

# BMC Youth Model Seminar #6: Maximising the use of digiHealth solutions in youth mental health care

**Presented by**

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# Acknowledgements

- Of country
- Of lived experience

# BMC Youth Model of Care – Seminar Series

1. A highly personalised and measurement-based model of care to manage youth mental health
2. Combining clinical stage and pathophysiological mechanisms to understand illness trajectories in young people
3. A comprehensive assessment framework for youth mental health care
4. Using the BMC Youth Model to personalise care options – best care, first time!
5. A youth mental health service delivery model to support highly personalised and measurement-based care
6. Maximising the use of digiHealth solutions in youth mental health care

# Recap of Seminar #1

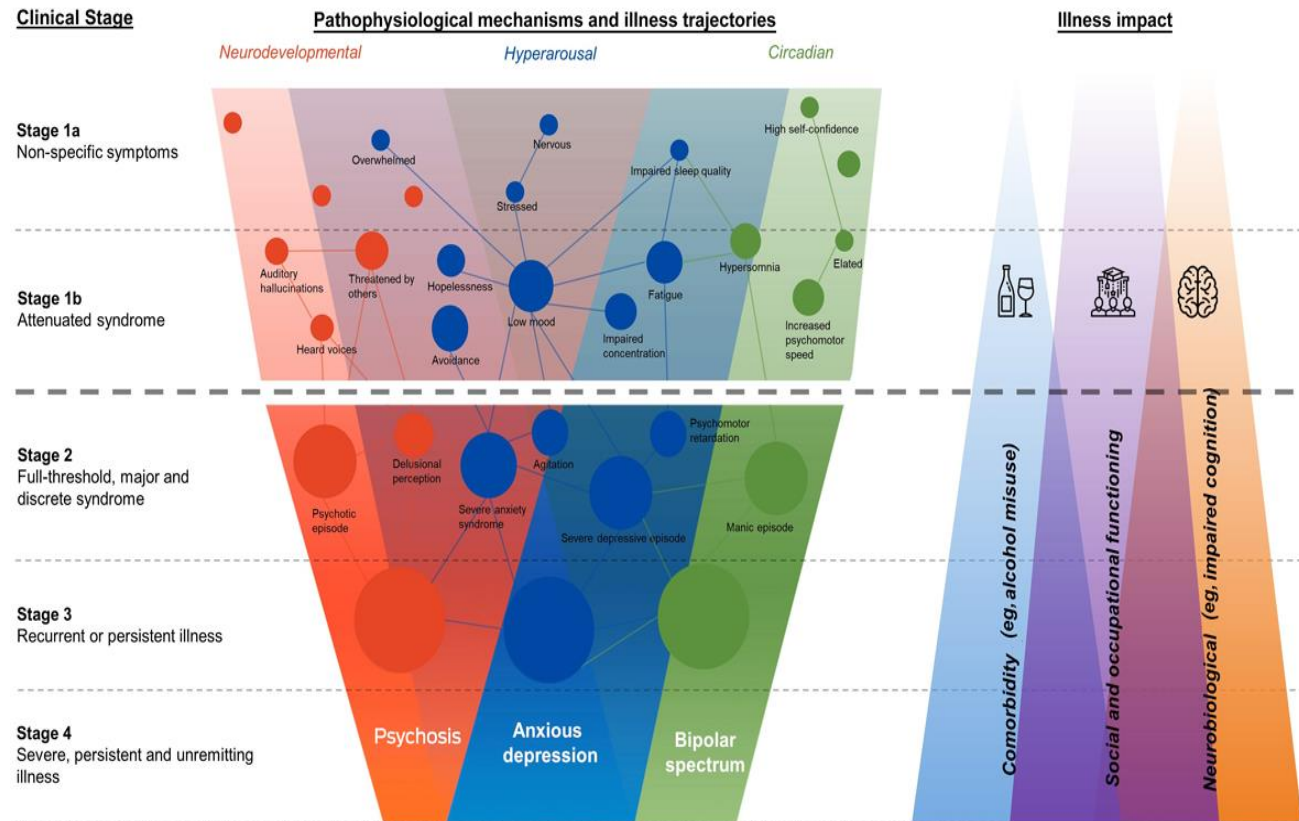
- BMC Youth Model aims to **prevent progression to more complex and severe forms of illness**
- First core concept is **a multidimensional assessment and outcomes framework** to address the holistic needs of young people presenting for care





# Recap of Seminar #2

- BMC Youth Model's **transdiagnostic framework** is supported by clinical, neuropsychological, neuroimaging, sleep-wake behavior and circadian rhythm evidence
- **Pathophysiological mechanisms and illness trajectories** attempt to describe the processes underlying development of common adolescent-onset mood and psychotic syndromes



# Recap of Seminar #3

- Use of **self-report, clinical and objective measures** allows unprecedented opportunity to refine our understanding of important clinical features in youth mental health care
- Once validated, it will be a major step towards **enabling highly personalised and measurement-based care**

