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BMC YOUTH MODEL

CLINICIANS GUIDE

THE UNIVERSITY OF SYDNEY

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The ultimate goal of this clinician guide is to assist mental health professionals (MHPs) in providing high quality, person-centred care for young people, aligned to the latest emerging evidence in youth mental health. The Brain and Mind Youth Model (BMYM) promotes care that is safe, effective, measurement-based, timely, and appropriate (does not over or under treat young people). Ultimately, it's about providing the right level of care, at the right place and at the right time, over time.

Over the past 10 years, the Brain and Mind Centre at the University of Sydney has led the development of the BMYM core concepts, adapted to real-world clinical practice and service delivery. The development of these concepts has been guided by our large and longstanding youth mental health research program, where data from over 10,000 young people accessing clinical care and the clinicians who have supported them has generated important insights into the key ingredients of the Brain and Mind Youth Model.

The BMYM model explicitly aims to prevent progression to more complex and severe forms of illness, and ideally, to facilitate recovery. It incorporates evidence-based processes, including measurement-based care, routine outcome monitoring as well as utilisation of multidisciplinary teams of health professionals to support highly personalised care. Furthermore, it allows for person-centred care through shared-decision making, i.e. giving the young person an equal voice in care decisions.

OVERVIEW

However, the BMYM care model requires clinical professionals and service administrators to re-think their approach to assessment, treatment and service processes in order the change the way care is experienced by young people at different levels of complexity and need. It advocates for the use of interventions and treatments that balance the risks with the benefits, as well as ensuring that the person with the illness is supported and treated for an appropriate length of time.

This guide is intended to be a concise and practical resource for MHPs, translating the latest evidence from the literature that can be readily applied in clinical practice.

It is divided into four sections.

1. Overview of youth mental health
2. Assessment
3. Interventions and
4. Outcome monitoring and Changing Treatment Intensity

A series of useful resources and summaries of the latest evidence can be found in the Appendix section of the guide. It is hoped that this guide provides clinicians with new information and practical guidance that not only improves their clinical practice, but ultimately improves the experience and outcomes from care for young people.

FOREWORD

The Brain and Mind Centre (BMC) was established on the shoulders of a decade in research conducted by the Brain and Mind Research Institute (BMRI) into mental health and its specific effects on our young people population, in Australia. Over that time, there have been important findings from clinicians and people of lived experience to inform what has become the key points of the Brain and Mind Centre's Youth Model (BMC Youth Model).

Among the lived experience community, the BMC is highly respected for its thoughtful consideration and inclusion of real people and their experiences within mental health throughout its research and development of clinical models.

The BMC Youth Model aims to provide high-quality, person-centred care, aligned with the latest evidence emerging in youth mental health for every young person seeking mental healthcare. With fewer than one in three girls and one in six boys, who have major mental health problems ever receiving assessment or intervention, the BMC Youth Model is about providing the right level of care, at the right place and time, over time, and at an appropriate cost to the young person (monetary, travel, absence from school/work).

The BMC Youth Model acknowledges the role of traditional diagnostic systems haves; however, also acknowledges its shortcomings, especially in identifying young people with needs who don't meet criteria for help. In contrast, the BMC Youth Model is an overarching model of care, aiming to achieve full remission or at least reduce the risks of the young person progressing into a more severe and longer-lasting level of mental ill-health, by managing current distress and impairment associated with the presenting stage of illness and allowing a young person to pass along a staging continuum via their unique pathways.

This new approach to care matches interventions to needs based on an individual's risk/benefit profile. This approach, we think, will be more successful than the current, or rather previous, methods of treating a young person's issues separately. Instead, the BMC Youth Model looks at a presenting young person holistically— assessing all their needs and providing more choice in treatment.

The most empowering aspect, especially for the young person and their family/carer no matter where they are in their staging continuum, is that at all times their treatment options should be discussed with, and co-driven by the clinician, the young person, and/or their family/carer – optimising every appropriate opportunity to educate and validate the young person about their experience and their journey in mental health and wellbeing.

Samuel J Hockey | Former National Mental Health Commissioner

SECTION ONE

a new approach in youth mental health

Key Readings

The following articles are listed as highly recommended further reading.

Hickie, I. B., Scott, E. M., Cross, S. P., Iorfino, F., Davenport, T. A., Guastella, A. J., . . . Scott, J. (2019). Right care, first time: a highly personalised and measurement-based care model to manage youth mental health. *Medical Journal of Australia, 211*(S9), S3-S46. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.5694/mja2.50383. doi:10.5694/mja2.50383

McGorry, P., & Hickie, I. (Eds.). (2019). *Clinical Staging in Psychiatry: Making Diagnosis Work for Research and Treatment*. Cambridge: Cambridge University Press. doi:10.1017/9781139839518

Cross, S. P., Hermens, D. F., Scott, E. M., Ottavio, A., McGorry, P. D., & Hickie, I. B. (2014). A Clinical Staging Model for Early Intervention Youth Mental Health Services. *Psychiatric Services, 65*(7), 939-943.

Hickie, I. B., Scott, E. M., Hermens, D. F., Naismith, S. L., Guastella, A. J., Kaur, M., . . . McGorry, P. D. (2013). Applying clinical staging to young people who present for mental health care. *Early Intervention in Psychiatry, 7*, 31-43.

