Title: Project Synergy: co-designing technology-enabled solutions for Australian mental health services reform

Category: Tom Trauer Evaluation and Research Award

Applicant: The Project Synergy R&D Team, Brain and Mind Centre, The University of Sydney

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We would also like to acknowledge previous Project Synergy R&D Team members including (in alphabetical order): Dr Shane Cross, Dr Mitch Dowling, Ms Amelia English, Dr Alyssa Milton, Ms Sarah Piper, Dr Laura Ospina-Pinillos, Ms Antonia Ottavio, Ms Cristina Ricci, Dr Shelley Rowe, Dr Vilas Sawrikar, Dr Elizabeth Stewart, Ms Lisa Whittle, Ms Hannah Yee.

Date of commencement: 2014

Brief description of research project (150 words limit):

Project Synergy harnesses new and emerging technologies to enhance the quality of mental health care provided by traditional in-clinic and online mental health services. It aims to co-design, build, implement and evaluate an online platform (i.e. a group of technologies used as a base upon which to customise and configure service-specific digital solutions) to ensure consumers get the right care, first time (delivery of effective mental health care early in the course of illness). This care encompasses the entire spectrum of health and wellbeing, meaning all individuals across this illness-wellness spectrum can gain value from this solution. Project Synergy Phase I (2014-16) was an Australian Government-funded initiative ($5.5 M) that was administered by the Young and Well Cooperative Research Centre. Project Synergy Phase II (2017-20) is an Australian Government-funded initiative ($30 M) currently being delivered by InnoWell Pty Ltd – a joint venture between the University of Sydney and PwC (Australia).
Introduction and overview of application

In 2014, the National Mental Health Commission (NMHC) invited the Young and Well Cooperative Research Centre (YAWCRC) to provide advice about new and emerging technologies in e-mental health (Burns et al 2014). The YAWCRC briefing paper (which included interviews with mental health and industry leaders) found consensus within the e-mental health sector to unite and coordinate new and emerging technologies into an integrated system of care that entwines both online and in-clinic models of mental health care, fusing them both to broaden the provision of care.

“Whether you are a 21-year-old man in rural South Australia living with depression, or the parent of a 16-year-old girl in Sydney trying to access a mental health service for the first time, one of the challenges facing young Australians and those who care for them is how to access the right information and the right services at the right time.” [YAWCRC, 2014]

As a result, the NMHC recommended that new and emerging technologies should be considered a cornerstone of major mental health reform in Australia, and that the mental health system be overhauled to integrate e-mental health with in-clinic services (NMHC 2014). The Australian Government Department of Health hence commissioned Project Synergy in 2014 to be conducted by the YAWCRC in partnership with the University of Sydney’s Brain and Mind Centre. Project Synergy aims to harness new and emerging technologies to enhance the quality of mental health care provided by traditional in-clinic and online mental health services. More specifically, it aims to co-design, build, implement and evaluate an online platform (i.e. a group of technologies used as a base upon which to customise and configure service-specific digital solutions) to ensure consumers get the right care, first time (delivery of effective mental health care early in the course of illness). This care encompasses the entire spectrum of health and wellbeing, meaning all individuals across this illness-wellness spectrum can gain value from this solution.

Due to its scale, Project Synergy was split into two phases with the following primary objectives:

- **Phase I (2014-16):** to use new and emerging technologies to transform the provision of mental health services for Australian young people, through co-designing, building, implementing, and evaluating prototypes for all users (young people, supportive others, health professionals, and service providers); and

- **Phase II (2017-20):** to use the methods refined in Phase I to iterate the prototypes to one online platform (Box 1). This platform can then be implemented into traditional and online mental health services as a means to deliver right care, first time across all age groups and populations.

**Box 1: Description of the online platform as listed on the Australian Register of Therapeutic Goods (software as a medical device, class 1, ARTG ID 315030)**

The online platform is a customisable digital toolkit that assists assessment, monitoring and management of mental health issues, and maintenance of wellbeing. It does this by collecting personal and health information from consumers and their service providers. This information is stored, scored and reported back to consumers and their health professionals to promote collaborative care. The clinical content in determined in collaboration with the service provider who invited the consumer to use the platform. The platform does not provide stand-alone medical or health advice, diagnosis or treatment. Instead, it guides and supports (but does not direct) consumers and their health professionals to decide what may be suitable care options. Importantly, all care aligns with the existing clinical governance (e.g. policies and procedures) of the service provider.
CRITERIA 1: Evidence of contribution to, or potential impact on, mental health service improvement

Over the course of Project Synergy, we have developed a number of innovative mental health service improvements which have also been the subject of impact evaluation studies.

1. **Service delivery and clinical practice:** Over the past decade, we have seen a growing focus on creating mental health service delivery models that better meet the unique needs of Australians. Recent policy directives from the Australian Government recommend the adoption of stepped care services to improve the appropriateness of care, determined by severity of need. Through our learnings from Project Synergy, we propose that a highly personalised approach enhances stepped-care models by incorporating technology, clinical staging (for mental disorders), and a person’s current and multidimensional needs. It explicitly aims to prevent progression to more complex and severe forms of illness and is better aligned to contemporary models of the patterns of emergence of psychopathology.