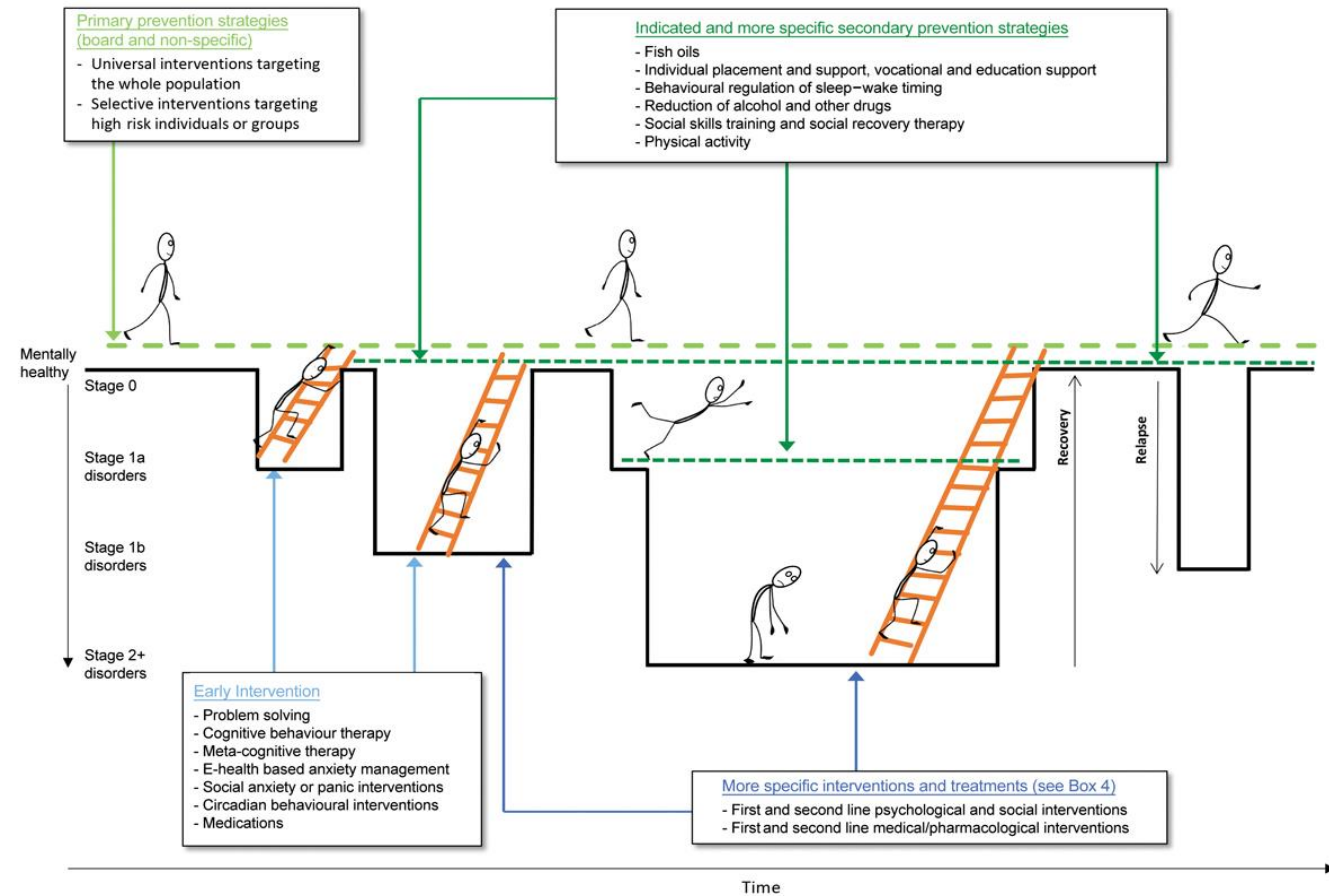


	Standard assessments	Further assessments
Neuropsychological function	<ul style="list-style-type: none"> <li>Online neuropsychological testing (eg, Cambridge Neuropsychological Test Automated Battery): <ul style="list-style-type: none"> <li>▶ attention</li> <li>▶ psychomotor speed</li> <li>▶ memory</li> <li>▶ executive function</li> <li>▶ emotion and social cognition</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive neuropsychological and social cognitive testing: <ul style="list-style-type: none"> <li>▶ immediate and delayed visual and verbal memory</li> <li>▶ verbal fluency</li> <li>▶ working memory</li> <li>▶ attentional switching</li> <li>▶ impulsivity</li> <li>▶ theory of mind</li> <li>▶ facial emotion recognition</li> </ul> </li> </ul>
Sleep-wake behaviours and circadian rhythms	<ul style="list-style-type: none"> <li>Sleep diary</li> <li>Timing of sleep onset, sleep offset, time in bed (eg, Pittsburgh Sleep Quality Index)</li> <li>24-hour actigraphy measurements with standard devices (over at least a 2-week period)</li> </ul>	<ul style="list-style-type: none"> <li>Overnight melatonin and cortisol assays</li> <li>Nocturnal core body temperature</li> </ul>
Metabolic and immune markers	<ul style="list-style-type: none"> <li>Anthropometric measurement: <ul style="list-style-type: none"> <li>▶ height, weight, waist circumference, body mass index</li> </ul> </li> <li>Blood pathology analysis: <ul style="list-style-type: none"> <li>▶ full blood count</li> <li>▶ urea, electrolytes and creatinine</li> <li>▶ thyroid function</li> <li>▶ non-specific inflammatory markers: C-reactive protein</li> <li>▶ fasting blood glucose</li> <li>▶ insulin resistance (eg, homeostasis model assessment)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Autoantibody screening (eg, N-methyl-D-aspartate receptor, glycine receptor, metabotropic glutamate receptor 5)</li> <li>More extensive inflammatory marker screening (eg, tumour necrosis factor, interleukin)</li> </ul>
Brain structure and function	<p><i>Recommended for all stage 2+ patients and stage 1b patients with a psychotic or circadian-bipolar spectrum phenotype</i></p> <ul style="list-style-type: none"> <li>Magnetic resonance imaging: <ul style="list-style-type: none"> <li>▶ cortical and subcortical grey matter volume</li> <li>▶ cortical thickness</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Diffusion magnetic resonance imaging: <ul style="list-style-type: none"> <li>▶ white matter tractography</li> </ul> </li> <li>In vivo magnetic resonance spectroscopy: <ul style="list-style-type: none"> <li>▶ metabolite concentrations (eg, glutathione, creatine, N-acetyl-aspartate)</li> </ul> </li> </ul>

# Recap of Seminar #4

- BMC Youth Model outlines a **treatment selection guide for early intervention** incorporating three core concepts:

1. Multidimensional assessment and outcomes framework
2. Clinical staging
3. Three common illness subtypes (psychosis, anxious depression, bipolar spectrum) based on three underlying pathophysiological mechanisms (neurodevelopmental, hyperarousal, circadian)



# Recap for Seminar #5

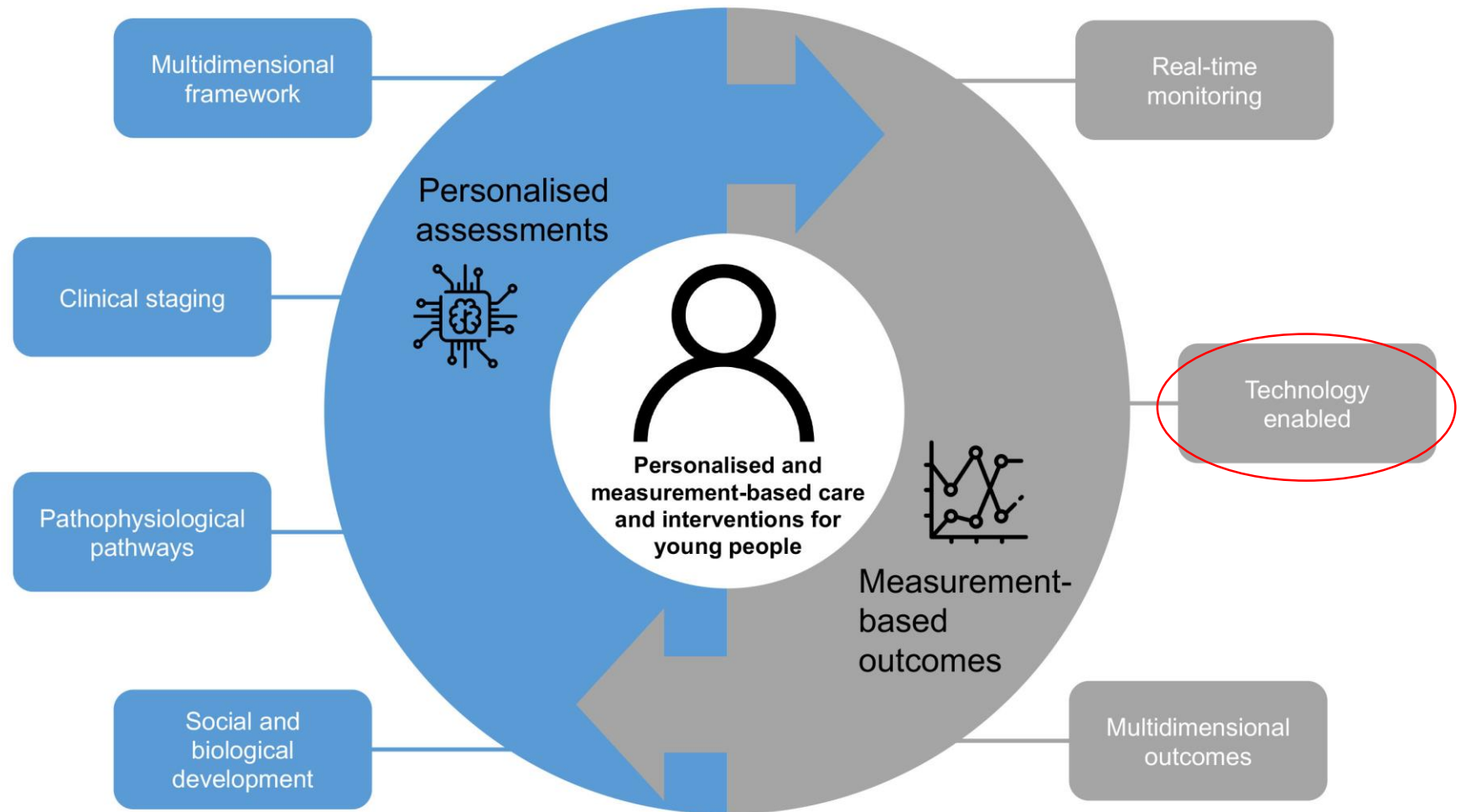
- **BMC Youth Model** explicitly aims to **prevent progression to more complex and severe forms of illness** - made possible through appropriate health service structures
- BMC Youth Model **incorporates** other **evidence-based processes**, including:
  1. Real-time measurement-based care
  2. Use of multidisciplinary teams of clinicians
- Data-driven local **simulation modelling** and personalised **health information technologies** provide crucial infrastructure support to these processes for better access to, and higher quality, mental health care!