McGorry, P. D., Purcell, R., Hickie, I. B., Yung, A. R., Pantelis, C., & Jackson, H. J. (2007). Clinical staging: a heuristic model for psychiatry and youth mental health. *Medical Journal of Australia, 187*(7), S40.

Mental ill-Health in Young People

Mental health is arguably the biggest health concern of young people. Rates of distress and impairment arising from mental ill health are very high (Box 1-1). Coupled with the fact that young people have the poorest level of access to professional mental health services compared to other age groups, the need to create and maintain high quality, easy access, timely and person-centred services is an international priority.

Box 1-1: Key Facts – Mental Ill Health in Young People

- Mental disorders are the leading cause of disability in people aged between 10 and 24 while also contributing 45% of the overall disease burden in this age group [1]
- The period spanning adolescence and early adulthood, between the ages of 12 and 25, are considered the peak periods for the onset of mental ill-health [3]
- 50% of all adult diagnoses of mental disorder having had an onset before the age of 15 years and 75% by age 25 [7]
- Depression, psychosis and bipolar disorders represent three of the four most burdensome conditions in young people aged under 25 years[1].
- Suicide and self-harm, alcohol and drug use, depressive, anxiety, and bipolar affective disorders are among the 10 most common leading causes of disease burden in young people aged 15-24, accounting for 35% of total disease burden (AIHW, 2015).
- The second Australian Child and Adolescent Survey of Mental Health and Wellbeing[12] showed that the 12-month prevalence rate of mental disorders for those aged between 4-17 was 13.9%.
- The National Survey of Mental Health and Wellbeing (NSMHWB) showed a significantly higher 12-month prevalence rate of 26.4% for young people aged 16-24 [14].
- When young people aged 9-17 endorse half or more of the symptom criteria for a full-threshold diagnosis 42.3% had a SUB disorder compared to 16.1% with a full-threshold DSM condition[17]

Many of us were trained as clinicians in this system. A system built for those with severe and enduring mental disorders that fails to recognise or validate early forms of mental ill health. Far from mental health problems developing overnight, symptoms and impairment develop gradually from risk factors – that usually begin in childhood or adolescence – and ebb and flow throughout an individual's life. For some, disorders are brief and time-limited. For many, mental disorders are changing and chronic conditions. They tend to track along a trajectory: from being at risk without ill-health, to early symptoms, through to full syndromes leading eventually to either remission or relapse and for some, recovery. For those with longer term illness, some have the same type of mental disorder that developed in childhood or adolescence in later life. For most, disorders morph over time into other disorders highlighting the dynamic and evolving nature of mental ill health for many over the course of their life (Box 1-2).

Box 1-2: A summary of the research showing how disorder presentations change over time

Homotypic (the same disorder over time) pathways:

The mean transition rate from SUB to FS psychotic disorder was 29.2% over a mean follow up period of 31 months [4]. The transition rate increased over time from 17.7% over 6 months to 35.8% over 36 months.

Young people seeking treatment who met Ultra High Risk (UHR) for psychosis criteria in the Comprehensive Assessment of At-Risk States (CAARMS) had a relative risk (RR) of 12.44 of developing a FS psychotic disorder at 6 month follow up [5].

Those who met criteria for UHR at baseline had a 19.3 times greater likelihood of developing psychosis at 6 months compared to those who did not meet UHR criteria at baseline [9].

The rate of transition (17%) from attenuated/sub-threshold to full threshold severe mood or psychotic disorders is consistent with that observed in other studies of transition to psychosis[10,11].

25% of children and adolescents with sub-syndromal bipolar disorder (BP) had 'converted' to full threshold bipolar I disorder (BP-I, characterised by manic episodes) or bipolar II disorder (BP-II, characterised by hypomanic episodes) at a 2-year follow-up [15]. At a 4-year follow-up, 38 % of sub-threshold BP subjects had converted to full threshold BP I or II disorder.

Over 4.9 years, conversion from sub-threshold BP to full threshold BP occurred in 45% of patients, where 23% converted from sub-threshold BP disorder to full threshold BP-I and 22% to BP-II, with most of these transitions occurring at 58 weeks[18].

Heterotypic (one disorder changing to a different disorder over time) pathways:

It appears that the earliest expressions of severe psychopathology are a non-specific mix of symptoms and states that dynamically affect each other[19], over time gradually differentiate into more distinct syndromes[20].

Woods and colleagues[21] reported that about 69% of those with sub-threshold psychosis had one or more mood or anxiety diagnoses, 25% had one or more substance use disorders and 44% had one or more personality disorder diagnoses.

All of the adults who developed FS BP had previously suffered from an anxiety disorder, and/or depressive disorder, and/or behavioural disorder[22].

In individuals with sub-threshold psychosis, Fusar-Poli and colleagues[23] found that 73% had a comorbid FS diagnosis, with 40% having MDD.

The prevalence of anxiety disorders with comorbidities increases at 10 year follow up, while the prevalence of 'single' anxiety disorders decreases [32,33].

Limitations of the current mental disorder diagnostic system when applied to young people.