Importantly, Project Synergy has allowed us to demonstrate that our new and innovative technology-enabled service models can be used to collect clinical data based on real-time consumer-service interactions, and that these data can be used to monitor aspects of clinical safety and quality of service. Safety was greatly enhanced via the use of a suicide escalation protocol.


Improvements in quality of service included service efficiency, access to service (reduced or no waitlists), more efficient clinical assessment (quicker access to assessment for consumers and more effective use of face-to-face sessions), and collaborative care (via team-based treatment planning). This was observed in a range of mental health services serving youth (*headspace*) and current and former Australian Defence personnel (Open Arms).


LaMonica HM, Davenport TA...Hickie IB. Technology-enabled mental health services reform for Open Arms – Veterans and Families Counselling: participatory design study. *JMIR Form Res.* 2019; 3(3): e13662.

In turn, this data was used to tweak implementations to ensure adoption (rather than simply adaptation) of our technology-enabled service models. Observed implementation facilitators within services included: leadership support, co-design, technology-implemented service models and clinical pathways, a culture of innovation, on-the-ground support, centre-specific education and training, and recognition of benefit of the new model. Observed barriers included: limited service capacity, variation in timing of offering an online self-report assessment (with earlier offerings leading to higher uptake), and staff perceptions and beliefs of technology.

Finally, our technology-enabled service models uniquely aggregate service-level quality performance indicator data including: clinical safety; accessibility and equity; effectiveness and outcomes; acceptability and satisfaction; efficiency, expenditure and cost; appropriateness; continuity and coordination; and workforce competence and capability. Through Project Synergy, we found that participating mental health services (as well as administering heath service organisations, policy makers and regulators) have utilised employment management practices that focus on these metrics to iteratively set quality targets.


2. **Implementation manual:** We have also iteratively developed and published a sound strategy for the implementation of our technology-enabled service models that explicitly
addresses the above barriers (e.g. technology, health professional, and service factors), as well as the traditional poor translation of new innovations into practice. Importantly, our strategy incorporates elements of co-design (such as service mapping and user testing) to facilitate the necessary changes in health service processes as well as intrinsic change management that is necessary to build staff engagement, knowledge, and skills for the adoption of new models of mental health service delivery.

LaMonica HM, Davenport TA…Hickie IB, Cross S. Technology-enabled person-centered mental health services reform: strategy for implementation science. JMIR Mental Health. 2019; 6(9): e14719.

Not only does the dissemination of our implementation strategy allow its continual application and iterative improvement, it also provides a resource for all Project Synergy stakeholders (past, current, and potential), as well as e-mental health researchers, to refer to, potentially fostering interdisciplinary and clinician-researcher collaboration.

3. **Medico-legal and ethical (MLE) Guidelines**: From the outset of Project Synergy, it was recognised that an ongoing series of consultation processes were required to inform the development of MLE Guidelines for the use of new and emerging technologies by Australian mental health service providers. Development of these guidelines followed an iterative process, with a revised set of guidelines produced after each consultation, and the process is ongoing. Participants in the consultation process have included: Orygen (the National Centre of Excellence in Youth Mental Health); Young and Well Cooperative Research Centre (CRC); Mental Health Commission of NSW; Pacific Privacy Consulting; The University of Sydney’s Brain and Mind Centre; and InnoWell Pty Ltd.

*Privacy Guidelines* (constructed around eight core foundation principles) developed for Project Synergy (2014-16) were used as the starting point for the development of the MLE Guidelines produced during Project Synergy (2017-20). The MLE Guidelines are advisory only and cover: use of HITs as part of clinical service delivery and for research; an applied case example; data and data protection; compliance with medical, legal, and ethical requirements; risk assessment for service providers; privacy policy of HIT manufacturers; feedback and complaints; and ongoing development. The MLE Guidelines have been designed to safeguard the legal and ethical rights of individuals who agree to use HITs in their care and share personal and health information with their service provider; as well as for use of their de-identified information for research purposes. While these MLE Guidelines are not able to change the broader legal, ethical, and regulatory landscape, they go some way towards mitigating emerging risks associated with the digital transformation to participatory mental health care.


4. **Development of an education and training program for health professionals**: We have also developed an education and training program for participating health professionals, service managers, and administrators. This includes access to a series of online videos that details how to use our online platform, as well as the theoretical rationale supporting the online platform. More recently, we have developed an eight-part series of webinars which have been endorsed as continuing professional development (CPD) activities for psychiatrists, psychologists, mental health nurses, social workers, and occupational therapists. In these eight webinars, we outline the theoretical basis and practical considerations of our technology-enabled service models, providing examples via case studies of how to practically apply these models. As webinars were conducted live (and later archived), we also answered questions from attendees which included people with lived experience of mental illness, service providers/ staff and other researchers.

