BMC Youth Model Seminar #4: Using the BMC Youth Model to personalise care options – best care, first time!

Presented by

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THE UNIVERSITY OF SYDNEY

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

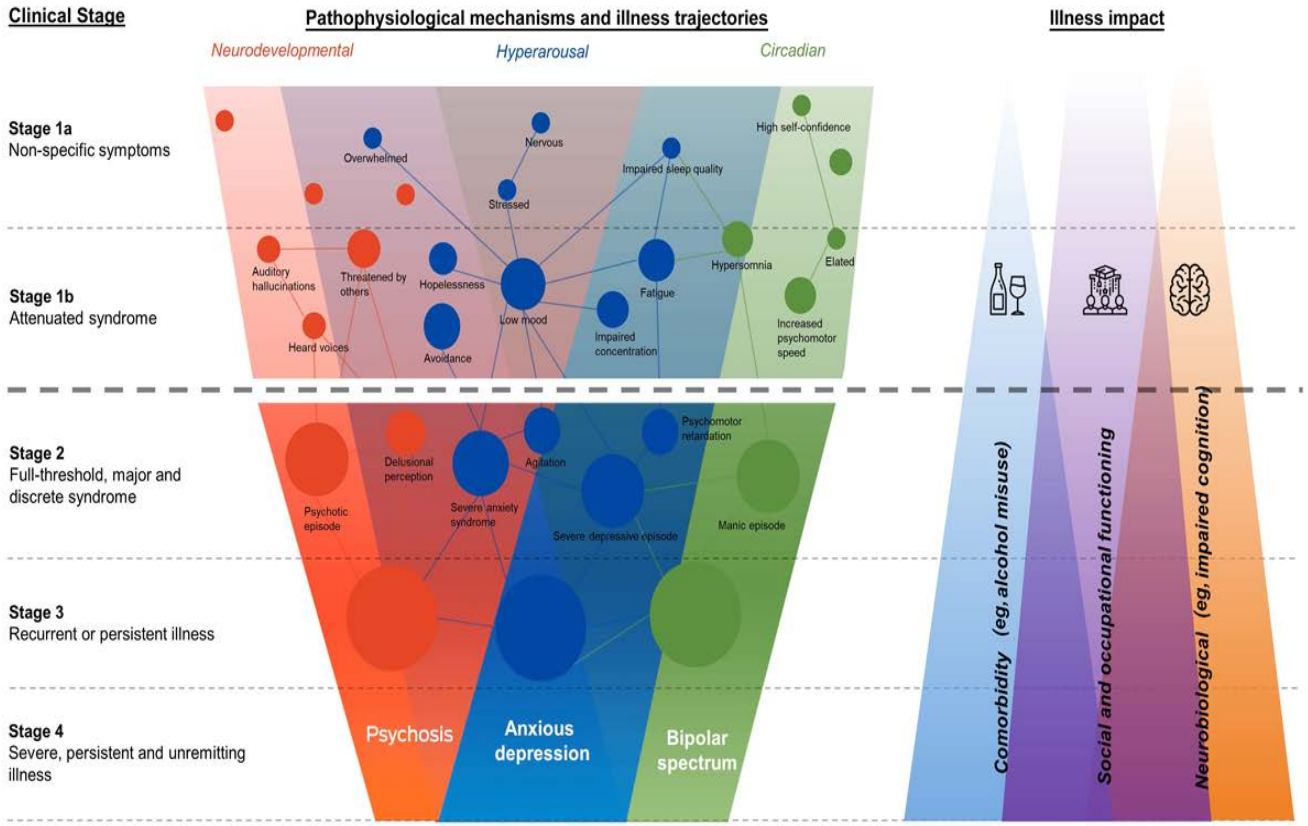
Recap of Seminar #1

- 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	• Online neuropsychological testing (eg, Cambridge Neuropsychological Test Automated Battery): ▸ attention ▸ psychomotor speed ▸ memory ▸ executive function ▸ emotion and social cognition	• Comprehensive neuropsychological and social cognitive testing: ▸ immediate and delayed visual and verbal memory ▸ verbal fluency ▸ working memory ▸ attentional switching ▸ impulsivity ▸ theory of mind ▸ facial emotion recognition
Sleep–wake behaviours and circadian rhythms	• Sleep diary • Timing of sleep onset, sleep offset, time in bed (eg, Pittsburgh Sleep Quality Index) • 24-hour actigraphy measurements with standard devices (over at least a 2-week period)	• Overnight melatonin and cortisol assays • Nocturnal core body temperature