Many Mental Health Professionals (MHPs) working with young people in real-world clinical settings have approached categorical diagnostic systems and their application in clinical practice with scepticism. Often used as a gatekeeper to care and support, it fails to adequately capture the complexities of clinical presentation in this age group or effectively guide treatment decisions, particularly for those with clear impairment and distress who do not meet a 'full threshold' disorder criteria [24,25]. Therefore, the value and utility of the established categorical classification systems have been continually questioned [25-31].

There are essentially four main problems with the traditional diagnostic system, relating to:

- **Etiology**: the multiple causality of mental disorder;
- **Discreteness**: whether the relevant phenomena are distinct categories or dimensions;
- **Thresholds**: how are the boundaries between disorder and non-disorder set; and
- **Comorbidity**: the fact that individuals with mental illness often meet diagnostic requirements for multiple conditions.

These diagnostic systems have proven to be somewhat useful in clinical practice and research, in particular by creating a common language that can be applied with good inter-rater reliability. However, the diagnostic entities have been poorly validated [26,31]. Disorders are best viewed as heuristics that group together the most apparent symptoms of similar presentations. Unfortunately, they have been treated in recent times as if they were natural and real entities [26]. The problem is that the etiological and pathophysiological processes underlying such disorders have not yet been identified, which results in a clinical system that cannot produce valid disease definitions at this time [29,31,34].

There is also a lack of evidence to support the concept of natural boundaries between mental disorder and mental health [35]. Many symptoms outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and International Classification of Diseases (ICD) have been shown to be normally distributed in the general population, with examples from major depression [36], obsessive compulsive disorder [37] and psychosis [38,39].

A categorical approach that makes out a clear difference between 'normality' and disorder fails to validate the impairment or distress caused by conditions or syndromes that are just below threshold criteria for a full syndrome DSM disorder. Importantly, sub-threshold DSM disorders are prevalent, cause significant impairment and represent a significant risk for the development of more severe mental health disorder and functional impairment over time. McGorry and colleagues argue that robust classification systems attempt to 'carve nature at its

joints', however when the traditional system is applied to young people with emerging mental disorders, it is 'reliably cutting through bone' [24]. Young people with emerging mental disorders are particularly affected by these hard boundaries between normality and disorder, as these attenuated and emerging symptoms in this age group are less specific syndromes with mixed clusters of symptoms and often fluctuating and transitory [40]. In some cases, sub-threshold disorders developed in early adolescence do not continue into later adolescence. Interestingly, sub-threshold conditions appear to have strong predictive validity for the progression to a more severe form of both the same illness type (homotypic) and different illness types (heterotypic)- Box 1-2.

As mentioned above, the traditional diagnostic categories in DSM and ICD are based on sets of presenting symptoms and are assumed to represent independent clinical categories. However, the splitting of disorders into separate and unrelated categories based on clinical observation instead of aetiology and pathophysiology has been described as being 'scientifically premature' [26]. This view is underpinned by the high rates of comorbid disorders (Australia: 30.1% in 4-17 year olds and 25.4% in adults, US: 40% in 13-18 year olds [41], Europe: 50% in 14-16 year olds [42]), leading to the description of comorbidity as the *'rule rather than the exception'* [43]. Comorbidity should be limited to genuinely independent conditions [31], i.e. artificial comorbidities based on splitting of pathophysiologically closely related conditions, should be avoided. Therefore, instead of the assembly of symptoms into disorders by clinical experts, new dimensional models of psychopathology that amalgamate symptoms into broad spectrums based on complex factor analytical statistical approaches have received much empirical support [19,29,44-46].

The problems with the diagnostic system are highlighted here because of the significant impact these rules have on young people who experiencing distress or impairment but who have symptom profiles that are unclear or ambiguous. Commonly, they are restricted from access care and support.

Therefore, the current clinical challenge for MHPs is to acknowledge both the strengths and weaknesses of the system as it applies to young people, and to derive new diagnostic and formulation frameworks that are consistent with the current understanding of developmental epidemiology, psychology and neurobiology; one that reflects the unique experiences of individuals across the lifespan and across the course of illness, understands the interaction between mental ill health and other risk factors, and provides clinical utility when used in a service settings for facilitating informed decisions regarding care and treatment intensity.

Figure 1-1: *Multidimensional outcomes framework for young people with emerging mental illness48*

Multidimensional needs

Young people most often present to care with multiple and diverse difficulties. We have identified in particular five key domains that make up a multi-dimensional outcomes framework that aims to address the specific needs of young people with emerging mental illness presenting to health services[47,48] (figure 1-1):

- Social and occupational function
- Self-harm, suicidal thoughts and behaviours
- Alcohol or other substance misuse
- Physical health
- Illness type, stage and trajectory (detailed description below)

Importantly, there is substantial evidence to demonstrate that these seemingly unrelated difficulties are in fact related. Complex relationships exist between mental ill health, educational and vocational functioning, self-harm risk, physical health and alcohol and other drug use. Assessing and treating these issues in isolation from each other is therefore a mistake. Change in one domain is likely to affect another, and it is vital that care not only assesses needs broadly at the beginning of care, but that it also monitors changes in each of these domains over time as they dynamically affect each other. Risk and protective factors coalesce together across seemingly non-connected domains and are often cumulative, such that where there is one risk factor, there is likely to be others. Appendix 2 outlines some useful research about the impacts and interactions between these domains. Importantly, addressing these multidimensional needs of young people allows a wider range of intervention options, that will have impacts on mental ill health (see Chapter 3), and ensures that the mental health care also focuses on the outcomes that matter to young people.