Through these webinars, we have translated Project Synergy learnings into a more accessible and publicly available format. As all webinars were recorded and archived on a freely accessible website, they are available as continual reference for mental health service improvement.

5. **Impact on policy**: Through Project Synergy, we have also had a major impact on Australian mental health policy including:
Table in Federal Parliament of our preliminary findings from Project Synergy (2014-16) and the subsequent inclusion of Project Synergy (2017-20) in *The Coalition’s Policy to Strengthen Mental Health Care in Australia*.


- Inclusion of Project Synergy in the National Mental Health Commission’s 2014 *Report of the National Review of Mental Health Programs and Services* (Recommendation 24 – Improve emergency access to the right telephone and internet-based forms of crisis support and link crisis support services to ongoing online and offline forms of information/education, monitoring and clinical intervention).

In response to a key priority recommendation of the National Mental Health Commission’s 2017 *Review into the Suicide and Self-Harm Prevention Services available to current and former serving ADF members and their families*, it was announced that Project Synergy would work with a regional PHN to develop tailored digital mental health solutions for former ADF personnel.

Direct requests for consultation on: National Safety and Quality Digital Mental Health Standards (Davenport – 2019); Support of telehealth sessions through temporary MBS item numbers that also include receiving care via information and communication technologies in response to COVID-19 (Hickie – March 2020); and, Australian Government Department of Health’s National Digital Mental Health Framework via the Australian National Mental Health Commission and in response to COVID-19 (Hickie, Davenport, Iorfino – July/ August 2020)

6. Dissemination activities: Given the impact of Project Synergy on Australian mental health service reform and improvements in clinical safety and quality of service, we have aimed to make all results and findings highly accessible to, and engaging for, the mental health (and more broadly health) workforce as well as policy makers. This has included the academic publication in high-impact trade journals such as the Medical Journal of Australia and the Journal of Medical Internet Research, as well as pieces for The Conversation, The National Tribute, and blogs. We have also developed a number of informational podcasts, videos (uploaded on YouTube and Vimeo), and online seminars, and have a dedicated Project Synergy website that details all research activities and is regularly updated.

7. International impact: Since 2015, we have been working with clinician-researchers in Colombia (South America). As Colombia is a low-to-middle income country with 100% Internet connectivity but just 1,500 psychiatrists to a population of more than 50 M people, technology-enabled mental health service solutions are practicable, scalable, and sustainable. Currently, our work is now guiding the expansion of the use of e-mental health in Colombia in partnership with the Department of Psychiatry and Mental Health, Faculty of Medicine, Pontificia Universidad Javeriana, Bogotá, Colombia.

- Ospina-Pinillos L, Davenport T…Hickie IB. Using participatory design methodologies to co-design and culturally adapt the Spanish version of the Mental Health eClinic: qualitative study. *JMIR*. 2019; 21(8): e14127.


More recently, we have been working with Alberta Youth Mental Health Services (Canada) to implement our technology-enabled service models into 10 communities. This research follows our R&D cycle to include both co-design and implementation health science studies. Impactful and sustained mental health service improvements will see the expansion of our technology-enabled service models into Alberta Health Services more broadly.

**CRITERIA 2: Evidence of research excellence**
Collectively, our team is made up of doctoral students (who are now early-career researchers), early-career researchers, mid-career researchers, and late-career researchers with excellent track records relative to opportunity.

Professor Hickie is currently an NHMRC Senior Principal Research Fellow (2018-22) (previously an NHMRC Australian Research Fellow, 2007-12), a Fellow of the Academy of Social Sciences in Australia (FASSA), a Fellow of the Royal Australian & New Zealand College of Psychiatrists (FRANZCP), a Member of the Order of Australia (AM), a Doctor of Medicine (MD, UNSW, 1990), a Professor of Psychiatry at Sydney Medical School (University of Sydney, 2003-) and the Co-Director of The University of Sydney’s Brain and Mind Centre (2003-). In 2015, he became a fellow of the new Australian Academy of Health and Medical Sciences. From 2012, Professor Hickie was appointed as one of Australia's first National Mental Health Commissioners and was reappointed to a second term in that role in 2014 which ended in July 2018.

As of July 2020, Professor Hickie has published over 752 peer-reviewed papers, and according to Scopus has an h-factor of 86, based on 33,421 citations; Web of Science has 794 recognised publications, 31,951 citations, 42.1 citations per work and an h-index of 81; Google Scholar (incorporating more of his reports to non-scientific and other agencies) notes 52,562 citations and a h-index of 108. In addition to the Medical Journal of Australia, our research has been published in top medical, psychological, and psychiatric journals, including The Lancet (IF: 59.102), Journal of American Medical Association (IF: 47.7), British Medical Journal (IF: 30.223), and Molecular Psychiatry (IF: 11.973).

