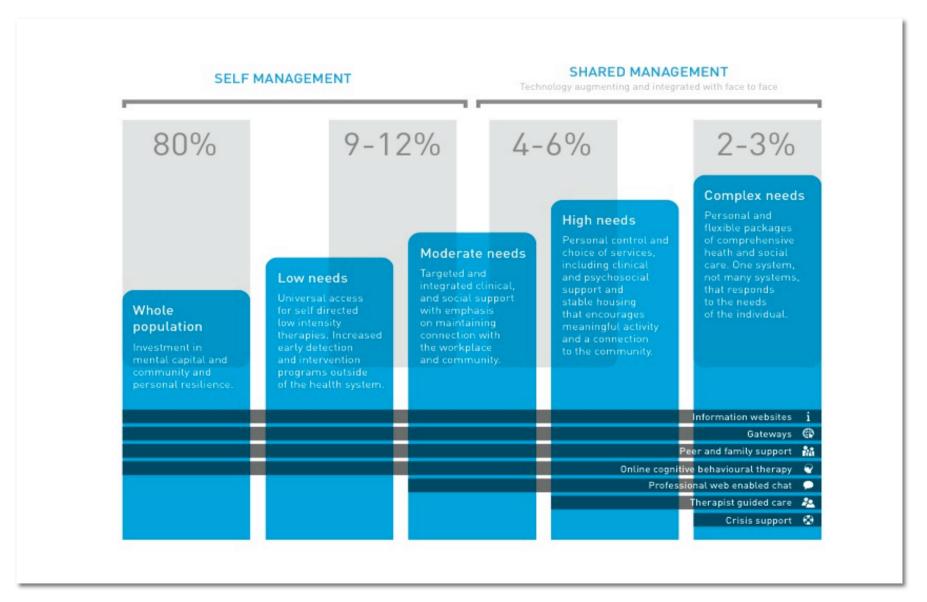
The recent Medibank and *beyondblue* publication (2014) proposed a reformed mental health system based on complexity of need. This paper aims to build on this, by overlaying this concept with new and emerging technology solutions, as a way of demonstrating 'how' to deliver the 'what'.

As the amended diagram (Figure 2) on the following page demonstrates, different forms of e-mental health solutions have the potential to address needs across the spectrum of mental health care and support, from mobile applications and information websites to support the whole population in relation to the self management of wellbeing, through to self-directed online interventions and web enabled chat for individuals with moderate needs, and by augmenting face-to-face care to support complex needs. In this manner, e-mental health increases reach and frees up clinical treatment for those with very complex needs, such as eating disorders, major depression and anxiety, drug and alcohol addictions and psychoses.

The end game is that every Australian receives the right care, at the right time, in the right way.



Figure 2: Building on the current thinking by outlining the role of e-mental health in system reform





1. Innovative technology and funding models

This chapter provides a brief overview of current, emerging and potential technologies and funding models that have the ability to transform the e-mental health landscape.

1.1 CURRENT, EMERGING AND POTENTIAL TECHNOLOGIES

Below is a diagram of the range of types of new and emerging technologies considered in this section. The body of this report goes on to discuss components of this landscape as they relate to the development of a user centric, integrated system of care.

Figure 3: New and emerging technologies in e-mental health





a) Mobile applications

A mobile application or "app" is a software application that is developed specifically for use on smartphones, tablet or other portable devices, rather than desktop or laptop computers. Apps are available through online application distribution platforms such as the Apple App Store, Google Play or BlackBerry App World.

Apps are generally small, individual software units with limited functionality, although their specificity has now become part of their desirability. They allow consumers to handpick and customise what their devices are able to do. In e-mental health a key challenge is in balancing evidence-based approaches with user experience characteristics. Smiling Mind is an app that exemplifies this challenge, as it is very popular (high User Experience ("UX") ratings) and evidence-informed but currently lacks an evidence base of effectiveness (although it is currently subject to a Randomised Controlled Trial (RCT) funded by the Young and Well CRC and supported by Queensland University of Technology).



GROWTH OF MOBILE APPLICATIONS

"The number of mobileconnected devices will exceed the world's population by the end of 2014." (Cisco, 2013) The use of smartphones to both access the internet and mobile applications continues to grow exponentially. Between 2013 and 2014 the global use of smartphones increased by 406 million people globally, reaching 1.82 billion devices (up five percent in a year), with internet usage via mobile devices having increased by 81 percent between 2012 and 2013 (Cisco, 2013). Australia is at the forefront of this growing demand, and as at June 2013, over 11 million Australians owned a smartphone and 7.5 million were accessing the internet through their device on at least a monthly basis (ACMA, 2013).

Aligned to the growing use of mobile phones to access the internet, is the rapid ascendance in the development and use of mobile apps. As of the end of 2012, there were over 1.2 billion people using mobile apps, with this estimated to increase to over 4.4 billion users by 2017 (Portio, 2013). This growth is enabled through an ever-expanding number of available mobile apps, ubiquitous distribution channels (for example, Apple Store and Google Play, each having over 1.2 million apps available for download as of June 2014 (Informit, 2014), and

"59 percent of Australians actively use a mobile application at least once a month." (Nielson, 2013)

the emergence of Freemium business models (which now accounts for over 98 percent of app pricing models) available to enable zero cost barrier to purchase (Gordon, 2013).

The mobile application market is fiercely competitive and has been polarised by the dominance of a few marketplaces. The two biggest providers, Apple Store and Google Play, have had over 75 million and 80 million applications downloaded, respectively from their stores since they have opened, accounting for over 90 percent of the global mobile application market (Informit, 2014).

Apple (iOS)

- There are currently 500 million active devices globally
- Despite Apple sitting behind Google Android with over 75 billion app downloads, Apple App store takes in over US\$5.1 million a day, compared with Google's US\$1.1 million
- 42 percent of Australia's 16 million smartphone market





Google (Android)

- By the start of 2015, Android will have nearly three billion active devices worldwide
- With over 80 billion apps downloaded to date, the Google Android market is tracking 45 percent ahead of Apple App store downloads
- 51 percent of Australia's 16 million smartphone market





ROLE OF MOBILE APPLICATIONS IN MENTAL HEATLH AND WELLBEING

Riding the wave of app growth, health and wellbeing applications have boomed in this marketplace with everything from running trackers to cognitive behaviour therapies now available through a mobile application. There are currently over 100,000 health and wellbeing related apps publicly available (Hides, 2014) with the market expected to be worth US\$26 billion by 2017 (Week, 2013).

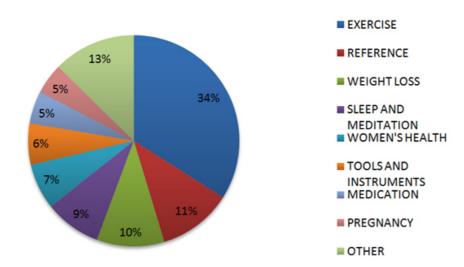


Figure 4: Percentage of mHealth Apps by Category: iPhone & Android (Verasoni

Many of these apps relate to diet, exercise and physical health monitoring, however, the growth in mental health applications is both a concern and an opportunity within the healthcare profession.

The key reason for concern is that a number of studies have highlighted the poor quality of health and mental health apps in terms of engagement, usability and functionality (Hides, 2014). There is also typically little information available on app safety or effectiveness, beyond 'star' ratings and consumer reviews. While consumer reviews are important in relation to engagement, trust and 'word of mouth' promotion, the selection of apps on the basis of popularity yields little or no meaningful information on their quality or evidence based effectiveness (Fiordelli, 2013). In addition to this, many of the mental health applications are not based on psychological theories or evidence-based practice (Fiordelli, 2013).

Despite these potential concerns, there are also a number of opportunities as research seeks to catch up with the changes in technology. Although, there is still very little research in respect of suicide prevention apps, a number of studies on web-based psychological interventions show this modality is popular with users, is cost-effective and can be clinically efficacious (Proudfoot et al., 2013a).

Mobile technology offers a new dynamic to web-based treatments one of which is the fact they are generally carried around by a person on a day-to-day basis (Proudfoot et al., 2013a). A recent study undertaken by Judy Proudfoot et al. (2103) from Black Dog Institute, on the impact of mobile phone and web program on functional outcomes for people with mild to moderate mental health issues found that these interventions brought about rapid improvements in mental health symptoms and in work and social functioning. These results demonstrate that delivery of CBT using a combination of both mobile phone and computer technology is effective and acceptable to users.

"76 percent of the general public would find 'Mobile Health' acceptable for mental health monitoring and self-management." (Donker T, 2013)



b) Wearables and biometric devices

A "biometric device" is any device that measures a biological function or trait. Also called "wearable computing", these devices tend to operate in one of two main ways; verification or identification and they can provide important baseline data on heart rate, sleep, brain function and blood glucose levels. This data is extremely useful for e-mental health because it can monitor and demonstrate the important relationships between certain variables such as exercise and eating behaviours through to the effects that this has on how individuals sleep and how they feel. Innovations such as Google Glass, as well as apps that monitor activities, physiology, and habits provide sophisticated, often real-time data, to both the patient and clinicians about important outcomes. These can range from simple physiological measures such as weight; sleep patterns or electrocardiograms, to the measurement of habits such as diet. Other examples include the measurement of exercise and daily recording of mood. In the field of geriatric health care some centres now equip people with dementia with electronic tags that activate an alarm if they leave the premises.

Some examples of biometric devices currently being trialled in the e-mental health sector by the Young and Well CRC and Brain and Mind Research Institute are UP by Jawbone, which has been used to track sleep patterns against depression in teenagers and Fitbit, which has a personal health focus.

c) Gaming

Gaming has been proven as effective way to learn, and it is now being used to teach cognitive behavioural skills to people with mental health problems and illness. An example of this is Reach Out Central, a world first game based on principles of Cognitive Behavioural Therapy (Burns et al., 2010) and Sparx (sparx.org.nz), a game based on an imaginary island where participants go on a quest and have to fight negative automatic thoughts (NATs), and overcome problems to progress. The game, aimed at teenagers, has been shown in a randomised controlled trial to be as effective as usual care in young people with mild to moderate depression.

Gamification is best defined as the use of game design elements in non-game contexts (Deterding, 2011). The game design elements that have been successfully applied in other areas include points, achievements or badges, leaderboards, levels, story integration, goals and associated feedback, rewards and progress indicators. Gamification is used where the goal is to create greater engagement, motivation or fun among users of a tool or interface. There is emerging evidence that some kinds of gamification (for example, simple rewards, point systems and badges) are useful for short-term goals, that is, on-boarding or adoption, it may be that they are less useful in the long-term and where the goal is to create deeper engagement with the content area.

Nicholson (2012) proposes that meaningful engagement and long-term motivation is more likely to result through the use of other types of gamification, such as, incorporating play in the form of freedom to explore within boundaries, building in exposition in terms of stories that are integrated with real world settings, giving players choice within the system, providing information using game design and display concepts, engaging players with others interested in the real world setting and helping players to reflect.

"From the results, it appears that more successful applications employ game-like strategies or feature a playful design, which challenges the commonplace notion that a playful attitude is out of place in relation with depression and mental health in general." (Rao, 2013).

In recent years, gamification has been successfully applied as a design concept to enhance user experience and engagement in a variety of industries and domains including productivity, finance, health, education, sustainability, news and entertainment media (Deterding, 2011), as well as by sport equipment manufacturers, coffee shops or in frequent flyer programs (Bunchball, 2013). A number of recent studies have shown benefits of gamification for men's physical and mental health and wellbeing (Ahola et al., 2013). Gartner Research forecasts that by 2014, 70 percent of Global 2000 businesses will have 'gamified' elements in their services (Gartner Research, 2011).

The Young and Well CRC support a Gaming Research Group, led by Associate Professor Daniel Johnson from QUT, with representation from universities across Australia and Johns Hopkins University: http://www.youngandwellcrc.org.au/research/safe-supportive/gaming-research-group/.



d) Social networking services

A social networking service is a platform that enables individuals or businesses to build social networks and relationships between people who share common interests, activities, backgrounds and real-life connections. Social networks are internet-based services that allow individuals to create a public profiles

and build a network of users with whom to share and view information. Social network sites are varied and they incorporate new information and communication tools such as mobile connectivity, photo/video/sharing and blogging. Popular platforms include Facebook, LinkedIn, Twitter, Pinterest and Instagram.

The main types of social networking services are those that allow the user to connect with friends (usually with self-description pages) or business connections and to recommend and share engaging content. For this reason young people in particular are high users of social networks. However, when framed in terms of e-mental health, they have become another place where bullying can be prevalent because they have opened up private experiences and places to the entire public.

Online peer support is the opportunity to seek and obtain support from others facing similar problems. The advantages of doing this online are the opportunities to meet a significant number of people and tap into crowd sourcing. Examples of this in mental health includes the ReachOut.com facilitated forum (Webb, Burns & Collin, 2007) and Big White Wall (bigwhitewall.com), which is an anonymous online service for people in psychological distress. It offers support for selfmanagement of mental health issues, information, and online therapy using a webcam, audio, or instant messaging.



In 2013, the Hunter Institute and Mindframe partnered with the Young and Well CRC to bring the sector together to discuss the role of Social Networking Services in Suicide Prevention. As a result several activities to support the sector are being coordinated and Better Practice Guidelines have been created to support the sector in their use of new and emerging technologies: http://reports.youngandwellcrc.org.au/a-better-practice-guide-for-services/.

e) Digital campaigns

E-mental health campaigns are typically aimed at raising awareness, reducing stigma and promoting participation in programs that promote positive social outcomes. Campaigns can reach extremely high levels of awareness and engagement through utilising the new pathways opened up by the opportunities of 'digital'. That said, little effort or resource is directed to understanding the impact of such campaigns on behaviour change. Two examples of popular mental health campaigns include Movember and beyondblue's 'Man Therapy' initiative, which encourages de-stigmatisation of men seeking help with depression. Given their popularity it seems opportune that they could act as gateway platforms for evidence-based interventions.



f) Online evidence-based interventions

Online evidence-based interventions can include web-based digital tools, community platforms and programs. 'Interventions' encompass direct actions for treating mental health and also strengthening the skills and capabilities of individuals to prevent the development of mental illness. The term 'evidence-

based' and what constitutes evidence for this paper is in some instances considered contentious. The 'evidence base' refers to existing evidence or research including epidemiological data, past evaluations, theories, strategies and models. The evidence for online interventions is discussed in detail in Chapters 3 and 4.



g) Big data

Big data refers to the use of large amounts of data to predict future behaviour and outcomes. This is similar to the Amazon or Netflix model of using past buying behaviour to predict and offer the consumer products that they will be likely to purchase. Examples in mental health include the use of data from individual health providers on who responds to what treatment to predict what individual patients should be offered in the future. Another is the use of predictive analytics to detect people at high risk of suicide. This involves examples such as monitoring social media and other data to detect suicidal 'signals' and providing an intervention to prevent suicide. This approach is being explored by Black Dog Institute and Brain and Mind Research Institute with the support of the Young and Well CRC.

h) Robots

Robots in mental health care have mainly been used in settings involving the care of people with dementia. The two types of robots that have been used are therapeutic robots that mimic animals, such as Paro (a robotic Canadian harp seal developed in Japan; see parorobots.com), and those specifically designed for health care, also known as healthbots. Evidence in residential health care demonstrates that these robots can reduce loneliness in those with dementia and increase social interactions.

i) Interoperability

Interoperability is the integration of different applications to making them work seamlessly together. Application Programming Interfaces (APIs) allow individuals to directly interact with data (including data from biometric devices such as the UP or Fitbit) in their own applications, products and services. APIs such as the Apple iOS 'HealthKit APIs' enable health and fitness apps to communicate with each other. For example, with a user's permission, a user's blood pressure app could share data with a physician's app, laying the groundwork for a more comprehensive way to manage health and fitness via mobile.

APIs will allow apps to talk and create shared networks. Interoperability is the ultimate aim, whereby instead of having individual software units with limited function, the individual apps will be integrated to create seamless functionality and cross-functionality. This interoperability will provide visibility into what is going to eventually transform long-term health management issues.

The opportunities that interoperability opens up for the e-mental health sector are numerous and wide-ranging. For instance, a mindfulness app would be able to 'talk' to the biometric device, which could all be linked into digital intervention software. Individuals could not only monitor their mental health and wellbeing through dashboards, but they could also share this information with clinicians to augment face-to-face care. This pilot project has been funded by the Department of Health and is called Project Synergy.

j) Virtual reality

Virtual reality is the computer-generated simulation of a three-dimensional environment. It is now beginning to be adopted in certain mental health care situations, especially for those with anxiety disorders. The advantage of virtual reality is that it can be used to create scenarios that may be impossible to replicate in real life, for example in the treatment of post-traumatic stress disorder in soldiers.



1.2 INNOVATIVE FUNDING MODELS

We stand at a convergent moment. Previous fragmentation of public funding has led to competitive behaviours between segment leaders. As a result of interviews, it is clear that the major sector participants believe that the system must be changed, inclusive of the funding models and are ready to cooperate, show leadership and drive reform of a fragmented system. Below are some financial models that will facilitate this leadership and cooperation. A common theme amongst these models is identifying and aligning the interests of various stakeholders, some of which are commercial. Whilst by no means comprehensive, our discussion groups these models into three categories:

- Structural Funding
- Transactional Funding
- Results Based Funding

1.2.1 STRUCTURAL FUNDING

This category of funding suggestions relates to the development of repeatable, long-term approaches that build and manage the fabric of research and the integrated system of care.

Public Private Partnerships: There is a significant body of experience around these models. In this conceptualisation, these arrangements build core research, service delivery or support capability, which eventually delivers outcomes without the amortised costs of design and delivery, effectively reducing the marginal cost of activity. This could be used to deliver system wide standardised clinical support systems for the purpose of supporting big data, universal data interoperability and deep pathway to care analytics.

Leveraged Funds: Programmatic funds that leverage the aggregation of non-government funding pools so as drive the depth and pace of research and development. A possible variant on this is to ensure that part of the programmatic funds are reserved for the very tail of the research or delivery program and are awarded based on outcome achievement. With 'skin in the game' seed funders are encouraged towards the promised outcomes to which pubic funds were applied. This could be used to enable the rapid coalescing of stakeholders around the development of innovative e-mental health interventions.

Social Impact Bonds: Deployed to address major gaps (such as system design, technology platforms, and research reform) these instruments bind private risk capital to measurable, often cost reducing, outcomes. The public purse distributes a percentage of the realised benefit as a reward to the placement of risk capital by the private sector. This could be used for both infrastructure and components of an integrated system of care.

1.2.2 TRANSACTIONAL FUNDING

This category of funding options relate to the usage costs and charges for resources and services. It is important to note that these models are not only restricted to service delivery. They can act as incentives for research and development of new interventions if structured with a sustainability perspective from the start.

Freemium Models: This model is often used in the digital space where a base service is provided free of charge and a related, expanded, set of services are available for a fee. As long as universal access is not compromised, this model would be a highly effective incentive to attract private sector into the development of new e-mental health interventions. It could also be used to encourage them to do so using established evidence and assessment (as opposed to the unregulated production of apps now).

Incentives and Subsidies (MBS and PBS): There is little or no reason to consider e-mental health interventions that aid clinical sessions, or act in between such sessions, as unworthy of being prescribed by a professional. Further, if such e-mental health interventions effectively enable self-management and correctly prevent mental ill health, there is a clear argument to subsidise or incentive their use.

Micro Payments: Again, this model is common in the digital and crowdsourcing space. The idea is that a large number of very small payments (for example, \$1) accumulate to a significant sum. The advent and emergence of standing payment gateways (for example, PayPal, Amazon Payments, Apple Pay) on mobile devices mean that it is a simple click away for an in-app purchase or micro contribution when applicable.



Data Monetisation: There is significant interest in big data. While it is public policy to provide data free of charge to the community, accessing and distributing such data in a digestible format is requiring significant expense and restructure of public technical infrastructure. There are two opportunities for monetisation of the de-identified big data in this sector: creating rapid and direct access pathways to raw de-identified data that update as technologies update; and, leveraging off knowledge within departments and service providers to add value to the de-identified data. There is precedence for this thinking in the domain of weather (for example, UK Met Office) where public data, freely available, is now a demanded for-pay product due to the modes of access to third party commercial providers, as well as the value added to it.

1.2.3 RESULTS-BASED FUNDING

This category of funding could actually be applied across all funding, as is more of a principle than a funding instrument. The general principle is that all funding be tied to an evaluation framework that directly links public (or philanthropic for that case) funding to outcomes of the activity. The advent of Social Return on Investment (SROI)-style thinking means that activities removed from direct service delivery can still be assessed for impact.

There are advocates for and against specific impact assessment methodologies, and it is not the purpose of this paper to argue one method over another. The critical point is that SROI-style thinking and impact assessment should be tied to the provision of funding into this sector so as to encourage behaviours towards the elimination of duplicating effort and a focus on filling system gaps, the enhancement of collaboration by focusing on outcomes not activities, and the embedding of sector leadership principles by creating a clear line of sight between funding and outcomes to which all stakeholder are aligned.

SUMMARY

It is the view of this paper that a sophisticated approach to funding is required and that sustainability will demand that investments will, more than likely, have elements of all three categories combined into hybrids that focus laser-like on specific outcomes and stakeholder motives.

1.3 POSITION

1.3.1 CURRENT AND EMERGING INNOVATIVE TECHNOLOGIES

An accelerating number of applications, website resources and other technology-based services are emerging independently and in many cases with a duplicating effect. Very few of these technologies are being designed and deployed using appropriate assessment and evidence. In summary, there is an expanding supply of uncoordinated and unsubstantiated technologies. There is little or no structured or systematic use of these technologies in the clinical service provision settings.

As they stand currently, these services do not achieve the level of benefits that might be obtained in a united and coordinated system of mental health care. The level of investment in research and evaluation has been minimal and as a result very few effectiveness evaluations have been undertaken. Although these services promise to reduce demand on the health workforce, the evidence for this has not been established.

1.3.2 POTENTIAL INNOVATIVE TECHNOLOGIES

There are a number of potential technologies including biometrics, gaming and artificial intelligence. In addition to these, technologies from fitness and health sectors could easily be ported across to the e-mental health domain. Additionally, there is an emergence of goal-based reporting or dashboard systems that are drawing data from multiple sources in an attempt to provide some sort of integrated view on a person's behaviours. As with the current and emerging technologies, these potential technologies are fragmented, not coordinated and currently not based on appropriate evidence and assessment for their use in mental health. One final note is that many of the world's largest technology companies (such as Google and Apple) are moving into the mobile wearable space, and it is not hard to see their platforms or market strengths be applied towards extensions of health such as wellbeing. Also, social media players such as Google, Facebook and Twitter are each grappling in different ways with the concepts of cyber safety and cyber resilience under their policy and corporate social responsibility obligations. The areas of cybersafety and cyber resilience fit squarely into the domains of social inclusion and wellbeing, and as such are part of the mental health domain.



1.3.3 FUNDING AND TECHNOLOGY TO ENSURE E-MENTAL HEALTH IS PART OF THE SERVICE FRAMEWORK IN AUSTRALIA

There is need for technology protocols and standards to help coordinate the production and distribution of technologies into this space. Certification of the technologies being deployed is needed to ensure their efficacious use and give consumers confidence in their benefits. The development of these technologies needs to be purposefully shifted from being clinical replacements to being patient-centric designs.

From a clinical perspective, the technologies should interoperate so that it is easy for clinicians to select bundles of technology that will complement the clinical interaction and be effective in between clinical interactions and further inform the clinical interaction.

Both of these things call for overarching technology standards that build confidence in and use of e-mental health interventions.

As an additional layer, a rethink of funding models is required so as to provide financial and credibility support to e-mental health interventions. This could range from subsidisation of the research and rapid prototyping of new e-mental health interventions, subsidisation of the licence fees for users of individual interventions (apps), incentives for clinicians to subscribe and use these technologies, new and innovative models such as impact investing to attract private sector funds and reduce the burden on the public purse.

1.4 MINOR RECOMMENDATIONS

- 1. Develop a coordinated ecosystem so as to enable a whole-of-life view and remove duplication.
- Funding for programs should include a mandatory requirement that 20% of the budget is allocated to R&D, which includes exploration of sustainable funding.
- 3. Revise the accreditation program for e-mental health interventions and develop common standards across the ecosystem so as to build consumer trust in the interventions and ensure data interoperability.
- 4. Embed access to the online ecosystem in other settings, making the entry point ubiquitous through end user environments (social media, universities, schools, workplaces, and so on) rather than relying on entry through a portal.
- 5. Develop an electronic version of a Pharmaceutical Benefits Scheme (PBS) subsidy and an equivalent Practice Incentive Payment (PIP) for clinicians to prescribe e-mental health interventions.
- Develop capability within the sector to analyse and innovate a participant's own business and funding models
 and provide financial support and incentives for their exploration of sophisticated and sustainable business
 models.
- 7. Commission a specific analytical report to quantify the costs and benefits of these changes.

1.5 SUPPORTING MATERIAL

1.5.1 CURRENT RESEARCH FINDINGS

Technology use by Australians is prolific. By 2013, 86 percent of Australians accessed the internet and 44 percent of Australians used the internet more than five times a day (Sensis and AIMIA, 2013). In 2012, 92 percent of homes had access to an internet connection almost universally across all demographics (Nielsen, 2012), and with the rollout of the NBN this is set to increase these percentages further.

Fifty percent of adult mental disorders have their onset before age 15, and 75 percent by age 25 (Kendler and Kessler, 2002). A deeper dive into the findings of technology use of this cohort uncovered the following:



- Young people are the faster adopters of new and emerging technologies, with 99 percent of young people
 using the internet, and 95 percent using the internet daily (Burns et al., 2013).
- Young people are using technologies to access information and assistance in relation to mental health concerns, which provide a potential alternative to traditional forms of clinical engagement, enabling professionals to interact via the internet (Burns et al., 2010b).
- Technologically-driven interventions can help encourage the accessing of face-to-face services, "allowing young people who need intensive services to readily access them whilst also supporting the large number of young people with mild or moderate mental health concerns" (Kauer et al., 2013).

1.5.2 EXAMPLES OF CURRENT, EMERGING AND POTENTIAL USE OF INNOVATIVE TECHNOLOGIES

Examples of current e-mental health offerings

Recharge is a mobile application developed by the Young and Well CRC in partnership with ReachOut.com and Brain and Mind Research Institute, which embraces the science of sleep and activity and their interaction with mood. Currently under trial, it will interface with both wellbeing plans and be used in clinical practice to enhance adherence to treatment protocols (known as share plans).

Figure 5: Recharge app





Headspace.com (international and not to be confused with headspace.org) has positioned itself as a personal trainer for the mind but it also embraces community with every single user able to track their progress against 'buddies'. To develop this 'community' the organisation has adopted a 'freemium' model whereby users can sign up for a free ten day challenge with content, videos and resources assisting the user. If the user then wants to pursue mindfulness and meditative practices further, they can pay for a yearly subscription of around \$100 (£60) to get access to the full suite of resources.

Entrepreneur, mindfulness expert and trained monk Andy Puddicombe launched headspace in 2010. From talking at events, to books and other written materials, to the mobile app service, Headspace is now used in over 150 countries; with its content translated into 12 different languages. Their aim is that through technology they can enable people to experience less stress, more contentment and greater clarity in their life.



Big White Wall Tavistock and Portman Foundation Trust (UK & NZ) bigwhitewall.com

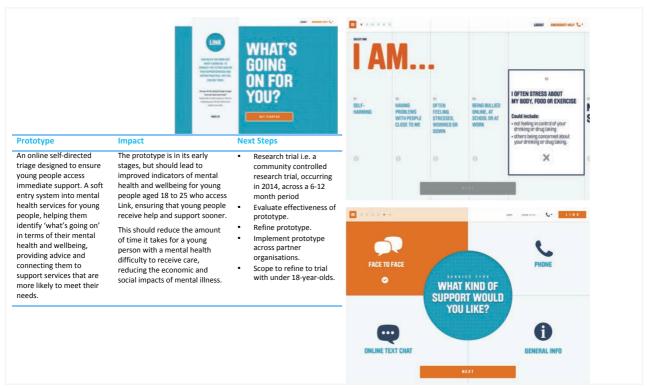
Big White Wall provides a peer-to-peer support services coupled with individual and group 'talk therapy'. A distinctive feature is the Wall Guides who are employed by Big White Wall to monitor and support people in crisis.

It also unique in being a monetised initiative with subsidised and paid options for joining.



Figure 6: Examples of emerging e-mental health initiatives from the Young and Well CRC







The private sector is also entering this space with products that link data from different apps and present individuals with personal dashboards (such as the example opposite from carepass.com).

Leading international examples in this space are TicTrac (tictrac.com) and Open mHealth (openmhealth.org).

Tictrac is a Quantified Self (QS) platform that takes lifestyle data and allows users to fully take control of all the variables in their lives. Tictrac synchronises with data from hundreds of connected apps, devices, sensors, and websites to create dashboards that empower users with comprehensive lifestyle insights and data visualisation. These insights can enable users to better understand their unique needs and be able to quantify where they can improve.