Clinical Staging, Illness Types and Individual Trajectories

Many young people present to youth mental health services with ambiguous and 'sub-threshold' syndromes, resulting in high numbers of young people receiving care in these settings with no clear diagnosis but who experience very high levels of psychological distress and very low levels of social and occupational functioning [49-52].

This calls for a more inclusive approach to definitions of mental ill health and associated disability in order to better guide safe and effective treatment planning, particularly for emerging forms of disorder.

Clinical staging is essentially a refinement to traditional diagnosis, and helps the MHP and young person understand their current difficulties in greater context. Staging is a concept borrowed from other areas of healthcare. A number of diseases in general medicine are represented as quantitative or dimensional deviations rather than qualitative deviations from health, such as type 2 diabetes mellitus, hypertension, dyslipidaemias, ischemic heart disease, arthritis and forms of cancer [26,53,54].

Clinical staging is used in these and other diseases to:

- define points in the course of a disease that reflect severity
- inform prognosis and importantly
- guide treatment such that early stage illnesses correspond with less specific and more benign treatments with proven effectiveness and reserving more intensive, expensive and side-effect prone treatments to later and more severe clinical stages

Staging of illnesses generally has two central goals:

1. to manage the current distress and impairment associated with the current stage of illness.
2. to prevent progression to higher, more severe clinical stages

The ultimate aim of staging models is to achieve full remission, through the identification of the unique risk and protective factors that may influence progression, stasis or remission; or at least, to reduce the risk of progression to more severe and enduring forms of illness [53,55]. Only subsets of individuals progress to the next stage in the hierarchy, with the associated chance of remission or recovery decreasing with each progression [53].

A number of recent studies have demonstrated the validity and utility of the clinical staging concept in youth mental health- Box 1-3 [34,56-59]. Appendix 1 summarises a number of Brain and Mind Centre research studies that highlight the key demographic, clinical and functional differences between each of the clinical stages.

Box 1-3: *Brief overview of the six levels in the staging model.*

Clinical Stage	Description
Stage 0	Non-help-seeking asymptomatic with risk factors
Stage 1a	Help-seeking with presenting symptoms which are distressing, but are not specific to one disorder, are or low to moderate severity and have limited impact on functioning.
Stage 1b	Attenuated syndromes of severe mental disorders, with moderate to severe functional impacts
Stage 2	Discrete first episode syndromes with major functional impacts
Stage 3	Recurrent or persistent syndromes with ongoing severe functional impacts
Stage 4	Syndromes which are severe, persistent and unremitting

Various staging models have been proposed for a number of single DSM disorders [60]. The inherent presumption with this approach is that disorders are distinct, separable entities with different underlying pathophysiological processes and aetiologies. The evidence for this assumption is weak [26,29,31,61]. Admixtures of depressed mood and anxiety dominate most early stage illnesses, which are often characterised by less severe and less specific clinical phenotypes [20,53,62], often at levels of symptomatology or impairment that do not reach thresholds for the assignment of specific mental disorders. The single disorder approach, therefore, risks excluding many earlier presentations of illness that fail to meet criteria for FS disorder or those, which are characterised by very mixed symptomatology and the clinical utility of such models is likely to be extremely limited. Further, first line (typically benign) psychological interventions (especially cognitive and behavioural therapies) for early stage illnesses have shown to be effective across a diverse range of disorders [63-69] and this commonality at early stages would not differ greatly enough to warrant the complexity of a single-disorder staging approach.

Emerging cross-sectional genetic, neurobiological and factor-analytic evidence highlight factors and processes that are common across a number of disorders previously thought of as independent constructs [26,29,44,61,70-73]. Therefore, staging models should become more explicitly transdiagnostic [20,62] and broader, where non-specific sub-diagnostic mental distress predicts both psychotic and non-psychotic outcomes [40].

Illness types, pathophysiological mechanisms, and individual trajectories

Staging is an overarching concept, yet an individual can progress along a staging continuum via unique illness pathways. The Brain and Mind Youth Model proposes that there are at least three common pathways in young people with mood syndromes (including anxiety, depression, bipolar disorder, and psychosis) which may represent underlying pathophysiological mechanisms [74,75]. They may reflect differential developmental pathways involving a range of neurodevelopmental impairments, including things like circadian dysregulation or heightened sensitivity or stress-reactivity in brain-based 'fear' circuitry [31,34].

These three pathophysiological mechanisms emphasise:

1. circadian rhythm dysregulation
2. neurodevelopmental impairments
3. heightened arousal and stress sensitivity

In young people presenting with any type of mood and psychotic syndrome, our model is used to allocate one of these three proposed pathophysiological mechanisms on the basis of the clinical presentation.
As a result three illness types can be distinguished:

1. Circadian–bipolar spectrum
2. Neurodevelopmental–psychosis
3. Hyperarousal–anxious depression

The three proposed pathophysiological mechanisms do not represent mutually exclusive pathways, and individuals may shift between pathways over time. They are also expected to have different patterns of onset of clinical characteristics across development, with evolving behavioural presentations and increasing comorbidity of different phenotypic features (see Appendix 3 for further details). Chapter 2 outlines the characteristics and key features of each of the three proposed illness types and underlying pathophysiological mechanisms.