Metabolic and immune markers	• Anthropometric measurement: ▸ height, weight, waist circumference, body mass index • Blood pathology analysis: ▸ full blood count ▸ urea, electrolytes and creatinine ▸ thyroid function ▸ non-specific inflammatory markers: C-reactive protein ▸ fasting blood glucose ▸ insulin resistance (eg, homeostasis model assessment)	• Autoantibody screening (eg, N-methyl-D-aspartate receptor, glycine receptor, metabotropic glutamate receptor 5) • More extensive inflammatory marker screening (eg, tumour necrosis factor, interleukin)
Brain structure and function	*Recommended for all stage 2+ patients and stage 1b patients with a psychotic or circadian–bipolar spectrum phenotype* • Magnetic resonance imaging: ▸ cortical and subcortical grey matter volume ▸ cortical thickness	• Diffusion magnetic resonance imaging: ▸ white matter tractography • In vivo magnetic resonance spectroscopy: ▸ metabolite concentrations (eg, glutathione, creatine, N-acetyl-aspartate)

Outline for Seminar #4

- Current models of youth mental health care are narrow, syndrome-focused and direct clinical attention away from other key factors such as functional impairment, self-harm and suicidality, alcohol or other substance misuse, poor physical health
- 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)

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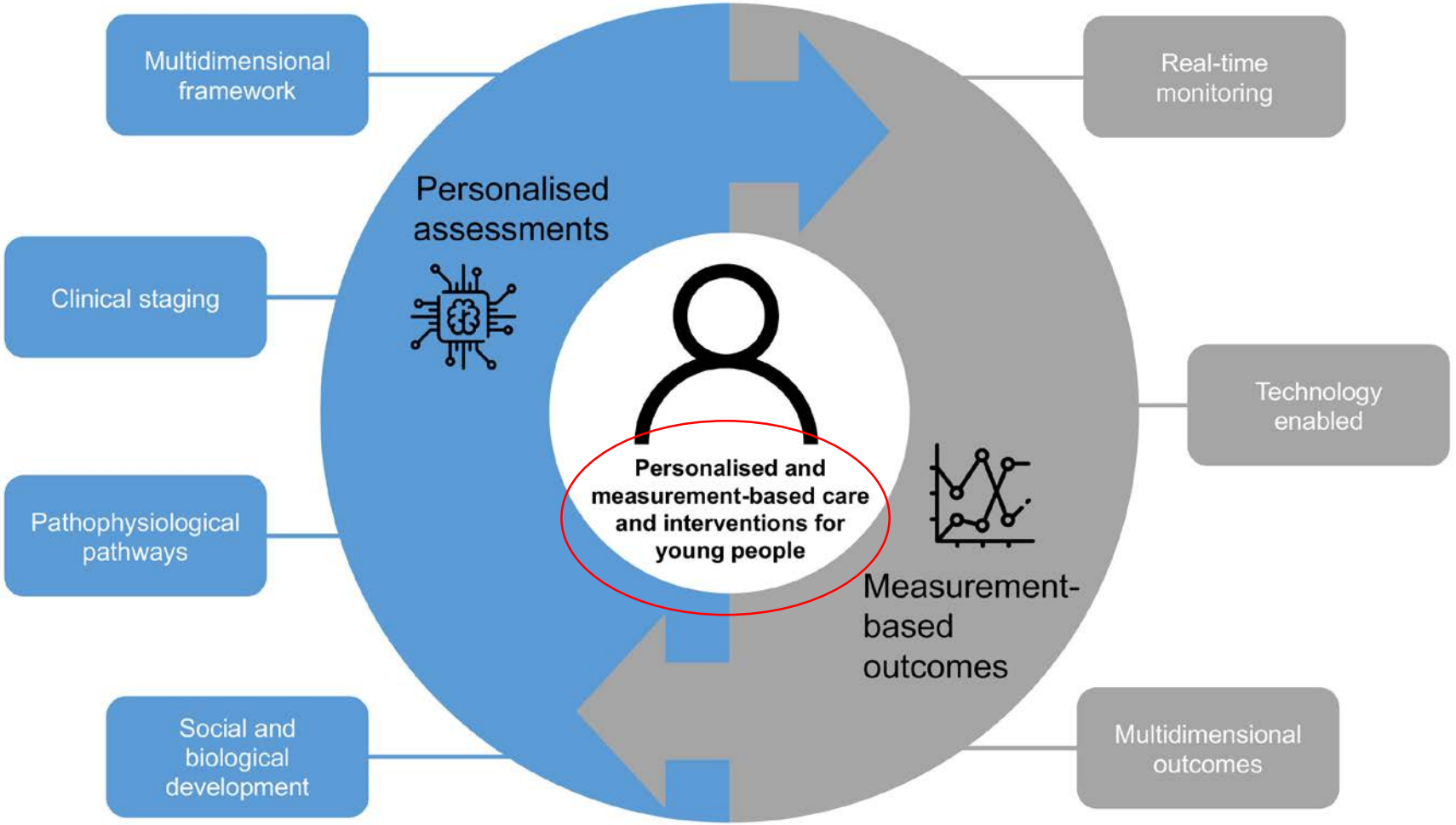