Being able to leverage the power of QS data can also be incredibly valuable for external organisations that can use it to intelligently drive increased engagement, conversions and ROI. Tictrac's brand platform enables companies to talk to their consumers at the right time, with the right message, through the right channels, based on what their data says is relevant to them. Their technology has the potential to enable health insurers, hospital groups, pharmaceutical companies, mental health organisations and large employers to deliver individualised care, through intuitive, consumer-friendly design informed by personalised data.

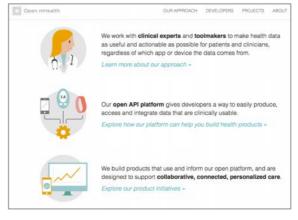
This will be incredibly valuable in the e-mental health space because the various apps, websites and software designed for intervention, education and counselling are currently disparate and not interoperable. Having a platform that can



capture, synchronise and present the information stored in these individual platforms will be incredibly beneficial. First it will allow for more effective interventions with those who suffer from depression and mental ill-health but secondly, and possibly even more valuably, it will create a vast network of data for researchers. This research will hopefully inform better, more targeted treatment in the future.

Open mHealth is an innovative and potentially transformative not-for-profit organisation that is attempting to bring clinical meaning to digital health data. They started with the mission of building an 'open mobile health architecture' to facilitate integration. With the increasing popularity of the quantified self (QS) movement, there has been an explosion of mobile apps and devices designed to help individuals better track and improve their health. With that comes huge potential to use the data these health-focused apps collect to help doctors and counsellors provide more personalised, preventive care for patients.

Open mHealth have a vision of driving a more effective 'learning health system', whereby care and research to occur side-by-side to generate much greater insight around



what is most effective for treating different patients. Their organisation brings clinicians, data scientists, developers and designers together to build tools and products that transform the way personal, digital data can be used in health care. Their argument is that the problem with current data in the e-mental health space is that it is read and written in inconsistent formats, which make it very hard to integrate, let alone be used in any meaningful way. These challenges are even greater in the clinical space, where understanding the true meaning of the data can be life critical.

Examples of potential e-mental health initiatives

A key to driving health outcomes is to engage individuals in the management of their own health and wellbeing. It is instructive to compare and contrast individual online behaviour between the health app ecosystems (including biometrics devices) and the Personally Controlled Electronic Health Record (PCEHR).

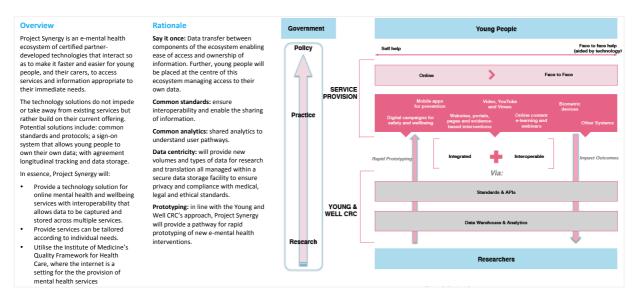
Individual interest in this self-awareness and management is growing as demonstrated by the production and uptake of mobile health and e-mental health apps as well as biometric devices and the associated ecosystems of apps to which their data links. As discussed in this paper, these ecosystems are building links between different developers and their unique apps (via open API) so as to provide each person with a unique dashboard of progress and outcomes against individual plans (Tictrac, Open mHealth, and so on).

In contrast the financial and transactional systems, such as the PCEHR, have experienced less than optimal uptake and are not growing in usage or distribution. This transactional information is useful for system funders and policy makers but as evidenced in Chapter 7, it has little or no utility for individuals in its current form.



The message this paper wants to draw out of this behaviour is both one of interoperability but even more importantly the concept of putting the individual at the centre and enabling them to self-design the combinations of resources that meet their needs. The contrasting online behaviours demonstrate that individuals demand a customisable, single, consolidated view on their activity, all combined to help them progress, achieve a goal or flourish. To do this, the apps or interventions need to be able to exchange data (interoperability). By organising these interoperable apps and interventions into a semi-structured array (some for information, some of management of stress, relationships and some for later stage care plan sharing), choice plus evidence-based intervention meet in a 'say it once' experience where people's journey and data are collected along the way and shared as and when it is needed. This is the principle the Department of Health has invested in by funding Project Synergy.

Figure 7: Synergy: an Integrated ecosystem of e-mental health care



1.5.3 THE CHALLENGE OF STANDARDS AND EVALUATION

A 2013 report by mobile health consultant group Research2Guidance (Global Observatory for eHealth series, 2011) found more than 97,000 mobile health applications, listed on 62 full catalogue app stores. The majority of these applications are general health and fitness apps that both facilitate the tracking of health parameters by private users, and provide users with basic health and fitness related information, as well as guidance.

A Reuters article releasing further details of the report states that "some 15 percent (of the 97,000+ apps) are primarily designed for the healthcare profession", implying that the remaining 85 percent are designed for users to promote their own health and wellbeing.

Most existing and emerging standards for apps in this field exist outside of Australia. A 2011 report by the WHO Global Observatory for e-Health (Global Observatory for e-Health series, 2011) indicated the following regarding policy-making around mobile health technologies: "mHealth is no different from other areas of e-Health in its need to adopt globally accepted standards and interoperable technologies, ideally using open architecture. The use of standardised information and communication technologies would enhance efficiency and reduce cost. To accomplish this, countries will need to collaborate in developing global best practices so that data can move more effectively between systems and applications."

The international survey on which the WHO mHealth report (World Health Organization, 2011) is based provides details of policies from all responding countries. The overall picture is an uneven one, with significant progress in some countries such as Finland, with its Office for Health Technology Assessment (Finohta), which is now a medium-sized health technology assessment (HTA) agency, to very limited advances in most others.

In July 2011, the US Federal Drug Administration (FDA) published draft guidance in which it proposed regulating any mobile app deemed to be a medical device. It stated it would not regulate personal wellness apps such as pedometers or heart-rate monitors.

According to the mHealth Alliance 'lawmakers in the US and the European Union (EU) are currently working to define regulatory frameworks that achieve a balance between patient safety and innovation. The US House Energy and Commerce Committee held a series of hearings on mHealth apps on 19-21 March 2013, to examine to what extent the



FDA should oversee and regulate medical applications on smartphones and tablets, and the FDA committed to releasing final guidance on mHealth apps by the end of fiscal year 2013. The EU, meanwhile, has focused on creating a framework for medical devices' (Kritsky, 2013).

It is important to note the role of the private sector in the field of assessment of apps. A notable example is Happtique, which describes itself as a digital and mobile platform for the curation, certification and prescribing of mHealth apps. Happtique's has a curated application store with more than 15,000 mHealth apps categorised into more than 330 categories, including physician specialties/professions and medical, health and fitness topics. Happtique runs a certification program for medical, health and wellness apps. In 2014 it will launch the Happtique App Certification Program (HACP), 'a voluntary program designed to help consumers, physicians and other healthcare providers identify mHealth applications that meet high operability, privacy and security performance criteria and are based on reliable content' (Happtique, 2012). HACP will address standards in four areas: operability, privacy, security and content.

Filling the gap of consumer confidence

The Young and Well CRC in partnership with The Queensland University of Technology developed the Mobile Application Rating Scale (MARS) and the methodology to support the evaluation of apps in 2012. This was due to the lack of a recognised comprehensive, reliable and objective instrument to rate the degree that mobile health applications satisfy the quality criteria of both evidence based content and usability, which are both needed to effectively provide a suitable intervention for mental health and wellbeing issues (Hides et al., To be published 2014).

The development of the MARS utilised a wide range of existing website and app assessment criteria identified in previous research, from which irrelevant criteria and duplicates were removed. An advisory team of psychologists, interaction and interface designers and developers, as well as other professionals involved in developing mental health and wellbeing applications, worked together to classify assessment criteria into categories, sub-categories and finally develop scale items and descriptors.

In its development the scale was tested across 60 randomly selected mobile apps, which found that it provided an excellent level of inter-rater operability, as well as excellent consistency in its scoring. The scale has been recognised by healthcare and professionals as an easy-to-use, simple, objective, reliable and widely applicable measure of app quality, developed by an expert multidisciplinary team (Hides et al., To be published 2014).

MARS Structure

The scale has been developed so as to provide an objective and reliable multi-dimensional measure of the quality of health-related apps. There are three main structural parts to the scale:

- 1. App Classification (not scored)
 The classification is used to record the descriptive and technical information on the app, including focus; theoretical background; affiliations; target group; and technical aspects of the app.
- 2. App Quality Rating (Scored)

Quality is rated on four dimensions, each of which are rated on a 5 point scale (where a score of 1 indicating poor quality and 5 indicating excellent quality)

- Engagement the app is interesting and /or fun to use
- Functionality the app works appropriately
- Aesthetics the app has good visual design
- Information the app contains quality information from reliable sources
- App Satisfaction Ratings (Scored)
 This is focused on rating from the perspective of a user as to the perceived value of the app.

The MARS utilises total scores as the indicator of quality and satisfaction for the tested mobile app.



In terms of rating portals, the work of Professors Helen Christensen and Kathy Griffiths created the Beacon web portal (Beacon.anu.edu.au), which provides a free guide to the content and effectiveness of online behavioural interventions, mobile apps and internet support groups worldwide. Developed and maintained by the Australian National University, the scientific evidence underpinning every intervention is systematically reviewed according to best practice principles and a smiley-face rating system is used to provide users with a guide to what works. Beacon also summarises the content, type and length of each intervention, its intended audience, whether it is free or feebased, the languages in which it is available and the findings of the research trials that have investigated whether it works. Users are also



given the opportunity to provide their own 'consumer' ratings and comments about each website much as TripAdvisor enables users to share their experiences of products. For each condition, visitors can filter by target age group, whether registration is required and level of evidence (for example, they may choose to select CBT interventions for adolescents with very strong evidence of effectiveness). Apps can be filtered by type of platform (Apple versus Android). Although it was previously funded by the Department of Health, Beacon is currently unfunded, however, this is the type of 'portal' that the government should be investing in because it uses an evidence-based framework to evaluate online interventions. That said, it currently sits within the ANU ecosystem and is not mainstreamed. Ideally, it should sit within an integrated e-Mental health system, with a focus on UX feature and functionality improvement, to make it more attractive to end users to increase uptake. Finally, it should be interoperable across different gateway sites, such as Lifeline, beyondblue, headspace and ReachOut.com. Additionally, counsellors and primary health care providers could be using it to recommend evidence based online CBT, IPT, mindfulness etc.

In terms of work to date towards developing standards for e-mental health, the following standard measures pack was developed by the Young and Well CRC in partnership with Internationally recognised thought leaders in technology and innovation including researchers from the Pew Internet and American Life Project, the Berkman Center at Harvard University, the Microsoft Research Centre and the EU Kids Online project. The standard measures pack is constantly evolving but aims to create internationally recognised minimum data set to be used across e-mental health projects to ensure comparability:

Measure	Instrument	Reference
Demographics	Young and Well National Survey	Based on ABS, headspace and beyondblue community surveys. Gender and sexuality questions developed with National GBLTI Health Alliance.
Mental Health	Kessler 10	Kessler RC, Barker PR, Colpe LJ, Epstein JF, Gfroerer JC, Hiripi E, et al. Screening for serious mental illness in the general population. Arch Gen Psychiatry. 2003 Feb; 60(2): 184-9.
Wellbeing	The brief 14-item version of the Mental Health Continuum – Short Form (MHC-SF)	Lamers, S., G. J. Westerhof, et al. (2011). "Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF)." Journal of clinical psychology 67(1): 99-110
	The Oxford Happiness Questionnaire: a compact scale for the measurement or psychological well-being.	Hills, P., & Argyle, M. (2002) The Oxford Happiness Questionnaire: a compact scale for the measurement or psychological well-being. Personality and Individual Differences, 33: 1073 - 1082.
Technology Use		Developed by Young and Well CRC working group; Adapted from Young and Well CRC National Survey and EU Kids Online survey



1.5.4 THE SHIFT TO INNOVATIVE FUNDING MODELS

The government context

Investment in e-mental health has decreased in recent years, from \$70.4 million from 2006-2012, to \$15.4 million for 2012-2015. This represents a 56% drop, which is at odds with the evidence around the uptake of technology and economies of scale in terms of service provision.

While specific organisations have received continuing financial support for the development of mental health infrastructure for example, headspace (10 new face-to-face bricks and mortar centres) and Orygen Centre of Excellence for Youth Mental Health (\$18 million), the Young and Well CRC (\$5 million for Project Synergy) is the only organisation to receive funding solely dedicated to e-mental health. The overarching result of this changed environment is that the funding envelope is shrinking, despite clear evidence of increasing demand and burden of disease. This is an unfortunate but reversible situation.

This articulates a policy view that goes beyond 'doing more with less' or shifting the burden to 'individual giving'. This is a hard shove towards innovation in sector funding, and the message is that the drivers for this innovation cannot come from government alone.

There are two levels of dialogue about funding innovation. What is common to both is the need to shift the system (be it e-mental health, Mental Health Services, or Health Services) from treatment to prevention and to do this the approach must move from being system-centric to being individual-centric.

The first level for fundamental reform is not new. There is merit in the arguments for micro economic policy to fundamentally facilitate the shift to being person-centric. Focusing on prevention will encourage people, practitioners, insurers and other stakeholders to move into the territory of prevention over care. An interesting position on this reform is provided in the Business Council of Australia's (2011) paper titled "Using microeconomic reform to deliver patient-centred health care".

The Productivity Commission articulated a number of microeconomic reforms that, like the reforms of the 1990s, led to a fundamental shift in productivity in other sectors. The mental health care sector is also in need of such reform. At their core is the need to move away from a system that rewards activity for managing illness and helping sick people get better, towards a system that keeps people mentally healthy and well.

The second level is an allocation dialogue, which is about creating effective and cost effective methods for individuals to take control of their own wellbeing and in doing so shift not only the quantum of demand but also move the less complex issues out of the clinic onto platforms well suited to them, freeing premium clinical space for those with complex issues.

The key to this second dialogue is to mobilise sophisticated commercial models to speed the development of innovative interventions and distribute them. Given the scope of this paper, the focus will be on the second level dialogue.



Some of the innovative actions taking place with regards to funding include:

Categories	Sub Categories	Examples that can be leveraged
Structural Funding	PPP	The 2003 'Second National Mental Health Plan' was developed with an understanding that the relationship between public mental health services and the private mental health sector is one of the key partnerships in service reform and delivery
	Leveraged Funds	 Young and Well CRC: Young People, Technology and Wellbeing Hearing CRC: Cochlear Implants Vision CRC: Soft Contact Lenses
	Social Impact Bonds	- Uniting Care in NSW keeping children out of foster care achieved a 7.5% yield ROI due to cost savings
Transactional Funding	Freemium	The headspace meditation app offers a free introductory ten-week: 'Take10'. If the user has enjoyed the content then they have the option to take advantage of the full program where they have access to a wide range of resources.
	Incentives	The Medicare Benefits Scheme (MBS) and Pharmaceutical Benefits Scheme (PBS) reward Medical Practioners and subside patients on a per service basis, encouraging uptake of these services.
	Micropayments	- In the same way that many mental health apps have begun to 'game-ify' the way their content is presented – users earn badges and climb levels – the example model of popular app 'Candy Crush Saga' could be leveraged. In this mobile application, users are given 3 chances to fail, once they do the game will not allow them to progress unless they wait 48hrs or give a micropayment of \$0.99 to continue immediately.
	Data Monetisation	Weatherzone is a premium service for the provision of weather information. It aggregates data supplied by the Australian Bureau of Meteorology and converts this data into a premium product by making it computer ready, providing bespoke forecasts and TV or web ready graphics.
Results Based Funding	SROI	- An SROI analysis undertaken by the social enterprise STREAT allowed the organisation to capture data that measured which of their initiatives were providing value and those that weren't as effective. Additionally, this analysis allowed the organisation to provide consistent measures of the expected impact and value of their activities for stakeholders such as investors.

A challenge to many of these models is shifting practitioner perspectives around e-mental health interventions. Anecdotal evidence suggest their primary concern about prescribing such interventions are around questions of:

- Evidence base
- · Misdiagnosis or misdirection
- Privacy of data collected or maintained within the technologies

Interestingly, Digitas Health surveyed 2,000 patients with 20 different cardiac, gastrointestinal, and respiratory diseases as well as CNS and diabetes conditions and found that a staggering 90 percent of chronic patients in the US would accept a mobile app prescription from their physician, as opposed to only 66 percent willing to accept a prescription of medication, according to a recent survey from health communications firm Digitas Health (Cohen, 2013).

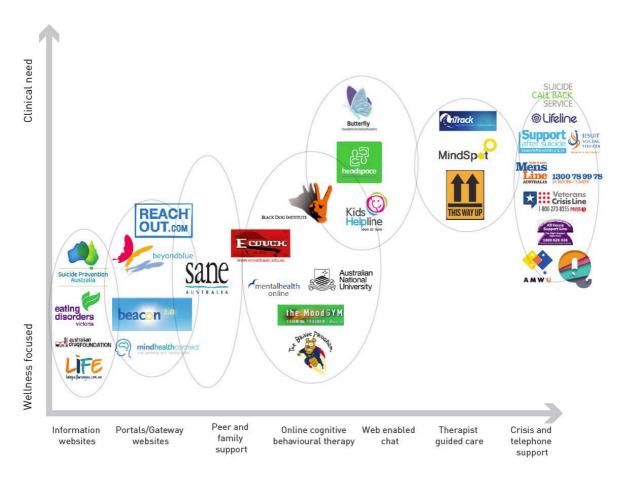


2. The current e-mental health landscape

2.1 SNAPSHOT OF THE CURRENT E-MENTAL HEALTH OFFERINGS IN AUSTRALIA

The diagram below maps key examples of e-mental health offerings in Australia:

Figure 8: Illustrative examples of the current e-mental health landscape in Australia



There is no doubt that there is duplication and wastage within the mental health system and a less than optimal approach to providing the right help at the right time. The diagram above is a graphical depiction of the brands, resources and online supports available to the Australian consumer. The private sector is also entering the e-Mental health space, e.g. Medibank, Telstra Health and Bupa. Using categories on the x-axis above, these private sector participants are active in: Information Websites, Portals, Web Enabled Chat and Crisis and Telephone Support. In terms of the y-axis, they are focused on Clinical Need rather than Wellness, so would skate across the top of the diagram. This picture does not include international offerings (BigWhiteWall and headspace.com). Also missing from the diagram are state and local level offerings. To add further to the complicated landscape is 'scope creep' where organisations have sought and gained funding, which may not be a part of their national remit. Organisations have diversified but it has been ad hoc, without strategy and without a unified approach to creating an integrated system of mental health care, which includes emental health as a core component.



The service sector is unanimous in its commitment to work in a united, coordinated and collaborative way. That said, they also raised areas of concern that worked against the sector uniting under one common agenda or vision for the future:

- Funding cycles are short (2-4 years) and uncertainty without backbone support breeds duplication, waste and competition;
- Federal and State systems are not aligned which creates fracture and segmentation, specifically in relation to providing wraparound care for people and their families (based on interview feedback);
- The current funding model is heavily weighted towards illness and medical models of care; distribution of funding should be tailored to suit a public health approach (based on interview feedback).

This next diagram aligns to the previous map, however aims to contrast the areas of e-mental health in Australia that have some duplication against those that have gaps (as per data collected, see Appendix 1):

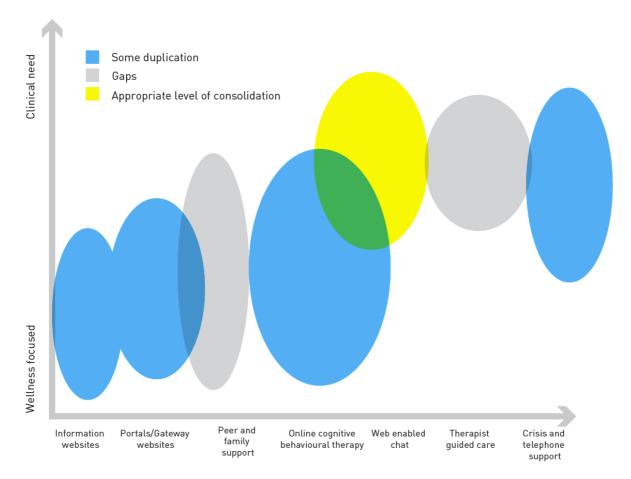


Figure 9: Areas of gaps and duplication in e-mental health in Australia

At a simple level, areas of duplication includes:

- The provision of 'information only', this duplication can be seen across federal and state information websites, within and between departments and specifically in relation to simple things like fact sheets, as demonstrated from the data collected through this engagement (Appendix 1). A data bank, or content management system that collated all material and made it available across syndicates would address this issue (in the same way media is syndicated and shared);
- Gateway services have a clear role to play in building community, reducing stigma and enhancing clear
 pathways to care between services. That said duplication of effort exists across major Gateway Services
 including beyondblue with 2.5 million unique users each year, ReachOut.com with 1.5 million unique users each
 year and eheadspace with 1.2 million unique users each year. Coordination of effort and clear delineation of
 roles would significantly enhance pathways to care across the three major sites;



- Crisis support services such as Lifeline and Kids Helpline, similarly provide call services that reach 820,000 and
 250,000 callers every year. Duplication occurs with other providers such as beyondblue and eheadspace but
 simple coordination of effort and agreed protocols for referrals, warm transfer and call back would address
 pathway challenges while protocol training for front-line staff regarding e-mental health resources and
 consistent and shared help seeker information would address this;
- Online therapy, both self-directed and therapist-guided, is lacking coordination. As the Beacon portal showcases, psychoeduction, online therapy and support groups cover 40 core topic areas, however this has not been comprehensively mapped into an ecosystem of care, with consideration given to data sharing, technology standards and common protocols:
- A significant gap, and one that the sector is keen to support is the role of peer-to-peer and family support
 forums (see Appendix 1). This area is being led by SANE and reachout.com and with leadership across the
 sector could easily be embedded into current service offerings such as web-enabled chat, online counselling
 and information sites.
- The role of Mindhealthconnect is not clear. This was reflected by comments from service providers. From an evidence informed perspective when considering reach in 2014 Mindhealthconnect funnelled 100,088 visits to information partners; approximately 14 percent went to beyondblue, 12 percent to Mentalhealthonline, 11 percent to reachout.com. For beyondblue given they have 2.5 million unique users this is less that .006 percent of their user base and creates an additional layer of complexity for the consumer. The recommendation is to cease funding this initiative and reallocate funds elsewhere as this is providing a duplicative, ineffective service.

Common and shared views on the way forward arising from sector interviews, include the following:

- The building blocks are in place and the sector has a united and shared vision which includes common standards and protocols, data capture and data sharing;
- More work needs to be done to ensure integration with face-to-face offerings;
- More work needs to be done to create relevant resource for vulnerable populations including men, rural regional remote, people who are indigenous, NESB or living with a disability;
- Leadership can be garnered in specific areas and tighter commitment given to a reduction in duplication which
 can be addressed by building an ecosystem of e-mental health care;
- Significant investment has positioned Australia as a world leader and innovator in e-mental health; this
 infrastructure and focus on R&D and rapid prototyping should not be lost;
- Sustainability and certainty of funding is a core element in moving from start-up to sustainability and the sector
 has a keen interest in leveraging funds and building models that showcase the role of government, NGO,
 University, Industry together;
- Consumer choice is critical, a reduction in duplication can be achieved with greater co-ordination of 'behind the scenes' systems, this maintains and continues to provide choice to consumers and ensures greater allocation of funds to innovation and R&D; and
- Data capture is critical for consumers, service providers, government and policy makers. If managed with the
 consumers needs in mind it will be empowering, seamless in its integration, reduce the need to tell the story
 numerous times and provide service makers with a clear way to improve service offerings and work towards
 efficiency in provision of service and better outcomes for the consumer.



2.2 DEFINITIONS

e-health – "The cost-effective and secure use of information and communication technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research." (World Health Organization, 2005)

Electronic health records – "An electronic longitudinal collection of personal health information usually based on the individual, entered or accepted by healthcare providers, which can be distributed over a number of sites or aggregated at a particular source. The information is organised primarily to support continuing, efficient and quality healthcare. The record is under the control of the consumer and is stored and transmitted securely." (National E-Health Transition Authority, 2008)

e-learning – "e-learning services comprise education and training in electronic form for health professionals. e-learning can improve the quality of education, increase access where learning resources are unavailable, or use new forms of learning." (WHO, 2012)

e-mental health – "...that form of e-health concerned with mental health... e-mental health services provide treatment and support to people with mental health disorders through telephone, mobile phone, computer and online applications, and can range from the provision of information, peer support services, virtual applications and games, through to real time interaction with trained clinicians." (Australian Government, 2012)

m-health - Describes services and information provided through mobile technology, such as mobile phones, portable computers. It may include data collection; real-time monitoring of patients; treatment support, health advice and medication compliance; health information and education programs to patients, practitioners and researchers; and diagnostic and treatment support and communication for healthcare workers.

Personally Controlled Electronic Health Records (PCEHR) - The PCEHR is a component of the Australian Government's e-health reform agenda, which commenced in July 2012. The system is designed to enable the secure sharing of health information between an individual's healthcare providers, with the individual controlling who can access their e-health record.

Social media / **Web 2.0** – "An interactive, participatory and collective approach that encourages self-expression and the building of online communities" (Burns et al., 2010b). Social media may be used to promote e-mental health programs, or it be a component of an e-mental health program

Telemedicine / telepsychiatry – "The delivery of health care services (where distance is a critical factor) by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities." (WHO, 2012)



2.3 A BRIEF HISTORY OF E-MENTAL HEALTH IN AUSTRALIA

The notion of e-mental health has evolved over time, from telehealth and online portals for storing data, to the holistic concept where technologies are used in an integrated manner for the improvement of mental health and wellbeing.

Often when discussing e-mental health, an assumption is made that e-mental health is simply 'telemedicine', a term coined in the 1970's literally meaning "healing at a distance", with its purpose to overcome geographical barriers to provide clinical support using various types of technologies to improve health. Another common assumption is that e-mental health is the Commonwealth Government's eHealth Record System, introduced in 2012 as a personally controlled, secure online summary of health information, allowing patients to share health information with healthcare providers (see Chapter 7).

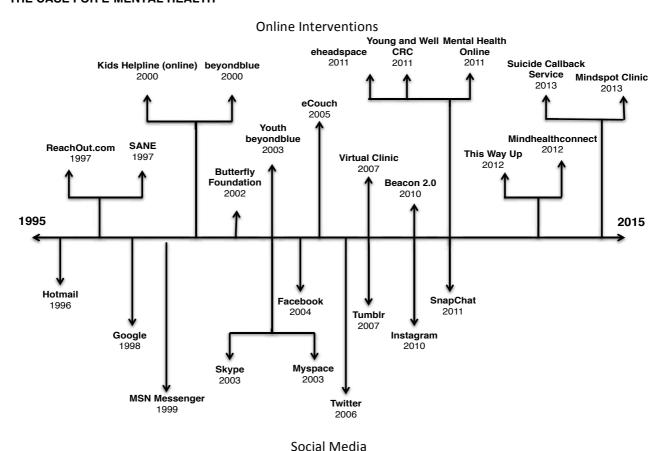
While both telemedicine and eHealth Records are important elements of e-mental health, the first major policy document was written over a decade ago 'e-mental health in Australia: Implications of the Internet and Related Technologies for Policy (Christensen et al., 2002)' — where the term 'e-mental health' was used to refer to mental health services and information delivered or enhanced through the internet and related technologies.

Major involvement from Government includes the Telephone Counselling, Self Help and Web-based Support Programme, established in 2006 and the e-mental health Strategy for Australia, announced in 2012.

The diagram below provides a brief overview of the major developments in online interventions mapped against the development of social networking services, to provide the context relating to technology innovation.

Figure 10: Overview of major developments of online interventions In Australia and social media

THE CASE FOR E-MENTAL HEALTH





The opportunities of e-mental health are typically framed in two areas:

- 1. The potential for efficiencies and greater value for investment in terms of reach and access
- 2. The potential to improve outcomes through enhancing access and self-efficacy

For example, a recent briefing paper from the NHS (2013) captures this dual focus:

"Digital technology has revolutionised the way we conduct our everyday lives. The expectations service users and their families have of mental health services, and how they interact with them, are also changing rapidly... [it] could help us address resource challenges... and also has the potential to support cultural transformation and a move towards a social model of health, by empowering service users to exercise greater choice and control and to manage their own conditions more effectively."

Similarly a rapid review of the e-mental health literature (Lal, 2014) concluded:

"Many believe that e-mental health has enormous potential to address the gap between the identified need for services and the limited capacity and resources to provide conventional treatment. Strengths of e-mental health initiatives noted in the literature include improved accessibility, reduced costs (although start-up and research and development costs are necessary), flexibility in terms of standardization and personalisation, interactivity, and consumer engagement".