Under Professor Hickie’s scientific leadership, our team has achieved unparalleled research excellence as evidenced by the following markers of distinction. Since 2014, we have co-authored more than 286 peer-reviewed journal publications, been awarded over AUD $48 M in competitive funding (including National Health & Medical Research Council, Australian Research Council, Government-supported, and industry-supported funds), published numerous government and/or policy reports, presented Project Synergy at international and national conferences (including almost 20 invited keynote presentations), co-facilitated and led four webinars under the title, ‘Flip the Clinic – the digital approach to mental health support’, created and delivered a series of education and training webinars, and appeared in more than 613 media stories. Further, we were invited to present a talk during the lunchtime break at TedxYouth@Sydney 2019 to showcase our findings and learnings.

In 2019, Hickie and Davenport co-led the publication of a highly impactful supplement in the Medical Journal of Australia (Impact Factor [IF]: 6.112):


This supplement, which was one of the journal’s most downloaded publications of 2019, marked the culmination of Project Synergy (2014-16), highlighting the significant learnings, including the development of our iterative R&D cycle used to co-design and develop online prototypes of digital tools aimed at enhancing the quality of mental health care for young people (Chapter 2). The supplement described the application of this R&D cycle to develop tools for young people attending universities (Chapter 3), residing in disadvantaged communities in NSW (Chapter 4), at risk of suicide (Chapter 5), and those seeking care at five headspace services (Chapter 6). Importantly, these prototypes served as the foundation for the development of our online platform that is currently being implemented and evaluated through Project Synergy (2017-20).

Research excellence is also demonstrated through our development of the next generation of researchers. For example, Hickie and the broader team have supervised many higher degree research students over the course of Project Synergy. Collectively, their research projects highlight our team’s dedication to technology-enabled mental health services reform, including suicide prevention, the co-design, development and implementation of digital health solutions that span the continuum of mental illness and wellbeing, cultural and contextual adaptation of health information technologies, strategies for improving engagement with digital technologies for health and wellbeing (e.g. gamification), and improved access to personalised, measurement-based care across populations for better clinical, social, and functional outcomes. The research
excellence of our students has also been recognised through awards (e.g. Brain and Mind Centre Excellence and Impact Award, awarded on two separate occasions to Cheng and Iorfino).

<table>
<thead>
<tr>
<th>Student (degree)</th>
<th>Supervisors</th>
<th>Year</th>
<th>Thesis topic</th>
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<tbody>
<tr>
<td>Vanessa Cheng (PhD)</td>
<td>Hickie Davenport</td>
<td>2019</td>
<td>Developing and evaluating MindMax: promoting mental wellbeing through an Australian Football League-themed app incorporating applied games (including gamification), psychoeducation, and social connectedness</td>
</tr>
<tr>
<td>Laura Ospina-Pinillos (PhD)</td>
<td>Hickie Davenport</td>
<td>2018</td>
<td>Language translation, cultural and contextual adaptation of health information technologies to transform mental health care in low- and middle-income countries: an example of a prototypic mental health eClinic for Columbia</td>
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<tr>
<td>Frank Iorfino (PhD)</td>
<td>Hickie</td>
<td>2018</td>
<td>Personalised mental health care for young people: using past outcomes to build future solutions</td>
</tr>
<tr>
<td>Igor Dórea Bandeira (Masters)</td>
<td>Hickie Davenport</td>
<td>2017</td>
<td>A comprehensive cross-sectional review of smartphone software applications tracking health and wellbeing across countries: engagement, functionality, aesthetics, information quality, and language availability</td>
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<tr>
<td>Shane Cross (PhD)</td>
<td>Hickie</td>
<td>2016</td>
<td>The application of a clinical staging model to an early intervention youth mental health service</td>
</tr>
<tr>
<td>Anna Roberts (Masters)</td>
<td>Hickie Davenport</td>
<td>2015</td>
<td>The use of a mobile phone application to improve mental health and wellbeing in young men: a randomised control trial</td>
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Through the Project Synergy Internship Program, our team has sought to mentor future clinician-researchers as they seek to determine their potential academic trajectories and fields of interest. To date, we have supported 21 interns (three per year over the life of Project Synergy) who were involved in a diverse range of research tasks, including literature reviews, app and e-tool exploration and evaluation, configuration and user testing of our prototypes and online platform, participation in publication processes, as well as routine activities such as research meetings, to get the full experience of being an academic team member.

Finally, our Project Synergy findings and learnings are now being incorporated into the University of Sydney’s Master of Brain and Mind Sciences course curriculum. In addition to our national education and training program (described above), this will assist with the development of a large workforce of new clinical and adjacent (e.g. allied health, medicolegal, regulatory, research) staff trained in the use of technology-enabled solutions to enable coordinated 21st-century person-centred mental health service delivery.

**CRITERIA 3: Evidence of participation of mental health consumers in the planning, implementation and evaluation**

As Scientific Lead, Professor Hickie has ensured that Project Synergy has adopted the participation of mental health consumers in mental health research and development throughout all phases of Project Synergy at all times.