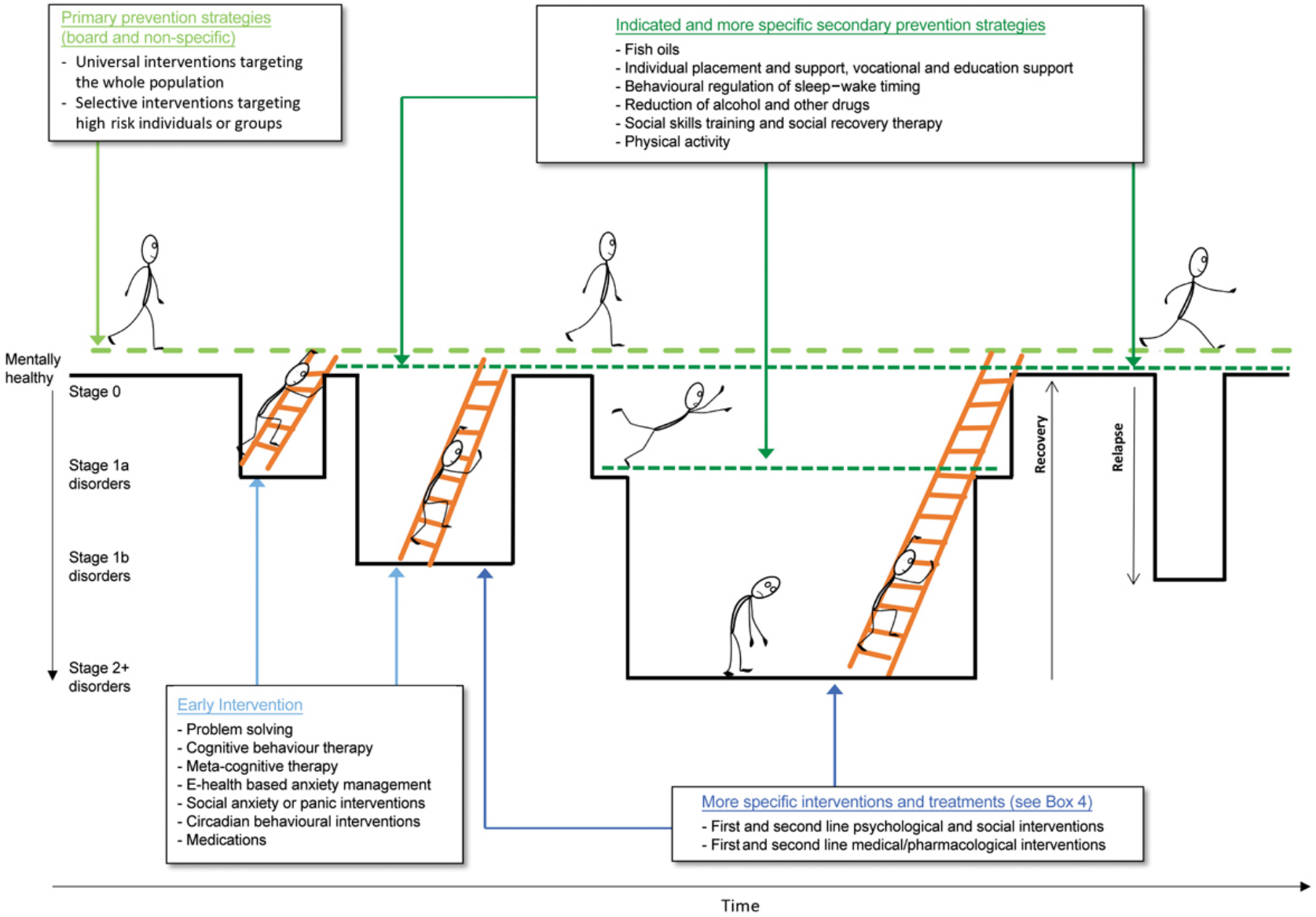

**As most adult- type mental disorders emerge during adolescence, it is crucial that considerable efforts are made to identify and intervene as early as possible in individuals who develop mood and psychotic syndromes and to provide timely, specific, active treatments, as well as indicated and more specific secondary prevention strategies to reduce the risk of illness persistence and relapse*