Within the Australian context the discourse is consistent, for example (Christensen and Hickie, 2010b):

"If we are to substantially reduce burden we need to develop more accessible, empowering, and sustainable models of care. E-health technologies have specific efficiencies & advantages in the domains of promotion, prevention, early intervention, and prolonged treatment. It is timely to use the best features of these technologies to start to build a more responsive & efficient mental health care system".

In 2010 and again in 2014, many individuals across the NGO and University sector united to write recommendations for considering the use of technologies in mental health service delivery. The arguments are simple, but are worth restating:

- E-mental health services enable consumers confidential, flexible access to services through preferred methods
 of contact, i.e. contact can be made from home, at all hours of the day, and in ways that do not require
 disclosure to friends or family members. Immediacy of access is especially important for delivery of services to
 people from rural and remote locations, and this feature will have substantially increased impact as broadband
 becomes universally available.
- Access at low cost and in flexible, non-stigmatising ways is particularly important for people with highprevalence, low-severity disorders, who are over-represented in the group who currently are not receiving treatment.
- E-mental health services can also be used as an adjunct to face-to-face treatment or as a guide for treatment sessions, ensuring high fidelity, evidence-based care, and building the capacity of practitioners.
- E-mental health services can reach consumers in rural, regional and remote locations who are often severely under-served.

Potential stakeholder benefits related to e-mental health can be summarised as follows:

Individuals:

- Overcome the traditional barriers to access mental health services (for example, the stigma, cost, geographical location, transport difficulties, social isolation, a lack of services)
- Provide immediate, convenient and flexible services which will be aided by the rollout of the National Broadband Network
- · Deliver confidential care
- Provide easy access to personally controlled care
- Empower people to choose care that meets their needs, and enable them to set the pace of their care and journey to recovery
- Provide treatment for people experiencing multiple mental health conditions
- · Deliver high-quality care that is in line with best practice guidelines.



Health professionals:

- · Reduced demands on the mental health workforce
- Ensures that clinicians utilise their skills for more complex care
- · Effectiveness and efficiency of face-to-face services may also be improved by e-mental health services
- Potential provision of a pathway to face-to-face care (and therefore reducing the reliance on crisis services)
- · Can potentially use e-mental health interventions as an adjunct to face-to-face treatment
- · Refer to e-learning tools and the availability of clinical practice guidelines
- Enjoy improved access to professional education and support resources.

Governments, and the broader community:

- Efficiency of this mode of service delivery.
- Reduction in inequities in health, by targeting population groups that currently do not receive treatment, and may most benefit from services.
- Improved population health planning and service delivery as a result of online data collection and information management
- Implementation support of a public health intervention on a mass scale.

2.4 CURRENT TYPES OF E-MENTAL HEALTH SERVICES IN AUSTRALIA

E-mental health programs or services have expanded rapidly in the past decade, and have been developed for virtually every component of conventional mental health services. The diagram below outlines the broad types of e-mental health (Christensen 2003; Taylor 2003; Ybarra 2005).

Figure 11: Types of e-mental health offerings in Australia





The following examples provide illustrations of such offerings in Australia.

2.4.1 INFORMATION PROVISION

The provision of mental health information is a foundational type of E-mental health. Typically these e-mental health initiatives are websites of 'static information' – that is, information that only web administrators can create, edit, delete and publish to the website.

Mental Health Australia

mhaustralia.org

A national non-governmental organisation founded to represent and promote the Mental Health sector in Australia. They provide factsheets, promote research around issues in Mental Health and publish articles from experts in the field.

Mental Health Association of NSW

mentalhealth.asn.au/programs

They are primarily focused on the provision of mental health information and running anxiety and health promotion programs within NSW, including co-ordinating Mental Health Month NSW, seminars, projects and public forums.

Victorian Transcultural Mental Health

vtmh.org.au

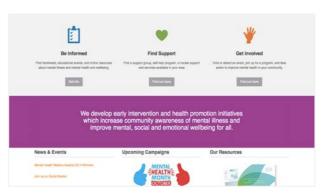
The VTMH is a statewide unit which supports area mental health and psychiatric disability support services in working with culturally and linguistically diverse (CALD) consumers and carers throughout Victoria. They provide education and professional development, aggregation of services (interpreters, and so on) and seminars.

Australian Department of Health

health.gov.au

This national, government website gives users access to information for a wide range of issues, across health professions. It provides aims to promote, develop and fund health care services for the Australian. Additionally the ADH provides public information on grants, links to online intervention resources, and health information and assurance for inbound and outbound travellers.











2.4.2 GATEWAY SERVICES

There are a number of gateway services that relate to health promotion, wellness promotion and psycho-education, which include:

Beacon

beacon.anu.edu.au



Beacon is a website application that assigns ratings that assess the scientific merit of existing mental health programs and provides users with information on which programs have been shown to be most effective.

Mindhealthconnect

minhealthconnect.org.au

A source of mental health and wellbeing information, online programs, helplines and news on developments in the mental health sector. It also serves as an aggregator providing access to trusted mental health resources from the leading mental health providers in Australia, allowing users to make informed choices about their own mental health.



Bluepages

bluepages.anu.edu.au



BluePages provides information on treatments for depression based on the latest scientific evidence. It also offers screening tests and quizzes for depression and anxiety, and links to other helpful resources.

ReachOut.com

au.reachout.com

ReachOut.com is one of Australia's leading online youth mental health services, targeting the under 25 age group with areas across motivation, depression, health, sexual health and sexual orientation amongst others. The organisation provides factsheets, stories, videos, guides, tools and apps to help educate their audience. Additionally their is a reachout.com forum to allow users to connect with other young people, chat to experts and share their tips for health and wellbeing





2.4.3 SCREENING AND ASSESSMENT

Screening and assessment tools have been available for many years on stand-alone computers. More recent developments are internet-based screening and assessment tools for broader access by individuals for self-assessment and for use by professionals in specific settings (for example, primary care).

Mental Health Online

mentalhealthonline.org.au

Mental Health Online (formerly Anxiety Online) is an internet-based treatment clinic for people with mental health problems. It is an initiative of the National eTherapy Centre (NeTC) at Swinburne University of Technology. The organisation focuses on clinical assessment, publicly accessible treatment programs that can be self-help or therapist-assisted and research trials to improve approaches in the mental health sector.

Turning Point

turningpoint.org.au

Turning Point Alcohol & Drug Centre was established in 1994 to 'provide leadership to the alcohol and drug field in Victoria'. They provide online self-assessment for individuals who may be affected, educational materials, undertake research and provide access to other resources in similar fields.

The Butterfly Foundation

thebutterflyfoundation.org.au

The Butterfly Foundation is an organisation dedicated to bringing about change to policy and practice in the prevention, treatment and support of those affected by eating disorders and negative body image. They provide depression self-testing, temperament and personality tests and wellbeing questionnaires.

2.4.4 SOCIAL SUPPORT

Social support includes discussion groups, forums bulletin boards, chat rooms, blogs, and social media.

These sites are mainly established by service users and provide peer based support, information and advice based on:

- Diagnoses depression, mood, anxiety, psychosis, eating disorders, and so on.
- Help-seeking options services, self-help, medication, therapies, and so on.
- Key issues stigma, employment, housing, social exclusion, human rights, and so on.

SANE Australia

sane.org

SANE Australia has a mission 'to help all Australians affected by mental illness lead a better life'. They support this in three ways: Education, Support and Training. Educational resources include Guidebooks and ebooks, Factsheets, podcasts, videos, Guidelines for health professionals and a magazine. All resources are available online in digital and print format. Additionally they also provide live cha support, and online forum support.











ReachOut.com and BluePages (both previously featured)

2.4.5 PREVENTION AND EARLY INTERVENTION

E-mental health interventions can have the following variables:

- Stage promotion, prevention, early intervention, treatment, maintenance, relapse prevention
- Structure service user led or professional/therapist led I individual or group
- Relationship professional/therapist with service user or between service users
- Therapy modality cognitive behavioural, problem solving, psycho-education, and so on
- Role primary intervention or adjunct to conventional intervention

BITE BACK

biteback.org.au

BITE BACK is a program run by Black Dog Institute, aimed at promoting mental health through community forums and blogging that share personal stories, educational videos and interviews of thought-leaders. The program provides resources to allow young adults to check and track their 'mental fitness' via quizzes and its mission is to promote self-esteem, creativity and individuality.



Climate Schools

climateschools.com.au

Climate Schools Australia provides health and wellbeing courses that are a mix of online cartoon scenarios and activities targeting school-based prevention of bullying and mental ill-health.



Mind Matters

mindmatters.edu.au

MindMatters aim to support secondary schools to promote and protect student mental health. They utilise a framework of tools and modules that aims to promote mental health, prevent problems and enable early intervention.





2.4.6 COGNITIVE BEHAVIOUR THERAPY ONLINE

There is a high prevalence of online CBT programs available in Australia, as demonstrated by the following examples:

e-Hub & MoodGym, Australian National University ehub.anu.edu.au

The e-Hub is a portal of e-mental health options with MoodGym providing a depression prevention intervention. It consists of five modules based on cognitive behavioural therapy and includes an interactive game, assessment and feedback, workbook and relaxation audio content.

MoodGym is an innovative, interactive web program designed to enable users to learn cognitive behaviour therapy skills for preventing and coping with depression. It consists of five modules, an interactive game, anxiety and depression assessments, downloadable relaxation audio, a workbook and feedback assessment.



THIS WAY UP

thiswayup.org.au

Online treatment, education and research in anxiety and depression. They provide an online clinician assisted treatment program and provide information and technical training for clinicians. Additionally there is a self-help program with guides to common mental disorders, psychological strategies and outcome measures. An internet-based learning system that provides health and wellbeing courses for school students is also available.



MindSpot Clinic mindspot.org.au

Online assessment and treatment for anxiety and depression. Services can be accessed online or via telephone for free and they also provide education and four to six week courses with access to a MindSpot clinical resource.



Brave Online

brave.psy.uq.edu.au

Internet-based cognitive behavioural treatment for anxious young people. Targeted at children (aged 7 to 12) and teenagers (aged 13 to 17).





2.4.7 WEB ENABLED CHAT

A few services in Australia also offer live, web-enabled chat for people to interact with a professional e.g. instant messaging, forums etc.

eheadspace

eheadspace.org.au

A confidential, free and secure space where young people can talk, email or speak on the phone with qualified youth e-mental health professionals. Family members are also able to utilise this service for relations who are 12 to 25 and are beginning to become a concern with regards to their mental health.



QLife

qlife.org.au

QLife is Australia's first nationally-oriented counselling and referral service for people of diverse sex, genders and Intersex (LGBTI) people. QLife is an initiative of the Department of Health's Teleweb project. Whilst keeping a focus on telephone-based counselling they also focus on web chat and internet forum interaction.



Kids Helpline

kidshelp.com.au

Kids Helpline is a free, private and confidential telephone and online counselling service specifically for young people aged between 5 and 25.



Lifeline Crisis Support

lifeline.org.au

Lifeline is a national charity providing all Australians experiencing a personal crisis with access to 24-hour crisis support and suicide prevention services. They also produce and publish social policy submissions and reports, caller profile reports, and research reports.

Butterfly Foundation (previously featured)





2.4.8 TELEPHONE SUPPORT

A range of support lines are established, many relating to suicide support, pre and post incident.

Support After Suicide

supportaftersuicide.org.au

A service to allow users to connect and interact with others who are also learning how to live with losing a loved one. They provide information and resources, and have counselling and group support directly for those bereaved by suicide, as well as education and professional development to health, welfare and education professionals.



Suicide Call Back Service

suicideprevention.com.au

The aim of this service is to provide telephone counselling to people aged over 15 years. This service caters to those experiencing suicidality themselves, but also to carers, people bereaved by suicide and professionals that are caring for people affected by suicide. The Suicide Call Back Service provides immediate telephone counselling, but also up to six additional counselling sessions with the same counsellor, scheduled at a time that suits the needs of the caller.

AMWU Workers' Union

amwu.org.au

AMWU Care is a free professional counselling service available to Australian Manufacturing Welfare Union members and their families 24 hours a day, seven days a week.

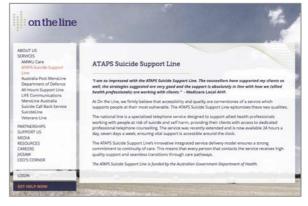
1300 659 467 Twenty-four hours a day seven days a week Emergency About Us News & Resources Support Us Contact I am feeling suicidal I am worried about someone Speak to a counsellor



ATAPS Suicide Support Line

ontheline.org.au/services/ataps-suicide-support-line

The ATAPS suicide support line is a specialised telephone service designed to support allied health professionals working with people at risk of suicide and self-harm. This allows individuals to provide their clients with access to dedicated professional telephone counselling. The service is available 24 hours a day, seven days a week.





Australia Post MensLine

mensline.org.au

Australia Post funds a dedicated support service, Australia Post MensLine, as an integral part of their corporate health and wellbeing program. The telephone counselling service provides anonymous, confidential support for Australia Post employees. Australia Post MensLine supports staff by promoting work-life balance, and healthy work and family relationships. The service is available nationally 24/7.



Department of Defence Triage Line

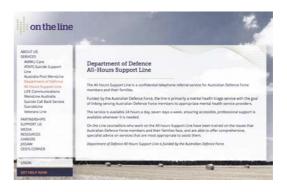
ontheline.org.au/services/department-of-defence-all-hours-support-line

The All Hours Support Line is a confidential telephone referral service for Australian Defence Force members and their families. Funded by the Australian Defence Force, the line is primarily a mental health triage service with the goal of linking serving Australian Defence Force members to appropriate mental health service providers. The service is available 24 hours a day, seven days a week, ensuring accessible, professional support is available whenever it is needed.

Veteransline

vvcs.gov.au/services/veterans-line.htm

Veterans Line provides free, professional, tailored support to Australian veterans of war and peacekeeping operations and their families. As the after-hours component of the Veterans and Veterans Families Counselling Service (VVCS), Veterans Line ensures 24/7 service provision for veterans and their families.





2.4.9 RECOVERY AND MUTUAL SUPPORT

BlueBoard

blueboard.anu.edu.au

BlueBoard is an online forum-based community for people experiencing depression or anxiety, their friends and carers, and for those who are concerned that they may have depression or anxiety and want some support. We hope that this bulletin board will enable people to reach out and both offer and receive help.





2.5 POSITION

Old thinking is about creating a single gateway to resources and pushing traffic to that gateway. New thinking is about embedding access to resources, not via one gateway, but rather within the online settings in which people spend time.

Therefore, an effective and viable frontline response is about being able to serve people in whatever setting at whatever time. Given that technology is ubiquitous, it is more than capable of facilitating access to these resources in these settings, therefore e-mental health stands as a viable frontline response.

The COAG National Action Plan on Mental Health (COAG, 2006) determined that 20 percent of the population suffers from mental illness (9-12 percent live with a mild illness, 4-6 percent moderate and the remaining 2-3 percent a severe). While there have been many attempts at sizing the cost and burden of mental illness (Degney et al., 2012, Butterfly Foundation, 2012, Medibank Health Solutions and Nous Group, 2013), none of these have adopted a holistic perspective that encompass the dollar benefit of wellbeing as it relates to a defrayment of mental healthcare costs.

This chapter demonstrates that the current landscape is one of numerous, uncoordinated e-mental components that do not work together as a single frontline response or as an easily navigable ecosystem of tools for self-management, assessment and care.

Looking forward, in order for e-mental health to live up to its potential as a core component and leverage its comparative advantage of cheaper reach, it must become an integrated system of care and the lead modality for frontline response and early stage self management. In order to do this the online landscape must be led towards a coordinated and integrated ecosystem that makes it simpler for consumers to access resources, manage their own care and access care when needed.

This coordination and integration is best effected not through direct control but rather through a framework of standards, integrations and sustainable business models that enable participants in this landscape to develop interventions.

Where today there is a growing body of uncoordinated technologies, tomorrow there must be a core ecosystem of technologies that work together and share data. Where today there is confusion as to where to go for help, tomorrow there must be clear gateways that guide, assess and direct consumers. Where today there is narrow specific funding of focused technologies, tomorrow there must be elimination of duplication and rigor in investment into the e-mental health landscape.

As a frontline and assessment toolkit, e-mental health provides an excellent opportunity to increase reach at a low marginal costs and efficiently reallocated cases to the modality that best balances expertise required, cost to society and the individual needs of the consumer. Whilst we do not expect e-mental health frontline programs to reduce the cost of the system overall, we do expect to gain greater value from the system.

As an early intervention or self management modality, e-mental health not only renders good Return on Investment (ROI) it also delivers Social Return on Investment (SROI) as it presents the opportunity to deliver services to more people (its reach to rural and remote is a clear example) in the prevention and early stages and keeping them as productive members of society for as long as possible.

It is the position of this chapter that:

- 1. The total demand for mental health information and services outstrips supply.
- 2. Highly valuable clinical resources are being used to service conditions that could be self-managed.
- 3. There are proven resources available to help reduce the progression to mental ill health.
- 4. Increasing severity of conditions may be reduced through the introduction of self-managed care in between face-to-face sessions.
- 5. There are some segments of demand that are not reachable by clinics, be they rural or remote, or vulnerable populations.
- 6. Increasing capacity of the existing system for frontline and early stages is a flawed approach to addressing the increasing demand for mental health services.



2.6 MINOR RECOMMENDATIONS

- 1. Arrange and position all interventions in an ecosystem, so as to help people progress seamlessly through the system, and prevent any individual getting "stuck" at one point.
- 2. Coordinate and enable the e-mental health landscape through the development of a national e-mental health framework of standards and APIs. Such a framework is intended not to direct activity but rather enable e-mental health participants to develop resources that add to the system of care and exchange data seamlessly.
- 3. Augment the national framework mentioned above with an approach to sustainable business models for use by commissioners of e-mental health technology so as to ensure the ongoing viability of the initiatives beyond their initial funding timelines. Without this unsustainable e-mental health components may require open-ended public funding or be decommissioned, leaving gaps in the system.
- 4. Develop a national e-mental health register of e-mental health resources, so as enable funders to eliminate waste and functional duplication, and enable e-mental health participants to re-use existing interventions before developing duplicative ones. This would be populated through self-reporting, which is linked to funding.
- 5. Develop and promote a 'tick' or 'certification' advertised through a 'powered by' branding in order to give consumers clear direction and access, as well as confidence in e-mental health components. This should be promoted and displayed on all gateways and interventions. Key to achieving this 'tick' would be the requirement to demonstrate that the intervention is evidence-based and can interoperate with other e-mental health interventions.
- 6. Public funders of e-mental health interventions to require of their investees that all products adhere to the above mentioned national framework; be developed in an open source manner, add to the system of care and do not duplicate existing services.

2.7 SUPPORTING MATERIAL

2.7.1 CURRENT RESEARCH

A fundamental challenge for e-mental health is establishing the evidence for these opportunities at the same pace as the rhetoric around potential opportunities.

The strengths and concerns around e-mental health are summarised by a recent rapid review by Lal & Adair (2014) that covered 115 e-mental health articles published between 2000 and 2010, of which 51 percent were primary empirical studies, and of this 22 percent were Australian.

Strengths	Concerns
Improved accessibility	Potential lack of quality control and standards
Reduced costs, following start-up R&D costs	Ethical and liability issues
Flexibility in terms of standardisation and personalisation	Reluctance among some healthcare professionals / "technological phobia"
Interactivity and consumer engagement	Worries that conventional services could be completely replaced



Considered especially promising for:	Some question the ability of professionals to establish
Rural populations	therapeutic relationships online and the feasibility of online treatment for certain population groups (e.g. patients with severe depression).
Individuals with barriers to access	patients with severe depression).
People afraid of stigma	
Youth	

When considering the evidence presented for this table, particularly in view of the federal focus of this review, it is important to consider Lal & Adair's (2014) comment that:

"Most of the literature reviewed described the development, implementation, and evaluation of single interventions in isolation. One very important question that has been given limited attention is how e-mental health interventions might best be situated in relation to an array of related services for a broad population". The recent briefing paper for the Mental Health Commission of Canada (2014) also emphasises the importance of integration

"Integrated properly, E-mental health is proving to be just as effective as face-to-face services ... will result in more people getting help [and] also improve the quality of care we deliver, reduce costs, and overcome challenges that are present in our current health care system".

Evidence to support the use of technologies for promotion and prevention in the Australian context includes:

- Strengths and concerns around e-mental health are summarised by a recent rapid review by Lal & Adair (2014) that covered 115 e-mental health articles published between 2000 and 2010, of which 51 percent were primary empirical studies, and of this 22 percent were Australian.
- The recent briefing paper for the Mental Health Commission of Canada (2014) emphasises the importance of integration "Integrated properly, E-mental health is proving to be just as effective as face-to-face services... will this result in more people getting help [and] also improve the quality of care we deliver, reduce costs, and overcome challenges that are present in our current health care system".
- Good evidence exists that technologies can be used effectively in improving mental health and wellbeing (Cuijpers et al., 2008, Griffiths et al., 2010c), especially among young people (Christensen and Hickie, 2010b).
- An evidence-based literature review of over 50 studies examining young people's use of social networking showed significant benefits to young people's mental health, including: delivering educational outcomes; facilitating supportive relationships; identity formation; and, promoting a sense of belonging and self-esteem. Collin et al. further argue that the "...strong sense of community and belonging fostered by SNS (social networking services) has the potential to promote resilience, which helps young people to successfully adapt to change and stressful events" (Collin et al., 2011).
- For those wishing to improve their overall wellbeing, technologies can assist in promoting social inclusion, access to material resources and freedom from discrimination and violence (Burns et al., 2009)
- A very recent 2014 study by van der Krieke and colleagues, 'e-mental health Self-Management for Psychotic Disorders: State of the Art and Future Perspectives' (van der Krieke, 2014) found suggest that e-mental health services are at least as effective as usual care or non technological approaches.



2.7.2 EARLY INTERVENTION, ENHANCED SELF-MANAGEMENT AND SECONDARY PREVENTION STRATEGIES

E-mental health arguably makes the greatest impact in early intervention self-management and secondary prevention. The goals of these strategies are not simply the reduction in immediate symptoms of distress but also a broader range of more profound impacts including:

- Supporting ongoing participation in education and employment;
- Enhancing participation in relevant social networks and supporting age-appropriate social development;
- · Reducing the risks of self-harm and suicidal behaviour;
- Reducing the risks of poor physical health through direct modification of relevant co-morbid risk factors such as
 tobacco and cannabis smoking, as well as other lifestyle modifications such as enhanced physical activity,
 management of appropriate eating behaviour and support for development of appropriate sleep-wake cycles;
- Secondary prevention of development of alcohol and other substance misuse disorders.

This focus on earlier intervention during the teenage years has raised many conceptual, ethical and health service challenges. From an illness-onset and treatment perspective, it requires active identification of disorders before they necessarily reach current diagnostic thresholds — which in turn guide treatment selection. From an ethical perspective, they raise questions about choice of treatment and potential exposure to harm associated with over-diagnosis, premature medicalisation, of distress or over treatment.

From a health services perspective, traditional primary care services, and particularly those based in typical general practice settings — see (Hickie et al., 2001) — have had the least engagement with the mental health concerns of young people. Repeated mental health surveys in Australia have indicated the lack of progress between 1997 and 2007 in attracting young people with mental disorders to healthcare — with only 16 percent of males under the age of 25 with a mental disorder, and 30% of females, receiving professional assistance. This is despite the fact that young people themselves increasingly recognise the importance of mental health problems emerging at this stage of life — and are increasingly likely to seek help from peers, family and the internet (Burns et al., 2010b).

In response to recognition of the gap between the need for care and the use of traditional primary care services in Australia, the national government supported the development of the headspace youth services network (McGorry, 2007). This network is based on the concept that healthcare can be delivered earlier in the course of the major anxiety, mood, psychotic and substance misuse disorders if that care is targeted directly at young people and their families.

However, the capacity of centre-based headspace services or other more traditional primary care services to connect with large numbers of young people, provide ongoing care or support, or focus on the broader range of outcomes described above remains unclear. Importantly, as such services are conceived largely as short-term or crisis-focused, they do not necessarily engage young people in the ongoing building of self-management supports or strategies or ongoing monitoring of key aspects of both their physical or mental health. The opportunity, therefore, to link with more dynamic e-mental health strategies is now perceived to be a major challenge for the field.



3. Cognitive behaviour therapy

Australia has led the world in driving cutting edge research, which clearly shows that Cognitive Behavioural Therapy (CBT) can be effectively delivered online, either self directed or with the support of a therapist. Australian research has clearly shown that at a population and individual level online CBT can promote better mental health and deliver enhanced mental health care (Christensen and Petrie, 2013; Griffiths, 2013; Proudfoot, 2013). Good evidence also exists that technologies can be used effectively in improving mental health and wellbeing (Cuijpers et al., 2008, Griffiths et al., 2010b), especially among young people (Christensen and Hickie, 2010b). Beacon collates online behavioural interventions across over 40 conditions, including mental and physical conditions and provides a free guide to the content and effectiveness of online behavioural interventions, mobile apps and internet support groups worldwide.

Developed and maintained by the Australian National University, the scientific evidence underpinning every application is systematically reviewed according to best practice principles and a smiley-face rating system is used to provide users with a guide to what works. Beacon also summarises the content, type and length of each intervention, its intended audience, whether it is free or fee-based, the languages in which it is available and the findings of the research trials that have investigated whether it works. A search of CBT on the Beacon website uncovered 10 pagers of online CBT programs, many of which also include other therapies such as Dialectical Behaviour Therapy, Interpersonal Behaviour Therapy and Mindfulness Therapy.

EXAMPLES

THIS WAY UP (thiswayup.org.au): Online treatment, education and research in anxiety and depression. THIS WAY UP provides an online clinician assisted treatment program and provide information and technical training for clinicians. Additionally there is a self-help program with guides to common mental disorders, psychological strategies and outcome measures. An internet-based learning system that provides health and wellbeing courses for school students is also available.

MindSpot Clinic (mindspot.org.au): Online assessment and treatment for anxiety and depression. Services can be accessed online or via telephone for free and they also provide education and four to six week courses with access to a MindSpot clinical resources.







3.1 POSITION

THE DOUBLE-EDGED SWORD: WORLD CLASS RESEARCH BUT MISSING A STRATEGY

Considerable investment has been made in research and development regarding the provision of online CBT, this has predominantly been funded in three ways, a) Government Departments (mainly Health, although other online CBT approaches have been funded by Veterans and Defence, Social and Human Services, and Education); b) Research bodies such as the National Health and Medical Research Council and the Australian Research Council, or, c) via third party providers across the NGO, private and philanthropic sectors for example *beyondblue*, Movember, Telstra Foundation, Sony Foundation, and so on. This substantial investment has placed Australia in an enviable position as a world leader in e-mental health. It has also created a considerable 'brains bank' and technology infrastructure, including advanced knowledge relating to managing data and responding to medico, legal and ethical considerations, across Universities such as those at ANU, Swinburne University, the University of NSW, Griffiths University, Queensland University of Technology, Melbourne University and Macquarie University (as examples, although there are research pockets across all universities).

While innovation has occurred, this fragmented funding base has resulted in an extremely competitive environment driven by funding cycles that are often short and have little or no focus on implementation or sustainability. In addition, little thought has been given to strategic alignment with population need, and direction in relation to inclusion in existing systems (such as schools, universities and workplaces), inclusion in other online settings (that is, embedded in social networks or on other government portals such as mygov.com) or inclusion in current primary, tertiary or secondary health care.

USER DESIGN AND HARD-TO-REACH POPULATIONS

The research regarding the provision of online CBT is very clear, it works. While there is less research evidence regarding other therapies such as DBT, IPT or mindfulness therapy one would anticipate that taking other evidence based therapies into the online environment should similarly translate and that they could also be delivered online, either via self-directed websites or with clinician support. Despite having strong evidence that online therapies work much work is still required to ensure that those population groups who are at most risk use them. This is particularly true for men, young people, people living in regional, rural and remote communities and people who are indigenous, NESB and living with a disability. Despite the fact that online modalities are confidential and available 24/7, the issues faced in primary health care in relation to reach are mirrored in the online environment. Uptake is greatest for woman with most websites reporting ratios of use of between 80/20 to 70/30. Critical to uptake and compliance is trust but also the concept of 'stickiness', that is what keeps an individual coming back. Increasingly, the principles of participatory design are being introduced and UX design is becoming the norm in relation to build and rapid prototyping. It is becoming common practice for researchers to work together with service providers and consumers to design, develop, implement and evaluate online interventions. This approach also positions well for deployment via word of mouth as consumers have ownership of the product.

Capacity for reach of self directed online therapy is high, particularly if delivered via schools, universities and workplaces.