		1. CURRENT CLINICAL STAGE			
		Stage 1a Minimum 3-monthly review and length of care	Stage 1b Minimum monthly review and 12 months of care	Stage 2 3-monthly review and 2-5 years of care	Stages 3 and 4 6-monthly review and ongoing care
2. CURRENT CLINICAL NEED (symptoms, functional impairment, risk severity)	Very mild	Self- and carer-directed monitoring and management			
	Mild	Low intensity services			
	Moderate	Moderate intensity services			
	Severe			High intensity services	
	Very severe			Acute and specialist community services	





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# Outline for Seminar #6

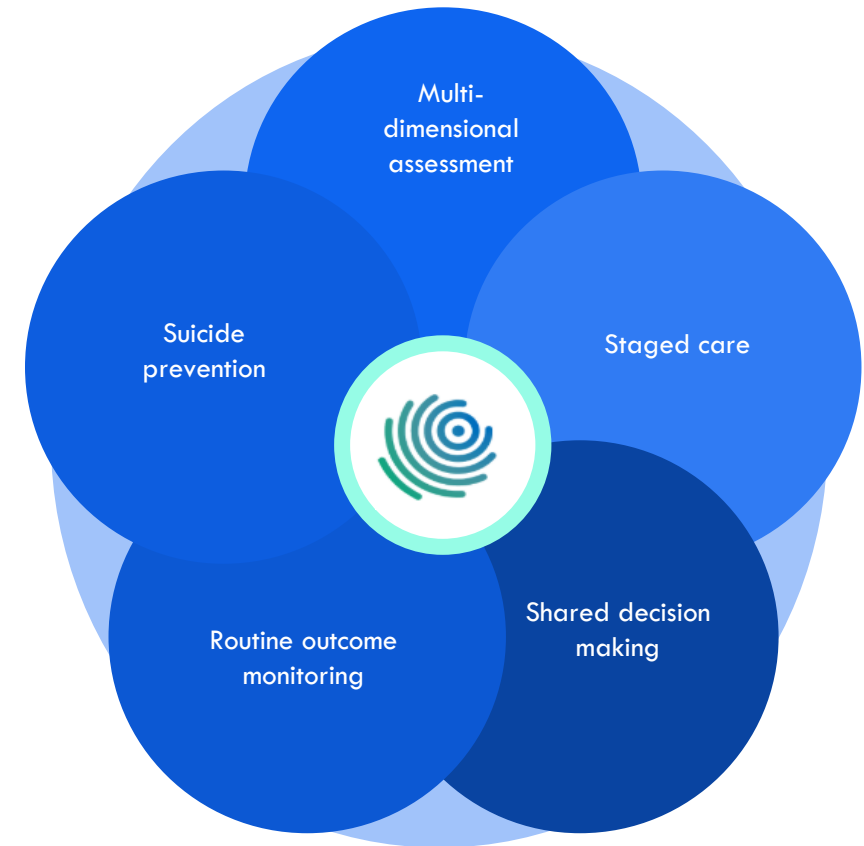
- Implementation of the **BMC Youth Model** is made possible through **health information technology** (HIT) infrastructure = **digiHealth**
- HITs improve access, efficiency, outcomes and care continuity by enabling real-time and comprehensive online assessment, self-monitoring and routine outcoming monitoring, facilitation of immediate access to high quality online psychological interventions
- To enable **digiHealth**, there are various digital clinical tools that can be implemented; we use the **InnoWell Platform** as one example



*The InnoWell Platform is registered as a Class 1 Software as a Medical Device (SaaMD) with the **Therapeutic Goods Association (TGA)**.*

# DigiHealth

- In clinical practice, digiHealth solutions enable:
  1. Multidimensional clinical assessment
  2. Suicidality Escalation Protocol
  3. Data-driven understandings of illness trajectories
  4. Staged care (for no more waitlists!)
  5. Shared decision making
  6. Routine outcome monitoring
  7. Collaborative care through multidisciplinary clinical teams





# The InnoWell Platform




Med J Aust 2019; 211 (7): S1-S39. || doi:  
10.5694/mja2.50349

The University of Sydney



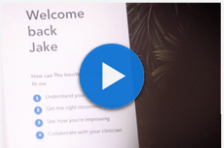





You're invited to start using InnoWell platform to help support your mental health.  
Click below to accept the invite.

[Privacy policy](#) | [Terms of use](#)


[Start with InnoWell now](#)




Watch the video to see how the InnoWell platform can help support your mental health and wellbeing.



1  
Create an account



2  
Complete surveys




3  
Get immediate results

If you have any questions about this invitation please contact your service provider with their details below. Your personal information is available to both you and Test\_headspace Tweed Heads through the platform to support your mental health.

[enquiries@headspace-tweed.org.au](mailto:enquiries@headspace-tweed.org.au)  
Call (07) 5589 8700

Warm regards,  
The Team at InnoWell





# Multidimensional clinical assessment



Individuals are prompted to complete a **multidimensional clinical assessment** representing the **five key domains**:

- Social & occupational function
- Self-harm, suicidal thoughts & behaviours
- Alcohol or other substance misuse
- Physical health
- Illness type, stage and trajectory

INNOWELL

Set up video calls I need help now

### Suicidal Thoughts And Behaviours

Sometimes, when someone is not coping well, they may have thoughts of harming themselves or taking their own life. These questions ask whether you have experienced suicidal thoughts and/or behaviours either recently or in the past. These questions take about 3 minutes to answer.

Your answers are secure and confidential

Your answers are saved automatically

You can do this later with support

#### Question 1

In the past month, how often have you had thoughts about suicide?

0 - Never
1
2
3
4
5
6
7
8
9
10 - Always

# Suicidality Escalation Protocol

## Individual notification

Need Help Now?

You have reported current suicidal thoughts and/or behaviours. If you are in immediate danger and are likely to harm yourself, please dial 000. If you are not in immediate danger but would like to talk to someone now, please contact:

Mental Health Line  
1800 011 511

Website

Call 1800 011 511

Lifeline  
AUSTRALIA  
LIFELINE

Website

Call 13 11 14

kidshelpline  
Anytime Any Reason  
KIDS HELPLINE

Website

Call 1800 55 1800

Individuals and their clinicians are prompted immediately when they have self-reported mild to high concerns for suicidality

## Clinician notification

Individuals

Assigned to me

All

Search

Search

Patient name	Suicidal thoughts ...	Social and occupa...	Psychological dist...	Psychosis-like exp...	Clinicians
<div>RG</div> <div>Renee Garcia</div> <div>"Renee"</div> <div>DOB: 26/04/2000</div> <div>Last active: 16 days ago</div>	High (21d) Deterioration	Poor (21d)	High (21d)	No concern (21d)	<div>SD</div> <div>GL</div>

> J Med Internet Res. 2017 Jul 12;19(7):e247. doi: 10.2196/jmir.7897.

## Using New and Emerging Technologies to Identify and Respond to Suicidality Among Help-Seeking Young People: A Cross-Sectional Study

Frank Iorfino<sup>1</sup>, Tracey A Davenport<sup>1</sup>, Laura Ospina-Pinillos<sup>1</sup>, Daniel F Hermens<sup>1</sup>, Shane Cross<sup>1</sup>, Jane Burns<sup>1</sup>, Ian B Hickie<sup>1</sup>