Recommended interventions based on multidimensional outcomes

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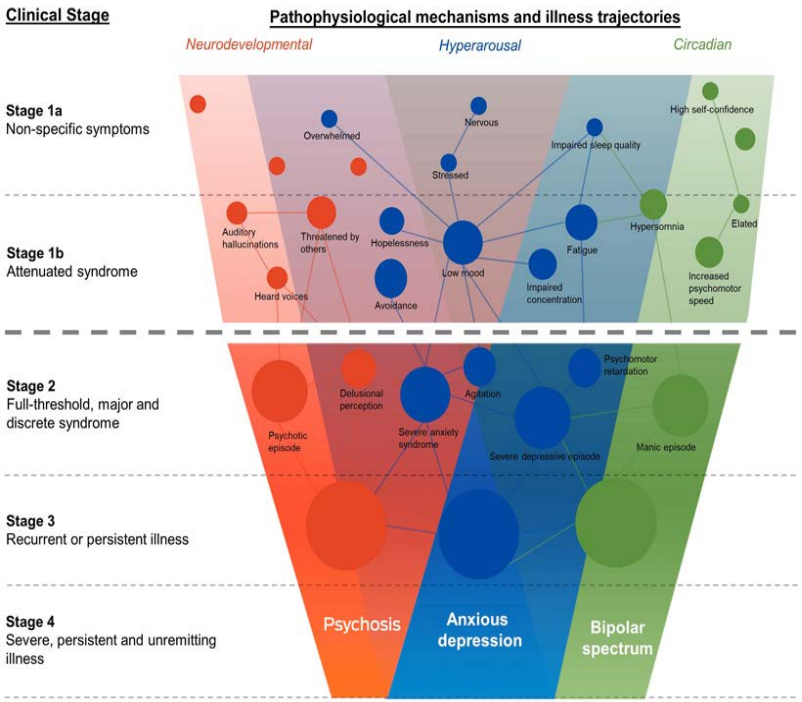
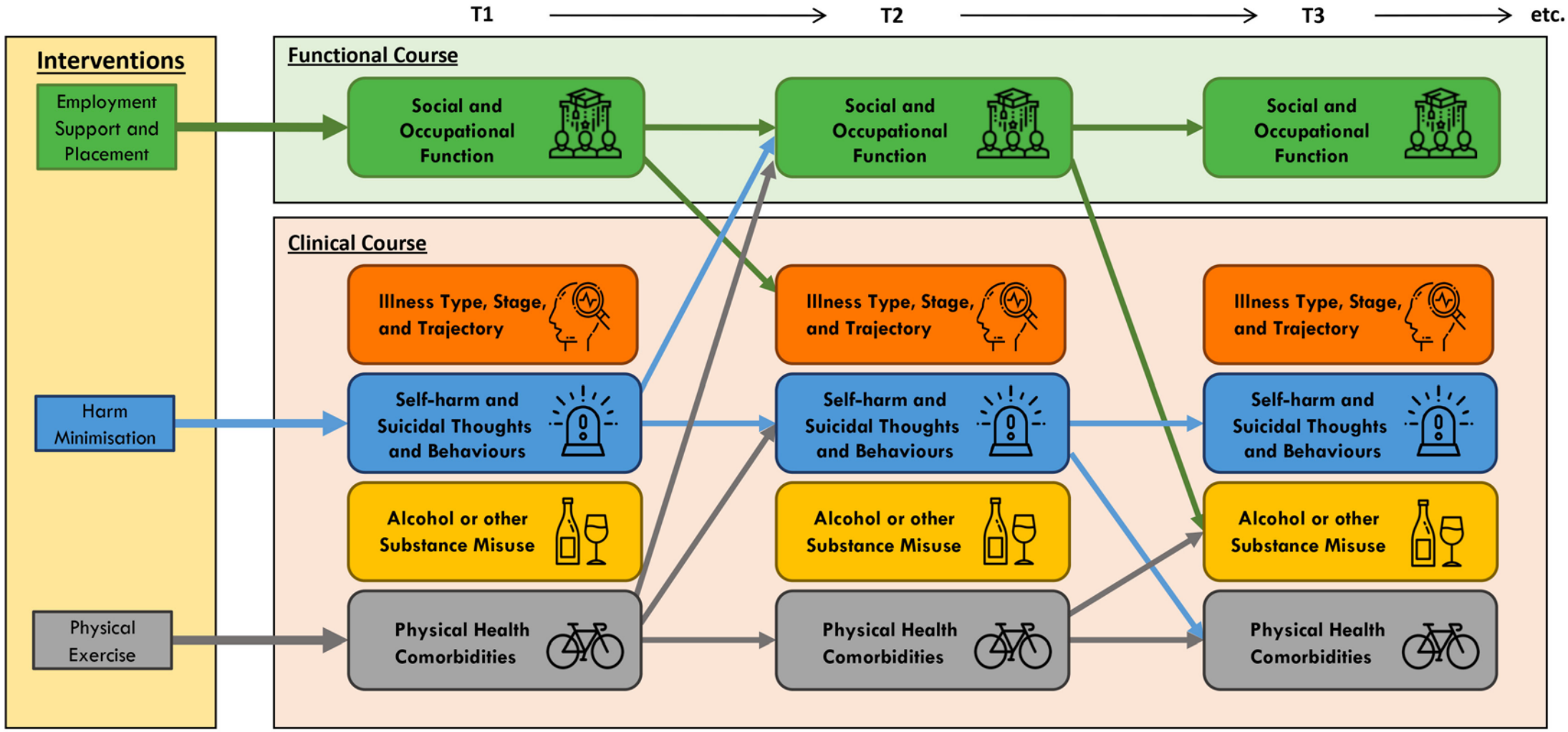
Social and occupational functioning	• Individual placement and support[25] • Educational and vocational support[26] • CBT[27,28] • Social recovery therapy[29,30] • Cognitive training[31] • Social skills training[32,33]
Self-harm, suicidal thoughts and behaviours	• Develop a personal or organisationally based safety plan (including online)[34,35] • Dialectical behaviour therapy[36] • CBT[37,38] • Interpersonal psychotherapy[39] • Peer support[40] • Medical treatments[41–43] • Family support and education[44–46]
Alcohol or other substance misuse	• Self-monitoring and online apps (eg, Daybreak)[47,48] • Motivational interviewing[49] • CBT-based interventions (eg, the online intervention The DEAL Project[50] or the FRAMES approach[51]) • Specialised clinical support
Physical health	• Self-monitoring and online apps (eg, Kick.it)[52,53] • Individual and group-based physical activity (eg, running, swimming, gym) • Weight control and exercise groups • Group behaviour therapy • Individual counselling • Motivational intervention techniques • Immune therapies (eg, fish oil,[54] low dose aspirin,[55] minocycline[56]) • Medical treatments (eg, metformin,[57,58] liraglutide,[58] topiramate,[57] nicotine replacement therapy)