COST EFFICIENCY: BETTER ACCESS VERSUS E-MENTAL HEALTH PROGRAMMES

In 2011 an evaluation of Better Access (Pirkis et al., 2011) showed that it reached 1.1 million people (one in 19 people in the Australian population). While it was difficult for the evaluation to assess cost-effectiveness directly, findings show the typical cost of a Better Access package of care delivered by a psychologist is estimated to be \$753.31. Based on cost modelling for optimal treatments for a population with common disorders, it is estimated that optimal treatment for anxiety or depressive disorders costs about \$1,100 in 2010 dollars. The evaluation also found that there are still some groups who are not accessing the services they need. This is particularly the case with young people aged less than 15 years, men, people living in rural and remote regions and people living in areas of high socio-economic disadvantage. Two-thirds of people who used Better Access (65.5 percent in 2009) live in capital cities. Geographic disadvantage continues to be an issue – compared to capital cities, people living in rural areas used the services 12 percent less and people living in remote areas used the services 60 percent less. Additionally, people in areas of socio-economic disadvantage are not using services at the same level as the broader population, with use of Better Access around 10 percent lower for people living in the most socio-economic disadvantaged areas than in all other areas.



A report prepared by the E-mental Health Alliance 'e-mental health services in Australia 2014: current and future' shows that delivery of e-mental health is both cost-effective and cheaper to provide than care as usual (Hedman et al., 2012), particularly for depressive and anxiety disorders. There is significant return on investment from e-mental health services, which leads to improvements in both cost-benefit ratios and sustainability of care (Lokkerbol et al., 2014). For example, a social return on investment study of Lifeline Online Crisis Support Chat service estimated a return of \$8.40 for every \$1 dollar invested in this service (netbalance, 2014). A cost-utility analysis of clinical trial data from the myCompass programme for depression and anxiety shows that the programme can be delivered in a cost-effective manner, with a cost per QALY gain of \$3508 (unpublished data). This is approximately one fifth the cost of treatment with antidepressants and a tenth the cost of recommended treatment with a psychologist to achieve the same QALY gain.

The E-mental Health Alliance also presents strong evidence, which supports the argument relating to the costeffectiveness, and lower overall expenditures of e-mental health in relation to other services arise:

- · The low marginal costs of providing e-mental health services to individuals
- Volume savings as the number of patients treated increases
- Significant clinical improvement despite reduced, minimal or no therapist support, reducing per patient costs while maintaining efficacy (Hedman et al., 2013)
- Reduced referrals to secondary mental health services and shortened waiting lists for face-to-face therapy in primary and secondary care (Kaltenthaler et al., 2002)
- Use of lower cost non-clinical services for information, crisis support and peer support purposes, supplementing the higher cost services as appropriate
- Additional benefits arising from immediate and unrestricted access to treatment, easier disclosure of sensitive
 information, removal of the need to travel to a therapist, and availability of e-mental health programmes for
 booster or revision sessions to prevent relapse.

Dissemination of e-mental health services can also potentially reduce demand on primary and secondary services and lessen medication use and chronicity, leading to further reductions in the individual and societal cost burden. Furthermore, recent overseas research into online preventive interventions reported that they have the potential to be cheaper to implement than some treatment services, even before taking into account lost productivity due to illness (Ruby et al., 2013).



3.2 MINOR RECOMMENDATIONS

- Map and integrate Australian online therapies into an "ecosystem of care". The end goal should be
 interoperability across all services which supports cross referral and pathways mapping, the generation and
 reporting of outcome data, quality control and advice in the form of shared standards, safety protocols and
 accreditation and incorporates and supports the ongoing nature of programme enhancements and technical
 upgrades.
- 2. The Australian Government should explore co-investment and leveraged funding with University, NGO and Industry partners to fund R&D innovation pipelines with a focus on sustainability via international growth and sub licensing agreements of products.
- 3. Give priority to understanding the needs of population groups who are not using online CBT with existing services tailored using the principles of participatory design, UX testing and rapid prototyping. This means the inclusion of consumers and the resourcing of R&D to achieve maximum reach for hard to reach populations.
- 4. Prioritise dissemination and implementation immediately and give consideration to dissemination pipelines. Areas that require further exploration:
 - Quick wins such as making Beacon, MoodGym, THIS WAY UP and Mindspot available on large portals such as MyGov.com and other gateway or crisis services such as Lifeline, Kids Helpline, beyondblue, ReachOut.com and headspace.
 - Tailoring offerings to make them relevant on other large platforms, quick wins could include Movember, Facebook and the AFL.
 - Online CBT packages created for schools, workplaces and universities.
 - Via primary care and other health services such as hospitals and via referral by public and private specialist mental health services (for example, allied health professionals and NGOs).
- 5. Primary health care providers should be educated about the provision of online CBT resources and incentivised via Better Access to provide online CBT as the first line treatment option for mild to moderate depression and anxiety. Explore the provision of iPads in surgery uploaded with Beacon, MoodGym, MySpot, THIS WAY UP, with Airplay linked to the GPs. Simple fact sheet on online CBT resources via pharmacy guild, and so on, General Practitioners (GPs) and eligible allied health professionals (for example, psychologists) includes incentives to refer patients to low cost e-mental health services.
- 6. All Commonwealth funded mental health services are required to educate and make the public aware of emental health services as an option available to them using consistent national messages. Together with direct-to-the-public awareness raising initiatives, they will address the limited levels of e-mental health awareness in the community, particularly in relation to the effectiveness and accessibility of e-mental health services and empower consumers and families to seek them out or ask for a referral.
- 7. Training and education programmes for health professionals (such as e-mental health in Practice) are continued in order to:
 - build awareness of existing e-mental health programmes and services;
 - develop systems that allow for successful incorporation of referral and follow-up into routine face-to-face practice; and
 - coordinate with organisations and professionals in community organisations (e.g. school counsellors), in a staged approach to expansion.
- 8. Training and education programmes for non-health professionals are introduced to build awareness about self-directed e-mental health programmes and establish systems for client referral to those programmes.



3.3 SUPPORTING MATERIAL

- Online interventions for a range of mental disorders and problematic health behaviours (for example, depression, anxiety, smoking, weight, substance use) have demonstrated efficacy, and the number of programs available is growing rapidly (Mitchell et al., 2010).
- A review of 26 randomised controlled trials (RCTs) found the internet to be an effective medium for the delivery of interventions designed to reduce the symptoms of depression and anxiety conditions in 88 percent of the studies (Griffiths et al., 2010b).
- Calear and Christensen (Calear and Christensen, 2010) conducted a systematic review of internet-based prevention and treatment programs for children and adolescents, identifying eight studies across schools, primary health care, mental health clinics and via open-access websites. The authors concluded that the "...findings provide early support for the effectiveness..." but more "...research is needed to further establish the conditions through which effectiveness is enhanced" (p. S12).
- Tait and Christensen (Tait and Christensen, 2010) conducted a systematic review of RCTs of web-based interventions for problematic substance use by adolescents and young adults. The authors identified 16 studies largely from tertiary students and concluded that web-based interventions were as effective as brief in-person interventions.
- While positive results are seen from the use of self-directed e-health interventions, there is some evidence that
 these are most effective if used as part of a stepped-care model (van Straten et al., 2010), with the support of a
 trained professional (Perini et al., 2009a, Titov et al., 2009a) or as an adjunct to face-to-face treatment (Hickie et
 al., 2010).
- Bergström and colleagues (Bergström et al., 2010) demonstrated that internet-based cognitive behavioural therapy (CBT) for panic disorder was equally effective as group-administered CBT treatment for adult patients in an outpatient psychiatric care setting, while Gerrits and colleagues (Gerrits et al., 2007) found an online CBT course for 140 adolescents with depressive disorders to have sustained and significant reductions in depressive symptoms. Rotondi and colleagues (Rotondi, 2010) reported on the effectiveness of an online family psychoeducation program in conjunction with professionally–moderated patient and carer forums, which showed improved engagement and education for patients with schizophrenia and their carers. Similar results for another group of adults with schizophrenia were shown by Glynn and colleagues (Glynn et al., 2010). In addition, van der Zanden and colleagues (van der Zanden et al., 2010) engaged a group of 48 parents with a mental illness to demonstrate the effectiveness of an online group program to improving parenting skills.
- A more extensive study by van der Zanden and colleagues on the effectiveness of a web-based group course
 for depression involving 244 adolescents and young adults between the ages of 16 and 25 years showed that
 the online group course was effective in reducing symptoms of depression and anxiety and in increasing
 mastery in young people. These effects were present in the initial review at three months and persisted in the
 online course group at six months (van der Zanden et al., 2012).
- Other research indicates that information about depression and interventions that used cognitive behaviour
 therapy and were delivered via the internet were more effective than a credible control intervention in reducing
 symptoms of depression in a community sample (Christensen et al., 2004). The result of the study revealed
 both cognitive behavioural therapy and psychoeducation delivered via the internet are effective in reducing
 symptoms of depression (Christensen et al., 2004).
- In the development of the portal, Beacon, Christensen et al., conducted a systematic review and found 183 websites (up to March 2010), of which 122 focused on physical health or wellbeing, 40 targeted anxiety, and 23 targeted depression. On a quality rating scale (with a score of two or more indicating evidence of efficacy based on reports in the scientific literature) of the eight generalised anxiety disorder sites identified, four achieved ratings of two or above. Two social anxiety disorder sites achieved scores higher than two. Ten panic disorder sites were identified, with three achieving ratings of two or above; and five post-traumatic stress disorder sites were identified, with two achieving ratings of 2 or above. Of the 23 identified depression sites, four



achieved a rating of two or above (Christensen et al., 2010a).

With permission, a number of tables have been repurposed for this review to showcase the evidence relating to online mental health websites, many of which include principles of CBT, are automated online CBT or are clinician assisted online CBT (see Appendix). The tables included are from a rapid review conducted for the NSW Mental Health Commission (Burns, Hickie & Christensen, 2014) and a report "e-mental health services in Australia 2014: current and future" which has been prepared by the E-mental Health Alliance representing a core group of organisations listed to the right, who are currently providing highly effective and cost efficient emental health services directly to the Australian population.









































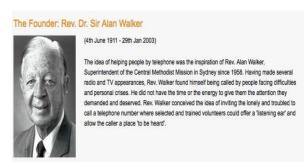
4. Telehealth, telephone helplines and websites

As outlined in "The Case for Mental Health Reform in Australia", mental health outcomes are sub-optimal and the current system is comprised of a complex network of care settings and service providers, with mixed and overlapping responsibility for information provision and service delivery between multiple government and non-government agencies. The nature of mental illness also increases the likelihood that an individual will interact with multiple parts of the health care system and the broader social services, yet the service model is fragmented and without coordination. This fragmentation and lack of coordination is mirrored in the online environment.

The evolution of technology solutions for mental health service provision has paralleled the development of technology offerings and Australia has been at the forefront of innovation. The idea of helping people by telephone was the inspiration of Rev. Alan Walker, Superintendent of the Central Methodist Mission in Sydney. In 1963 the first Lifeline call was answered. Similarly, ReachOut.com was the worlds first youth mental health website founded in 1997 by Jack Heath with the intent of providing 24/7 access to support in a confidential, safe environment, free of stigma. The initial focus was on preventing suicide amongst young people living in regional, rural and remote communities.

With the changing nature of technologies and a shift from Web 1.0 (focused on information provision, one-way communication and passive Involvement) to Web 2.0 sites (collaborative, group participation, two-way communication, active Involvement, user-generated content and blogging) we have similarly seen a shift in mental health websites from static information only sites to interactive communication platforms where communities are built.

This chapter combines telehealth, telephone helplines and websites as a clear delineation can no longer be made between the three. For example Lifeline provides telephone support to 820,000 callers per annum but also provides online counselling to 40,000 clients. eheadspace provides an information website which is accessed by 1.3 million unique users per annum but also provide an online service





via eheadspace which provides telephone support to 40,000 young people each year, as well as providing online counselling support via web enabled chat. ReachOut.com is built around the concept of an online community with 1.7 million unique users per annum accessing their resources and participating in the online peer moderated forums.



4.1 POSITION

INTEGRATION AND IMPLEMENTATION

Given the utilisation of telephone helplines (Lifeline, Kids Helpline, beyondblue and eheadspace), the increased uptake of online counselling (eheadspace, ED Hope, Lifeline), via web-enabled chat, a clear need for peer and family support online (ReachOut.com and SANE) and the growing interest in research and development to support innovative mental health professional service delivery (MindSpot, THIS WAY UP, Young and Well CRC e-mental health clinic) there is an increasing realisation that consumers have different preferences for seeking help. Three issues are relevant and inform the position of this chapter:

- 1. It is critical to ensure adequate pathways to appropriate care to ensure 'right care at the right time', this includes direct triage to subject matter expertise (for example, Q-Life, Veterans Hotline, ED Hope);
- It is paramount to reduce confusion about the service offerings available and creating a clear line of sight for individuals about what is available for them, particularly in relation to their readiness for help seeking (see for example, the Young and Well CRC Link project which brings together 14 sector providers);
- 3. Greater coordination of effort across service offerings is needed to ensure a seamless user experience, this includes the creation of common standards and data sharing to ensure the individual only needs to tell their story once (see Young and Well CRC Project Synergy).

Internationally, governments are increasingly considering some form of coordination and integration to ensure easy access and consistent quality across the helplines and their websites. For example, in the United Kingdom, 'Helplines Partnership' represents the helplines sector across the country and internationally. The integrated approach not only leverages economies of scale while procuring and maintaining services but also facilitates coordinated improvement to the services such as developing and issuing guidelines on confidentiality for all helplines across the UK. The agency is funded by the UK Department of Health and is a good practical example of how central funding agencies can drive a coordinated and integrated approach. Figures below show snapshots from search.helplines.org showing a range of services that are offered by the Helplines Partnership to all its members.

Figure 12: Sub list of some of the helplines related to one subject (depression)



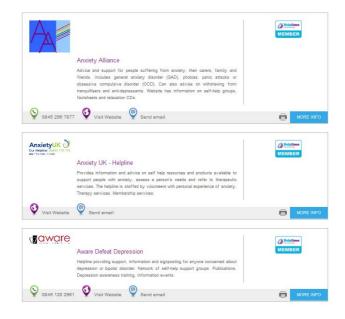




Figure 13: Commonly shared services by the partner helplines



In New Zealand, the Ministry of Health has set up a National Governance Group to provide oversight of all Ministry funded e-mental health initiatives under the National Depression Initiative (such as depression.org.nz and lowdown.co.nz). The Ministry has also recently commenced the procurement process to develop and purchase an integrated national telehealth service.

The New Zealand national telehealth service will include advice, support, assessment of symptoms, triage, treatment, preventative (educational) and curative aspects of healthcare services. This new service is not about achieving a single phone number but having services capable of ensuring, behind the scenes, whichever part of the National Telehealth Service you contact is the front door able to get you to the right place and information. Various telephone numbers for the individual service components can go into the same infrastructure. The national telehealth service will be free of charge to users and available 24 hours per day, seven days per week either by telephone, text messaging or online. For the public, the new national telehealth service will enable access to help and support via:

- Telephone triage, phone advice, support and counselling (single door access to Ministry funded helplines namely: Healthline, Poisonline, Immunisation advice for the public, Quitline, Gambling Helpline, Alcohol and Drug Helpline and Depression Helpline).
- Text messages
- Email communication
- Smartphone applications such as a symptom checker
- · Health information available on the internet
- Online chat
- Self-guided e-therapy
- · Social media including blogs and online forums
- Ability to refer to other health advice phone lines.

In summary, in Australia there is an opportunity for the funding agencies to consider coordinated and integrated approach to helplines and websites to provide clear, coordinated high quality services to their users. Some of the options include:

- 1. Setting up Governance Group to consider importance of diversity as well as to provide oversight and drive coordination and ensure quality amongst various services, such as the Quality Framework for Telephone Counselling and Internet-based Support Services group (2008).
- 2. Setting up a collaborative network or partnership framework amongst various services to leverage economies of scale and work in collaboration, such as when headspace coordinated the National Online Telephone Support Services, which bring together key youth services providers, Canteen, NCLYC and the Young and Well CRC.
- 3. Position Lifeline as the crisis and emergency helpline number, with sector engagement to ensure that calls can be triaged and transferred to appropriate agencies or subject matter experts. This would similar to the role played by Headspace in coordinating the NOTSS National Online Telephone Support Services group which brings together key youth service providers, plus Canteen, NCLYC and us as research partner, however it would go beyond young people.
- 4. Establishing a system that facilitates long term partnerships between consumers and virtual service provider/s to work together using cross disciplines, multi-modal communication (which may include one or more of texts, emails, web updates, blogs and phone calls) to provide seamless and personalised healing experience addressing a range of co-morbidities. For example, one patient needing help with depression, smoking and alcohol abuse can be seamlessly assessed and supported rather than using different services for each condition. This is consistent with the principles of participatory design and will become increasingly important as different population segments are targeted.



4.2 RECOMMENDATIONS

- Mapping of information websites, telephone helplines, online counselling and peer and family support forums to determine where there is true duplication and where there is the need for greater co-ordination. For example, both eheadspace and Kids Helpline provide online counselling but it is not clear if this is duplication or rather based on consumer choice, different needs or a true reflection of demand;
- 2. Improvements in the functioning of helplines across crisis support, subject matter and information only by creating a more 'joined up' and collaborative model of service provision with each helpline playing its part according to its expertise and thereby reducing duplication and enabling the sharing of resources such as technology systems, common protocols, standard measures and data sharing where possible;
- 3. The decision to regard Lifeline 13 11 14 as the national general crisis line and to provide a role for Lifeline Australia to:
 - a. Coordinate with other helplines to develop referral protocols and pathways so that incoming callers can be directed to appropriate services without having to navigate multiple phone numbers
 - b. Coordinate with emergency services and hospitals to explore potential referral protocols following discharge of suicidal and mental health patients;
- 4. Recognition of the value of helplines in the overall ecosystem but with a clear understanding of how to triage to greater support via online counselling or peer support forums and subject matter expertise;
- 5. Content (for example, fact sheets, digital campaigns, consumer stories) areas owned by content expert organisations e.g. Butterfly Foundation with eating disorders, with some type of Content Management System to allow cross sharing of resource; and
- 6. Greater attention should be given to the role of telehealth in Australia with a focus on up-skilling mental health professionals, community awareness raising relating to its utility and mapping to determine greatest pockets of need, that is indigenous, rural, regional and remote, disability support services.

4.3 SUPPORTING MATERIAL

This supporting material includes evidence from a confidential Australian rapid e-mental health review, material from the Canadian E-mental Health Commission review and the tables used with permission from the E-mental Health Alliance (see Appendix 2).

Given workforce shortages in mental health, the geographical and cost barriers to effective service provision, and the reluctance of key groups (such as young people and men) to use formal clinical services, e-mental health innovations will be central to real reforms (Rosenberg et al., 2009, Burns et al., 2013). Technologies are likely to have maximum impact within the health system in the next decade if attention is given to both empowering individuals to use technologies to manage their own mental health and wellbeing and integrating online services with face-to-face services. Currently, there is a range of e-health strategies in place or early development to support early intervention, enhanced self-management and secondary prevention (Christensen and Hickie, 2010a, Christensen and Hickie, 2010b).

The Australian Government uses the International Organisation for Standardisation definition of telehealth, which is largely consistent with international usage of this term:

"Telehealth is the use of telecommunication techniques for the purpose of providing telemedicine, medical education, and health education over a distance."

- Department of Health, Australian Government (2012)



There is further definition of 'telemedicine' as

"Telemedicine is the use of advanced telecommunication technologies to exchange health information and provide health care services across geographic, time, social and cultural barriers."

- Department of Health, Australian Government (2012)

While these definitions are broad in potential scope, there is a strong connotation that telehealth is primarily about connecting patients with health practitioners, particularly doctors to provide a clinical service. For example, "it is about transmitting voice, data, images and information rather than moving care recipients, health professionals or educators. Video-conferencing is one of the main ways in which telehealth is improving access to healthcare services for patients who live in regional, rural and remote areas."

Gros et al., 2011 argues that telemental health, that is the provision of high-quality consultations to be conducted via telephone or video conferencing via the internet, is increasingly gaining support in relation to home based implementation (Gros et al., 2011). Telemental health consultations can encompass a range of services, such as psychological assessment, diagnosis, care plan development, neuropsychological assessment, medication management, forensic evaluation, psychological treatment, general guidance, psychoeducation and referral, and management of psychiatric emergencies. When appropriate to aid in medication management, telemental health consultation can be conducted in conjunction with a local general practitioner.

Telemental health can also involve provision of specialised training and/or supervision to clinical staff in remote locations in the management of mental health conditions. Telemental health is often supported by email, or electronic medical record transmission of supporting information.

Although telemental health has largely been implemented and studied in clinic settings, home-based telemental health has growing support (Gros et al., 2011). The uptake of telemental health in Australia has been slow although Country Health SA, the University of South Australia and Flinders University are exploring new models of tele-mental health delivery in rural, regional and remote areas of South Australia. The Young and Well CRC with Brain and Mind Research Institute at the University of Sydney are also exploring the use of telemental health for young people aged 16 to 25.

Numerous reviews of research conducted around the world have supported the use of videoconferencing technology for evaluation and treatment of a wide array of mental health concerns in various populations (Chipps et al., 2012, Hilty et al., 2013, Mohr et al., 2013). Diagnoses can be made reliably for children, adolescents, and adults and a wide range of assessment scales have been shown to be reliable and valid when administered via synchronous telehealth systems. Telepsychology and telepsychiatry have demonstrated feasibility and acceptability across populations with enhancement of care through telemental health observed in subgroups of users (Chipps et al., 2012). Notably, satisfaction with videoconference-delivered treatment has generally been on par with face-to-face treatment. In younger persons, comparisons with in-person care suggest a preference for telemental health, resulting in greater satisfaction and superior outcomes. In geriatric populations, telepsychiatry has produced satisfaction, diagnosis and outcomes metrics comparable to in-person care, even for assessing and managing cognitive impairment.

In addition, telemental health has demonstrated feasibility veterans in the US (Gros et al., 2011) and with active duty military populations in Australia (Wallace and Rayner, 2013). Having repeatedly demonstrated viability and acceptability, telemental health is increasingly being utilised by population management healthcare systems around the world to extend quality care to areas where it would otherwise not be available. Provision of mental health services to ethnically and culturally diverse populations can be a particular challenge. Telemental health can help to overcome language and cultural barriers by enabling provision of culturally sensitive services in patients' native languages. In the US, cultural adaptations of remote monitoring systems for veterans with PTSD have been successfully deployed with Native Americans in remote locations (Brooks et al., 2012). Likewise, telepsychiatry has been shown to be a feasible means of addressing the mental health needs of Indigenous people in Australia (Alexander and Lattanzio, 2009).

Overall, research suggests that telemental health can be an effective mode of delivery, and is no less effective than inperson care. Randomised clinical trials have found comparable treatment outcomes for patients who received treatment
via videoconference compared to in-person delivery (Chipps et al., 2012, Hilty et al., 2013), with favourable results even
for challenging mental health problems, such as PTSD (Gros et al., 2011, Strachan et al., 2012). Telemental health has
also been shown to be a viable modality for delivering specific evidence-based treatments (Gros et al., 2011). Moreover,
teleconferencing can be an effective means of outreach, increasing help seeking among those reluctant to seek care,
such as college students (Haas et al., 2008). Support also exists for the feasibility, reliability, and validity of
asynchronous telepsychiatry, in which video and patient histories are uploaded for review by a remote psychiatrist who



provides evaluation and recommendations to the primary care provider managing the patient's care (Odor et al., 2011). Finally, there is support for therapy delivered entirely via telephone and there are numerous examples of programs that combine computer-guided intervention with telephone (Mohr et al., 2013).

More recently multimodal e-mental health interventions are being designed to enhance adherence and outcomes for depression. The interventions include a combination of:

- 1. A website that requires frequent brief log-ins for self-monitoring and feedback.
- 2. Personal email support from a healthcare professional.
- 3. Brief telephone support guided by a theory-driven protocol.

The objective of these studies was to examine if internet intervention plus manualised telephone support program would result in increased adherence rates and improvement in depression outcomes. The initial outcomes have been mixed where some trials show limited additive advantage of telephone support by a lay telephone counsellor (Farrer et al., 2013). Other studies showed significantly lower attrition rate by integrating web based interventions with telephone support (as compared to either web based studies or trials of face-to-face interventions), and depression outcomes were significantly better (Mohr et al., 2013). The findings indicate that the factors underpinning success of such a programme might lie within:

- 1. The quality and engagement factor of the web based programme.
- 2. The skills of the person providing telephone support (a healthcare professional versus a lay counsellor).
- 3. The use of theory driven protocols rather than a free flow conversation.

MEDICO-LEGAL AND ETHICAL ISSUES AND ACCESS TO HEALTH PROFESSIONALS

While out of the scope of this paper, there are a number of pertinent medico-legal and ethical issues when considering the utilisation of web-based support particularly in relation to data management, confidentiality and anonymity and duty of care responses and a summation from the Canadian Mental Health Commission is provided in the Appendix. That said, the sector has led ground breaking work particularly in the development of secure platforms for the suite of products offered across ANU, Swinburne, UNSW, Macquarie, and so on, and the majority of concerns come from professional bodies which fundamentally creates a barrier to the uptake of online support. Given that this is an emerging field, particularly in the area of telemental health more work needs to be done in this area. A national standard is recommended and this work has commenced through Project Synergy.



5. Local initiatives

5.1 POSITION

When looking to learn from the international experience, it is important to remember that not all nations have universal health care and within those, the understanding of a system of care for mental health varies. It is the overarching position of this paper that Australia is very much the leader in this space and has been at the forefront of international innovations in its use of e-health platforms to promote better mental health and deliver enhanced mental health care (Christensen and Petrie, 2013).

From an Australian perspective, the Canadian experience is instructive. Both nations have large landmasses with a few concentrated urban populations and many rural and remote communities. Both have indigenous population issues to address and both have a similar basis to their economic value chains (for example, resources and services with a modest manufacturing base).

Whilst there is a nationally funded institute Canadian Institutes of Health Research (CIHR), service delivery is left very much to the provinces. This provincial approach was purportedly adopted to enable 'local' issues to be dealt with by locals. As a result there is little or no publically federally coordinated and funded available mental health care, and certainly none that is integrated.

In response to this, the private philanthropic sector (headed by the Graham Boeckh Foundation in Montreal) has undertaken a project around the provision of community-led, youth-focused, service delivery which combines both on and offline services. They consulted with headspace in Australia, Orygen Youth Mental Health Research Centre and Orygen Youth Health, the Young and Well CRC and *beyondblue* to name a few. As a result they have:

- Privately funded and commissioned a project to leverage on the experiences of these organisations in the design of a clinical and online service model that can become national and publically available
- Directed the design team for the online component of the above system, to liaise with the Young and Well CRC locally so as to leverage on the technology model being deployed through Project Synergy
- Instigated government to government discussions, and engaged with other key stakeholders, to
 encourage the Canadian government to establish a leveraged fund model (much like the CRC program
 locally) to continue to seed and deploy this integrated system of care.

In France, the UK and the US, e-mental health approaches have been characterised by a focus on one or more of these three themes:

- The discourse around, or development of, an e-mental health record (in conjunction with or without an e-health record)
- The development, enhancement or even consolidation of telehealth services
- Research, trial and deployment of specific technologies (websites and apps), by niche organisations to address specific issues

There are a few successful initiatives internationally (for example, Samaritans, Big White Wall, headspace) but again these are all point solutions, not complete approaches or models to e-mental health.

As outlined elsewhere in this report:

- The current focus on an e-mental health record is about capturing transactional information and has demonstrated little support from the sector and little relevance for consumers (see Chapter 7 below). The world must move past the idea of translating all non-online activities into online activities. There is a range of technologies being considered or deployed, just about all of which involve a web front end (website, portal or app) to a cloud base On Line Transaction Processing (OLTP) based data store, which itself is often an off shoot of a Departmental claims management system. Most of these solutions are based on similar architectural principles, with the approach being an online emulation of a patient transactional record.
- Globally there has been an explosion in both evidence based and non-evidence based wellness, health
 and mental health apps and technologies as organisations seek to define themselves within the digital
 context. In the e-mental health space a standout technology is the app eheadspace (not to be confused



with the Australian clinical service provider headspace nor its telephone and internet support service, eheadspace). Using standard web and app development technologies, this mixed fund solution has gained significant international attention. It is however only a single solution and not a model.

- As the references below will indicate, academics, service providers and funders alike see the potential of
 the e-mental health opportunity; the reality is that just about all except Australia are yet to begin the
 journey on a systematic design and deployment of what an integrated model looks like, what technology
 it sits upon and how it should be funded.
- As part of another assignment, the authors have undertaken interviews with over 25 leaders of mental
 health service providers and researcher organisations globally, some private, but most publically funded,
 and they have all, without exception, recognised the leadership position Australia holds in the design of
 an e-mental health ecosystem as part of an integrated model of care. This leadership is recognised to
 extend into:
 - The selection of technology platforms and the use of technology in this space
 - The funding used to research, seed and deploy new solutions (combined public, private and philanthropic alongside a leveraged funding model)
 - The global advocacy for more e-mental health based reform

5.2 RECOMMENDATIONS

The recommendations for this section are located in the Major Recommendations section above as they relate to Australia continuing in its global leadership role and establishing a user centric integrated system of online and offline care.