Affiliations + expand

PMID: 28701290 PMCID: PMC5529742 DOI: 10.2196/jmir.7897

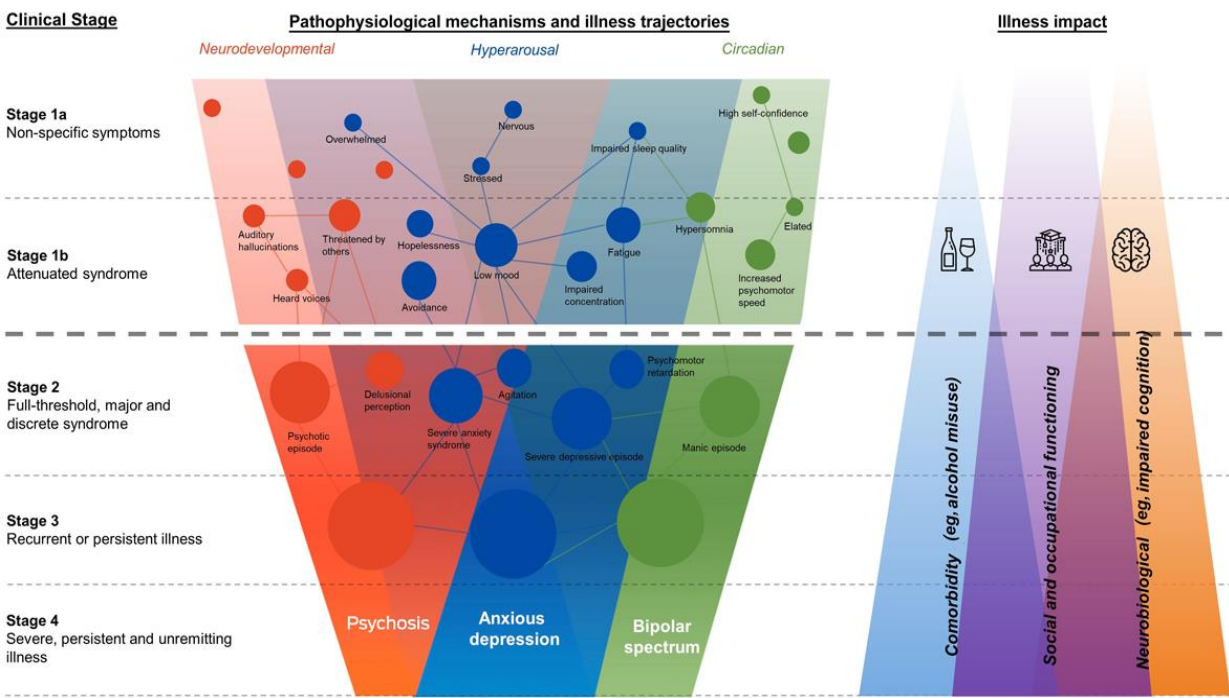
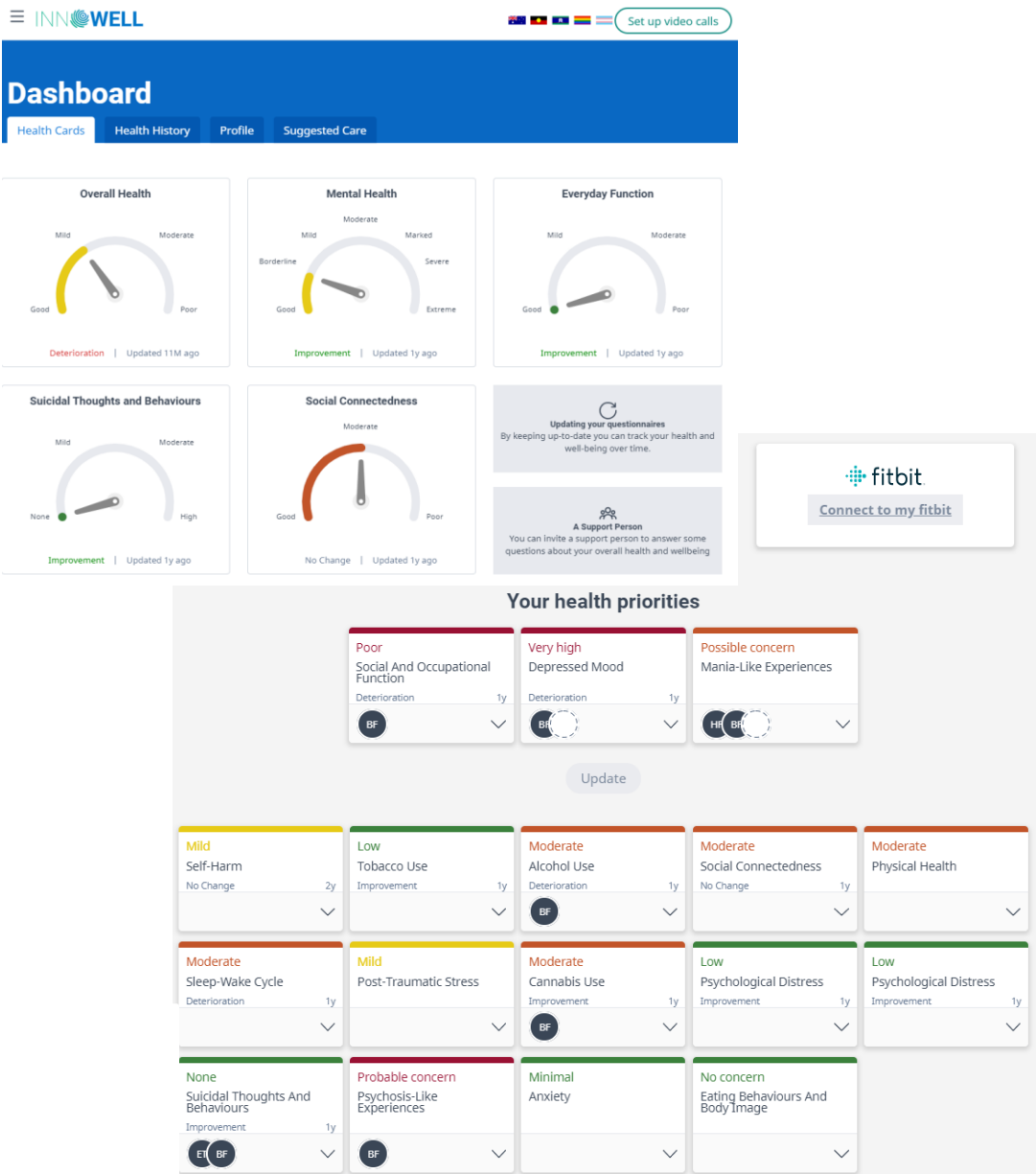
## Using the InnoWell Platform - service response to suicide thoughts and behaviours (April 2020)

39%

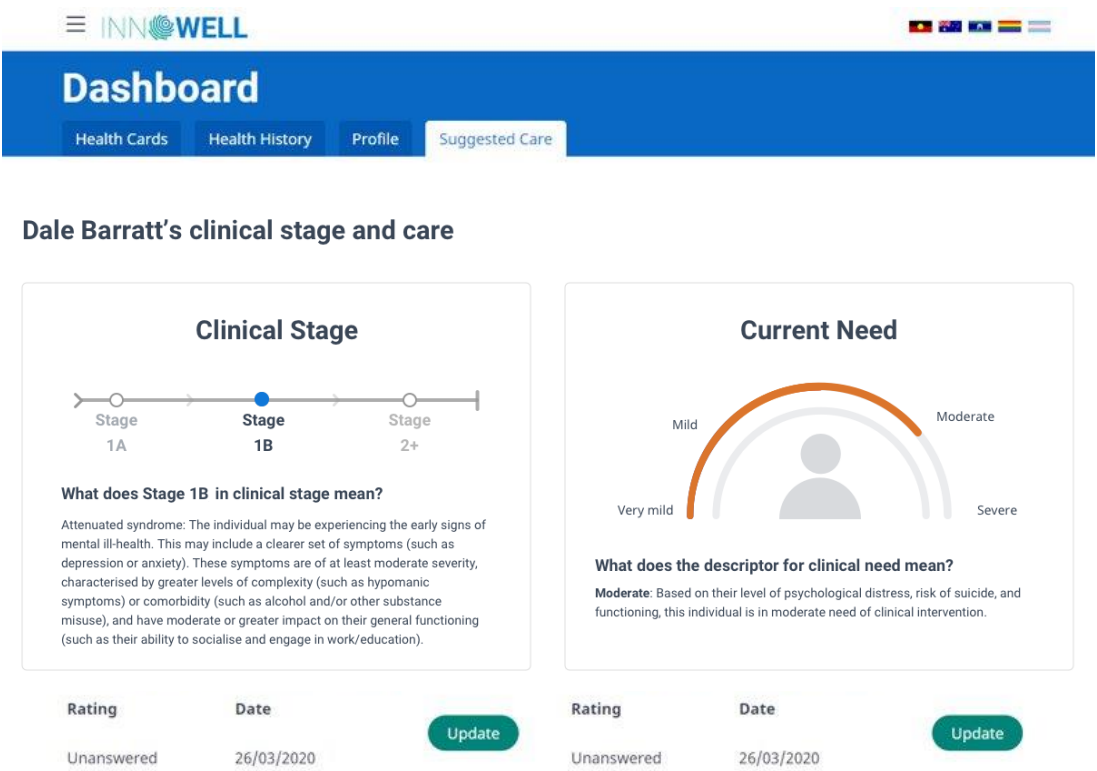
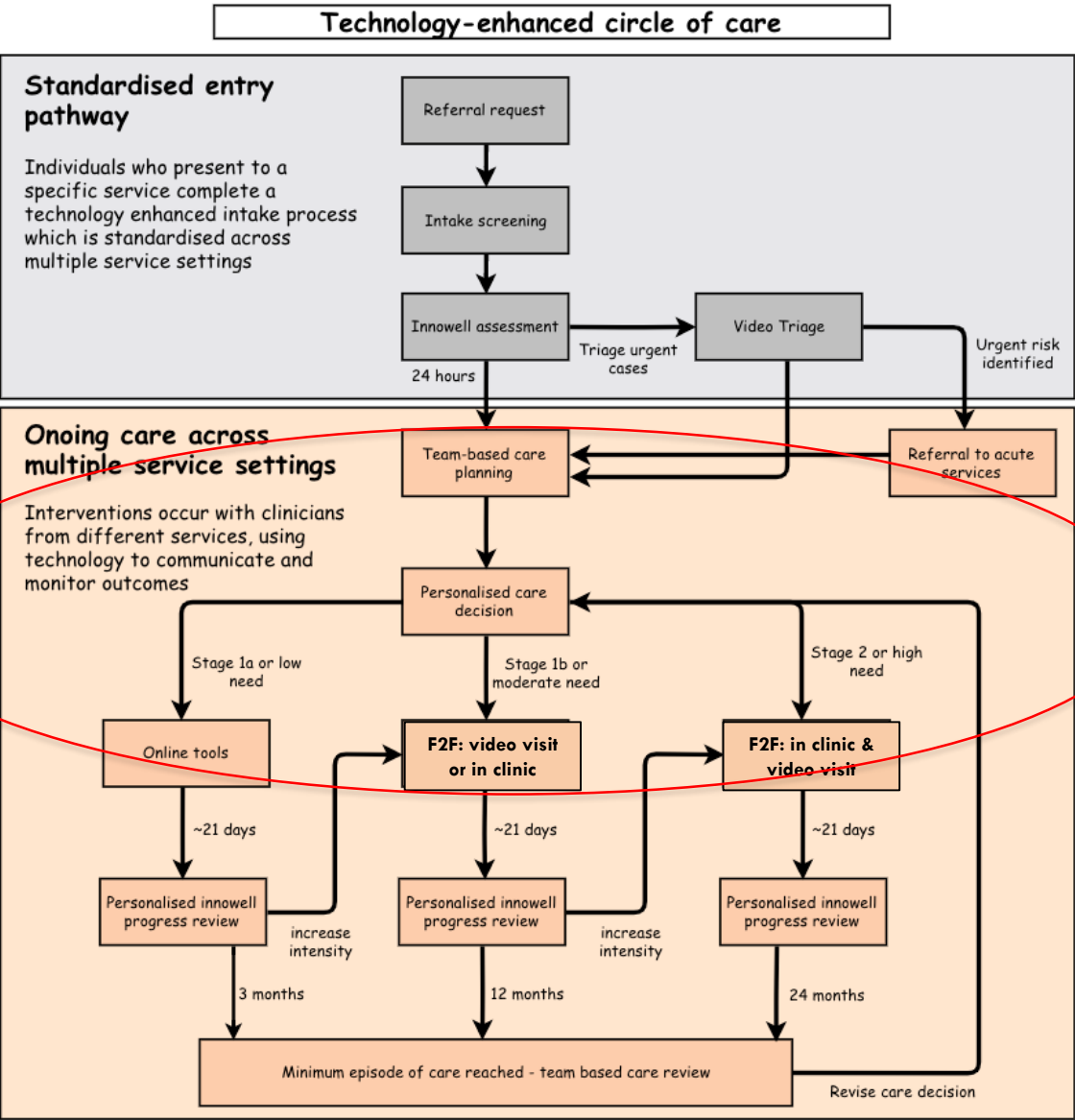
A total of 170 individuals have received rapid support from their service after completion of the self-reported suicidal thoughts and behaviours questionnaire.