Recommended interventions based on illness subtype, stage & trajectory



	Psychological or social interventions		Pharmacological interventions	
Illness subtype	**First line**	**Second line**	**First line**	**Second line**
Neurodevelopmental–psychosis	• Social skills training[59] • Social recovery therapy[29] • Physical activity[60,61] • Education engagement	• Cognitive training[31,62] • Individual placement and support[25]	• Fish oils[63,64] • Aripiprazole,[65] quetiapine[66]	• Other atypical antipsychotics[67] • Lamotrigine (add-on)[68]
Hyperarousal–anxious depression	• Transdiagnostic CBT-based interventions[69] • E-health-based anxiety management[70,71] • Education engagement	• CBT[72] or interpersonal therapy[73] (depression) • Exposure and response prevention (obsessive compulsive disorder)[74] • Exposure therapy (social phobia)[75,76] • Meta-cognitive therapy (generalised anxiety disorder)[77] • Individual placement and support[25]	• Selective serotonin reuptake inhibitors (eg, fluoxetine, sertraline, escitalopram)[78–81]	• Selective serotonin and norepinephrine reuptake inhibitors (eg, venlafaxine, duloxetine)[80–82]
Circadian–bipolar spectrum	• CBT focusing on sleep–wake behaviours and circadian rhythms[83,84] • Behavioural regulation of sleep–wake timing[85] • Physical activity[61,85] • Education engagement	• Chronobiological treatments during depression (eg, light therapy, sleep-deprivation therapy, sleep-phase advance)[85,86] • Dialectical behaviour therapy[87,88] • Rumination-focused CBT[89,90] • Interpersonal and social rhythm therapy[91]	• Melatonin[92] • Melatonin analogues (eg, agomelatine,[93] ramelteon[92,94])	• Lithium[95,96] • Pregabalin[95,97] • Lamotrigine[98] • Stimulants (eg, modafinil)[99,100]

CBT = cognitive behaviour therapy. ◆



Interventions which target individual multidimensional outcome domains are likely to have specific and direct impacts, as well as indirect impacts which cascade over time (indicated by time points [T] 1 to 3). Here, we demonstrate three hypothetical paths stemming from three distinct targeted interventions. Path 1 (green) demonstrates that employment support and placement can have a direct effect on social and occupational function that is sustained over multiple time points and has flow- on effects on the future illness type, stage and trajectory, and alcohol or other substance misuse. Path 2 (blue) shows that harm reduction can have a direct and enduring effect on self- harm, suicidal thoughts and behaviours, and also has downstream impacts on social and occupational function and physical health. Path 3 (grey) demonstrates that an exercise intervention can directly improve physical health with future positive effects on social and occupational function, self- harm, suicidal thoughts and behaviours, and alcohol or other substance misuse.