Professor Hickie’s long-standing commitment to conducting mental health research through active engagement with those with lived experiences in Australia, and its subsequent impact on mental health service improvement, is evident in his: i) capacity to facilitate public engagement with mental health issues, notably through his initial CEO role with beyondblue (2000-03); ii) engagement with major national mental health service reports over two decades (notably 2006, Not For Service Report with Human Rights and Equal Opportunities Commission); iii) continuous
public commentary on contemporary mental health and suicide prevention issues; and iv) role in implementation of substantive health services reform in Australia, including *headspace*, Young and Well CRC, and now Project Synergy.

In relation to the latter, Project Synergy (2014-16) included the development of an R&D cycle which utilises co-design methodologies with consumers to brainstorm a technology solution which is then translated by researchers into wireframes. The technology is then rapidly prototyped, consumers participate in user acceptance testing of the prototype, and then the technology is implemented into mental health services for feasibility testing. This process explicitly positions users as empowered participants in all stages of design, development, implementation, and feasibility testing of our online platform. Co-design methodologies were integral to all the Project Synergy (2014-16) research trials: **Trial 1** involved the design and development of ‘Fit Uni Life to thrive’, an online prototype tailored to a university population, allowing users to set goals and track their progress. Seventy-four participants (University of Sydney students) co-designed, knowledge translated, and user (acceptance) tested the prototype; **Trial 2 – NSW Synergy Trial** was a community-based clinical trial with 398 participants who co-designed and tested a synergised online system including ReachOut Next Step (*a triage e-tool*), HAPPINESS CENTRAL (*a health and wellbeing e-tool*) and a Mental Health eClinic (MHeC) within the vulnerable regions of the NSW Central Coast, Western Sydney, and Far West of NSW; **Trial 3** involved the development of digitally-smart suicide prevention tools, with a total of 208 participants engaging in the co-design, knowledge translation, and user (acceptance) testing of this technology; and, **Trial 4** involved the implementation of a Mental Health eClinic prototype into five *headspace* services in Central and Eastern Sydney (Ashfield, Bondi Junction, Camperdown, Hurstville, and Miranda) and was user tested by 549 participants. It demonstrated Project Synergy’s capacity for creating tangible service reform within primary care and its potential to do so in other health settings across Australia. Further information regarding the R&D cycle, as well as the above four trials, can be found in following publications:


**Trial 2:** Ospina-Pinillos L, Davenport TA...Hickie IB. Developing a mental health eClinic to improve access to a quality of mental health care for young people: using participatory design as research methodologies. *JMIR*. 2018; 20(5): e188.


**Trial 4:** Cross SP, Piper SE, Davenport TA...Hickie IB. Implementation study of a prototypic e-clinic being integrated into youth mental health services: staff experiences and reported service quality improvements. *Med J Aust.* 2019; 211 (Suppl 7 Oct): S30-S36.

Project Synergy (2017-20) has seen the continued involvement of consumers in the co-design, development, implementation, and evaluation of our online platform. The prototypes of Trials 1-4, as well as adjacent e-mental health projects conducted by our team including *Recharge* and *MindMax*, were iterated into one online platform to be implemented within traditional and online mental health services. As our online platform was designed to be configurable, it is able to meet the unique needs of different services and their consumers. To accomplish this, researchers have worked directly with consumers, health professionals, service managers, and administrators of participating services including: Open Arms – Veterans and Families Counselling service (Sydney and Lismore centres); five *headspace* services located within the footprint of the North Coast NSW Primary Health Network (Port Macquarie, Coffs Harbour, Grafton, Lismore, Tweed Heads); The Butterfly Foundation’s National Helpline 1800 ED HOPE; Kildare Road Medical Centre (a large general practice in Western Sydney); Connect to Wellbeing North Coast (as administered
by Neami National); and, community-dwelling older adults as well as young children and their families associated with the University of Sydney’s Brain and Mind Centre clinics.

Furthermore, Project Synergy (2017-20) included a Lived Experience Advisory Function (LEAF; founded by the late Ms Jackie Crowe and subsequently led by Ms Sue Muller), to ensure that individuals with lived experience of mental ill health were equal partners in the co-design, subject knowledge expertise, and input that shaped research methodologies, including (but not limited to) co-facilitation of workshops and knowledge translation.

Our commitment to co-design with individuals with lived experience is showcased in several more recent publications, including:

LaMonica HM, Davenport TA...Hickie IB. Technology-enabled mental health services reform for Open Arms – Veterans and Families Counselling: participatory design study. JMIR Formative Research. 2019; 3(3): e13662.
LaMonica HM, Davenport TA, Roberts A, Hickie IB. Understanding technology preferences and requirements for health information technologies designed to improve mental health and maintain wellbeing for older persons: a participatory design study. JMIR Aging. Under review.