5.3 SUPPORTING MATERIAL

5.3.1 CANADA

Mental illness affects many Canadians, with one in five experiencing a mental illness in their lifetime. However, young Canadians are the most profoundly affected, with 75 percent of mental health problems and illnesses beginning prior to age 25, and more than 50 percent beginning between 11 and 25 years.

While young people are more likely to experience mental health disorders than any other age group, they have the least access to mental health care. Existing services are designed for younger children and older adults, meaning that the system is weakest where it should be strongest. As a result, mental illness takes an enormous toll on youth and their families, with high levels of preventable mortality and lifelong illness.

In response, the Canadian Institutes of Health Research (CIHR) and the Graham Boeckh Foundation (GBF) created the Transformational Research in Adolescent Mental health (TRAM) partnership to find solutions to this problem and, ultimately, to improve mental health outcomes in Canada. TRAM has led to the creation of ACCESS Canada – a research network that will seek to address this gap in care. It represents a new way of working collaboratively with the provinces, territories, and partners, to increase resources and support research that will transform Canada's health care system.

ACCESS Canada will bring about transformational change in addressing adolescent and youth mental health and wellbeing. By connecting patients and young people with researchers, health care professionals, and decision-makers, the Network will bridge the gap between research evidence and health care practice and policy. It will allow patients and families to benefit from research evidence by bringing the most promising interventions to the front lines of health care.

Specifically, the objectives of ACCESS Canada are:

- to improve youth engagement and awareness of mental health issues leading to early identification of those in need; and
- to make appropriate, evidence-informed, youth-friendly mental health care accessible to youth as early as possible.



This pan-Canadian initiative is the first-ever research Network launched under Canada's Strategy for Patient-Oriented Research (SPOR). SPOR is a coalition of federal, provincial and territorial partners – patients, researchers, health care providers, and decision-makers – all dedicated to the integration of research into care. This inaugural SPOR Network is being led by Dr. Ashok Malla, Director of the Prevention and Early Intervention Program for Psychoses (PEPP-Montréal) at the Douglas Institute, Professor at McGill University and Canada Research Chair in Early Psychosis.

Below are a number of support materials and references taken from the Mental Health Commission of Canada (2014), of which Anil Thapliyal was a co-author. This information is used with permission.

5.3.2 EUROPEAN UNION

The role of e-mental health does not appear within the European Commission strategies for mental health, though there is reference to: Digital Agenda, which includes a focus on 'Living Healthy, Ageing Well' where "information and communication technology can be our most powerful ally for good and affordable healthcare." (https://ec.europa.eu/digital-agenda/node/1103)

The CORDIS division (Community Research and Development Information Service) have issued an 'Information and Communication Technology Challenge for Health, Ageing Well, Inclusion and Governance' with "ICT for Health activities" addressing 'health management' continuum from lifestyle to disease management, including disease prevention and management of comorbidities (http://cordis.europa.eu/fp7/ict/programme/challenge5_en.html)

Neither contains strategic frameworks relating to e-mental health.

5.3.3 NEW ZEALAND

New Zealand has had a similar pathway to Australia and has looked to Australia for guidance, with five to ten years of investment in e-mental health services. This includes a more recent focus on developing strategic context with the forthcoming publication of the New Zealand Government Ministry of Health's Mental Health and Alcohol and Other Drugs E-therapy Framework.

Key Document

Mental Health and Alcohol and Other Drugs E-therapy Framework (due 2014), issued by New Zealand Government Ministry of Health.

Definition

New Zealand has taken a focus on e-therapies as a, "subset of e-mental health services that are primarily user directed, computer system automated, and delivered online, or by mobile phone."

Purpose

To provide an overarching framework for the planning, development, implementation, and investment in e-therapy tools, interventions, programs, or products for use within mental health and alcohol and other drug (AOD) services in New Zealand.

Aim

Provide guidance to the mental health and AOD sector on the key principles to be considered when planning and developing or implementing e-therapy tools, interventions, programs, or products. It sets out a structure and process for making informed investment and implementation decisions on Ministry of Health and/or District Health Board commissioned e-therapy tools, interventions, programs or products.

There will be a Governance Group that will provide oversight of the Framework, and an approval process for etherapy tool and programs.



Guiding Principles

- · Must be evidence-based
- Must include routine evaluation
- Clinical governance in place
- Funding considered
- R&D component included
- Privacy Impact Assessment done
- · Sustainability considered

5.3.4 UNITED KINGDOM

The United Kingdom recently published an e-mental health Discussion Document (2013).

Key Document

E-mental health, What's all the fuss about? (2013) Issued by the National Health Service: http://www.nhsconfed.org/Publications/discussion-paper/Pages/E-mental-health.aspx.

Context

The implementation framework for the No Health Without Mental Health strategy states that mental health services should consider "the power of information to transform services" including "the potential of mental health and wellbeing services that use technology to provide self-care and peer support within a well-governed, safe, immediately accessible and stigma-free environment."

The discussion document provides key areas for consideration, including governance, and key questions for the future but does not recommend an integrated system of care. This is not an e-mental health strategy or blueprint.

5.3.5 UNITED STATES

The United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA) has a Strategic Plan, which includes Health IT and Considerations for the Provision of E-Therapy with a Substance Abuse focus.

Key Documents

Leading Change: A Plan for SAMHSA's Roles and Actions 2011-2014: http://store.samhsa.gov/product/SMA11-4629.

Considerations for the Provision of E-Therapy (2009): <a href="http://store.samhsa.gov/shin/content/SMA09-4450/SMA09-450/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA09-50/SMA00-50/SMA09-50/SMA09-50/SMA00-50/SMA09-50/SMA00-50/SMA09-50/SMA09-50/SMA09-50/

Both issued by SAMHSA.

Leading Change – Strategic Plan Outline The Leading Change document states that the Health IT Strategic Initiative:

"Provides the overall framework... HIT is a broad construct that extends beyond Electronic Health Records and includes telemedicine and other technologies. Health IT can improve health care quality, prevent medical errors, increase administrative efficiencies, decrease paperwork, and improve patient health. It also has the potential to enhance medical decision making, promote patient monitoring, and involve consumers in their own care." However, the objectives of this Strategic Initiative relate primarily to the use of Electronic Health Records.



6. Potential gaps in e-mental health services in Australia

6.1 POSITION

In Chapter 2, we discussed the positioning of many e-mental health interventions and explored areas of duplication and potential gaps. In the Executive Summary, we provided a framework for the integration and innovation of e-mental health interventions, which also provides a useful method for exploring this landscape moving forward.

It is the position of this paper that the following holds in the service system:

- Lack of Coordination: Gaps in e-mental health must be identified and filled in a coordinated manner. The lack of leadership and coordination at a time when a plethora of e-mental health technologies are being made available to individuals is one of the glaring criticisms being levelled at the system. This position re-enforces the recommendation above that a detailed blueprint of the e-mental health components of an integrated system be developed.
- E-mental health is not a copy of face-to-face: There is a temptation to measure gaps in the e-mental health service spectrum by comparing this to a traditional functional face-to-face service model. E-mental health is not simply about the replacement or automation of face-to-face services. In fact it is the position of this paper that in many cases, e-mental health is a complementary component of an integrated system of care.
- Absence of a direction: The ability to identify a 'gap' is also based on having a clear view on the end-point
 and being able to see what is needed to bridge this gap. A comprehensive view of the current state is missing
 let alone a statement of the future or what the future state of an integrated system of care will look like.
- Degrading global leadership: When looking overseas for guidance on what is missing, it is clear that Australia is in a leadership position with respect to e-mental health. Having said this, countries like New Zealand and the United Kingdom have also made steps in turning their attention to e-mental health. New Zealand is establishing a five to ten-year investment pathway into e-mental health and the United Kingdom has published a discussion document on this topic (Mental Health Network, 2013).
- The gaps inside the services. Existing and proposed e-mental health services have many technology layers. Gaps in services simply do not mean that a specific factsheet is not available or there is not an App produced to help treat a specific issue. Software based technologies have subcomponents that have specific tasks within the app, software or site. As is commonly understood, these are the Data layer, the Business Logic layer, the User Experience (UX) layer and the Communications layer. Each layer is part of an e-mental health service.

Using apps as an example, apps are attractive to users because, in part, their specificity enable them to customise their mobile. A service in mental health terms, would require a combination of specific apps. In order to make this work, the apps need to cooperate. If they don't, there are gaps in the system. This is like saying there are gaps at the cellular level of the e-mental health service system. This is a system wide gap in e-mental health services. There is no consistency in UX, what works what doesn't? At the data and communications layers we do not yet have commonly agreed standards, protocols and application programming interfaces (APIs) to enable interoperability between technologies so as to enable the technologies to be arranged into a cohesive service or system.

• Universal Access – for some: The literature shows that people experience barriers in gaining access to mental health services, with some segments of the population more underserved than others (Blanchard et al., 2008b). Studies show that in Australia, many people lack access to traditional, clinic-based mental health services (Christensen and Hickie, 2010a). Culturally and linguistically diverse (CALD) people experience high levels of structural disadvantage that threaten their mental wellbeing as well as posing barriers to accessing support (Francis and Comfoot, 2007). Exposure to trauma makes refugees especially vulnerable (Drew et al., 2005). Other groups of people that face barriers to mental health services due to social exclusion, discrimination, and other constraints include Indigenous communities; people living with disability or chronic illness; carers; and sexuality, sex, and gender diverse people (Burns et al., 2008, Blanchard et al., 2008a).



6.2 RECOMMENDATIONS

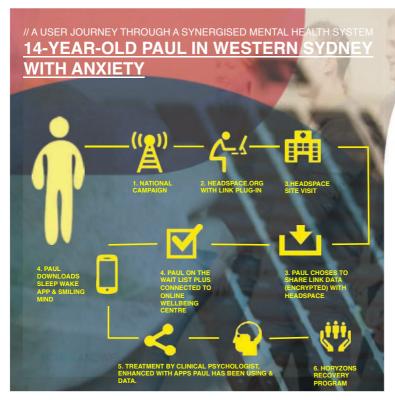
- 1. Ensure that the strategic blueprint of the integrated system of care, provides focused attention on gaps in service delivery and care. This area is ripe for PPP with major organisations like Movember taking a lead role in coordinating efforts around men's health (as an example).
- 2. That barriers to access be considered a gap in the service. The ubiquity of the internet and the ease of distribution of technology products, means that, for as long as there is the means to access the internet, e-mental health can begin to bridge these access gaps. A specific policy should be to develop or extend segments 'beyond the digital divide', data concession plans for use of e-mental health components etc.

6.3 SUPPORTING MATERIAL

6.3.1 FUTURE VIEW: USER JOURNEYS THROUGH AN INTEGRATED SYSTEM

Below are a number of vignettes designed to illustrate the journey of various individuals through an integrated system of care. These user journeys were constructed with input from a variety of sector participants and have also be extrapolated from interviews held. The key messages these user journeys tell are:

- An integrated system combines Telehealth, face-to-face services and online tools;
- Age, gender or location are not filters as to who would use which components of the integrated system
- The level of reliance upon the online or face-to-face components is dependent on the individual and the stage of care they are at; and
- At each stage, the person's information is able to be carried forward to the subsequent stage and, with their permission, shared with the subsequent component (be that on or off line); this interoperability and personal control is core to uptake.

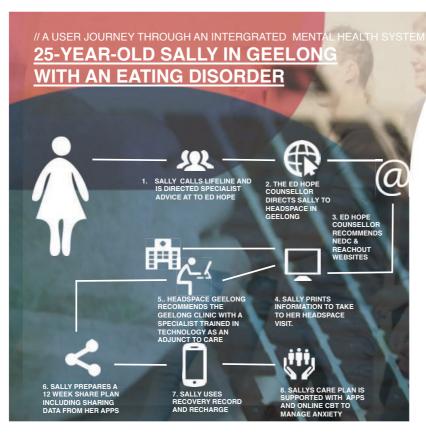


- PAUL'S MUM LISA SEES THE HEADSPACE CAMPAIGN TO PROMOTE HELP-SEEKING FOR YOUNG MEN.
- 2. LISA RECOMMENDS PAUL LOG ONTO HEADSPACE.ORG. USING THE LINK PLUG-IN, PAUL IS DIRECTED TO HIS LOCAL HEADSPACE SITE. LINK PROVIDES RELEVANT INFORMATION FOR DOWNLOAD ON REFFERAL.
- 3. PAUL AND LISA VISIT THE HEADSPACE SITE TOGETHER FOR PAUL'S ASSESSMENT BY A CLINICIAN AND SHARE HIS INFORMATION FROM LINK. ASSESSMENT DETERMINES PAUL NEEDS TO SEE A CLINICAL PSYCHOLOGIST FOR TREATMENT.
- 4. WHILE WAITING FOR FIRST APPOINTMENT HEADSPACE DIRECTS PAUL TO SPECIFIC APPS FOR YOUNG MEN ON THE ONLINE WELLBEING CENTRE.
- 6 SESSIONS WITH A CLINICAL PSYCHOLOGIST, ENHANCED BY ACCESS TO DATA (ENCRYPTED) FROM THE APPS PAUL HAS BEEN USING
- 6. ONCE DISCHARGED FROM CARE, PAUL JOINS HORYZONS RECOVERY PROGRAM. HORYZONS HAS ACCESS TO DATA FROM LINK, ONLINE WELLBEING CENTRE, APPS AND HEADSPACE TO SUPPORT PAUL'S RECOVERY.



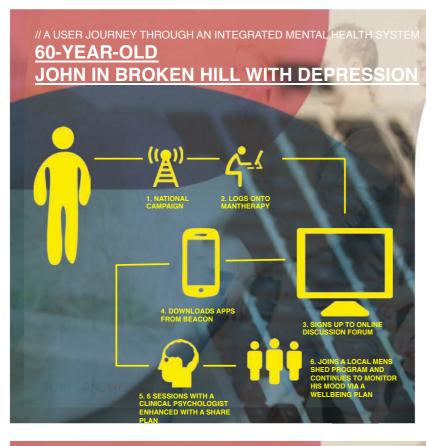


- 1. PORT PIRIE IS A YOUNG & WELL TOWN. AT A SCHOOL FORUM NICK HEARS ABOUT KIDSHELPLINE.
- 2. NICK LOGS ONTO KIDSHELPLINE AND THE COUNSELLOR SUGGESTS HE REGISTER FOR ONLINE WELLBEING CENTRE AND DOWNLOADS THE @PPRECIATE APP.
- 3. @PPRECIATE APP DIRECTS
 NICK TO BUTTERFLY
 WEBSITE WITH LINK PLUG
 IN. THIS DIRECTS HIM TO
 EITHER PORT AUGUSTA
 HEADSPACE (AN HOUR
 AWAY) OR THE ONLINE
 MENTAL HEATLH CLINIC IN
 PARTNERSHIP WITH
 EHEADSPACE.
- 4. NICK CHOOSES THE
 MENTAL HEALTH CLINIC,
 DEVELOPS A 12 WEEK
 SHARE PLAN WHICH HE
 IMPLEMENTS WITH ONLINE
 SUPPORT FROM A
 MULTIDISCIPLINARY TEAM
 WHO HAVE ACCESS TO HIS
 DATA AND PLAN. HE ALSO
 USES THE RECOVERY
 RECORDAND RECHARGE
 APP DURING TREATMENT
 TO MANAGE EATING.
- 5. AT THE END OF HIS 12 WEEKS HE IS REFERRED TO HORYZONS ANXIETY RECOVERY GROUP FROM OVHRC

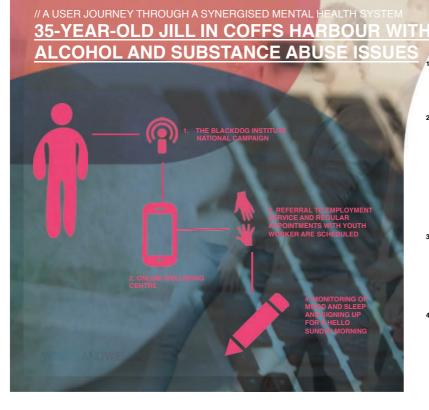


- 1. SALLY CALLS LIFELINE AND BECAUSE SHE DESCRIBES ISSUES WITH EATING IS TRIAGED TO ED-HOPE.
- THE ED HOPE COUNSELLOR DIRECTS SALLY TO ED EXPERT AND TO HEADSPACE IN GEELONG FOR ED SERVICES SUCH AS AN IOP
- 3. ED HOPE COUNSELLOR
 ALSO RECOMMENDS NEDC
 & REACHOUT.COM
- 4. SALLY PRINTS
 INFORMATION TO TAKE TO
 HER ED EXPERT AND
 HEADSPACE VISIT.
- 5. ED HOPE AND ED EXPERT
 RECOMMENDS THE
 GEELONG CLINIC WITH A
 SPECIALIST TRAINED IN
 USING TECHNOLOGY AS AN
 ADJUNCT TO CARE
- 6. SALLY DEVELOPS A 12
 WEEK SHARE PLAN WHICH
 SHE IMPLEMENTS WITH
 ONLINE SUPPORT FROM A
 MULTIDISCIPLINARY TEAM
 INCLUDING ED HOPE WHO
 HAVE ACCESS TO HER DATA
 AND PLAN.
- 7. SALLY USES THE
 RECOVERY RECORD APP
 WHICH PARTNERS WITH ED
 HOPE AND RECHARGE
 DURING HER TREATMENT
 TO MANAGE HER EATING.
- B. SALLYS CARE PLAN IS FURTHER SUPPORTED WITH APPS AND ONLINE CBT TO MANAGE ANXIETY.





- JOHN SEES ADVERTISING FOR BEYONDBLUE'S MANTHERAPY CAMPAIGN.
- 2. JOHN LOGS ONTO MANTHERAPY.ORG.AU AND WATCHES A NUMBER OF VIDEO TESTIMONIALS DETAILING PERSONAL EXPERIENCES WITH MENTAL ILLNESS.
- 3. JOHN DECIDES TO SIGN UP TO THE ONLINE DISCUSSION FORUM OFFERED BY SANE, VIA THE MANTHERAPY WEBSITE, WHICH ALSO RECOMMENDS JOHN VISIT HIS GP.
- 4. USING THE INFORMATION COLLECTED FROM THE ONLINE DISCUSSION FORUM, JOHN'S GP REFERS HIM TO A CLINICAL PSYCHOLOGIST. WHILE WAITING FOR HIS FIRST APPOINTMENT HE IS DIRECTED TO BEACON AND USES THE ONLINE RESOURCES.
- 5. 6 SESSIONS WITH A CLINICAL PSYCHOLOGIST ARE ENHANCED BY ACCESS TO DATA (ENCRYPTED) FROM THE APPS AND ONINE TOOLS JOHN HAS BEEN USING WHICH FEED INTO HIS SHARE PLAN.
- JOHN ALSO JOINS A LOCAL MENS SHED PROGRAM. HE CONTINUES TO MONITOR HIS MOOD AND ACTIVITY USING APPS IN HIS SHARE PLAN..



- JILL SEES THE BLACKDOG INSTITUTE CAMPAIGN TO INCREASE MENTAL HEALTH AND WELLBEING LITERACY IN ABORIGINAL AND TORRES STRAIT ISLANDER.
- 2. USING LINK ON HER
 MOBILE, JILL IS DIRECTED
 TO THE ONLINE WELLBEING
 CENTRE. SHE IS
 RECOMMENDED TO USE
 THE IBOBBLY APP, A
 PROGRAM SPECIFICALLY
 AIMED AT COMBATTING
 SUICIDAL IDEATION IN
 INDIGENOUS YOUNG
 PEOPLE. THIS ALLOWS HER
 TO ACCESS HELP
 CONFIDENTIALLY AND IN
 HER OWN TIME.
- 3. VIA LINK AND USING DATA COLLECTED USING IBOBBLY, JILL IS THEN REFERRED TO A LOCAL EMPLOYMENT SERVICE AND IS SCHEDULED TO CHECK IN WITH A YOUTH WORKER ONCE-A-WEEK TO MONITOR HER PROGRESS.
- I. JILL USES RECHARGE, A MOOD AND SLEEP APP TO MONITOR HER DAILY ACTIVITY, AND TO HELP ADDRESS HER ISSUES WITH ALCOHOL SIGNS UP FOR A HELLO SUNDAY MORNING.





- I. HEADSPACE NATIONAL CAMPAIGN TO PROMOTE HELP-SEEKING FOR YOUNG MEN.
- PAUL LOGS ONTO
 HEADSPACE.ORG WITH
 LINK PLUG-IN & SUGGESTS
 HE VISIT HIS LOCAL
 HEADSPACE SITE. LINK
 PROVIDES RELEVANT
 INFORMATION FOR
 DOWNLOAD ON REFFERAL.
- 3. PAUL VISITS HEADSPACE SITE FOR ASSESSMENT BY A CLINICIAN AND SHARES HIS INFORMATION FROM LINK. ASSESSMENT DETERMINES PAUL NEEDS TO SEE A CLINICAL PSYCHOLOGIST FOR TREATMENT.
- 4. WHILE WAITING FOR FIRST APPOINTMENT HEADSPACE DIRECTS PAUL TO SPECIFIC APPS FOR YOUNG MEN ON THE ONLINE WELLBEING CENTRE.
- 5. 6 SESSIONS WITH A CLINICAL PSYCHOLOGIST, ENHANCED BY ACCESS TO DATA (ENCRYPTED) FROM THE APPS PAUL HAS BEEN USING.
- 6. ONCE DISCHARGED FROM CARE, PAUL JOINS HORYZONS RECOVERY PROGRAM. HORYZONS HAS ACCESS TO DATA FROM LINK, ONLINE WELLBEING CENTRE, APPS AND HEADSPACE TO SUPPORT PAUL'S RECOVERY.

6.3.2 BARRIERS TO ACCESS, THE DIGITAL DIVIDE AND THE ROLE OF TECHNOLOGIES

It is beyond the scope of this document to showcase the barriers to access to high quality care. This was adequately covered in Adjunct Professor John Mendoza's document "Obsessive Hope Disorder", which included the collective knowledge of the sector both current and historical.

The following literature is taken directly from the NSW Mental Health Commission review and while technologies have been discussed in the context of reducing disparities in access to care it is still very clear that the issues and challenges in in face-to-face service offerings are similar in the online environment. The following literature is heavily weighted towards young people. Areas requiring greater attention include the lack of help seeking by men. In the youth mental health space Young and Well CRC, ReachOut.com, Brain and Mind Research Institute and Headspace and Orygen Youth Health Research Centre have prioritised young men's mental health and have committed significant resource to understanding the structural, cultural and individual challenges for this particular demographic. This has been strongly supported by Movember. Similarly, Suicide Prevention Australia is leading an alliance of the sector with a major focus on the prevention of suicide in men.

The disadvantage experienced by Indigenous Australians living in remote communities is a factor in higher rates of serious mental disorders and of mental health problems that are compounded by narrowly focused and inadequate mental health services, with children being particularly vulnerable (Hunter et al., 2007). Socioeconomic factors also play a role in determining access to care, with young people living in disadvantaged areas more likely to lack social support (Australian Institute of Health and Welfare, 2007).

A number of different types of barriers faced by Australians in need of mental health services were indicated by the literature. For example, geographical barriers can limit access to services for people too young to drive, particularly in rural and remote locations where public transport is not (Aisbett et al., 2007, Boyd et al., 2007). Physical constraints can prevent access for people living with disability and chronic illness (Burns et al., 2008). Cultural barriers, such as language and communication difficulties, can complicate service access for Indigenous and CALD youth (Gorman et al., 2003). Temporal barriers have also been suggested by research, as young people are more likely to experience psychological distress after 11pm when mental health services are less available (Burns et al., 2013).



Digital connectivity has been affirmed as increasingly important, particularly for young people. For this reason it is important to consider the role of technologies in achieving greater levels of health equity, as well as the inequities generated by barriers to access to technologies, known as the 'digital divide'. Access to the internet has been linked to income, class, ethnicity, disability status, and levels of education (Notley and Foth, 2008, Livingstone and Helsper, 2007, ABS, 2008). Metropolitan families with children under 15 years of age in higher income brackets are more likely to use computers and the internet, while groups that are less likely to have access are Indigenous Australian, the unemployed, people with low incomes, and people living with a disability (Notley and Foth, 2008).

The literature suggests that removing barriers to internet access can be useful in improving mental health outcomes for young people. In addition to the barriers young people face in accessing mental health services, young people with mental health problems are less likely than adults to seek help from GPs or clinic-based services (Blanchard, 2011, Collin and Burns, 2008). Recent studies demonstrate that young people prefer to access support online (Gould et al., 2002, Hampshire and Di Nicola, 2011, Burns et al., 2010b) and that online services can transcend many of the barriers faced by traditional clinical services, such as temporal and geographical constraints. This research, combined with recent policy documents (Christensen et al., 2010b), present a strong case for the potential role of mental e-health services in improving both access to services, and rates of usage by young people (Burns et al., 2010a).

A better understanding of how young people access support through the internet is important when considering how to improve equity of access and reduce the digital divide. One Australian study found that 43 percent of young people at greater risk of mental health problems accessed the internet at home, with libraries (32 percent), schools (18 percent), internet cafes, workplaces, and youth centres cited as other points of access (Blanchard et al., 2008). Studies in the US and Germany have found evidence of increased access to the internet through mobile phone usage in disadvantaged populations of young people, indicating the importance of mobile phone applications (Thomas et al., 2010, Horrigan, 2009).

The use of social media to bolster social inclusion is also indicated by a study that found 57 percent of young people creating online content using Web 2.0 platforms in the US belong to racial minorities (Lenhart and Fox, 2006). Recent reports show that 90% of Australians aged 12 to 17 use social networking sites frequently, with figures increasing to 97 percent when only 16-17 years olds are considered (Australian Communications and Media Authority, 2009). Further research undertaken with young Australian men reported that those suffering from psychological distress were significantly more likely to seek mental health information through the internet, with 95 percent reporting that they were satisfied with information they received (Burns et al., 2013).

6.3.3 TECHNOLOGY AND FUNDING TO ADDRESS WORKFORCE CHALLENGES

Youth health workers believe that using technologies will enable them to have a greater impact on young people's mental health, argue Blanchard and colleagues (Blanchard et al., 2012). The same study reports that youth health workers believed that technologies play a considerable role in the lives of most young people, and that these technologies have the potential to influence mental health and wellbeing, both positively and negatively. However, participants also felt that these technologies are poorly understood and under-utilised in mental health promotion and in the prevention, early intervention and treatment of mental ill-health.

If barriers to the use of technologies were overcome, the youth mental health workforce would be able to use technologies more effectively in their practice. Such barriers include poor infrastructure, lack of guidelines or policies to support safe and constructive use of technologies and lack of awareness about which technology-based strategies or approaches are most effective, and in which contexts (Blanchard et al., 2012).

Further investment needs to be made in securing appropriate technological infrastructure in youth mental health services, and in training staff members to develop an adequate understanding of young people's technology use and the range of strategies that can be applied to improve and promote young people's wellbeing (Blanchard et al., 2012). The capacity of the existing health workforce to integrate e-mental health services into their practice has been found to be low. Funding, promotion, professional development and online teaching resources have been needed to increase uptake and sustained use.



7. E-mental health records

7.1 POSITION

The current Personally Controlled Electronic Health Record (PCEHR) has been met with limited success. Low uptake due to lack of awareness and unclear benefit of use do not incentivise end users to sign up to the system. In fact, there is little additional functional benefit than digitising the paper system.

The promise of better diagnosis and information sharing across locations is countered by the limited utilisation and uptake by doctors, many claiming workload, lack of structural technology supports and challenges relating to medico, legal and ethical considerations. Particularly when considering the use of the PCEHR in the management and support of those living with a mental illness, significant duty of care issues need very careful consideration. Specifically, issues requiring careful consideration include the duty of care to intervene if the system detects scenarios such as one person getting multiple prescriptions from multiple locations or poor quality care, misdiagnosis or compromised treatment.

This lack of clear value proposition, coupled with unincentivised data entry and history review, make it unlikely that more medical professionals or end users will adopt the current system.

As a result of a recent review, 38 recommendations for improvement have been made, however the Department of Health maintains that it will take four years for these to be implemented. Considering this considerable timeline (not to mention investment) it is the position of this paper that emerging technologies will supersede this initiative, with individuals' data from multiple sources "talking to each other" through interoperability and augmenting face-to-face care.