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# Data driven understanding of illness trajectories



# Staged care for no more waitlists



Click to add text



# 21st Century face-to-face care: in clinic &/or video visit

JOURNAL OF MEDICAL INTERNET RESEARCH

Ospina-Pinillos et al

## Original Paper

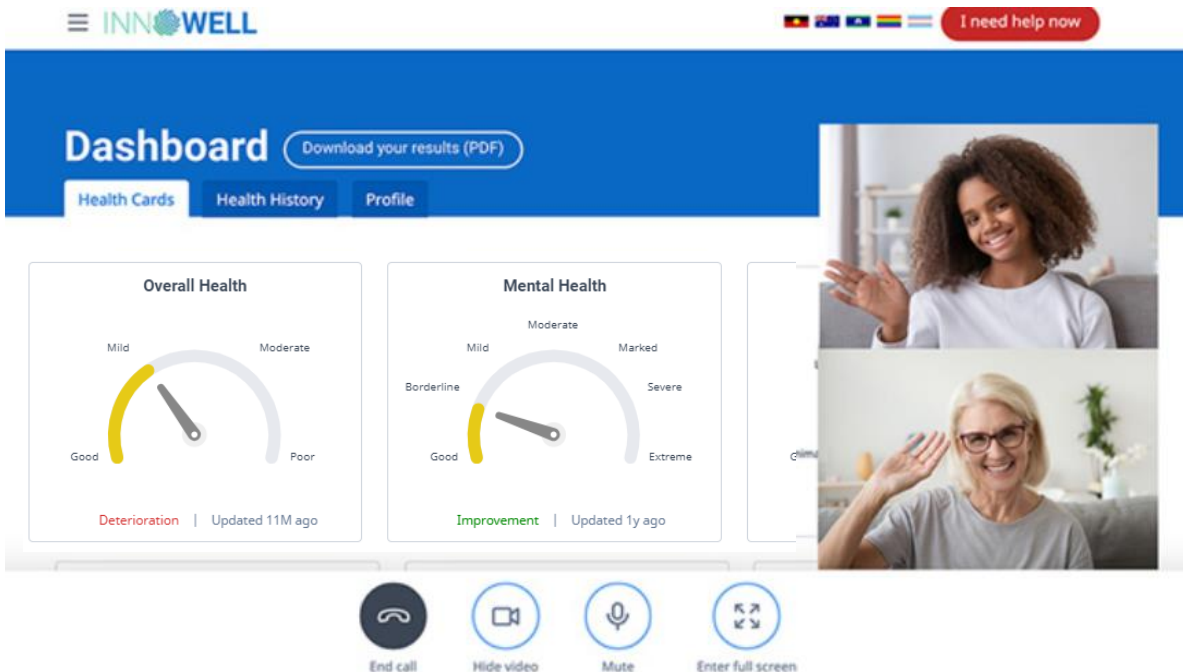
### Using New and Innovative Technologies to Assess Clinical Stage in Early Intervention Youth Mental Health Services: Evaluation Study

Laura Ospina-Pinillos<sup>1</sup>, MD; Tracey Davenport<sup>1</sup>, BA (Hons), EMBA; Frank Iorfino<sup>1</sup>, BSc (Psych), MBMSc; Ashleigh Tickell<sup>1</sup>, BSc (Psych); Shane Cross<sup>1</sup>, BPsych (Hons), MPsy (Clin), PhD; Elizabeth M Scott<sup>2</sup>, MBBS, FRANZCP; Ian B Hickie<sup>1</sup>, MD, FRANZCP

<sup>1</sup>Brain and Mind Centre, The University of Sydney, Sydney, Australia

<sup>2</sup>University of Notre Dame Australia, Sydney, Australia

Using the **dashboard** in association with **secure videoconferencing software**, Ospina-Pinillos et al. reported that skilled clinicians take **12 minutes to complete an initial assessment → intervention**, or **22 minutes** with a safety plan. 'Video visits' can also be used for **routine outcome monitoring** in the form of quick and more **regular check-ins** for the provision of best mental health care.




*"I've used the video visit a few times now and it worked wonders – one patient stated she felt more at ease and found the contact therapeutic. She was less anxious and was able to engage better with me... The Platform facilitated better and safer engagement (in light of COVID-19); and as a clinician, I was able to access the patient's dashboards while still seeing them face-to-face."*

**Julius Ajayi, Mental Health Nurse**

# Shared decision making

Click on a health card to find fact sheets, browse a number of care options and review your results.

  
[Connect to my fitbit](#)

### Your health priorities

<b>Poor</b> Social And Occupational Function Deterioration 1y BF	<b>Very high</b> Depressed Mood Deterioration 1y BF	<b>Possible concern</b> Mania-Like Experiences HF BF
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Update

<b>Mild</b> Self-Harm No Change 2y	<b>Low</b> Tobacco Use Improvement 1y	<b>Moderate</b> Alcohol Use Deterioration 1y BF	<b>Moderate</b> Social Connectedness No Change 1y	<b>Moderate</b> Physical Health
<b>Moderate</b> Sleep-Wake Cycle Deterioration 1y	<b>Mild</b> Post-Traumatic Stress	<b>Moderate</b> Cannabis Use Improvement 1y BF	<b>Low</b> Psychological Distress Improvement 1y	<b>Low</b> Psychological Distress Improvement 1y
<b>None</b> Suicidal Thoughts And Behaviours Improvement 1y ET BF	<b>Probable concern</b> Psychosis-Like Experiences BF	<b>High</b> Anxiety Deterioration 1m	<b>No concern</b> Eating Behaviours And Body Image	

### Care Options

Here are some care options for this health card. These care options are arranged from those you can do on your own at the top to those you can do with your service provider. Your service provider will work with you to determine the type of care that is best suited to your needs.