Importantly, while Project Synergy’s LEAF formally ended on 30 June 2020, the model of positioning lived experience at the centre of research – not just as participants but as researchers – has been enthusiastically adopted by The University of Sydney’s Brain and Mind Centre and all of its associated research activities. Further, a Lived Experience Research Associate position within the Brain and Mind Centre has recently been set up in the name of Ms Jackie Crowe and is currently filled by Mr Samuel Hockey (a youth mental health ambassador with lived experience and previous National Mental Health Commissioner).

CRITERIA 4: Evidence of Partnerships and Linkages (collaboration for continuity between organisations)

National partnerships and linkages: In Australia, Professor Hickie has participated in each of the major national advisory bodies on mental health to the Federal Health Minister or Prime Minister since 2007. He has worked with the Mental Health Council of Australia (now Mental Health Australia) since 2001 to advance national mental health policy and practice. In partnership with Mental Health Australia, the Human Rights and Equal Opportunities Commission, Orygen Youth Health, the Young and Well CRC, and the National Mental Health Commission, he has authored major national reports on the evaluation or delivery of the community experiences of mental health services and the impacts of various mental health initiatives.

Through both phases of Project Synergy (2014-16, 2017-20), we have established a multi-stakeholder network of service providers working with diverse consumer groups, including young people, current and ex-serving military personnel and their families, consumers affected by eating disorders and negative body image issues, and community-dwelling adults seeking mental health services in a general practice setting. Participating sites in Project Synergy (2014-16) included: the University of Sydney in Trial 1; primary health networks (PHNs) and local health districts in NSW Central Coast, Western Sydney and Far West NSW as well as the Mental Health Commission of New South Wales in Trial 2; ConNetica (an Australian mental health and suicide prevention social enterprise) and PHNs in four regions of Australia (Central and Eastern Sydney; Murrumbidgee; Central Queensland, Wide Bay and Sunshine Coast; and Country Western Australia) in Trial 3; and five headspace services within Central and Eastern Sydney (Ashfield, Bondi Junction, Camperdown, Hurstville and Miranda) and a specialist inpatient service (Uspace at St. Vincent’s Hospital, Sydney) in Trial 4.

In Project Synergy (2017-20), we continued to expand our work with youth mental health services by partnering with five **heads**pace services and their lead agencies (Port Macquarie, EACH; Coffs Harbour and Grafton, GenHealth; Lismore and Tweed Heads, Social Futures) on the NSW North Coast to explore the potential impact of our technology-enabled service models on mental health care in regional communities. The co-authored publication referenced below highlights the collaborative nature of this work, with results indicating that a co-designed technology-enabled service model has the potential to improve clinical safety and quality of service delivered.


Furthermore, we sought to extend our work across the lifespan and to specialised consumer groups. To that end, we established a new partnership with Open Arms – Veterans & Families Counselling, and together we published (see reference below) the findings from nine co-facilitated participatory design workshops with current and former Australian Defence Force personnel and their families as well as Open Arms’ health professionals, service managers, and administrators from regions of New South Wales, including Sydney, Canberra, Maitland, Singleton, and Port Stephens. Importantly, the outcomes from this collaboration served as the basis for the configuration of our online platform for the Open Arms community which is now being actively implemented and evaluated within their Sydney and Lismore centres as part of Project Synergy (2017-20).


Additionally, we partnered with the Butterfly Foundation’s National Helpline 1800 ED HOPE to explore how the online platform could be embedded within a web-based helpline (i.e. chat, email), furthering our understanding of the potential impact of technology-enabled service models beyond traditional in-clinic care.


As general practitioners (GPs) are often the first port of call for Australians seeking mental health care, we established a strategic partnership with Kildare Road Medical Centre, a large-scale general practice with 26 GPs serving more than 100,000 registered patients with diverse demographic profiles. Together with consumers, GPs, and service managers, we co-designed and implemented a mental health nurse-led technology-enabled service model which has the potential to radically innovate mental health care in a general practice setting. Specifically, this model improves the identification of risk and facilitates access to person-centred care matched to an individual’s level of need. This care includes self-directed apps and e-tools, brief psychological therapies, and mental health plans when specialised secondary care is indicated.

We have also established a partnership with Neami National who manage and deliver the central intake service of the NSW North Coast PHN through Connect to Wellbeing North Coast. Together with consumers, clinicians, and service managers/administrators, we have now co-designed a technology-enabled service model to efficiently and effectively assess and triage youth and adult consumers to appropriate levels of service offered across the PHN. **International partnerships and linkages:** Professor Hickie (with direct support from the Project Synergy R&D Team) has also initiated, developed, and established sound partnerships and linkages with a number of universities in the United States, United Kingdom and New Zealand. Furthermore, we have shared Project Synergy findings and learnings and developed subsequent collaborative research studies with Alberta Youth Mental Health Services (in Canada) and the Department of Psychiatry and Mental Health, Faculty of Medicine, Pontificia Universidad Javeriana (Bogotá, Colombia). More recently, Hickie has contributed to ongoing consultation by the World Economic Forum regarding the development of international best practice standards in regards to Digital Mental Health.
These efforts attempt to capitalise on Australia’s current strategic advantage (and considerable Australian Government investment) in digital mental health knowledge and experience to ensure opportunities to benefit from the world of digital health innovations are not missed.