Combining clinical staging and illness pathways

Across all stages of illness, there is a degree of overlap between the three pathways, as illustrated in Figure 1-1[75]. In the early stages, the overlap is greatest, and differentiating illness pathways is most challenging. This is demonstrated by mixed presentations of non-specific symptoms. At later stages syndromes may be more specific, and therefore easier to identify unique illness pathways, however there may also be comorbidity where two or more unique illness pathways co-occur.

Assigning individuals to a location within the framework is intended to assist in clinical decisions regarding appropriate care and treatment (see Chapter 3) and tracking movement or progression within the framework over time will allow for a greater understanding of individual illness pathways and key intervention points.

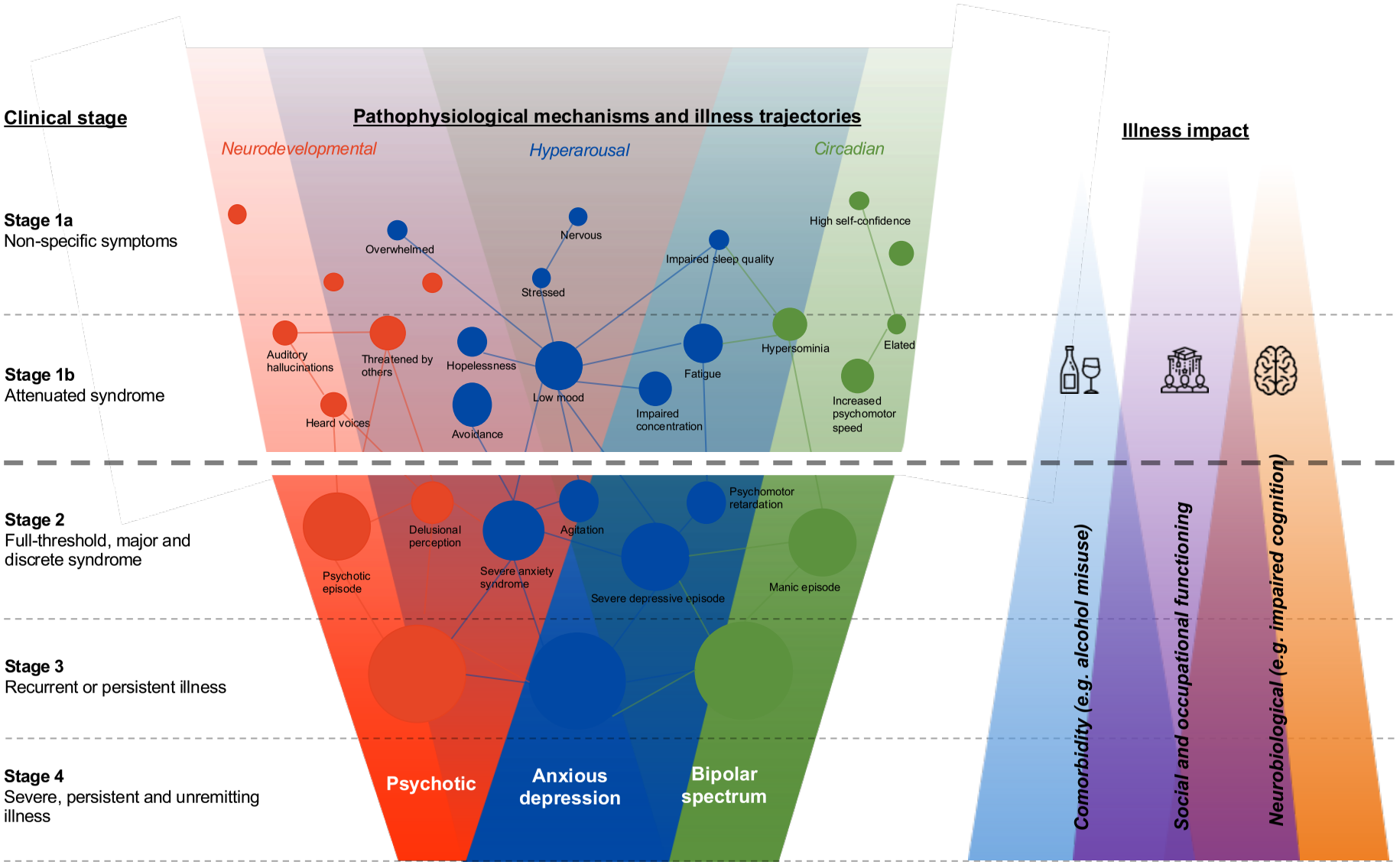


Figure 1-1. *Model of illness trajectories and clinical stages for the onset and course of major adolescent-onset mental disorders. Increasing symptom burden occurs as syndromes progress to later stages of illness. Three key illness trajectories follow neurodevelopmental-psychotic, hyperarousal-anxious depression, and circadian-bipolar spectrum pathways. Progression to later stages of illness is also accompanied by increasing illness extension including comorbidity, impairment in social and occupational functioning, and neurobiological deficits*[75].