#### What I can do now...

**Smiling Mind**  
An app for practicing guided mindfulness and meditation, to help reduce your anxiety and create a sense of calm. (FREE)  
In progress X Visit

**ReachOut WorryTime**  
ReachOut WorryTime interrupts repetitive thinking by setting aside your worries to one time of the day, so you don't get caught up in them and can get on with your day. (FREE)  
Get started Visit

**MindShift**  
MindShift is an app designed to help teens and young adults shift their anxiety. Rather than trying to avoid anxiety, you can make an important shift and face it. (FREE)  
Get started Visit

#### What I can do with my clinician...

**Group therapy for social anxiety**  
Group-based Cognitive Behavioural Therapy (CBT) that can help you manage the symptoms of social anxiety.  
Requested X  
Waiting for your clinician

**Psychological therapy for anxiety**  
Psychological therapy, such as Cognitive Behavioural Therapy (CBT) or Acceptance and Commitment Therapy (ACT) that can help you better manage the thoughts, feelings and behaviours associated with anxiety.  
Request this

**Medical treatment for anxiety**  
Medications that can help you manage the symptoms associated with anxiety.  
Request this

Used to communicate that a young person is using this care option

A direct link to download the app or access the webpage

This care option requires a clinician to assist/arrange

Used to communicate that a young person is interested in this care option

**Recommended care options** are arranged hierarchically, from low to higher intensity

# Care options

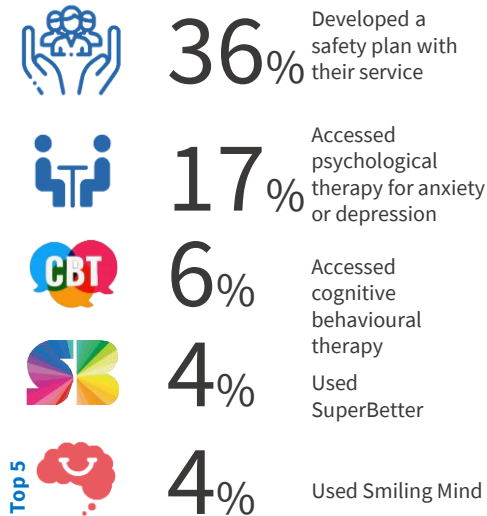
407

Care options have been accessed via individuals using the InnoWell Platform (April 2020)

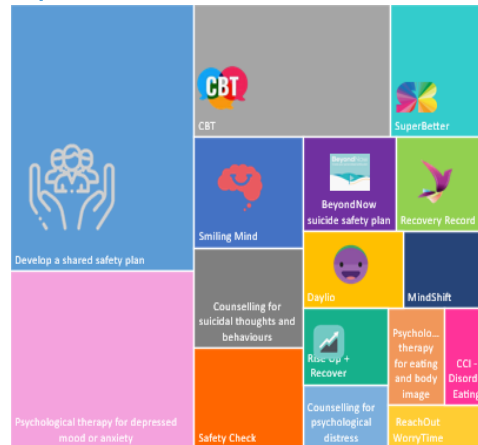


On average, 1 in 2 individuals are accessing the Platform's care option feature

## Top care options accessed



## Top 20



## Mobile App Rating Scale (MARS)

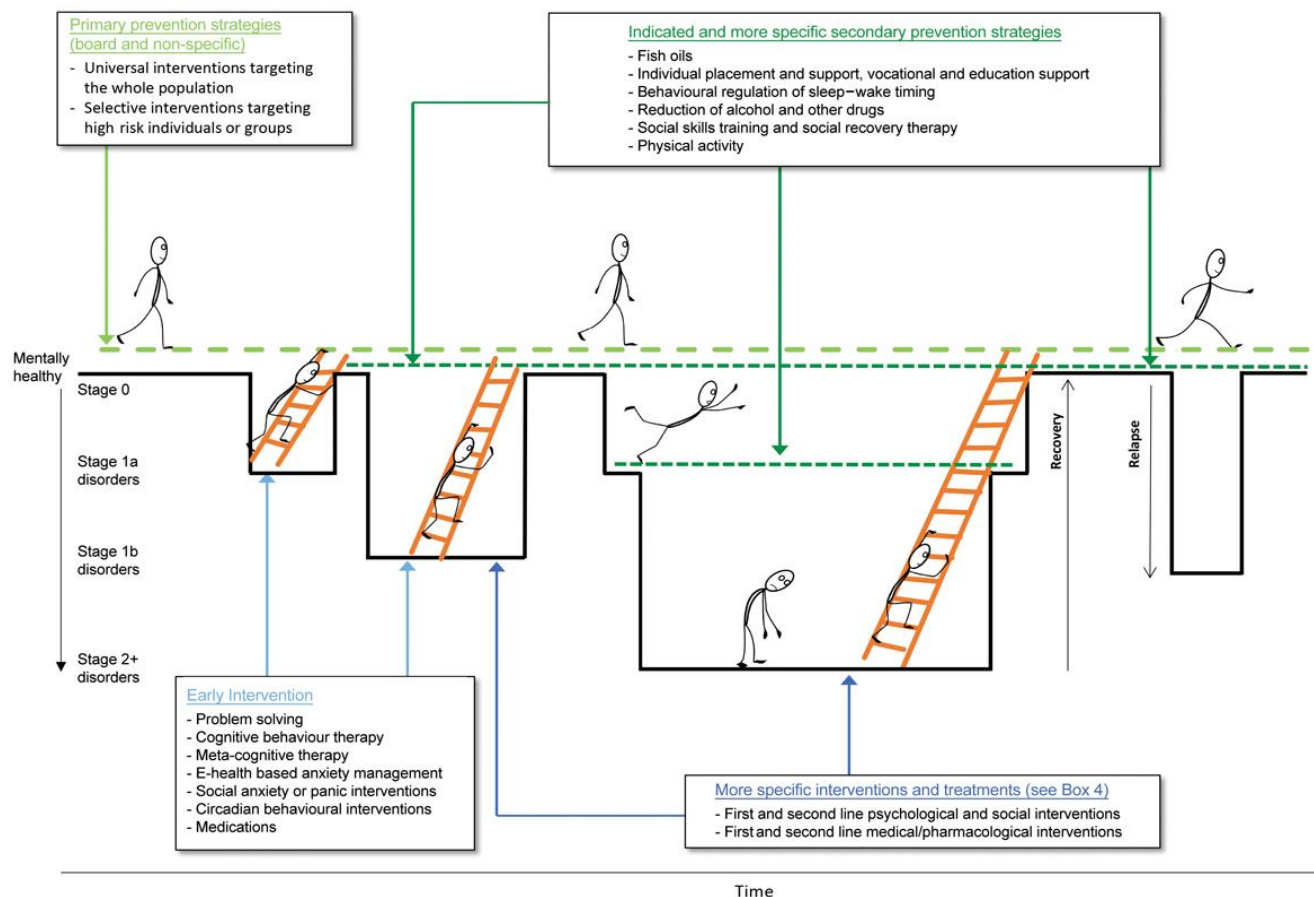
- Apps & eTools are suggested by young people and recommended by clinicians through co-design processes
- Apps & eTools are quality assured using the MARS
- MARS is a tool that assess app & eTool quality on four key domains: engagement, functionality, aesthetics and information
- MARS rates these dimensions using a five-point scale: 1 for inadequate, 2 for poor, 3 for acceptable, 4 for good, 5 for excellent