7.2 RECOMMENDATIONS

1. Based on low uptake in international deployments of electronic health records, a fundamental rethink of purpose and design would need to be undertaken before establishing an e-mental health version. This exercise should include participatory design principles, wherein the end user is involved to ensure that the service being developed was actually meeting a real need. If the ecosystem and standards recommended in this paper are developed, this technology makes the need for such an e-mental health record redundant, as data from different applications will integrate and provide real-time data and history, which individuals can use to gain a holistic perspective of their mental health and wellbeing, and which they can choose to share with professionals if they so wish to support their face-to-face care.

7.3 Supporting Material

The Personally Controlled eHealth Record (PCEHR) is described from ehealth.gov.au as

"An electronic summary of your health records that individuals and authorised healthcare providers (such as doctors, nurses and other staff) can access it online, including information like medications, hospital Discharge Summaries, allergies and immunisations."

Its existence is supported by the Personally Controlled Electronic Health Records Act of 2012.

The PCEHR is free, voluntary, federal and is additional to existing health records held by health providers. People who choose to use it are required to register themselves using an authorised identity, i.e. anonymity is not an option. Patients and their clinicians usually decide together what data are made available in the PCEHR but this process is probably used inconsistently among clinicians depending on the nature of the clinician-patient relationship.

The 2013 review on the PCEHR progress (2013) provides 38 recommendations. The following recommendations have implications for e-mental health.



- Restructuring governance has implications and opportunities to include stronger representation for e-mental health (recommendation 2).
- Establishing a clinical and technical advisory board, offers opportunities to progress e-mental health as a priority (recommendation 3). This aligns with recommendation 11 and implies that centralisation of EHR services (and by extension mEHR) can be facilitated and supported centrally.
- The new task force for the governance transition offers opportunities for e-mental health to be overtly included in the transition (recommendation 4).
- Regulation of e-health standards implies that e-mental health standards require inclusion, resulting in opportunities for development of standards that may apply only to e-mental health (recommendation 10). This aligns with recommendation 32. Implications of the PCEHR on mental health range from interoperability between the PCEHR, the electronic health records (EHRs) that feed it, and the ability to make Internet-based tools, e.g. MoodGym, iSpot interoperable with either the PCEHR or existing versions of EHRs. Policy decisions about the potential to link Internet-based tools to something like the PCEHR have yet to be explored.
- The transition to the 'opt out' model (recommendation 13) may impact on people's desire for anonymity, and therefore influence approaches to privacy in e-mental health services. While patients will be able to decide to not make certain records available, the PCEHR (or MyHealthRecord as it will be called in the future) draws from data repositories, e.g. medications that could reveal information that patients may not want revealed.
- The PCEHR architecture is complex people with mental health issues may find it harder to use than other people, as found by MyHealthyVet users (Rice et al., 2013). The minimum composite of records in recommendation 21 indicates inclusion of medication lists, which could in turn reveal mental health diagnoses by clinical deduction that patients may not want to occur. Adding a flag to notify clinicians of restricted information (recommendation 27) may benefit the clinician's decision-making process for diagnostic purposes but may impinge on patient privacy when a 'break glass' rule is used.
- Privacy and security in mental health environments are considered more sensitive than for other health issues, while new concerns about, for instance, genomic testing are emerging in the privacy debate, i.e. mental health data is not the only sensitive data in the record but does deserve consideration in light of the vulnerability of people with mental health issues (McGuire et al., 2008, Craig et al., 2014). Recommendations 15 and 16 could benefit from mental health representation on the recommended committees and working groups.
- Secure messaging facilities in the PCEHR (recommendation 24) could be leveraged for e-mental health services, but would be subject to policy regarding the use of secure messaging between patient and clinician, thus limiting e-mental health messaging to additional interoperable software products. The growth of mobile apps and other technologies with potential to provide a range of services with or without the patient-clinician relationship (Klasnja and Pratt, 2012) plus the potential of the Quantified Self for prevention, self-care and intervention models of care that don't yet exist (Swan, 2012) may influence the scope of message facilities in the PCEHR in the future.
- Notifying patients whenever their records are opened (recommendation 28) may be counterproductive with some patients. People who use mental health services also use other services, and are often frequent users with comorbidities, making them more vulnerable than the majority of healthcare consumers (Rivers, 2010). How multiple notifications are delivered over time should be considered, especially if telephone and website access is part of the PCEHR notification system.
- Recommendation 30 talks about evolving education on how to use the PCEHR. This has implications on
 website and telephone service providers in terms of linking their services to the PCHER, as well as informed
 consent for patients who give them access to enable service delivery. As pointed out by Rice et al., 2013) the more compromised one's mental health is, the harder it is to use PHRs. Education programmes
 should deliver to a wide range of health literacy competency.



Figure 14: PCEHR statistics reported as at midnight 1 September 2014

PCEHR Statistics Reported as at midnight 1 September 2014	
Description	Count
Consumer Registrations	1,851,693
Healthcare Provider Organisations Connected	7,477
Aged Care Residential Services	141
Hospitals	172
Pharmacies	1143
Clinical Documents	
Shared Health Summary	30,879
Hospital Discharge Summary	57,106
Event Summary	3,923
National Prescription and Dispense Repository (NPDR) Documents	
Prescription	262,823
Dispense	222,507
Clinical views of patient records in past week*	2,895
*latest weekly date range 21 – 27 August 2014	

The uptake of the PCEHR is low, which is in keeping with the uptake of Personal Health Records (PHRs) in general (2013, Nazi, 2013). Up to 80% of general practices have enrolled but only 10% are contributing records to the PCEHR (Craig et al., 2014). PHRs work best for people when the features allow them to do more than view content, e.g. transactional activities such as make appointments, order repeat prescriptions and have brief written communications with their doctor (Day and Gu, 2012).

Mental health records are not usually specifically kept separate from general health records, other than as a function of authorised access. They are usually recorded in the same software/database that serves an organisation, and are separated by means of user profile rather than software ring-fencing. Services provided online are usually separate from a healthcare organisation's information system. Interoperability would be the biggest technical barrier to integration. Clinical processes and clinician attitudes to Internet-based mental health services would be the biggest organisational challenge for integration, with psychiatrists least likely to use EHRs than other clinicians (Druss and Dimitropoulos, 2013).

International attempts at including mental health features in PHRs include:

- MyHealthyVet (US). Veterans appear to be willing to use the service but the numbers of actual users is small (Tsai and Rosenheck, 2012). Rice et al (Rice et al., 2013) outline the difficulties people have accessing mental health services (lower insurance funding than for physical health issues, stigma and stereotyping of people with mental health issues) and use MyHealthyVet as an exemplar ePHR.
- HealthSpace was rolled out in the UK but has closed down. Greenhalgh et al. (Greenhalgh et al., 2010) outline the reasons for non-adoption.
- Estonia, Spain (particularly Andalucia), Netherlands, Denmark, Sweden and Germany all have versions of PHRs but the literature is mostly silent on mental health as a component.

A large body of literature is emerging on PHRs in general. Kaelbar et al. (Kaelbar et al., 2008) describe a research agenda in which researchers focus on functionality evaluation (without specifying mental health), privacy and security, adoption and attitudes, and PHR architecture. The literature is grappling with the basics at the moment, with some reference to mental health issues, e.g. Rice et al.'s comments about barriers being exacerbated by mental health issues.

The PCEHR (and PHRs in general) is not yet mature. It was implemented in July 2012 and uptake is low and slow. The recent review has 38 recommendations, many of which influence one another, and each of which demands considerable attention and effort in response. As pointed out by Kaelbar et al. (2008), the research agenda is still new. Mobile technologies (include phones, websites and apps functionalities) offer potential for flexibility and scope as outlined by Klasnja et al. (2012). Interoperability of health information systems continues to



be fraught and difficult to resolve. Issues associated with privacy and ethics (Rivers, 2010, Craig et al., 2014) are exacerbated for people with mental health issues.



8. Appendices

1. DATA COLLECTED FROM ONLINE SURVEYS

Current top Australian e -mental health offerings: Awareness and Reach

Organisation	Unique users	Bounce rate	Top 5 page views					Repeat users	Website subscribers	Facebook likes	Twitter followers
A CONTRACTOR OF THE PARTY OF TH			1	2	3	4	5				
The Butterfly Foundation (http://www.thebutterflyfoundation.org.au)	81268 (from December 2013 onwards)									23,708	7712
The Butterfly Foundation - National ED HOPE Line (http://thebutterflyfoundation.org.au/national- edhope-line/)											
The Butterfly Foundation - The National Eating Disorders Collaboration (http://www.nedc.com.au/)	229163 (from December 2013 onwards)		Anorexía nervosa, 69,211 http://nedc.com.au/anorexia nervosa	Eating Disorders in Australia, 47,264 http://nedc.com.au/eating- disorders-in-australia	Bulimia Nervosa, 30,737 http://nedc.com.au/bulimia- nervosa	Eating disorders explained, 29,340 http://nedc.com.au/eating- disorders-explained Homepage, 24,159 http://nedc.com.au	Homepage, 24,159 http://nedc.com.au	74,275	1600	1669	912
Lifeline (https://www.lifeline.org.au/)	674,321	40%	Homepage	Lifeline Locations	Crisis Support Chat	Volunteer for Lifeline	Donate	241,317	18,510	21,429	10,919
headspace (http://www.headspace.org.au/)	1,203,200	50.40%	headspace centres	about headspace	is it just me	job opportunities	what we do	431,238	28,078	40,954	15,527
BoysTown - Kids Helpline (http://www.kidshelp.com.au/)	572,548	56.90%	www.kidshelp.com.au/teens /gethelp/web - counselling	www.kidshelp.com.au/kids/f un - stuff	www.kidshelp.com.au/kids/i nformation	www.kidshelp.com.au/teens /get - help	www.kidshelp.com.au/teens /get - info	92,226	5		
MindSpot Clinic (http://www.mindspot.org.au/)	194,438	55.57%	Homepage	Anxiety Quiz	Depression Quiz	Treatment Courses	Our Services	52,498	8	3141	
ReachOut.com Australia (http://au.reachout.com/)	1,509,000		mental health difficulties	suicide and self harm	eating disorders and body image	emergency help	developing coping skills		14,000+	35,000+	21,0004
Australian National University (http://www.anu.edu.au/)	828,000		bluepages.anu.edu.au/inde x	bluepages.anu.edu.au/abou t_bluepages/feedback	bluepages.anu.edu.au/help _and_resources/State_by_ State/SA	bluepages.anu.edu.au/help _and_resources/State_by_ State/NSW	bluepages.anu.edu.au/help _and_resources/State_by_ State/Qld			3885 (since inception)	
myCompass (https://www.mycompass.org.au/)	57,102	68%	myCompass Landing Page	Registration Page	Tracking / Self-monitoring	Graphical Feedback Reports	Profile / Symptom Questionnaire	21,469)		
The Black Dog Institute (http://www.blackdoginstitute.org.au/)	1,252,733	53.40%	http://www.blackdoginstitute .org.au/public/bipolardisord er/self-test.cfm		http://www.blackdoginstitute .org.au/public/bipolardisord er/bipolardisorderexplained. index.cfm		http://www.blackdoginstitute .org.au/public/depression/d epressionexplained/index.ct m	337,778	3	48,430	13,300
C.R.E.S.P.: NHMRC Centre of Research Excellence in Suicide Prevention (https://cresp.edu.au/)	5108	61.57%	Home I CRE	A/news/abs-report-suicide- still-highest-cause-death- amongst-australian-young- people	/people/who-we-are	/people/dr-tom-calma-ao	/cre-ehealth-sites	1,737			529
BITE BACK (http://www.biteback.org.au/)	39,000	45.80%	http://www.biteback.org.au/	http://www.biteback.org.au/ mental-fitness/	http://www.biteback.org.au/ mental-fitness/mental- fitness-personality/	http://www.biteback.org.au/t hings-to-do/	http://www.biteback.org.au/ competition/	14,050			252
beyondblue (http://www.beyondblue.org.au/)	2,562,013	47.92%	Beyondolue – home	Signs and symptoms of depression	Anxiety and depression checklist (K10)	Anxiety Signs and symptoms	Depression	1,130,307	29,888	232,722	34,237
beyondblue - Just speak up (http://justspeakup.beyondblue.org.au/)	24,819	64.68%						4,871			
Heads Up - (http://www.headsup.org.au/)	86,419	79.03%	-					18,370			
Man Therapy (http://www.mantherapy.org.au/)	516,251	62.08%						134,568	3		
MindMatters (http://www.mindmatters.edu.au/)	82,176	50.13%						33,717	,		
The Shed Online (http://www.theshedonline.org.su/)	232,787	65.25%						98,912			
Youthbeyondblue (http://www.youthbeyondblue.com/)	488,141	73.34%						99,128	3		



Current top Australian e-mental health offerings: Functionality

Organisation	Fact sheets	Consumer services	Pathways to care	Evidence- based online interventions	Forums (Peer chat rooms)	Facilitation of social media discussions				F2F augmented with self care
The Butterfly Foundation	1	1	1	1		1	1	1		
The Butterfly Foundation - ED HOPE Teleweb Service										
The Butterfly Foundation - NEDC										
Lifeline Australia	1		1	1						1
headspace	1		1	1	1	1	1	1		1
BoysTown - Kids Helpline	1	1	1	1	1		1	1	1	1
The MindSpot Clinic	1	1	1	1						1
ReachOut.com	1	1	1	1	1	1	1			1
ANU		/	1	1	1					/
myCompass program	1	1		1						1
The Black Dog Institute	1	/		1		1				/
CRESP				1						
BITEBACK						/				
beyondblue	1	1	1	1	1	1	1			-
Justspeakup.beyondblue.org.au										
Headsup.org.au										
Mantherapy.org.au										
Mindmatters.org.au										
Theshedonline.org.au										
Youthbeyondblue.org.au										



Current top Australian e-mental health offerings: Overview

	Evidence-based	Measures (within website, in relation			New and emerging	Measure	W3C compliant	UX friendly
Organisation	design*	to user outcomes)	Analytics	Interfaces with F2F	tech**	effectiveness	(accessibility)	(consumer driven)
The Butterfly Foundation	Yes		Google Analytics			Yes	Yes	Yes
The Butterfly Foundation - ED HOPE Teleweb Service	Yes		Yes, not specified	Yes		Yes	Yes	Yes
The Butterfly Foundation - NEDC	Yes		Google Analytics		Yes	Yes	Yes	Yes
Lifeline Australia	Yes		Google Analytics	Yes		Yes	No	Yes
headspace	Yes	Yes	Google Analytics	Yes		Yes	Yes	Yes
BoysTown - Kids Helpline	Yes	Yes	Google Analytics	Yes		Yes	Yes	Yes
The MindSpot Clinic								
ReachOut.com								
ANU	Yes	Yes	AWStats, plus own software	Yes, but not explicitly		Yes	Yes	Yes
myCompass program	Yes	Yes	Google Analytics	Yes		Yes	Yes	Yes
The Black Dog Institute	Yes		Google Analytics		Yes	Yes	Yes	Yes
CRESP	Yes		Google Analytics		Yes		No	
BITEBACK	Yes					Yes	Yes	Yes
beyondblue.org.au	Yes	Yes	Google Analytics, UTM tagging, Sizmek, Qualaroo, Crazyeggs	Yes, but not explicitly	Yes	Yes	No	Yes
Justspeakup.beyondblue.org.au	Yes					Yes		Yes
Headsup.org.au	Yes					Yes		Yes
Mantherapy.org.au	Yes					Yes		Yes
Mindmatters.org.au	Yes					Yes		Yes
Theshedonline.org.au	Yes					Yes		Yes
Youthbeyondblue.org.au	Yes					Yes		Yes

^{*}The question asked was "Please briefly outline any products available via your website that would be classified as being of 'evidence-based design" **Biometrics, gaming and virtual intelligence



2. RELEVANT DATA FROM RECENT LITERATURE

AUSTRALIAN eMH SERVICES and USAGE (Christensen et al., 2014)

SERVICE ORGANISATION	KEY AUDIENCE AND SERVICES PROVIDED	USAGE
HEALTH PROMOTION, WE	LLNESS PROMOTION AND PSYCHO-EDUCATION	
Beacon https://beacon.anu.edu.au/	Key audience: consumers and health practitioners Provides guidance on the content, quality and availability of – ehealth applications including online tools, mobile apps and online support groups Consumer and researcher ratings are provided	 9,810 unique visitors per month, on average. No registration required. 76,503 pages accessed per month, on average
Beyondblue http://www.beyondblue.org.au/	 Key Audience: all Australians Communication and education through provision of comprehensive information on depression and anxiety including recognising symptoms Promotes early action and recovery 	 208,000 visitors per month, on average No registrations required
Black Dog Institute http://www.blackdoginstitute.org.au	 Key audience: all Australians Information, education, psycho-education focused on depression, bipolar disorder and anxiety disorders Screening tools, referrals to eMH programs and clinicians Contact point for community education programs 	 121,332 unique visitors per month, on average 276,115 unique page views per month, on average No registrations required 1,823,656 annual visitors
BluePages http://bluepages.anu.edu.au	 Key audience: people with depression Evidence based information about depression Automated screening tools for depression and anxiety Information about the experience, symptoms and diagnosis of depression Information about psychological, medical and alternative/lifestyle treatments for depression 	 9,701 unique visitors per month, on average No registrations required 229,638 pages accessed per month, on average
HeadsUp http://www.headsup.org.au/	Key Audience: workplaces, employer groups and business leaders Online resource providing information about mental health and the workplace. The website offers simple tools e.g. an action plan for business), practical advice, information and resources to take action	87,000 visits to the website in first six weeks Since June launch 4,700 businesses and individuals have registered for further information on mentally healthy workplaces



KidsMatter National Primary Schools Mental Health Initiative www.KidsMatter.edu.au Man Therapy www.mantherapy.org.au	 Key audience: school leadership, teachers and parents Objective: strengthen capacity of primary school communities to support children's social and emotional development and to respond effectively to child mental health issues Provides online resources and training, links to evidenced-based programs and services Key Audience: men - 30-54 years Practical information for men dealing with stress, anxiety and depression Online screening tool and links to programs and services 2,000+ school communities currently participating 691,302 website visits 152,000 completions of Man Quiz (K10) Has reached 41% of men aged 30 -54 years (approx 1.5 million)
mindhealthconnect Healthdirect Australia www.mindhealthconnect.org.au MindMatters National Secondary Schools Mental Health Initiative	 Key audience: National e-mental health website for the public and health professionals Brings together Australia's leading mental health providers in one place Find relevant mental health and wellbeing information, online programmes, services, tools, news, helplines Operated by Healthdirect Australia, on behalf of the Australian Federal Government Key Audience: school leadership, teachers and parents Objective: strengthen capacity of secondary school communities to support student resilience and to respond effectively to youth mental health issues Provides online resources and training, links to evidenced-based programs and services
ReachOut.com www.reachout.com	 Online forums Key audience: young people aged 14-25 Non-clinical mental health promotion and early intervention service Information, self-help referral, peer support via online forum Anonymous, available 24/7, accessible on computers/mobile/tablet Referral pathways (41% of distressed young visitors to the site said they would be more likely to seek additional help after using R/O) On average 170,000 unique visitors per month, on average No registration required 1.7 million annual visits on average



PREVENTION AND EARLY	YINTERVENTION	
beyondblue support service 24 hr – 1300 224636	 Key audience: people experiencing distress Telephone (24 hr – 1300 224636), email and web chat counselling with trained mental health professional Provides brief interventions/support and referral 	8,583 contacts per month, on average during the first full year of operation – 2013/14 (telephone, email or web chat)
BiteBack Black Dog Institute http://www.biteback.org.au/	 Key audience: 12-18 year olds Prevention Services: well-being and resilience building 	 3,400 unique visits per month, on average 75 registrations per month, on average 2,646 registered users since 2011
Brave Online https://brave4you.psy.uq.edu.au/	Key audience: Children and adolescents with risk factors (e.g. temperament) or early signs of anxiety Self-help, therapist assisted, or supported by school staff Full-automated	Current pilot project with 2 schools, available to research populations only
Climate Schools www.climateschools.com.au	Key audience: secondary school students Health education courses available via website, with teachers delivering additional activities to reinforce online lessons: alcohol education, alcohol and cannabis use, psychostimulant and cannabis education	 313 unique visitors per month, on average 3,716 page views per month, on average 90 schools currently registered and using the programme
e-couch https://ecouch.anu.edu.au	Key audience: adults aged 20-70years Information and automated self-help program that includes a literacy component and online tools for prevention and treatment of depression, generalised anxiety disorder and social phobia Two additional tailored streams for bereavement and loss, and divorce and separation	 1,000 community registrations per month, on average 7,256 unique visitors per month, on average 393,038 pages accessed per month, on average
eheadspace www.eheadspace.org.au	 Key audience: 12-25year olds and their friends and families Early intervention Improving the availability and accessibility of free, confidential, youth friendly clinical mental health support. Improving help seeking behaviours of young people and their families. 	 1,526 unique registrations per month, on average 41,000 registrations since 2011 For 54% of young people accessing eheadspace, this was their first experience of seeking help.
Kids Helpline 1800 55 1800 www.kidshelp.com.au	 Key audience: children and young people aged between 5 and 25 years Kids Helpline Counselling Services – provides free, private and confidential counselling and information/referral for children and young people aged under 26 years across Australia via phone, 	 18,952 counselling contacts per month, on average (15,460 via phone; 1,978 via email; 1,514 via web) 44,531 unique visitors to Kids Helpline website per month, on average 28,105 webpage views of Hot Topics covering information



	web and email www.kidshelp.com.au – provides a range of information and self-help resources for children, young people and adult carers	and coping strategies for a variety of problems (14,526 page views of "teens" Hot Topics; 10,666 page views of "grownups" Hot Topics; 2,913 page views of "kids" Hot Topics) 10,337 webpage views of self-submitted stories of young people's problems and their experiences contacting Kids Helpline 480 connections with Search for a Service function, which connects people with their local support services No registrations required More than 7.5 million contacts since the service started in 1991
MoodGYM http://moodgym.anu.edu.au	 Key audience: people at risk of developing a common mental health problem or who are experiencing depression or anxiety symptoms Automated, self-help CBT for depression with 5 modules and 29 online exercises 	 9,400 community registrations per month, on average Over 800,000 registrations 36,834 unique visitors per month, on average 3,154,840 pages accessed per month, on average
New Access http://www.beyondblue.org.au/resourc es/health-professionals/newaccess-a- beyondblue-program	Key audience: people with mild-to-moderate depression / anxiety. Trained coaches provide individually tailored low intensity CBT to clients incorporating e-mental health programs/supports	Currently only available to research participants at three pilot sires located in SA, ACT and NSW
CRISIS INTERVENTION AN Lifeline https://www.lifeline.org.au/	Key audience: Australians experiencing a crisis Lifeline 13 11 14 – national telephone helpline Lifeline Online Crisis Support Chat Service – one on one confidential chat service Lifeline Suicide Hot Spot crisis line – specialist telephone helpline Lifeline Online 'Get Help – self-help resources at lifeline.org.au	 Lifeline 13 11 14: average 60,000+ calls per month, on average Online Crisis Support Chat: average 2,500 contacts per month Suicide Hot Spot Crisis Line: average 1,500 calls per month No registrations required lifeline.org.au – on average 58,000+ unique visitors per month Online 'Get Help' resources – 8,000 unique page views per month Referrals to other services – 2/3 of callers and chat visitors receive referral to other services
iBobbly Black Dog Institute TREATMENT AND E-THER	 Key audience: Aboriginal and Torres Strait Islander peoples aged 16-35 years. Treatment for suicidal ideation based on acceptance and commitment therapy Currently undergoing upgrades and improvements 	Currently only available to research participants in pilot study in the Kimberley, WA Public release date TBA



BraveOnline	Key audience: children and adolescents with anxiety disorders	To date, the clinician supported version of the programme is
http://www.brave.psy.uq.edu.au/index _brave.html	 Fully automated online intervention for anxiety in youth, delivered via computer, mobile phone or tablet Minimal therapist assistance Cognitive behavioural therapy, problem solving therapy, cognitive challenging, exposure delivered via 10 interactive modules for young people (plus 2booster sessions) 6 interactive modules for parents (plus booster sessions) Separate programmes for children vs adolescents Additional programme with specific sessions for social phobia 	only accessible via research group in Australia Being used with clinically anxious children post the Christchurch earthquake
e-couch http://ecouch.anu.edu.au	 Key audience: adults aged 20-70years Information and automated self-help program that includes a literacy component and online tools for treatment of depression, generalised anxiety disorder and social phobia Two additional tailored streams for bereavement and loss, and divorce and separation 	 1,000 community registrations per month, on average 7,256 unique visitors per month, on average 393,038 pages accessed per month, on average
OnTrack, QUT www.ontrack.org.au	 Key audience: Australians with a health problem Information services for a range of health conditions Self-rated quizzes on drinking, mood and relationships with feedback supplied Interactive online programmes for depression, alcohol & depression, family & friends, psychosis, flood and storm recovery, diabetes iPhone/iPad apps for meditation iPad app, Stay Strong, which is used by workers in Indigenous health settings 	 1,400+ unique visitors per month, on average No registrations required for screening 916 registrations for web programmes 63,526 page views since 2009
Mental Health Online https://www.mentalhealthonline.org.a u	 Key audience: adults aged 18 years or more Information and self-guided assessment for 21 disorders Guided and unguided self-help online CBT for generalised anxiety disorder, obsessive compulsive disorder, panic disorder, depression, insomnia, PTSD and social anxiety disorder, as well as a trans-diagnostic programme (depression and anxiety) for same-sex attracted young people Tailored integrated resources for people with comorbid problems Availability of therapist support via e-mail, text chat, voice-over internet, video chat and within a VR space Additional programmes offered through participation in research (e.g. depression, insomnia, compulsive hoarding) eTherapist Online training and placement opportunities 	 1,380 unique visitors per month, on average 625 registrations per month, on average 22,098 page views per month, on average
MoodGYM http://moodgym.anu.edu.au	Key audience: people with depression or anxiety symptoms. Designed for young people but used by all ages.	 9,400 community registrations per month, on average Over 800,000 registrations



	 Automated, self-help CBT for depression with 5 modules and 29 online exercises 36,834 unique visitors per month, on average 3,154,840 pages accessed per month, on average
myCompass Black Dog Institute www.mycompass.org.au	 Key audience: people with mild-mod depression and anxiety Fully automated online intervention for depression and anxiety, delivered via computer, mobile phone or tablet Cognitive behavioural therapy, problem solving therapy, positive psychology and interpersonal psychotherapy delivered via 12 interactive self-help modules Real time tracking/monitoring of symptoms 4,545 unique visits per month, on average (users and general public) 310 registrations per month, on average 24,711 page view per month, on average 15,028 registered users since June 2012
SHADE National Drug and Alcohol Research Centre, UNSW www.shadetreatment.com	 Key audience: people aged 18 years and over with depression and comorbid substance use problems Fully automated online intervention incorporating CBT, motivational enhancement training, mindfulness and relapse prevention Minimal therapist assistance (10-15 minutes per session) via email, telephone or in clinic Available in 10-session programme (weekly sessions) or a skills module version (1-2 hours each)
ThisWayUp St Vincent's Hospital www.thiswayup.org.au	 Key audience: people with common mental health problems Online clinic for registered health providers and their patients CBT for major depressive disorder, generalized anxiety disorder, panic disorder, social phobia, obsessive compulsive disorder, and co-morbid anxiety and depression Self-help web intervention for mixed anxiety and depression, crisis management, social phobia Online courses for schools to teach students how to manage depression and anxiety, alcohol and drugs 1,000 unique visitors per month, on average Clinic site: 80 patient and 40 clinician registrations per month on average 275 self-help site registrations per month, on average 6,000 registrations to self-help courses since 500 primary and high schools registered to use the courses as part of their lessons
RECOVERY AND MUTUAL	SUPPORT SERVICES
BlueBoard http://blueboard.anu.edu.au	 Key audience: people with common mental health problems Moderated internet support group Available 24/7; moderated 7am-10pm Separate bulletin board forums for depression, bipolar, anxiety, social anxiety, panic disorder and borderline personality disorder 110 new member registrations per month 6,073 posts per month, on average 5,408 unique visitors per month, on average 210,671 pages accessed per month, on average



CLINICAL EFFECTIVENESS and COST EFFICIENCY of AUSTRALIAN eMH SERVICES (Christensen et al., 2014)