SECTION TWO
assessment

A holistic approach to assessment in youth mental health requires a framework that considers all aspects of a young person's needs; informed by current multidimensional and mental health needs, past illness course and possible future trajectory, underlying pathophysiological mechanisms, and risk and protective factors (figure 2-1).

In the Brain and Mind Youth Model there are two 'levels' of assessment that facilitate a 'whole of person' view of mental health.

1. multidimensional needs, incorporating:
   - social and occupational function
   - self-harm, suicidal thoughts and behaviours (STB)
   - alcohol or other substance misuse
   - physical health

2. mental health, incorporating:
   - current symptom, functional, and risk severity
   - clinical stage
   - illness pathway

This section outlines the critical information that must be collected in order to facilitate an allocation of a young person to a clinical stage, an illness pathway and multidimensional needs.

Multidimensional Assessment

Collecting pertinent information from a young person requires the establishment of rapport, and an understanding of the implications of consent and confidentiality. The headspace Psychosocial Assessment (https://headspace.org.au/assets/Uploads/headspace-psychosocial-assessment.pdf) for young people (an expansion of the HEADDS assessment) is a resources which is useful for engaging and screening for the broad needs of young people entering mental health care- especially for the multidimensional needs and screening questions for a range of mental health concerns.

The HEADDS encourages MHPs to assess broadly in a manner sensitive to the developmental needs of young people. Typically, mental health specific items are screened last. Screening questions are asked in each of the following domains and should lead to further assessment if endorsed:

- Home and Environment
- Education and Employment

- Activities
- Alcohol and Other Drugs
- Relationships and Sexuality
- Conduct difficulties and Risk-taking
- Anxiety
- Eating
- Depression and Suicide
- Psychosis and Mania

The assessment of these multidimensional needs is best complemented by psychometric tools. Young people are more likely to disclose information that is sensitive via psychometric tools or online mediums. **Appendix 4** outlines a number range of recommended psychometrics that could be used to enhance the breadth of the assessment.

For mental health related concerns, staging and illness pathway allocation requires a more detailed assessment with the adjunctive use of psychometrics (see Appendix 5). Using the HEADDS assessment tool alone to guide intervention decisions will likely result in missing pertinent information required to provide the right intensity of care at the right time, especially for those with ambiguous, mixed or severe symptoms with impairment. Therefore, further assessment is recommended for those young people with ambiguous or severe difficulties or concerns.

Mental Health Assessment

To facilitate a more comprehensive mental health assessment for the purpose of clinical staging and illness pathway classification, MHPs are encouraged to collect the following clinical information.

Table 2-1: *Mental health assessment outline to support staging and illness pathway*

Current Major Symptoms (type, severity, frequency)
 	
Can be collected via direct interview, psychometric assessment tools or both.
	• Document current symptoms as described by the YP and/or their carer;
	  ○ Age of onset, duration and course of symptoms, including 'worst ever'.
	  ○ Obtain a chronological description of recent events leading up to the presentation, precipitating events, and any other psychosocial stressors.
	  ○ Review presence of common cardinal symptoms of
	  ▪ affective,
	  ▪ psychotic, and
	  ▪ anxiety disorders.

Current and premorbid functioning (eg. SOFAS)	• Assess and rate the overall level of functioning for the YP and determine 'worst ever'
Mental State Examination (MSE) These are the most useful aspects of the MSE to facilitate staging and illness pathway	• Appearance and Behaviour. In particular: psychomotor retardation, restlessness, repetitive behaviours, hyperactive, tremors, hand-wringing, bizarre behavior. • Speech. In particular: rate, volume and quantity • Mood and Affect • Form, stream and content of thought. In particular: Delusional content (eg. persecution, reference, control, grandiosity) and preoccupations (eg. obsessions, compulsions, phobias, antisocial urges, intentions, somatic) and suicidal thoughts • Perception, in particular: hallucinations and other perceptual disturbances such as derealisation, depersonalisation • Sensorium and cognition. In particular: memory and concentration
Family History	• Presence of mental illness in family members, especially in first degree relatives
Current & Previous Treatment/s and Treatment Outcomes	• List all treatments provided and whether they were effective, include number of previous hospitalisations, psychiatric treatment, use of psychiatric medication and psychological therapies

Psychometrics used to support mental health assessment and guide severity ratings

At a minimum, it is important to collect a baseline measure of the scale of symptom severity, functional impairment and degree of suicide vulnerability. The two 'core measures' (Kessler 10 – K10; Social and Occupational Functioning Assessment Scale (SOFAS) are outlined in table and are derived from numerous research studies in clinical staging and outcomes measurement in youth mental health. Beyond these core measures are a number of syndrome specific measures that are useful in clinical practice (see Appendix 5 for recommendations).

When these domains are objectively assessed with standardised measures, its help quantify the degree of 'clinical need' and is used together with clinical staging and illness pathway allocation to determine 1. Intensity of care and 2. Specific interventions delivered within that intensity (see Chapter 3- Intervention).

As treatment progresses, these core measures are repeated, to help guide changes in treatment intensity and clinical focus as needs change.