## 2 Domains of the Mobile App Rating Scale and what they assess<sup>29</sup>

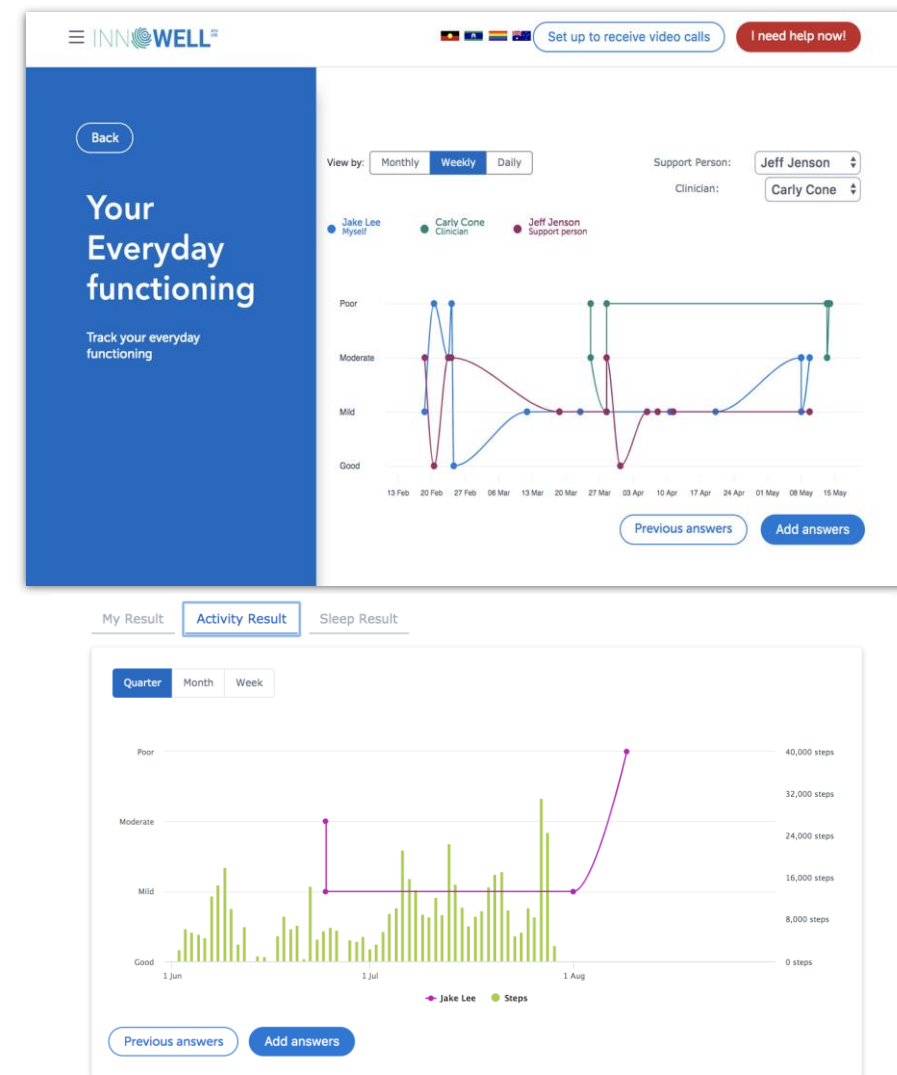
Domain	Criteria assessed
Engagement	Entertainment, interest, customisation, interactivity, target group
Functionality	Performance, ease of use, navigation, gestural design
Aesthetics	Layout, graphics, visual appeal
Information quality	Accuracy of app description in app store, goals, quality of information, quantity of information, visual information, credibility, evidence base

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# Routine outcome monitoring

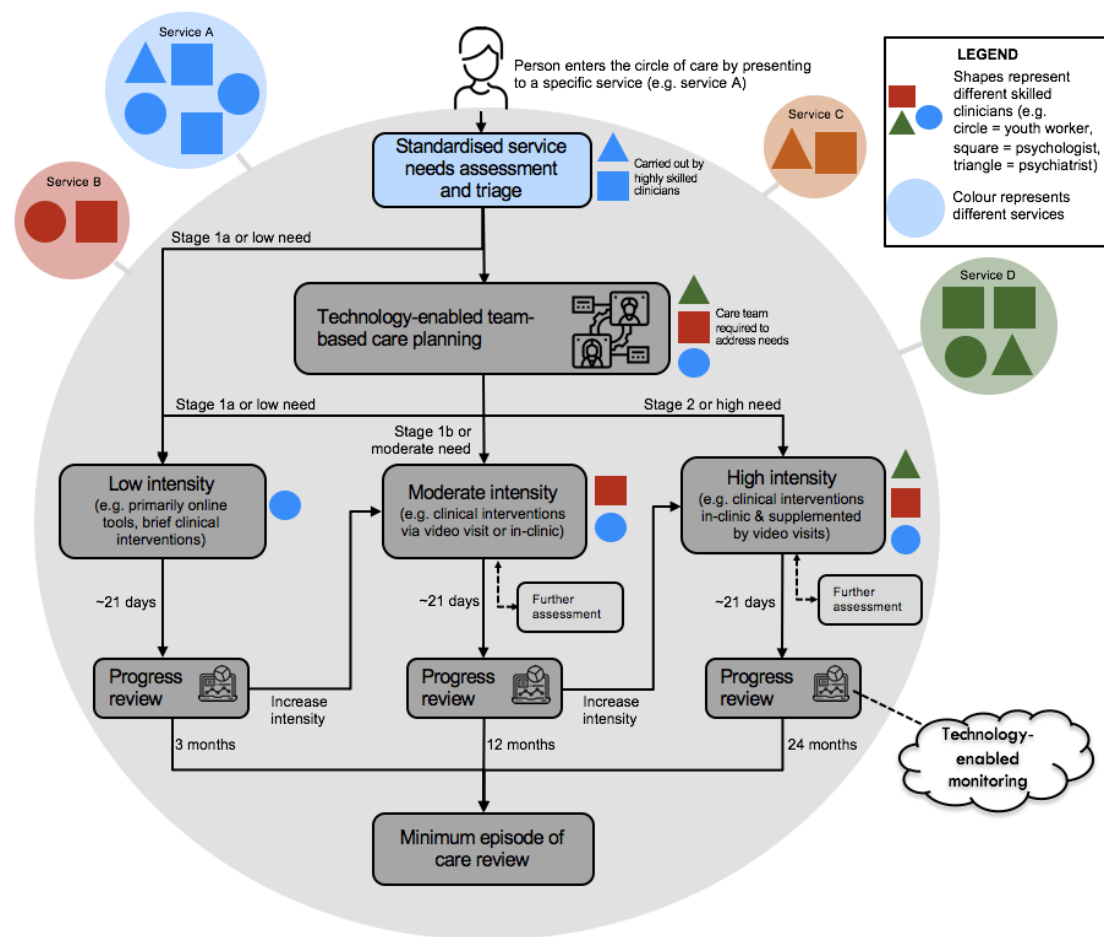


Routinely track progress during treatment using self-report, clinician rated scales, other subjective raters or by connecting wearable devices





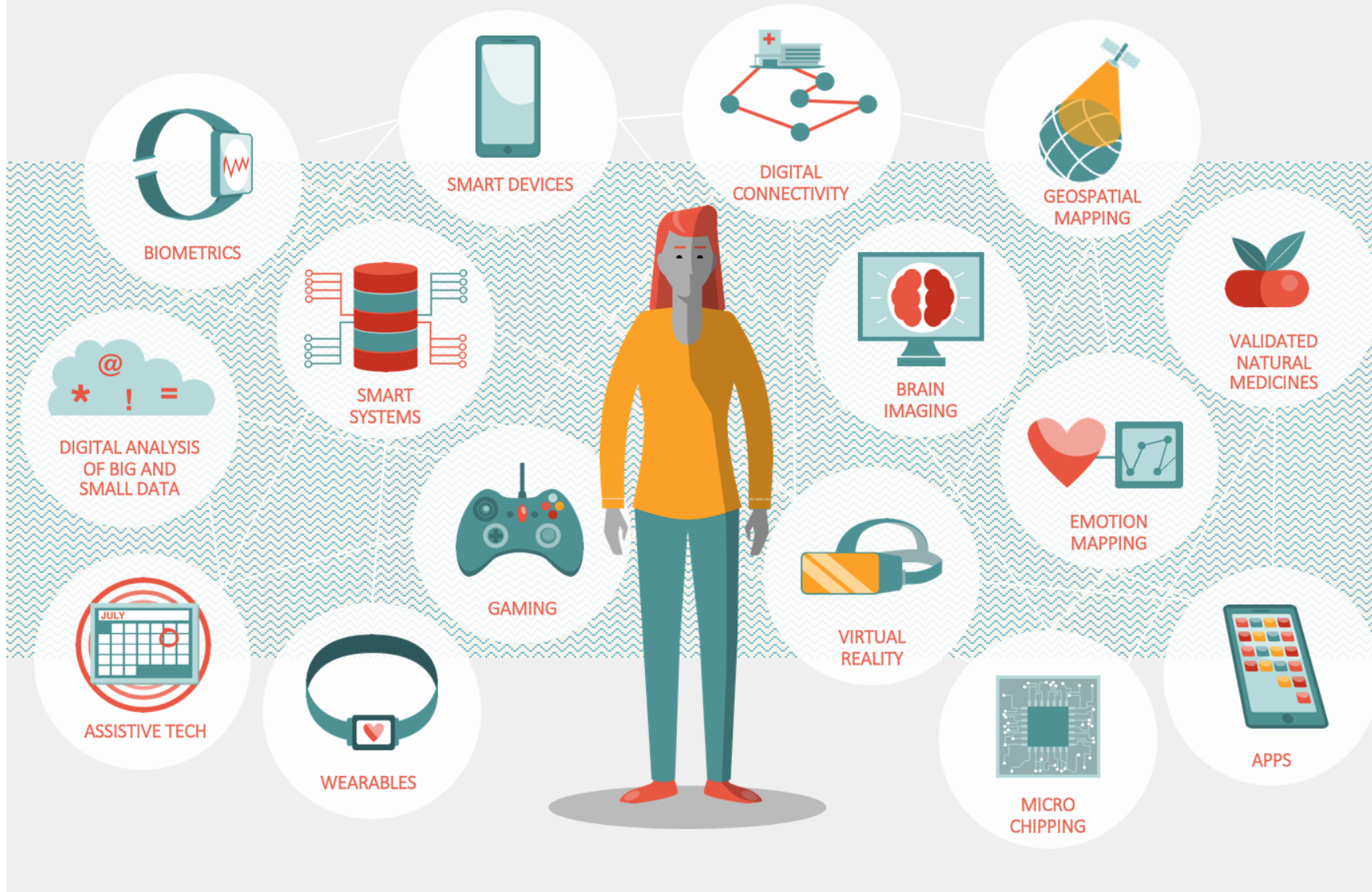
# Collaborative care through multidisciplinary clinical