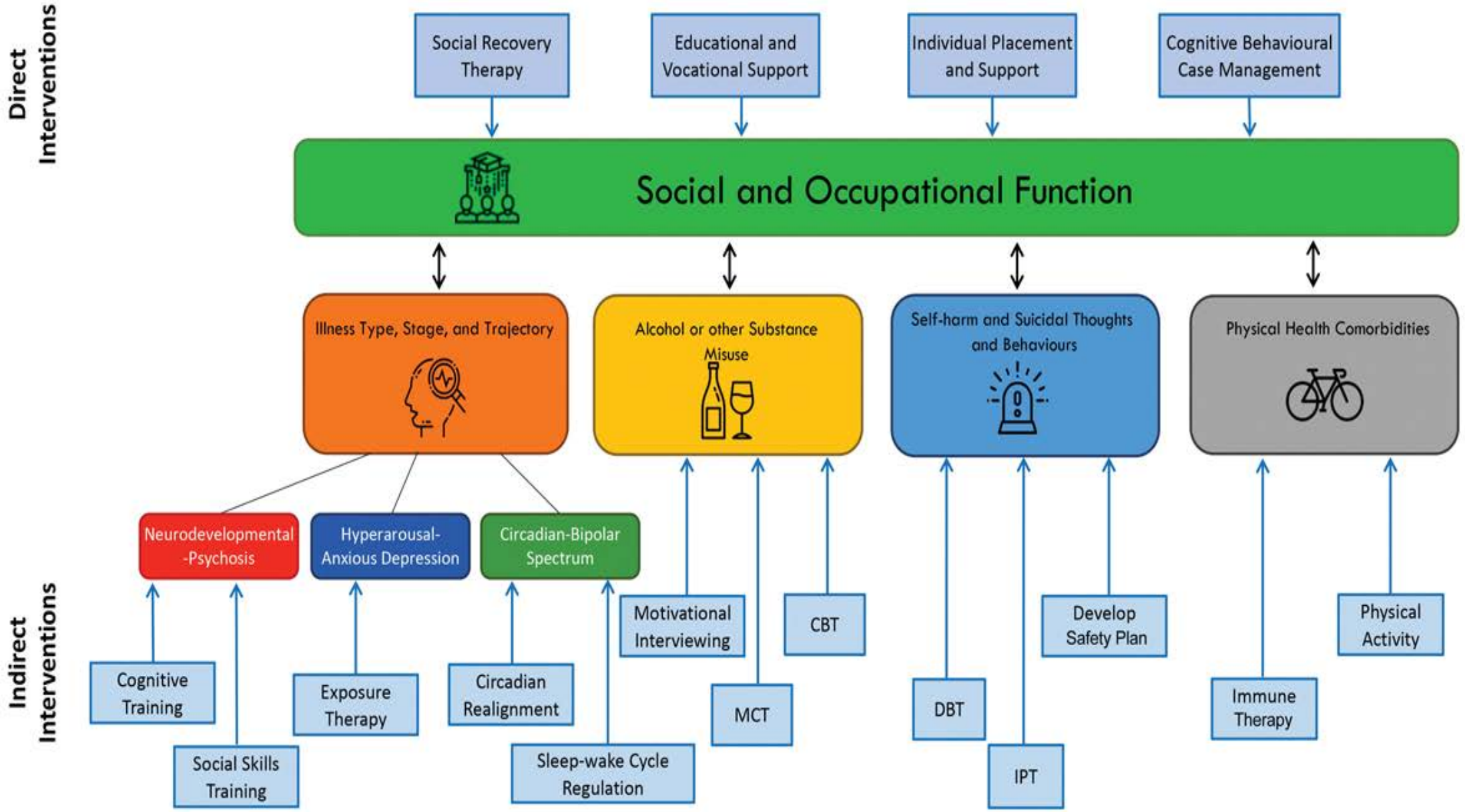
Non-specific primary intervention and secondary prevention strategies

Non-specific primary interventions:

- Cognitive behaviour therapy within a case-management framework
- Meta-cognitive therapy
- Problem solving

Secondary prevention strategies:

- Physical activity
- Reduction of intake of alcohol or other substances
- Close follow-up monitoring
- Educational and vocational support
- Individual placement and support



CBT=cognitive behaviour therapy; DBT=dialectical behaviour therapy; IPT=interpersonal therapy; MCT=meta- cognitive therapy. Here, we emphasise the importance of social and occupational function (SaOF) as a key long term outcome in youth mental health. This is a schematic representation of interventions that target SaOF directly (direct interventions) compared with those that target the other outcome domains that have bidirectional relationships with SaOF. Consequently, these interventions may have indirect effects on SaOF.

Summary…

- 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)
- These concepts are not mutually exclusive and together may **facilitate improved outcomes** through a **clinical stage-appropriate** and **transdiagnostic framework** that helps **guide decisions regarding the provision of appropriate and effective care options**

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)	https://www.youtube.com/watch?v=OP0XRBBrlNc&t=18s
2. Combining clinical stage and pathophysiological mechanisms to understand illness trajectories in young people	Tues, 12 May (2-3pm)	https://www.youtube.com/watch?v=-75UCBWSY88
3. A comprehensive assessment framework for youth mental health care	Thurs, 14 May (2-3pm)	https://www.youtube.com/watch?v=gEhwA2-Ze0o&t=326s
4. Using the BMC Youth Model to personalise care options – best care, first time!	Tues, 19 May (2-3pm)	https://uni-sydney.zoom.us/j/97165489405
5. A youth mental health service delivery model to support highly personalised and measurement-based care	**Thurs, 21 May (2-3pm)**	**https://uni-sydney.zoom.us/j/99292797315**
6. Maximising the use of digiHealth solutions in youth mental health care	Thurs, 28 May (2-3pm)	https://uni-sydney.zoom.us/j/99899983293

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*** *for more information.*

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

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