Name of programme	Number of research trials	Effect sizes	Cost data	Setting	Target and Reference
HEALTH PROMOTIC	N, WELLNESS	PROMOTION AND PSYCHO-EDUC	ATION SERVICES		
BluePages http://bluepages.anu.edu.au	1 x RCT (quasi indicated prevention)	Within group effect size: d=0.4 (depression symptoms) and d=0.5 for completers Between group effect size d=0.29 (depression symptoms) and d=0.35 for completers (12m follow up)		Community	Depression symptoms, depression literacy; reductions in stigma (Mackinnon et al., 2008, Griffiths et al., 2004)
PREVENTION, EARL	Y INTERVENTIO	ON AND SUICIDE PREVENTION			
BiteBack http://www.biteback.org.au/	1 x RCT	Between group effect sizes: overall d=0.22 (depression symptoms) d=0.34 (high adherence users)		Open access, Australia-wide, community-based trial	Well-being, resilience, depression and anxiety symptoms (Manicavasagar et al., 2014)
Climate schools www.climateschools.com. au	3 x RCTs	Within group effect sizes at post: d=0.23 (average alcohol consumption), d=0.2 (binge drinking). AT 6 month follow up: d=0.18 (average alcohol consumption); d=0.19 (cannabis use) At 12 month follow-up: d= 0.38 (average alcohol consumption), d=0.17 (binge drinking); d=0.31 (cannabis use)		Australian secondary school students	Alcohol and drug use, alcohol and drug knowledge alcohol and drug-related harms, overall wellbeing. (Newton et al., 2010)
eCouch	4 x RCT quasi- indicated	University/staff users social anxiety stream e-couch; Between group pre-post difference:		Community/young people in the	Depression and anxiety (Donker et al., 2013, Bowler et al., 2012, Glozier et al.,



http://ecouch.anu.edu.au	prevention trials +	d=0.71 - 0.93 (for social anxiety).		community	2013)		
(see also: treatment data)	1 x equivalence trial	Spontaneous users; e-couch depression IPT and CBT streams: Within group d= 0.80 (ITT) and d=1.44 for completers (depression, CBT); d= 0.67 (ITT) and d=1.02 (completers) (depression, IPT) Cardiovascular disease; d=0.18 (depression) and d=0.16 (anxiety)		People with cardio vascular disease			
MoodGYM https://moodgym.anu.edu. au	8 x quasi-indicated prevention; 1 x universal prevention 2 x RCT	Within group effect sizes: d=0.4 (depression) and d=0.6 for completers Unguided between group: g=1.19 (depression) and g=0.23 (alcohol misuse) (6 mths) Unguided between group: g= 0.57 (depression), g=0.74 completers and g=0.82 compliers Between group effect size: MoodGYM vs waitlist: d=0.23 (anxiety) d=0.27 (depression) at 6 month follow up	Cost effective to translate into another language: 16 QALYs gained per 1000 treated persons; CER=3432	Community Schools Universities Lifeline Workplace NHS Choices Brain injury	(Christensen et al., 2004, Calear et al., 2013, Calear et al., 2009)		
CRISIS INTERVENTION AND SUICIDE PREVENTION							
Lifeline 13 11 14 https://www.lifeline.org.au/	N/A	N/A	Social Return on Investment study of Lifeline Online Crisis Support Chat service in 2013 calculated a return of \$8.40 for this service.	Community based adults	Crisis intervention with suicidal Australians (netbalance, 2014)		



BraveOnline http://www.brave.psy.uq.e du.au/index_brave.html e-couch https://ecouch.anu.edu.au Mental Health Online https://www.mentalhealthonline.org.au 3 x RCTs + 1 equivalence Uncontrolled ongoing 'rea open access service result	University/staff social anxiety stream: Between effect (social anxiety 'cases') OR=1.7 (social anxiety) Community users e-couch: Between effect (depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group		Adolescents with anxiety Community (Metro/ regional/rural) University	Anxiety symptoms (Spence et al., 2011, Spence et al., 2006) (Bowler et al., 2012, Donker et al., 2013, Griffiths et al., 2012)
e-couch https://ecouch.anu.edu.au Mental Health Online https://www.mentalhealthonli	e-couch community users: Between group effect size d=2.43 (generalised anxiety) trial University/staff social anxiety stream: Between effect (social anxiety 'cases') OR=1.7 (social anxiety) Community users e-couch: Between effect (depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group		Community (Metro/ regional/rural)	Spence et al., 2006) (Bowler et al., 2012, Donker et al., 2013, Griffiths et al.,
Mental Health Online https://www.mentalhealthonli https://www.mentalhealthonli	effect size d=2.43 (generalised anxiety) University/staff social anxiety stream: Between effect (social anxiety 'cases') OR=1.7 (social anxiety) Community users e-couch: Between effect (depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group		(Metro/ regional/rural)	et al., 2013, Griffiths et al.,
Mental Health Online https://www.mentalhealthonli Uncontrolled ongoing 'rea open access	trial University/staff social anxiety stream: Between effect (social anxiety 'cases') OR=1.7 (social anxiety) Community users e-couch: Between effect (depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group		regional/rural)	, , ,
Mental Health Online https://www.mentalhealthonli Uncontrolled ongoing 'rea open access	University/staff social anxiety stream: Between effect (social anxiety 'cases') OR=1.7 (social anxiety) Community users e-couch: Between effect (depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group			2012)
https://www.mentalhealthonli ongoing 'rea open access	effect (social anxiety 'cases') OR=1.7 (social anxiety) Community users e-couch: Between effect (depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group		University	
ongoing 'rea open access	(depression 'cases'): OR= 5.3 (depression) Spontaneous users e-couch CBT: within group			
https://www.mentalhealthonli ongoing 'rea open access	Spontaneous users e-couch CBT: within group			
https://www.mentalhealthonli ongoing 'rea open access	•			
https://www.mentalhealthonli ongoing 'rea open access	•			1
ongoing 'rea open access	effect sizes (depression 'cases') d= 0.65 (ITT,			
ongoing 'rea open access	6 mths; (depressive symptoms).			
https://www.mentalhealthonli open access	Within group effect sizes:	GAD Online:	Open access real	Primary and secondary
	world' Social anxiety automated: d=0.84; Post	Therapist-assisted vs face-	world	mental health symptoms, number of disorders,
	traumatic stress disorder automated : d=0.72;	to-face 59% cost saving;		confidence in managing
	Obsessive compulsive disorder automated: d=0.83; Panic automated: d=1.12; Generalised	Self-help vs face-to-face		mental health and psychological distress
	anxiety disorder automated : d=1.22;	61% cost saving		
		Panic Online		(Klein et al., 2011, Klein et al., 2010, Klein et al., 2006)
	In press data re: effect on depression:	iCBT \$350 vs. telephone		
	Pania automatad: d- 20: Post traumatia strass	CBT \$378 vs. psycho- education only \$55		
	Panic automated: d=.30; Post-traumatic stress disorder automated: d=.36; Obsessive	education only \$55		
	uisoluel autolliateu. u=.so, Obsessive	PTSD Online (V1)		
	compulsive disorder automated: d=.33; Generalised anxiety disorder automated:			



MoodGYM http://moodgym.anu.edu.au	8 x RCT+2CTs + 1 equivalence trial +1 uncontrolled trial (one TBI)	Within group effect sizes: d=0.9 (depression caseness) completers Callers Lifeline; Between group effect 6 mths (depression 'cases'): 1.2 (ITT) and 1.4 completers Spontaneous users: Within group effect (depression 'cases'): =0.61 and 1.36 for completers (at 6 mths). University students between group: g=0.68-0.86 (mild to severe depression 'cases') completers and g=0.40-0.90 compliers, Guided primary care between group effect size at post: d=0.65 & d=1.1	3.7 times less expensive than the current cost for psychological therapist time in the traditional face-to-face modality. Anxiety Online (whole service) Estimated labour time cost saving resulting from the Anxiety Online service in the first 18 months of operation is therefore estimated at AU \$6.7 million.	Spontaneous users; schools; universities; primary care (GP supported); psychologists; Lifeline; NHS Choices online health portal; public mental health services; brain injury	Anxiety Depression (Høifødt et al., 2013, Donker et al., 2013, Farrer et al., 2011)
myCompass www.mycompass.org.au	1 x RCT 1 x uncontrolled trial (diabetes related distress)	Between group effect sizes at post: myCompass vs attention control - d=0.36 (depression); d=0.4 (anxiety); d=0.22 (stress); d= 0.22 (work and social adjustment) myCompass vs waitlist d=0.46 (depression);	Net Monetary Benefits for MyCompass are \$12187 for 12 months vs \$9245 for face-to-face CBT and \$9206 for TAU. [unpublished]	Adults with mild- moderate depression, stress and anxiety	Anxiety, depression & work and social adjustment (Proudfoot et al., 2013b, Harrison et al., 2011)



OnTrack	1 x RCT	d=0.47 (anxiety); d=0.35 (stress); d=0.29 (work and social adjustment) Within group effect sizes myCompass d=0.24 (anxiety)-0.49(depression, work and social adjustment) Diabetes trial within group effect sizes at post (unpublished): d=1.05 (depression); d=0.68 (anxiety); d=04 (work and social); d=1.15 (diabetes distress) Diabetes within group effect sizes at 3 month follow up: d=0.74 (depression); d=0.48 (anxiety); d=0.57 (work and social); d=1.04 (diabetes distress) Between group effect sizes at 3 month follow		Adults with diabetes related distress and mild- mod stress, depression and anxiety Adults with	Depression and alcohol use
www.ontrack.org.au	1 x pilot	up: Unguided brief vs full intervention: d=0.55 (depression); d=0.42 (psychological quality of life)		depression and alcohol misuse	Depression and psychological quality of life QOL
SHADE www.shadetreatment.com	2 x RCTs 3 x pilots	At 12-month follow-up: DEPRSSION: Clinician-assisted SHADE (d=0.97) vs. therapist-delivered CBT (d=1.16), vs. 1-session (d=0.71), vs. supportive counselling (d=1.03); ALCOHOL: Clinician-assisted SHADE (d=0.87) vs. therapist-delivered CBT (d=1.05), vs. 1-session (d=0.85), vs. supportive counselling (d=0.75) CANNABIS: Clinician-assisted SHADE (d=0.75) vs. therapist-delivered CBT (d=0.53), vs. 1-session (d=0.07), vs. supportive counselling (d=0.17).	SHADE used a minimum of 50% less clinician time than the specialist therapist-delivered CBT to produce equivalent outcomes through to 3-years post-treatment	Adults with depression and alcohol or cannabis or amphetamine use in the community	Depressive symptoms Alcohol use Cannabis use Amphetamine (Kay-Lambkin et al., 2011, Kay-Lambkin et al., 2009) use



THIS WAY UP	4 x RCT	CCCBT+Tel vs CCBT+Forum. Within group	THIS WAY UP Clinic	Community	Shyness (Titov et al.,
Material Control		effect sizes d=1.31-1.54	04000/DALW	volunteers with	2009b); depression(Perini et
www.thiswayup.org.au			\$1800/DALY averted;	social phobia,	al., 2009b);
		cCBT vs waitlist Within group d=0.98; between		depression,	
		group d=0.75	This Way Up self-help	anxiety	anxiety; social phobia
			programme		
		Worry vs waitlist: within group effect size d=1.3		82 volunteers with	
		and between group effect size d= 1.1	\$800/DALY averted	social phobia	
		Social phobia: within group effect size d=0.86		45 diagnosed with	
		(auto) and 1.15 (reminders)		depression	1
				48 diagnosed with	
				anxiety	
				,	
				163 with social	
				phobia	
RECOVERY AND N	MUTUTAL SUPI	PORT SERVICES			
BlueBoard	1 x RCT	Unguided community users: BlueBoard		Online support	Depression (Griffiths et al.,
http://blueboard.anu.edu.au		(adapted): Between group effect: Odds Ratio =		group for people	2012, Griffiths et al., 2010a)
		12.5. (12 mths]		with depression	
		Unpublished data – Within group effect size			
		for spontaneous BlueBoard users -			
		completers: d= 0.58 (depression)			



Evidence-based e-Health Interventions for Mental Health Promotion Table of References (Burns et al., 2014)

#	Reference	Mental health promotion strategy	Study type	Intervention	Study method	Findings	Summary of evidence
1	Costin, D.L., Mackinnon A.J., Griffiths K.M., Batterham, P.J., Bennett A.J., Bennett, K., & Christensen H. (2009). Health e-cards as a means of encouraging help seeking for depression among young adults: Randomized controlled trial. Journal of Medical Internet Research, 11, e42.	Promoting Help Seeking Attitudes & Behaviours – Psycho- education	RCT	Depression e-cards: Brief intervention delivering personalized emails containing links to depression information to enhance help- seeking outcomes.	348 young adults randomised to basic or enhanced depression e-card intervention, or attention-control.	Depression e- cards associated with significant improvements in help-seeking intentions and beliefs around formal help sources.	Depression e- card delivery associated with significantly improved intentions and attitudes towards help-seeking.
2	Collin, P.J., Metcalf, A.T., Stephens-Reicher, J.C., Blanchard, M.E., Herrman, H.E., Rahilly, K. & Burns, J.M. (2011). ReachOut.com: The role of an online service for promoting help-seeking in young people. Advances in Mental Health, 10, 39-51.	Promoting Help Seeking Attitudes & Behaviours – Psycho- education	Program evaluation - cross- sectional user profiling online survey and focus groups	Reachout.com: A website established and maintained by the Inspire Foundation targeted at young people aged 14- 25 years.	1,552 youth (14-25) completed online survey following visit to ReachOut.com.	39% sought information about mental health issues; on average around half reported improvements in skills, knowledge and confidence in help-seeking, propensity to seek help, and mental health literacy;	A moderate proportion of young adult users of ReachOut.com found the site useful and facilitated helpseeking outcomes.



						35.2% reported	
						•	
						site assisted them	
						in asking for	
						professional help.	
3	Shandley, K., Austin, D., Klein,	Promoting	Quasi-	Reach Out Central	Single group of 266	Positive	Females
	B., Kyrios, M. (2010). An	Help Seeking	experiment	(ROC): Online	youth aged 18-25	improvements	appeared to gain
	evaluation of 'Reach Out	Attitudes &	al repeated	educational game with	assessed at pre, post	over time were	greater benefits
	Central': an online gaming	Behaviours –	measures	virtual interactive	and 2 month follow-up	found for females	from use of ROC
	program for supporting the	Psycho-	trial	scenarios designed to	after 4 weeks of play	in use of positive	than males for a
	mental health of young people.	education		support the mental	on ROC.	coping strategies,	range of mental
	Health Education Research,			health of youth aged		life satisfaction,	wellbeing and
	<i>25</i> (4), 563-57			16-25, based on CBT.		resilience, help-	behavioural
						seeking intentions	outcomes.
						and reductions in	Further controlled
						alcohol use and	trials are
						avoidance	required, with
						behaviours.	particular
						Conversely, for	attention paid to
						males a non-	enhancing
						significant	acceptability and
						worsening effect	effectiveness for
						was observed for	both genders.
						some outcomes.	botti geriders.
4	Christensen, H., Griffiths,	Promoting	RCT	BluePages: A website	525 individuals with	Significant	Use of
4	K.M., & Jorm, A.F. (2004).	Help Seeking	no i	that provides	elevated depression	increases in	BluePages
		Attitudes &		information on	-		associated with
	Delivering interventions for				randomly	participants'	
	depression by using the	Behaviours –		treatments for	allocated to	understanding of	improved literacy
	Internet: Randomised	Psycho-		depression, screening	depression information	effective evidence-	regarding
	controlled trial. British Medical	education		tests, and links to	website, MoodGYM	based treatments	appropriate
	Journal, 328, 265-268.			other evidence-based	CBT training website	for depression.	depression
				resources.	or attention-control.		treatments.
5	Dunt, D., Robinson, J.,	Promoting	Internal	Beyondblue InfoLine:	Internal audit of calls	Infoline provided	Infoline is



	Selvarajah, S., Young, L., Highet, N., Shann, C. & Pirkis, J. (2011) beyondblue, Australia's national depression initiative: An evaluation for the period 2005 – 2010. International Journal of Mental Health Promotion, 13, 22-36,	Help Seeking Attitudes & Behaviours – Psycho- education	data evaluation (published as a report)	A 24-hour telephone helpline that operates seven days a week, providing callers with access to information and referral to relevant services where necessary.	between July 2007 - December 2008.	information, referrals & help to 73,129 callers. Calls increased substantially since its inception in 2006 (average increase of 150 calls/month). Callers included consumers (45%),	accessed by a broad range of individuals, including consumers and their networks across both genders and rural communities. The service appears to be extending its reach, with a
						consumers (45%), third party e.g., relative (36%) and professional (15%). 44% of consumer callers were male, and over 25% were from regional or remote areas.	its reach, with a steadily increasing number of callers accessing the service.
6	Finkelstein, J., & Lapshin, O. (2007). Reducing depression stigma using a web-based program. <i>International Journal of Medical Informatics</i> , <i>76</i> , 726-734.	Enhancing Community Attitudes & Stigma Reduction - Intensive Educational Interventions	Pre – post trial	CO-ED: A web-based depression stigma program delivered to healthcare professionals which is effective for reducing stigma associated with depression.	42 graduate students and university staff completed intervention; prepost assessment.	Significant improvements in depression literacy and reduction in depression stigma.	Web-based education tool was effective in reducing depression stigma and enhancing knowledge around



							depression.
7	Finklestein J., Lapshin O., &	Enhancing	RCT	CO-ED: A web-based	193 graduate	Computer-assisted	Computer-
	Wasserman E. (2008).	Community		depression stigma	students allocated	delivery of anti-	assisted
	Randomised study of different	Attitudes &		program delivered to	to 3 groups: anti-	stigma educational	educational anti-
	anti-stigma media. Patient	Stigma		healthcare professionals	stigma printed	content decreased	stigma materials
	Education and Counselling,	Reduction -		which is effective for	materials; anti-	stigmatising	was effective in
	<i>71</i> , 204-14.	Intensive		reducing stigma	stigma computer	attitudes and	reducing
		Educational		associated with	program, or no	increased	psychiatric
		Interventions		depression.	intervention	knowledge at post-	stigma and
					(control); assessed	test and 6 month	improving
					post-test and 6	follow up,	knowledge of
					months.	compared to the	mental illness at
						reading group, and	post-test and 6
						to control.	month follow-up.



Evidence-based e-Health Interventions for Mental Illness Prevention Table of References (Burns et al., 2014)

#	Reference	Mental health promotion strategy	Study type	Intervention	Study method	Findings	Summary of evidence
8	Gardner, P. C., Moore, J. T., Cigularov, K. P., Putter, S. E., Sampson, J. M., Maertens, J., Chen, P. Y., Quinnett, P., & Baker, A. (2009, April). Comparison of online and face-to-face gatekeeper training. Paper presented at the 42nd American Association of Suicidology Annual Conference, San Francisco, CA.	Prevention of Suicide, Suicidal Ideation and Behaviour – Gate keeper training	Non- randomised pre-post trial	QPR (Question, Persuade, Refer): A program designed to train community members who may be in contact with suicidal individuals to identify those at risk and assist with referring to appropriate mental health services.	107 Australians participated in the web-based version of QPR training and 853 Americans in the face-to-face QPR training.	Both groups demonstrated gains in knowledge post- test and declines at follow-up. Web-based QPR group showed more improvement in self-efficacy at post- test but this gain was not maintained at follow-up. Both groups showed gains in intentions to engage in suicide intervention post-test but only the online group maintained these intentions at follow up.	The results of this study are promising for the utility of the webbased QPR training, however they need to be replicated in a RCT. Further, it is not clear how these training programs directly impact actual gatekeeper behaviour or suicidal ideation/behaviour in those who are at risk.
9	van Spijker, B.A., Majo, M.C., Smit, F., van Straten, A., & Kerkhof, A.J. (2012). Reducing suicidal	Prevention of suicide, suicidal ideation and behaviour –	RCT & cost-effectivene ss analysis	Living with Deadly Thoughts: Online self-help CBT program to reduce	236 adults experiencing mild- moderate suicidal ideation,	Significantly larger proportion of individuals who received the	Online self-help CBT program on top of CAU increases the



	ideation: Cost-	Web Based	I	suicide ideation.	randan	mised to	intervention	likelihood of
	effectiveness analysis of a					ention or	demonstrated	
	I -	Programs For						clinically
	randomized controlled trial of	Reducing				t, information-	clinically significant	significant
	unguided web-based self-	Suicidal Ideation			•	ontrol. All	reductions in suicidal	reduction in
	help. Journal of Medical				particip	•	ideation (35% vs.	suicidal ideation,
	Internet Research, 14, 141.					ed care as	21% in the control	at lower cost.
					usual ((CAU)	group); with a saving	
							of, €34,727 (US	
							\$41,325) societal	
							costs relative to CAU.	
10*	Lifeline (2009). Crisis	Prevention of	Internal	Lifeline Crisis Telephon	ne Cro	oss-sectional	5.8% of calls	Lifeline provides
	Support through 13 11 14.	suicide, suicidal	data	Service: 13 11 14 is a	ana	alysis of Lifeline	identified as	support to highly
	Lifeline: Deakin West, ACT	ideation and	evaluation	confidential telephone	cal	II data sample	suicide related (45-	vulnerable
	[available online	behaviour –	(published	crisis support service	(20	008-2009).	50 calls/day); 10%	population
	http://www.lifeline.org.au/Abo	Crisis	as a report)	available 24/7 from a			of suicide-related	groups with high
	ut-Lifeline/Research-and-	Intervention		landline, payphone or			calls required	suicide risk,
	reports/Research-and-			mobile.			emergency service	receives suicide-
	Reports]						attendance for	related calls and
							direct intervention;	facilitates
							32% of suicide-	interventions
							related calls	where
							reported mental	appropriate for
							health and 33%	these suicide-
							reported	related calls to
							'aloneness and	ensure safety.
							support' as a main	,
							concern.	
11	Christensen, H., Farrer, L.,	Prevention of	RCT	Lifeline Crisis Telephon	ne 15	55 Lifeline callers		Suicide ideation
	Batterham, P.J., Mackinnon,	suicide, suicidal		Service: Weekly 10		th elevated	intervention,	declines over
	A., Griffiths, K.M., & Donker,	ideation and		minute calls to previous		ychological	participants	time both with
	T. (2013). The effect of a	behaviour –		Lifeline callers were		stress	demonstrated	and without
	web-based depression	Crisis		made by Lifeline		ndomised to	significant declines	proactive
L	i · · · · ·		l	,			5	· ·



	intervention on suicide	Intervention		counsellors.	internet CBT	in suicidal ideation	intervention.
		mervention					
	ideation: Secondary outcome			NB: intervention	(MoodGYM) plus	over time (12	Weekly call back
l l	from a randomised controlled			examined within an RCT	weekly telephone	months).	by Lifeline
	trial in a helpline. <i>BMJ Open.</i>			(compared to other	follow-up; internet	Telephone call	counsellors was
				active interventions).	CBT only; weekly	back group	equally as
					telephone follow-	showed significant	effective as
					up only or wait-list	reduction in	alternative
					TAU control.	suicidal ideation	interventions and
						from pre to post-	no intervention, in
						intervention, 6 and	the resolution of
						12 months follow-	suicidal ideation.
						up.	
12*	Kids Helpline (2008).	Prevention of	Survey	Kids Helpline: A free, 24	Two telephone	95% clients were	Kids Helpline
	Satisfaction & Efficacy	suicide, suicidal		hour counselling service	surveys conducted	found to be	appears to
	Report: Understanding Client	ideation and		for young people aged 5-	by Kids Helpline	"satisfied" or "Very	increase a young
	Satisfaction and the	behaviour –		25 years. Counselling is	counsellors with	satisfied" with the	person's ability
	Service's Efficacy in	Crisis		offered by phone, email	77 young people	service. 96%	and confidence to
	Increasing a Young Person's	Intervention		and over the web.	at the end of their	reported having	deal with their
	Ability to Cope. BoysTown:				counselling	gained some idea	issues, and the
	Milton, QLD				session.	on how to manage	service is in line
	[available online					their problem.	with the needs of
	http://www.kidshelp.com.au/g					92% reported	callers.
	rownups/news-					confidence in their	
	research/research-					ability to manage.	
	reports/research.php]						
	O'Kearney, R., Gibson,	Indicated	School-	MoodGYM: Online self-	78 males aged 15-	Those completing	Tentative support
	M., Christensen, H., Griffiths,	prevention of	based	help CBT program	16 allocated to	3+ MoodGYM	for reduction in
	K.M. (2006). Effects of a	depression and	controlled		MoodGYM or	modules showed	risk of depression
	cognitive-behavioural internet	anxiety - School	trial		standard PE	small relative	and small
	program on depression,	based screening			education classes;	benefits in	improvements in
	vulnerability to depression	& CBT			assessed post-test	depressive	depression
	valificability to approposition	α 001			accepted poor tool	acpicoolive	acprossion



	males: A school-based controlled trial. <i>Cognitive Behaviour Therapy</i> , <i>35</i> , 43-54.				and 16 weeks.	attributional style and a small reduction in risk of becoming depressed; all of which approached significance at post-test. These results were not maintained at follow-up.	attributions following moderate exposure to MoodGYM as an indicated program; however, results did not reach significance. Unable to endorse MoodGYM as an effective indicated program for depression in school-aged males.
14	O'Kearney, R., Kang, K., Gibson, M., Christensen, H., & Griffiths, K.M. (2009). A controlled trial of a school- based Internet program for reducing depressive symptoms in adolescent girls. Depression and Anxiety, 26, 65-72.	Indicated prevention of depression and anxiety - School based screening & CBT	School- based controlled trial	MoodGYM: Online self- help CBT program	157 females aged 15-16 allocated to MoodGYM or usual PE curriculum.	Significantly faster rate of decline in self-reported depressive symptoms observed in MoodGYM group compared to controls at 20 week follow-up (d=.46, 95% CI .1082). No	Some benefits demonstrated from MoodGYM on self-reported depressive symptoms only.



15	Dietz, D.K., Cook, R.F., Billings, D.W., Hendrickson, A. (2009). A web-based	Indicated prevention of depression and	RCT	Youth Mental Health: A Parents' Guide (YMH): Online multimedia skills	99 working parents allocated to online program or waitlist	significant intervention effects on depression status or attributional style. YMH yielded improvements in parents' self-	Online multimedia program was
	mental health program: reaching parents at work. Journal of Pediatric Psychology, 34, 488-494.	anxiety - Parent training and family strengthening		and knowledge- enhancement program (Social Cognitive Theory- based) for working parents with adolescents.	control.	efficacy and knowledge around childhood mental illness and its treatment.	effective in improving parental knowledge and confidence in addressing childhood mental illness.
16	Kenardy, J., McCafferty, K., & Rosa, V. (2003). Internet- delivered indicated prevention for anxiety disorders: A randomised controlled trial. <i>Behavioral</i> and Cognitive Psychotherapy, 31, 279–289	Indicated Prevention of Depression and Anxiety - General adults CBT for depression &/or anxiety	RCT	Online Anxiety Prevention Program: Online anxiety prevention CBT program.	83 university students with heightened anxiety sensitivity allocated to online program or waitlist control.	Significant reductions in self-reported depression symptoms and anxiety-related cognitions for those receiving online CBT relative to control.	Online CBT is effective in reducing anxiety-related cognitions and depressive symptoms relative control.
17	Ellis, L., Campbell, A.J., Sethi, S., & O'Dea, B.M. (2011). Comparative Randomized Trial of an	Indicated Prevention of Depression and	RCT	MoodGYM: Online self- help CBT program.	39 young adults (18-25 years) with elevated distress allocated to	Relative to control, MoodGYM participants demonstrated	Initial positive benefits for anxiety and CBT literacy following



	online cognitive-behavioural therapy program and an online support group for depression and anxiety. Journal of Cyber Therapy & Rehabilitation, 4, 461-467.	Anxiety - General adults CBT for depression &/or anxiety			MoodGYM (online CBT), online support group or control.	improvements in anxiety symptoms and CBT literacy at post-test.	use of MoodGYM, however long term outcomes require examination.
18	Mackinnon, A., Griffiths, K.M., &Christensen, H. (2008). Comparative randomised trial of online cognitive—behavioural therapy and an information website for depression: 12-month outcomes. British Journal of Psychiatry, 192, 130-134.	Indicated Prevention of Depression and Anxiety General adults CBT for depression &/or anxiety	RCT	MoodGYM: Online self-help CBT program.	525 adults allocated to online CBT (MoodGYM) or placebo control (online depression information website).	Both online CBT and depression information website associated with significant reductions in depression symptoms at posttest, which were maintained at 6 and 12 months in the CBT condition compared to placebo control.	Some evidence that benefits of internet-delivered CBT is effective in reducing depression immediately and over time.
19	Billings, D.W., Cook, R.F., Hendrickson, A., Dove, D.C. (2008). A web- based approach to managing stress and mood disorders in the workforce. Journal of Occupational and Environmental Medicine, 50,	Indicated Prevention of Depression and Anxiety - General adults CBT for depression &/or anxiety	RCT	Stress and Mood Management: Web- based multimedia health promotion program for workers.	309 working adults randomly assigned to web-based program or waitlist control.	Significant improvements in help-seeking attitudes, knowledge of depression and anxiety, and reduced stress levels in the online treatment group	Preliminary suggestion of positive effects in stress management, help-seeking attitudes and knowledge of mental illness.