Table 2-2: *Ranges on K10 and SOFAS to support severity ratings.*

	K10	SOFAS
None-Very Mild	<19	>70
Mild	20-24	61-70
Moderate	25-30	51-60
Severe	30-34	41-50
Very Severe	35+	<40

Neurobiological, neuropsychological, and physiological measures

Where available, the incorporation of additional assessment information can add value in the pursuit of person-centred care planning and delivery. While more time consuming, neurobiological, neuropsychological, and physiological assessments can assist in providing important additional information regarding the phenotype of a young person and the associated impacts on multidimensional outcomes that help guide clinicians in tailoring interventions.

Appendix 6 summarises a range of assessments which, where available and practical, could be used as additional secondary assessments which can be conducted to further understand the phenotype.

Clinical staging

In order to assign clinical stage effectively, MHP should be very familiar with the criteria for each stage, outlined in specific detail in table 2-4 [76].
There are six stages in the model.

Stage 0 represents an asymptomatic, at-risk, latency or vulnerability stage. Individuals at this stage possess a number of risk factors for the development of later mental disorder, but who are not yet seeking help for their mental health difficulties. These risk factors include family history of mental illness, preterm delivery or low birth weight, childhood physical or sexual abuse, presence of a major developmental disorder and childhood onset anxiety and/or affective disorders.

Stage 1a is the earliest stage of those who are 'help-seeking' (or a concerned other is seeking help on their behalf). These individuals typically have mild symptoms (typically non-specific anxiety or depressive symptoms) and mild functional impacts in social, educational or occupational domains. There may be subjective or objective indications of mild neuropsychological deficits, such as problems with attention.

Stage 1b is an early stage illness, with symptoms and functioning now in the moderate range of severity. These individuals typically possess symptom profiles that suggest that they have 'attenuated' or 'sub-syndromal' features of more discrete psychotic, manic or severe depressive disorders. There are now moderate to severe impacts on social and occupational functioning and evidence of moderate neuropsychological deterioration. Individuals at this stage typically have complex mixtures of symptoms that feature across a number of different diagnostic categories and possess other problems, such as comorbid substance abuse, deliberate self-harm or suicidal ideation/behaviour, or sleep disturbance. While some of these individuals will meet full criteria for some disorders, others may not meet diagnostic criteria for a DSM disorder. Others still may have a mix of mild full-threshold disorders with comorbid sub-threshold disorders. In any case, these individuals have a particular constellation of symptoms that is associated with their high level of distress and significant functional impairment.

Stage 2 represents those clear episodes of psychotic, manic or severe depressive disorders that are moderate to severe in terms of symptom severity and functional impacts. This stage is typically associated with significant neuropsychological deficits. Individuals at this stage are often described as having a 'first episode' of a severe mental illness. Although disorders at this stage are more discrete, there can quite often be a

complex mix of symptoms that do not neatly fit within established DSM disorder categories (for example, a severe depression and anxiety with comorbid psychotic features). This stage also usually corresponds to the point where medical intervention is required.

Stage 3 represents recurrent or persistent disorders or incomplete remission from a stage 2 illness at 12 months after care. Stage 3 also includes those who look to have recovered from their stage 2 illness, only to relapse and re-present.

Stage 4 is reserved for those individuals who possess severe, persistent and unremitting illnesses, which have persisted without remission for at least 2 years.

In clinical care, it is often easiest to identify those with mild and uncomplicated needs, and those with very severe and complicated needs. From a dimensional point of view, it is most challenging to differentiate the group ‘in-between’; otherwise known as the ‘missing middle’.

Stage 1a: 'HELP-SEEKING' INDIVIDUALS WITH SYMPTOMS	• Typically help-seeking individuals with non-specific anxiety or depressive symptoms.
	• Symptoms are of mild to moderate severity:
	  ○ For anxiety – mild to moderate levels of arousal without significant or persistent avoidant behaviours
	  ○ For depression – mild to moderate levels of depressive ideation without specific features indicative of a more disabling disorder
	• May include those with earlier childhood-onset symptoms who have re-presented or worsened during the adolescent period
	• May include those with earlier onset neurodevelopmental or attentional disorders who now present with anxiety or depressive symptoms in the adolescent years
	• May be referred to specialist settings for further assessment

Stage 1b: 'ATTENUATED SYNDROMES'	• Development of more specific anxiety, depressive or mixed syndromes of at least moderate severity:
	  ○ anxiety syndromes characterized by more severe symptoms and development of specific avoidant behaviours
	  ○ depressive syndromes associated with persistently depressed mood, anhedonia, suicidal ideation or thoughts of self-harm and/or some neurovegetative features
	  ○ hypomanic symptoms of less than 4 days' duration during any specific episode
	  ○ psychotic symptoms are of brief duration only
	• Syndromes at this stage should be persisting and clearly having a significant impact on major aspects of psychosocial function.
	• Consequently, this stage may include individuals who meet diagnostic criteria for specific anxiety disorders, major depressive disorder or bipolar II disorder, as long as the disorder does not have the characteristics of those assigned to Stage 2.
	• Patients may have syndromes that are somewhat mixed in terms of their symptomatology or have features of a number of different diagnostic groups (e.g. anxiety plus depressive disorders, OCD plus depression, anxiety or depression plus substance use). Typically, such co-morbid disorders will be more severe and have greater impact on functioning.
	• 'Comorbidity' of anxiety, depressive and substance misuse disorders is common at this stage.
	• The presence of regular, deliberate self-harm without overt suicidal intent may occur in this stage. This includes impulsive low lethality overdose occurring in context of psychosocial stressor and in the absence of severe depression.
	• The presence of significant circadian disturbance (e.g. prolonged fatigue or sleep disturbance) with co-morbid anxious or depressive syndromes is common.
	• Treatment may have already commenced and/or the person may have been referred for further specialized assessment.
	• Some degree of treatment with an antidepressant, antipsychotic or mood-stabilizing agent is common for individuals in this stage, particularly where there has been limited access to specialized psychological therapies.