**CRITERIA 5: Verification and Evaluation of the research effectiveness in achieving the goals of the investigation(s).**

Project Synergy aims to transform Australian mental health services through the use of new and emerging technologies. Our tremendous achievements serve to verify and evaluate our effectiveness in reaching the research goals of this highly ambitious project.

**Digital health solutions:** In collaboration with InnoWell Pty Ltd, a joint venture between the University of Sydney and PwC Australia, the research team has co-designed and developed the InnoWell Platform from prototype to an industrial grade health information technology (HIT). The InnoWell Platform is listed on the Australian Register of Therapeutic Goods (software as a medical device, class 1, ARTG ID 315030) as a customisable digital toolkit to assist assessment, monitoring, and management of mental ill health and maintenance of wellbeing. It does this by collecting, storing, scoring, and reporting personal and health information back to consumers and their health professionals to promote collaborative care partnership. The research successes associated with this innovation are evident in the following publications:


Iorfino F, Cross SP, Davenport TA…Hickie IB. A digital platform designed for youth mental health services to deliver personalized and measurement-based care. *Front Psychiatry.* 2019; 10: 595.

Embedded within the InnoWell Platform is our digital suicide escalation protocol designed to identify and respond in real-time to suicidal thoughts and behaviours experienced by consumers seeking help through services implementing the InnoWell Platform as part of standard service delivery. As reported in the publication cited below, this protocol has been shown to be a valuable adjunct to traditional in-clinic mental health services, enhancing clinical decision-making about suicide risk and the care needs for those experiencing high levels of suicidal thoughts and behaviours.


**Research protocols for implementation, quality assurance and evaluation of digital health solutions:** Our team has also developed several protocols for the systematic implementation, quality assurance, and evaluation of digital health solutions. This includes our protocol for the implementation of HITs into mental health services which explicitly addresses barriers (e.g. technology, health professional, and service factors) as well as the traditional poor translation of new innovations into practice. Importantly, it incorporates elements of co-design (such as iterative service mapping and user-testing) to facilitate the necessary changes in health service processes as well as intrinsic change management that is necessary to build staff engagement, knowledge and skills for the adoption of new models of mental health service delivery.


Furthermore, given the increasing interest in, and reliance on, HITs for screening, treatment, and ongoing maintenance of health, we developed a quality assurance protocol to guide health professionals in the evaluation of the quality and safety of health-related apps and e-tools to determine their appropriateness for use in clinical practice.
Finally, we designed an evaluation protocol utilising Web-based surveys, semi-structured interviews and workshops, to systematically monitor and evaluate the impact of implementing HITs into Australian mental health services, with the aim of facilitating the iterative refinement of these technologies as well as the service models into which they are embedded to meet the needs of consumers and their supportive others as well as health professionals and service providers.


Research translation into policy and practice: Capitalising on our extensive experience in the field of digital health solutions for mental health services reform, the research team has recently developed medico-legal and ethical guidelines to act as a tool to guide Australian mental health service providers through the process of adopting and implementing HITs in practice, thus further demonstrating the translational nature of our research. As detailed in the publication listed below, these guidelines were born from an iterative consultation process with researchers, health professionals, service providers, policy makers, expert privacy consultants, and executives. These advisory standards aim to safeguard the legal and ethical rights of consumers who agree to use HITs as part of care and share personal and health information with their service provider; and also cover the use of their de-identified information for research purposes.


As an adjunct to the guidelines, we have also developed a checklist of considerations for service providers regarding HIT manufacturers’ privacy policies. To foster trust with consumers, HIT manufacturers need to ensure full transparency in relation to how personal and health information will be protected and under what conditions it will be disclosed in accordance with national and service-level privacy standards.

Furthermore, we have identified 10 key national priority areas for the Australian government to respond effectively to the ever-increasing demand for mental health services through the delivery of technology-enabled person-centred care. As outlined in the publication noted below, the priorities are grouped into those that: i) highlight Australia’s potential as an attractive test site for both national and international developments in digital mental health care; ii) enhance consumers’ experience of digital mental health care; and iii) emphasise the potential added value of digital health solutions to the Australian health care system by promoting accountability, smart infrastructure investments, and rapid improvements in regional and national governance.


International adoption and application of our digital health solutions: Our innovations have garnered international attention, resulting in research partnerships with Alberta Youth Mental Health Services which will see the implementation of our technology-enabled service models into their services for improved youth mental health outcomes, as well as clinician-researchers in Bogotá, Colombia.