	960-8.					relative to controls.	
20	Harrison, V., Proudfoot, J., Wee, P.P., Parker, G., Pavlovic, D.H., Manicavasagar, V. (2011). Mobile mental health: Review of the emerging field and proof of concept study. <i>Journal of Mental Health</i> , <i>20</i> , 509-24.	Indicated Prevention of Depression and Anxiety - General adults CBT for depression &/or anxiety	Feasibility proof of concept study; pre- post uncontrolle d trial	My Compass: web and mobile-based self-help program for mild-moderate stress, anxiety and depression.	44 adults used MyCompass for 6 weeks, with pre- post assessment.	Significant reductions in general psychological distress, stress, depression and anxiety symptoms at post-test, compared to pretest scores, following 6 weeks using MyCompass.	Significant improvement in symptoms of stress, depression, anxiety and distress following use of MyCompass.
21	Calear, A.L., Christensen, H., Mackinnon, A., Griffiths, K.M. & O'Kearney, R. (2009). The YouthMood Project: A cluster randomized controlled trial of an online cognitive behavioral program with adolescents. <i>Journal of Consulting and Clinical Psychology</i> , 77, 1021-1032	Universal Prevention of Depression and Anxiety - High School Based CBT	Stratified, cluster RCT	MoodGYM: An online, self-directed cognitive—behavioral therapy program designed to prevent or decrease the symptoms of anxiety and depression in adolescents.	32 Australian schools (N = 1,477 Year 9, 10 and 11 students) were randomised to the intervention (MoodGYM) or a waitlist control condition.	At post- intervention and 6- month follow-up, participants in the intervention condition had lower levels of anxiety than those in the control condition. Only males in the intervention condition showed reduced depressive	Although small to moderate, the effects obtained provide support for the utility of universal online prevention programs in schools.



22	Calear, A.L., Christensen, H., Mackinnon, A. & Griffiths, K.M. (2013). Adherence to the MoodGYM program: Outcomes and predictors for an adolescent school-based population. <i>Journal of Affective Disorders</i> , 147, 338–344	Universal Prevention of Depression and Anxiety - High School Based CBT	Stratified, cluster RCT	MoodGYM: An online, self-directed cognitive—behavioral therapy program designed to prevent or decrease the symptoms of anxiety and depression in adolescents.	32 Australian schools (N = 1,477 Year 9, 10 and 11 students) were randomised to the intervention (MoodGYM) or a waitlist control condition . Those in the intervention group were then classified as low or high adherers to the MoodGYM program.	symptoms at post- intervention and 6- month follow-up. High adherers reported stronger effects on anxiety and depression at post-intervention and follow-up than low adherers (vs. control). Predictors of adherence: Being in Year 9, living in a rural location and having higher pre- intervention levels of depressive symptoms.	Preliminary support for the positive relationship between program adherence and outcomes in a school environment. The identification of significant predictors of adherence will assist in identifying the type of user who will engage most with an online prevention program.
23	Heinecke, B.E., Paxton, S.J., McLean, S.A., & Wertheim, E.H. (2007). Internet- delivered targeted group intervention for body dissatisfaction and disordered eating in	Prevention of Eating Disorders And Body Image Problems - Community- Based	RCT	My Body, My Life: Weekly, CBT- based online group sessions facilitated by a guided self-help manual and trained therapist, plus online discussion board.	73 girls (12 – 18 years) who self-identified as having body image or eating problems. Randomly	Clinically significant improvements in body dissatisfaction, disordered eating,	Preliminary support for an online group intervention for non-clinical girls with disordered eating behaviours



	adolescent girls: A randomized controlled trial. Journal of Abnormal Child Psychology, 35, 379-391.	Programs			assignment to intervention (<i>My Body, My Life</i>) or a delayed treatment control group.	and depression observed at post- intervention and maintained at follow-up. Internet delivery was enthusiastically endorsed.	or body image.
24	Cox, C. M., Kenardy, J. A., Hendrikz, J. K. (2010). A randomized controlled trial of a web-based early intervention for children and their parents following unintentional injury. <i>Journal of Pediatric Psychology</i> , 35(6), 581-592.	Prevention of PTSD - Prevention of Post-Event Pathology From Post-Event Intervention For Those Who Demonstrate Vulnerability	RCT	So You've Been in an Accident: Psychoeducational website for children and adolescents.	85 children (7-16) who had been hospitalized overnight with an accidental injury (including mild traumatic brain injury). Children & their families randomly assigned to intervention (an information booklet and website) or control group.	Children within the intervention group reported improved anxiety, in comparison to worsening symptoms in the control group. Children with higher baseline trauma scores reported the intervention to be helpful.	The online intervention showed promising results in its ability to aid child recovery.

Evaluation conducted in non-academic context



New and emerging technologies in mental health promotion, early intervention and treatment: Table of References(Burns et al., 2014)

#	Reference	Mental health promotion	Study type	Intervention	Study method	Findings	Summary of evidence
		strategy					
1	Christensen, H. and I. Hickie (2010). "Using e-health applications to deliver new mental health services." Med J Aust 192: S53-S56.	Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	N/A	E-health services: how these services are delivering new and innovative mental health approaches.	Review of recent research publications.	Despite 'successful' public awareness campaigns, school-based prevention programs and reforming of the primary care-based mental health system, individuals experiencing a diagnosable mental health condition are too often not receiving adequate care.	The facilitation of promotion, prevention and early intervention programs and access to care can be improved by the investment and sector-wide uptake of e-health services.
2	Burns, J., T. Davenport, H. Christensen, G. M. Luscombe, J. A. Mendoza, A. Bresnan, M. Blanchard and I. Hickie (2013). Game on: Exploring the impact of technologies on young men's mental health and wellbeing Findings from the first Young and Well National Survey. Australia, The Young and Well Cooperative Research	Enhancing Community Attitudes, Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	Survey.	Utilising online services and mobile apps to benefit the mental health and wellbeing of young men.	700 young men completed a CATI survey over the phone.	Almost 50% of young men said coping with stress was their biggest issue, but less than one-in-four young men would recommend professional support, either faceto-face or online.	Young men are not engaging with current mental health promotion, prevention and early intervention programs, and are therefor reaching crisis point before receiving care. Current research suggests that by more greatly using



	Centre.						online approaches, young men are more likely to engage with strategies to understand and improve their mental health and wellbeing.
3	Christensen, H. and I. B. Hickie (2010). "E-mental health: a new era in delivery of mental health services." Med J Aust 192(11).	Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	N/A	E-mental health: briefly outlining successful models of e-mental health care in Australia.	Review of recent publications.	E-mental health can overcome traditional barriers to care (geographical, financial and attitudal) and provide accessible treatment to end users.	Australia is leading the world in the development of emental health strategies, which are significantly improving access to care and treatment outcomes.
4	beyondblue (2013). beyondblue Information Paper: Improved access - e- mental health programs. Melbourne, beyondblue.	Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	Feasibility proof of concept study, review of current literature.	E-mental health: outlining the position of beyondblue in improving people's access to mental health care via e-mental health strategies.	Review of recent publications.	Via the provision of evidence-based E-mental health programs and strategies, it has the potential to increase access to mental health information, treatment and support.	With key stakeholders working collaboratively (federal and state government, peak not-for-profits, academics, and the broader mental health sector), a comprehensive emental health system can be implemented.
5	Blanchard, M., A. Metcalf, J. Degney, H. Herrman and J.	Enhancing Community	Service evaluation -	The report "investigated the role that information	Sixteen focus groups were	ICT plays an enormous part in	Young people who experienced



							,
	Burns (2008). "Rethinking the Digital Divide: Findings from a study of marginalised young people's ICT use." <u>Youth Studies Australia</u> 27 (4): 35-42.	Attitudes, Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	focus groups	communication technologies (ICT), specifically the internet, may play in promoting mental health among young people at risk of, or experiencing, marginalisation."	conducted with 96 young people at 12 locations in rural, regional and metropolitan Victoria.	the everyday lives of marginalised young people, with a greater ease of access that hypothesised by researchers prior to the commencement of the research.	marginalisation were not necessarily limited in their ability to access the internet and ICT services.
6	Blanchard, M., H. Herrman, M. Frere and J. Burns (2011). Attitudes informing the use of technologies by the youth health workforce to improve young people's wellbeing: Understanding the nature of the "digital disconnect". National Youth Sector Conference 2011.	Enhancing Community Attitudes, Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	Online questionnai- re, organisatio- nal audits and interviews.	Investigating the current role technology plays in enhancing a young person's mental health, in conjunction with understanding the youth mental health sector professional's understanding and uptake of technological strategies.	Online questionnaire (n=233), organisational audits of five multidisciplinary youth health services and interviews with expert opinion leaders (n=9)	More than half of the questionnaire participants believed that technology interventions have a role to play in the improvement of young people's mental health. However, from a professional perspective, there was limited uptake and understanding of the available online and technologically driven interventions and programs.	Professionals have a poor awareness of the online and technology sphere that their clients/patients engage in on a daily basis.
7	Burns, J., C. Morey, A. Lagalee, A. MacKenzie and J. Nicholas (2007). "Reach	Enhancing Community Attitudes,	Evaluation of service.	Reachout.com: A website established and maintained by the Inspire	Review of internal statistics and	Reach Out! provides a reliable, cost-effective and	Reach Out! recognises the potential that the wide



	Out! Innovation in service delivery." Medical Journal Australia 187: S31-34.	Promoting Help Seeking Attitudes and Behaviours – Psycho- Education		Foundation targeted at young people aged 14- 25 years.	research.	accessible service delivering information and early intervention strategies to young people. Reach Out! Pro is a service aimed specifically at mental health sector	provision of e-mental health information and programs, for both young people and mental health professionals alike.
8	Burns, J., M. Blanchard and	Enhancing	Review of	The impact	Review of recent	professionals, as how to integrate the tools Reach Out! provides in care plans.	
	A. Metcalf (2010). Bridging the Digital Divide in Australia: The Potential Implications for the Mental Health of Young People Experiencing Marginalisation. Handbook of Research on Overcoming Digital Divides: Constructing an Equitable and Competitive Informative Society. K. Killinger. US, IGI Global.	Community Attitudes, Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	recent publications.	technologically driven and online mental health and wellbeing strategies on marginalised young people.	literature, particularly the Bridging the Digital Divide project.		
9	Sensis and AIMIA (2013). Yellow Social Media Report: What Australian people and businesses are doing with	N/A	Survey.	N/A	Survey of 515 individual consumers and 1959 businesses.	Over the past year, the social media usage of Australian's has increased, with the	Australian's are enthusiastic users of social media, with indicated growth in relation to both



	social media.					survey indicating that 65% of internet users have a social media presence.	personal and business use.
10	Burns, J. M., T. A. Davenport, L. A. Durkin, G. M. Luscombe and I. B. Hickie (2010). "The internet as a setting for mental health service utilisation by young people." Med J Aust 192(11 Suppl): S22-26.	Enhancing Community Attitudes, Promoting Help Seeking Attitudes and Behaviours – Psycho- Education	Cross-sectional RCT, CATI telephone interview.	N/A	2000 young people aged 12-25 years completed the survey.	Of those surveyed, 76.9% of young people expressed using the internet to connect with other young people. Twenty percent of those who answered survey had experienced a mental health problem in the last five years, with 30.8% of those young people having used the internet to search for information.	The report suggest "technology is important in the everyday lives of young people, and online mental health services that encompass promotion and prevention activities should include a variety of resources that appeal to all ages and both sexes, such as "question and answer" forums and email."
11	Department of Health and Ageing (2012). E-mental health Strategy for Australia. D. o. H. a. Ageing. Canberra, Australian Government.	Enhancing Community Attitudes, Promoting Help Seeking Attitude, Web Based Programs For Improving	N/A	N/A	Review of recent literature.	The Australian Government, by funding a number of small, evidence- based projects, is striding forward with an agenda to widely integrate e-mental health	With strength of evidence-based e- mental health programs and strategies in Australia and a collaborative sector-wide approach, the Australian Government has a



		Mental Health					valuable opportunity for the further investment in and expansion of these services.
12	Farrer, L., A. Gulliver, J. Chan, P. Batterham, J. Reynolds, A. L. Calear, R. Tait, K. Bennet and K. Griffiths (2013). "Technology- Based Interentions for Mental Health in Tertiary Students: Systematic Review." Journal Of Medical Internet Research 15(5).	Enhancing Community Attitudes, Promoting Help Seeking Attitude, Web Based Programs For Improving Mental Health	Review of recent literature.	N/A	Review of recent literature; PubMed, PsycInfo, and Cochrane Central Register of Controlled Trials databases were searched using keywords, phrases, and MeSH terms. A total of 28 papers were included.	Overall, over 50% of the outcomes examined in this study report one positive outcome in relation to the treatment of the end-user.	This report finds that additional research is required to establish the effectiveness of online interventions in a university setting.
13	Medibank Health Solutions and Nous Group (2013). The Case for Mental Health Reform in Australia: a Review of Expenditure and System Design, Medibank Health Solutions and Nous Group.	Enhancing Community Attitudes, Promoting Help Seeking Attitude, Web Based Programs For Improving Mental Health	Review of recent literature.	N/A	Review of recent literature and data; the report "provides the most comprehensive estimate to date of expenditure" on mental health in Australia.	The total expenditure on mental health in Australia has been found to be grossly underestimated, with Australia spending in excess of \$28.6 billion per year (excluding costs associated with loss of productivity).	The Australian mental health system is inefficiently designed, translating to "suboptimal" treatment outcomes and reduced accessibility to services.



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14	Blanchard, M. (2011).	Promoting	PhD Thesis.	N/A	233 members of	Results from the	Young people have
	Navigating the Digital	Help Seeking			the youth mental	conducted research	chosen ICT as their
	disconnect Understanding the	Attitude, Web			health sector	suggest that	preferred form of
	use of information	Based			completed an	technology can play	communication,
	communication technologies	Programs For			online	a large and positive	presenting this
	by the youth health workforce	Improving			questionnaire,	role in the youth	technological sphere
	to help improve young	Mental Health			organizational	mental health	as a space to
	people's mental health and				audits of five	sphere, "when used	"through which
	wellbeing PhD.				multidisciplinary	alone or as an	mental health can be
					youth and	adjunct to face-to-	improved."
					community mental	face intervention,	
					health services and	as appropriate." To	
					in-depth interviews	ensure these	
					with eight leaders in	positive outcomes	
					the fields of	come to fruition,	
					psychiatry,	more investment in	
					psychology, e-	sector employees,	
					health,	infrastructure and	
					epidemiology and	research is	
					.sociology.	required.	
15	Dowling, M. and D. Rickwood	Promoting	Review of	N/A	Review of recent	To support the roll-	The findings of this
	(2013). "Online Counseling	Help Seeking	recent		literature; A	out e-mental health	study indicate that
	and Therapy for Mental	Attitude, Web	literature.		systematic search	interventions, these	more evidence-based
	Health Problems: A	Based			was conducted	strategies and	research is required
	Systematic Review of	Programs For			using the following	approaches must	to justify the
	Individual Synchronous	Improving			EBSCO databases:	be supported by	expansion of online
	Interventions Using Chat."	Mental Health			Academic Search	research evidence	mental health
	Journal of Technology in				Complete, CINAHL	– it is here where	services.
	Human Services 31(1).				Plus, Psychology	investment is	
					and Behavioral	lacking, and the	
					Sciences	number of RCTs	
					Collection,	and large studies is	
					PsychArticles, and		
					1 Syon attoles, and		



					Psych INFO.	lacking.	
16	Kauer, S. D., C. Mangan and L. Sanci (2013). Does online mental health improve helpseeking for young people? A systematic review, University of Melbourne.	Promoting Help Seeking Attitude, Web Based Programs For Improving Mental Health	Review of recent literature.	N/A	Review of recent literature; Using PRISMA guidelines, literature searches were conducted in PubMed, PsycInfo and the Cochrane library. A total of 18 studies were included.	The report finds a lack of studies that examine the effect of technology on help seeking in young people aged 14-25 years. The report doesn't strive "to say that there is no benefit in online services, rather that this field has yet to be properly evaluated."	This report describes the effectiveness of online means on help-seeking.
17	Johnson, D., C. Jones, L. Scholes and M. Carras Colder (2013). Videogames and Wellbeing: A Comprehensive Review. Melbourne, Young and Well Cooperative Research Centre.	Promoting Help Seeking Attitude, Web Based Programs For Improving Mental Health	Review of recent literature.	N/A	Review of recent research.	The report found videogames have been shown to positively influence young people's emotional state, self-esteem, optimism, vitality, resilience, engagement, relationships, sense of competence, self-acceptance and social connections and functioning.	This report explores the positive effects of videogames on young people's mental health and wellbeing, as well as calling for further research into this relationship.



18	Collin, P., K. Rahilly, I. Richardson and A. Third (2011). The Benefits of Socials Networking Services. Sydney, Cooperative Research Centre for Young People, Technology and Wellbeing.	Enhancing Community Attitudes, Promoting Help Seeking Attitude, Web Based Programs For Improving Mental Health	Review of recent literature.	N/A	Review of recent literature.	The usage of social networking services by young people can have a positive impact "delivering educational outcomes; facilitating supportive relationships; identity formation; and, promoting a sense of belonging and self-esteem."	This report finds there are many positive links between the mental health and wellbeing of young people and the usage of social networking services.
20	Campbell, A. and F. Robards (2013). Using technologies safely and effectively to promote young people's wellbeing: A Better Practice Guide for Services. Abbotsford, NSW Centre for the Advancement of Adolescent Health, Westmead and Young and Well Cooperative Research Centre.	Enhancing Community Attitudes, Promoting Help Seeking Attitude, Web Based Programs For Improving Mental Health	Review of recent literature.	N/A	Review of recent literature.	After reviewing samples of "Australian and international literature to identify successful models for using technology to engage young people in health services, design and delivery," the authors formulated a set of guidelines for the sector.	The implementation of a framework to ensure the safe, inclusive and innovative use of technology in the delivery of mental health and wellbeing services is vital.



3. Notable interviewee quotes

United Sector:

"We have the components of a great mental health system but require greater clarity of role"

"Willingness in the industry and a lot of good will, people will work together – there may be one exception, but even that seems to be more aligned"

"There is a mutual respect between the university on non-university sector"

"They need long-term funding"

"KPIs are critical for accountability"

"Duplication with too many portals can be confusing"

"Need to know that if we want top grade services we need an evidence base"

"Recognise that we have government support that meets needs"

"There must be a strong working relationship across the sector, information should be shared to create a consolidated evidence-base"

Consumer Choice:

"Consumers need choice; a little like a shopping experience"

"Let 100 flowers bloom"

"What's not working is how consumers can tell the difference between services"

Integration:

"Facilitated by some type of tech system that allows sharing of data"

"Lack of integration is a problem"

"Technology integration is a major tester because there can be huge complexity around It"

Leadership:

"We are light years ahead of the rest of the world"

"Innovation needs to keep propelling things forward"

"We are all moving in the right direction"

"We need a national strategy on how to do this shift"

"There needs to be thought put into capacity building and capacity retention"

"Implementation: We need to implement what we know, which is e-mental health in Schools and e-mental health in NGOs"

"There are services that have the endurance and effectiveness"

"Prevention doesn't fit into a medical model of service support"

"Need to be supported by a public health system"



"If we are serious about e-mental health, it needs to be treated as a real service"

"Resources of the rats and mice of the sector being used in a more efficient way"

"e-mental health is not the answer for all people, we don't only want an online service. Needs integration, coordination and seamless support"

"A lot of it is ego driven, we've lost our perspective the focus needs to be on the end user because of three and four year cycles we get distracted because we are worried about survival"

"Continuity of funding is important as is certainty of funding"

"Subject matter expertise needs to be going"

"Current funding models; short term, encourage silos. In order to be heard, people defend their space"

"Resource a team who can support collaboration"

"Seamless, coordinated care is critical"

"Decisions need to be made with the sector"

Data:

"More data is just Gold"

"Consumer instant feedback, tracking how define going over time, input data about what someone is saying – tailor the experience and make it truly interactive and begin to approximate what might happen"

"Data can then be taken to a face-to-face practice then excludes the practitioner benefits (hard copy or given access to data by integrated systems – they can then monitor what is happen."

"Developers must undertake iterative quality assurance and improvement"

"Data should be interrogated and then used to improve the system"

"Data is critical and if an organisation is collecting data, it should ensure that outcomes are optimized"

"For the Government, data is important in relation to outcomes and efficiency"

"Data should be fed back into health systems, it should be a flag"

Random Comments

"Let's not reinvent the wheel, government should support an ecosystem of care"

"There is noise in the sector, no clear signpost in the community other than Lifeline"

"It must be holistic in approach, not just about e-mental health"

"The major obstacle is **resources**, which are often spread too thin – a consolidated model allows you to meet demand"

"MindHealthConnect has added no value"

"Three Obstacles:

- Cohesive view of what the ecosystem should look like
- Review as new and emerging tech avenues
- Chaotic funding rather than co-ordination"



"Underinvestment in impact data over time"

"Integration of ONLINE + OFFLINE"

"Face-to-face slow to integrate into enhanced care"

"Lack of imagination from traditional services"

"Given the tools to find and track the help wanted"

"Everyone has a niche, a lot of stuff needs to be done"

"Costs of eHealth small relative to 4 services - should free up funds for innovation"

"Untapped potential of peer work"

"Great online initiatives - people don't know about them"

"No ecosystem that brings it together. This is how consumers + families can work through the system"

4. Collective Impact Framework

The following framework is based on the Young and Well CRC's interpretation of Collective Impact. This has been proven effective in addressing some of the system wide complex challenges which impact on the mental health and wellbeing of young people aged 12 to 25. Essential to success is the commitment of key partners from nonprofit, academic, government and corporate sectors to share a common agenda of improving the mental health and wellbeing of young people through the use of technology. The five core elements of the Collective Impact framework are outlined below.



to have including a common understanding of the problem and solving it through agreed-upon research and other activities

partners ensures efforts remain aligned and partners hold each

coordinated through a mutually reinforcing plan of action.

build trust, assure mutual objectives, and create common motivation.

Creating and managing collective impact requires the Young and Well CRC to be adequately resourced with a team who have a specific set of skills to serve as the backbone for the entire initiative to coordinate partners, government agencies, academic and research organisations, community organisations. commercial partners and enterprises.



5. Medico-legal and ethical issues and access to health professionals

Clinical scope of practice: Certification organisations, such as medical, nursing and psychological councils, associations and professional societies, do not overtly endorse the use of online services (Manhal-Baugus, 2001, MDA National). There appears to be a preference for face-to-face care delivery, with telehealth being an optional back up or secondary service delivery mode. Protocols and guidelines for, e.g. social media use, are being developed but have not yet matured (Wade et al., 2012). The International Society for Mental Health Online (ISMHO) provides guidelines for websites, telephone helplines and other forms of online service (http://ismho.org/resources/standards-for-online-practice/) The Australian Psychological Society (http://www.psychology.org.au/essentials/etherapy/#s2) has developed guidelines for online therapy delivery. Guidelines require regular updating due to the rapid development of new technologies and new ways of delivering mental health services (Mohr et al., 2013).

Clinicians are usually licensed to practice in a certain country or region. Websites and phone services are obliged to define the boundaries of their services but it is not always clear to consumers if they are within an appropriate boundary (Recupero and Rainey, 2005).

Confidentiality and privacy: Some people prefer to use online services because they can be anonymous (Recupero and Rainey, 2005). While the anonymity may be preferable to the consumer, it may create challenges with follow up, and risk management for people in crisis. Patient identification requires alternatives to visual verification, especially if there is a preference for anonymity by using pseudonyms (Recupero and Rainey, 2005). Increasingly the use of encryption and data storage on secure servers is becoming common practice for organisations offering clinical support online. This reduces the risk of confidentiality breaches, e.g. criminal Internet breach, if encryption is not used (Manhal-Baugus, 2001, MDA National). Online service providers also have a responsibility for ensuring that consumers have a clear understanding of the limitations of the technology itself, e.g. lack of non-verbal cues, lack of integration with their usual mental health record however this is dependent on the service offering and may not be appropriate for online interventions that promote self managed care (MDA National, Manhal-Baugus, 2001).

Building the therapeutic alliance: Many people access online services with a desire to remain anonymous. While facilitating a soft entry point and self managed care, a potential risk, particularly if a person is very unwell, is the lack of continuity of care, limitations in the development of a therapeutic alliance should the illness be chronic and debilitating, attrition from the service with no ability to follow up, and high attrition rates for self-managed use of online asynchronous therapies. In face-to-face clinical care a high touch, technology supported approach is advised in the early stages of building the therapeutic relationship, i.e. in person therapy followed by online therapy, but this is not always possible, and rarely practiced in self-managed websites or telephone helplines (Manhal-Baugus, 2001, Day and Kerr, 2012). The complexity of mental illnesses means that the consumers preference might be to use online resources across multiple services, however a challenge is redirecting or supporting a person to seek face-to-face care when technologies may not be appropriate or sufficient to meet their needs (Recupero and Rainey, 2005, Manhal-Baugus, 2001). Rapport is difficult to build without 'high touch' (Manhal-Baugus, 2001, Wade et al., 2012, MDA National) which is often not an option in telephone or self-managed website therapy.

Informed consent: The therapeutic alliance should include informed consent about the use and/or appropriateness of phone/website or other online therapy. This consent is usually implied or recorded electronically, visually or in writing, as part of commencement of the interaction. However, when visual cues are missing, there is the risk of misunderstanding or misinterpretation (Recupero and Rainey, 2005, Wade et al., 2012).

Liability: Medico-legal liability requires the establishment of duty of care protocols and the provision of a reasonable quality of care (Wade et al., 2012) or what is considered by peers to be competent care (modified Bolam Principle) (MDA National). Lines of accountability can be blurred when multiple providers from the same service are involved in care at a distance. Telehealth (and by extension, e-mental health) in Australia has not been tested in the courts (Wade et al., 2012) therefore one could assume that case law does not yet exist to



enable liability assessment of mental health services via websites or phone helplines. The recordings of the interactions could be used in court – however it is not clear how recordings of in-person interactions and phone/online interactions compare as evidence in court or how patient privilege can be used, e.g. deleted SMS messages or emails.

Access to health professionals: Telehealth services such as helplines and care via websites appear to be easier to access than in-person services for people who live in remote rural environments, assuming people have access to broadband, telephones and the Internet. Many people with mental health issues appear to prefer the anonymity and distance that are afforded by such services (Manhal-Baugus, 2001, Wade et al., 2012). Regardless of environment (urban vs rural, in-person vs virtual), some people with mental health issues prefer the immediacy of telephone services such as LifeLine when in crisis. In contrast, it is not obvious when specific health professionals are not available online or by phone (Recupero and Rainey, 2005). This could present risk to the consumer who may have unrealistic expectations about the availability of their clinician or therapist. While technology-mediated services may make services more immediate and accessible, the availability of specific individuals is not predictable or transparent.

6. Risks specific to Telehealth

Telehealth often creates health information in formats that have not traditionally been part of people's records, e.g. audio recordings, video, remote monitoring data. Early thinking suggests that it is important to ensure that responsibilities for securing and managing the health information generated are clearly defined, and each party is aware of its responsibilities and the others, e.g. agreements on who is responsible for maintaining the information and the levels of access. American health lawyers, Friedberg & Quashie (2014), identify three categories of privacy and security law issues that can create heightened challenges in the telehealth setting:

DATA MANAGEMENT

Key questions include:

- Should the data be maintained as part of the "medical record"?
- Does the law or other statutory obligations require the information to be recorded and what obligations are there to provide people with access to their information and disclosure?
- How and where is it being maintained and secured? The issue is data encryption and storage
- What consititutes data? Audio and video recordings, remote monitoring data, app data, big data, small data etc.?
- · What data should be included as a component part of a medical record?
- What are the legal and statutory requiremets regarding medico, legal and ethical issues?
- · When is data being stored, managed and encrypted?

SHARING DATA MANAGEMENT RESPONSIBILITIES WITH OTHER PROVIDERS

Current legislation regarding e-mental services including the Privacy Act 1988 and Australian Privacy Principles state that:

- 2.1 If an APP entity holds personal information, the entity must take such steps as are reasonable in the circumstances to protect the information:
- a) from misuse, interference and loss; and
- b) from unauthorised access, modification or disclosure.



2.2 If:

- a) an APP entity holds personal information about an individual; and
- b) the entity no longer needs the information for any purpose for which the information may be used or disclosed by the entity under this Schedule; and
- c) the information is not contained in a Commonwealth record; and
- d) the entity is not required by or under an Australian law, or a court/tribunal order, to retain the information;
- e) the entity must take such steps as are reasonable in the circumstances to destroy the information or to ensure that the information is de-identified.

PRIVACY AND SECURITY RISKS DURING THE TELEHEALTH ENCOUNTER

There are risks that an encounter could result in privacy or security law violation. To minimise risk there needs to be:

- · Reliable methods for verifying and identifying identities of the service user and practitioner
- Quality of data transfer that comprises quality of the therapeutic alliance

Telehealth encounters may also be vulnerable to third party interference, signal errors, or transmission outages. These types of incidents can result in the loss of data, interrupted communications, or the alteration of important clinical information.



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