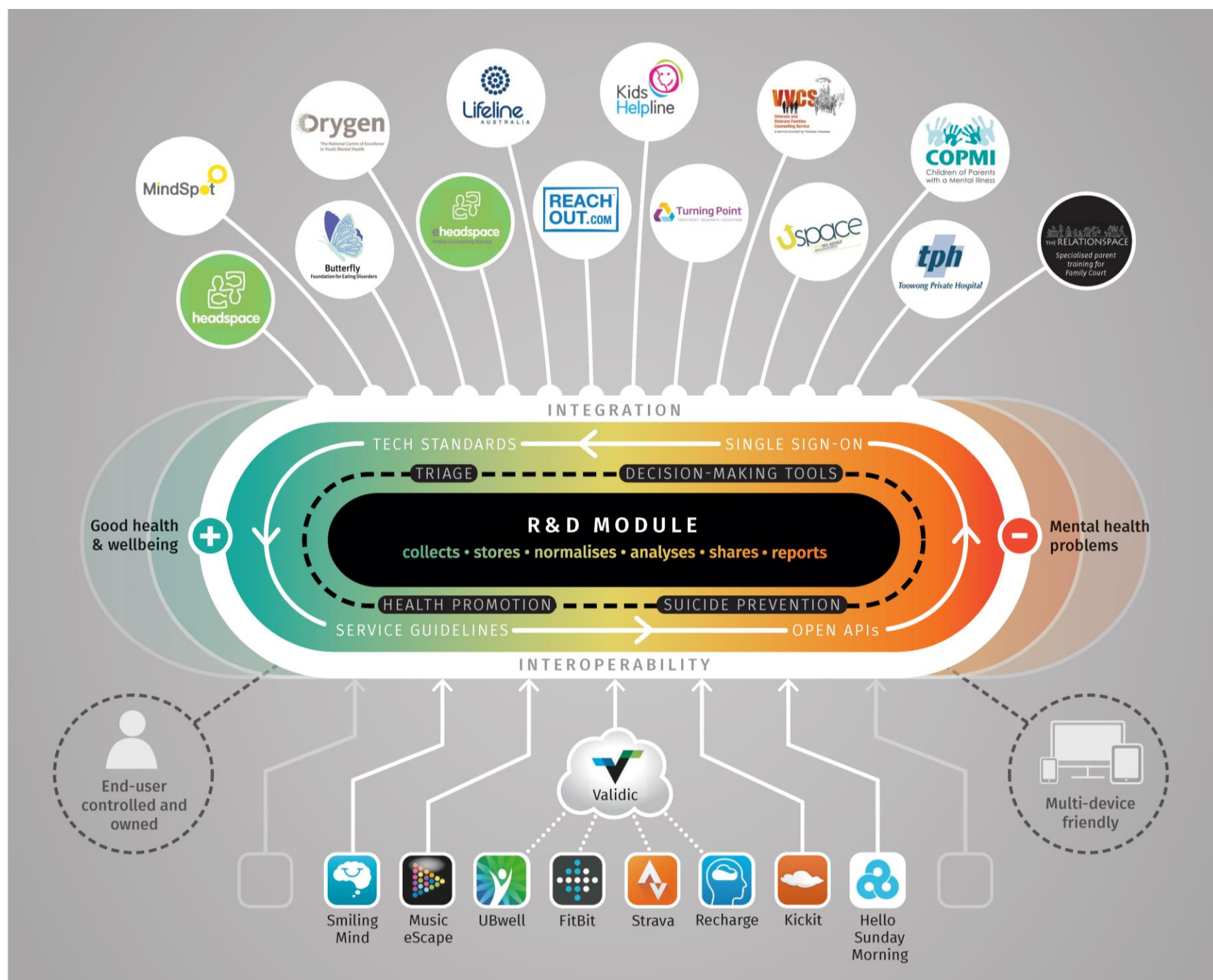


Patient name	Date of birth	Initial QA	Primary clinician
RG Renee Garcia "Renee" DOB: 26/04/2000 Last active: 16 days ago	26/04/2000	Completed	SD GL +
PJ Paul Jung "Paul" DOB: 11/10/1992 Last active: 3 minutes ago	11/10/1992	Completed	SD +

DigiHealth solutions **promote collaborative care through multidisciplinary clinical teams** using real-time data through the InnoWell Platform.

# THE FUTURE OF DIGITAL HEALTH







# Summary...

- 
- BMC Youth Model of Care + HIT (e.g. InnoWell Platform) = digiHealth solution
  - The InnoWell Platform is a Commonwealth-Government supported HIT and is a recommended tool as it is a secure, TGA-approved software that is currently undergoing validation via a clinical trial sponsored by the University of Sydney
  - We recommend all youth mental health services use a digiHealth solution to ensure the provision of best care, first time!





# BMC Youth Model of Care – Seminar Series

What	When	Video Recording/ Zoom details
1. A highly personalised and measurement-based model of care to manage youth mental health	Wed, 6 May (2-3pm)	<a href="https://www.youtube.com/watch?v=OP0XRBBrlNc&amp;t=18s">https://www.youtube.com/watch?v=OP0XRBBrlNc&amp;t=18s</a>
2. Combining clinical stage and pathophysiological mechanisms to understand illness trajectories in young people	Tues, 12 May (2-3pm)	<a href="https://www.youtube.com/watch?v=75UCBWSY88">https://www.youtube.com/watch?v=75UCBWSY88</a>
3. A comprehensive assessment framework for youth mental health care	Thurs, 14 May (2-3pm)	<a href="https://www.youtube.com/watch?v=gEhwA2-Ze0o&amp;t=326s">https://www.youtube.com/watch?v=gEhwA2-Ze0o&amp;t=326s</a>
4. Using the BMC Youth Model to personalise care options – best care, first time!	Tues, 19 May (2-3pm)	<a href="https://www.youtube.com/watch?v=9cvgGEZjEXg">https://www.youtube.com/watch?v=9cvgGEZjEXg</a>
5. A youth mental health service delivery model to support highly personalised and measurement-based care	Thurs, 21 May (2-3pm)	<a href="https://www.youtube.com/watch?v=ow4FtXTqjcl&amp;t=1459s">https://www.youtube.com/watch?v=ow4FtXTqjcl&amp;t=1459s</a>
6. Maximising the use of digiHealth solutions in youth mental health care	Thurs, 28 May (1-2pm)	<a href="https://uni-sydney.zoom.us/j/99899983293">https://uni-sydney.zoom.us/j/99899983293</a>

# Thank you!

*CPD points can be claimed for psychologists, psychiatrists, social workers, occupational therapists, and mental health nurses.*

*Please contact [tanya.jackson@sydney.edu.au](mailto:tanya.jackson@sydney.edu.au) for more information.*

*The Brain and Mind Centre would like to thank our research partners, such as*

# END