Ospina-Pinillos L, Davenport T...Hickie IB. Using participatory design methodologies to co-design and culturally adapt the Spanish version of the Mental Health eClinic: qualitative study. *JMIR*. 2019; 21(8): e14127.
CONCLUSION

Project Synergy is a large-scale research project that aims to co-design, build, implement, and evaluate new and emerging technologies to enhance the quality of mental health care provided by traditional in-clinic and online mental health services. Spanning two phases and six years, Project Synergy has contributed to quantifiable improvements in mental health service delivery, created long-term partnerships between mental health research and service delivery organisations, and extensively knowledge translated its findings so that they are accessible to a wide range of stakeholders, including mental health consumers, health professionals, service providers, and policy makers, in formats including blog posts, video webinars, quality assurance protocols for mental health apps and e-tools, and implementation and medicolegal/ethical guidelines relating to embedding digital technologies within mental health services. As evidenced by publication in prestigious academic journals, all work was conducted to a high standard of research excellence. Throughout its six-year duration, Project Synergy has upheld the principle of mental health consumer participation as well as the participation of other stakeholders including supportive others, health professionals, and service providers through co-design workshops, user (acceptance) testing of prototypes, and service mapping workshops. This was key in developing a technology-enabled solution for Australian mental health service reform that would be acceptable to all stakeholders. Through our work conducted as part of Project Synergy, we have realised, and continue to iteratively evaluate, an online platform listed on the Australian Register of Therapeutic Goods (software as a medical device, class 1, ARTG ID 315030). Not only is this online platform and the surrounding body of work the culmination of six years of work, it is also another step closer to the reform of Australian mental health services and achieving the provision of right care, first time.

REFEREES

John Torous MD MBI is director of the digital psychiatry division, in the Department of Psychiatry at Beth Israel Deaconess Medical Center, a Harvard Medical School affiliated teaching hospital, where he also serves as a staff psychiatrist and academic faculty. He has a background in electrical engineering and computer sciences and received an undergraduate degree in the field from UC Berkeley before attending medical school at UC San Diego. He completed his psychiatry residency, fellowship in clinical informatics, and master's degree in biomedical informatics at Harvard. Dr. Torous is active in investigating the potential of mobile mental health technologies for psychiatry and has published over 75 peer reviewed articles and 5 books chapters on the topic. He serves as editor-in-chief for an academic journal on technology and mental health, JMIR Mental Health (http://mental.jmir.org/), currently leads the American Psychiatric Association’s work group on the evaluation of smartphone apps, and is an advisor to the smartphone mood study within the NIH’s one million person All of Us research program.

Michael Krausz MD PhD FRCPC is a founding member of the International Society of Addiction Medicine (ISAM) and is currently serving on the boards of the Section of Addiction and the Section of Public Policy for the World Psychiatric Association. He is a Professor of Psychiatry and the University of British Columbia (UBC) as well as the LEEF Chair in Addiction Research at the Institute of Mental Health at UBC.
APPENDIX OF SUPPORT MATERIAL

Hickie and Davenport co-led the publication of a highly impactful supplement in the Medical Journal of Australia (Impact Factor [IF]: 6.112).
Project Synergy (2014-16): Early prototypes
Project Synergy (2017-20): the online platform
Media reports highlighting Australian Government investment in Project Synergy.

27 June 2016

Turning old models of mental health care on their head

Professor Ian Hickie has applauded Prime Minister Malcolm Turnbull’s commitment to invest $30 million in a world-leading suicide prevention system as the centre-piece of the government’s $192 million mental health policy, announced on the weekend.

Mr Turnbull made the announcement while meeting mental health experts at the University of Sydney’s Brain and Mind Centre.

Co-developed by the Brain and Mind Centre and Young and Well Co-operative Research Centre, the system known as Project Synergy, provides fast access to mental health experts via

Left to right: Professor Rafael Calvo, Professor Ian Hickie, Dr Laura Ospina Pinillos, Professor Jane Burns, Prime Minister Malcolm Turnbull, Health Minister Sussan Ley.
Co-design methods in action
I’m involved in this because I was drawn to this project, because that’s what you want. You want that person-centred care. It does align with what PHNs are mandated to do. *(Stakeholder)*

It’s faster, it’s a way of connecting consumers with a medical team. ... Project Synergy I think could potentially create a more accessible and more open way for consumers to seek help or access help, if they need it, and for ongoing support as well. *(Lived experience)*

I mean, from my point of view, things have changed since I went through the mental health system ... I have to say, things have changed quite a bit, just in that timeframe. So, in terms of mental health reform, I think it’s a step in the right direction. It has a lot of potential, in my opinion. *(Lived experience)*

It’s an innovative way for people to access better support. *(Lived experience)*

... not only the product itself, but the process to develop the InnoWell Platform is really person centred and it’s one of the great things is that they’ve embedded the lived experience perspective in every element. *(Stakeholder)*

I think one of the best stories we have in terms of feedback from clients was the very first case that we had go through and this was an individual who completed the Platform after hours. So, it was in the night and we got the alert, the risk alert came through on the manager’s dashboard and we contacted the client straightaway the next morning... We rang him straightaway to follow up because he was showing elevated risk and he was really impressed by that. It actually enhanced his engagement in clinical care. *(Service Provider)*