Table 2-4: Detailed clinical staging descriptors – Hickie et al 2013

**continued on page 28.*

Stage 2: 'DISCRETE DISORDERS'	• Discrete depressive, manic, psychotic or mixed syndromes.
	• Although these syndromes are 'discrete' in presentation, many remain mixed in phenomenological terms – that is, they do not necessarily match a single or discrete DSM-style disorder or correspond to a specific cut-off point on a specific rating scale for anxiety, depressive, manic or psychotic symptoms.
	• The syndromes are characterized by key symptoms that are no longer transient.
	• The syndromes themselves persist and are typically associated with more severe symptoms.
	• The syndromes must have evidence of major impacts on social, educational or occupational functioning.
	  ○ For depression:
	  ▪ The disorder needs to have features indicative of more severe disorders including psychomotor retardation, agitation, impaired cognitive function, severe circadian dysfunction, psychotic features, brief hypomanic periods, severe neurovegetative changes, pathological guilt or severe suicidality.
	  ○ For anxiety disorders:
	  ▪ These need to be complicated by at least moderately severe and concurrent depressive disorders, typically associated with marked agitation, fixed irrational beliefs, overvalued ideas or attenuated psychotic symptoms, or substantial and persistent substance misuse.
	  ○ For manic disorders:
	  ▪ Must clearly have had manic syndromes (not just symptoms) for more than 4 days during a specific illness event; hypomanic symptoms or brief hypomanic syndromes alone do not constitute a discrete disorder
	  ○ For psychotic disorders:
	  ▪ Must have had a clear psychotic syndrome for more than a week
	  ○ For mixed or 'comorbid' syndromes:
	  ▪ Must have had significant symptoms (depressive, manic or psychotic) within the context of a more severe syndrome that is persisting and having a major impact on function. At some points, the significant co-morbidity may include alcohol or substance misuse, abnormal eating behaviour or other relevant psychological disorders
	• Importantly, the primary discrete syndromes may themselves co-occur.
	  ○ For example, severe anxiety and depression; severe depression complicated by hypomanic periods; severe bipolar depression; and severe depression complicated by a psychotic syndrome.
	• The 'discrete disorder' stage generally corresponds with the clinical point at which specific medical treatments would be considered an essential part of clinical management (e.g. prescription of antipsychotic or mood-stabilising agents).
	• If the patient has been hospitalized for treatment, then typically they would have met criteria for this stage.
	• If the patient required very intensive outpatient care due to suicidal or homicidal intent, plan or history of attempt, florid or persistent psychotic or very severe depressive symptoms (e.g. psychomotor change, psychotic features), he/she would have been likely to have met criteria for this stage.
	• Moderately severe mood or anxiety disorders that are complicated by significant and persistent alcohol or other substance misuse may reach this stage.
	• Typically, patients with discrete disorders have been referred to specialist services for further assessment or have been managed extensively by suitably qualified primary care or other interdisciplinary services

Stage 3: 'RECURRENT OR PERSISTENT DISORDER'	• Discrete disorders are assessed and specifically treated for at least 3 months and are then associated with poor response or incomplete response to treatment. • Discrete disorders may have fully recovered but then relapse to the full extent described in stage 2 (for anxiety/depression, depression, mania, psychotic or mixed states, which may also be complicated by alcohol or other substance misuse). • Over at least a 12-month period after entry to relevant specialist or enhanced primary care services, there has been clear evidence that the illness course has resulted in marked worsening in social, education or occupational function.
Stage 4 'SEVERE, PERSISTENT & UNREMITTING'	• Chronic deteriorating severe depressive, bipolar and/or psychotic illness, which may be complicated by alcohol or other substance misuse, and has persisted without remission for at least 2 years

Ten Principles to Guide Allocation of Clinical Stage

The following section outlines some ten of the key principles in guiding clinicians to make standardised clinical staging allocation decisions.

1. The cardinal features driving stage are a combination of **symptoms & functional impact** (i.e. duration & life impact).

2. Allocation to stage 2+ requires clear evidence of a severe episode (**severity x impact**). Being hospitalised for treatment of a diagnosed severe episode may constitute evidence.

3. Assign the highest stage the YP has ever achieved in their lifetime. This can be done by assessing for the **'worst-ever'** stage a person has achieved. While recovery/remission is possible, a person **cannot go backwards** in the staging model. Moving 'backwards' puts those people who relapse and return to care some time later at risk of receiving inappropriate care.

4. Assigning a clinical stage at first assessment may be difficult if the young person has been extensively treated previously, particularly when that young person has responded well to treatment and is no longer displaying the symptoms or degree of impairment that is characteristic of that stage.

5. Current treatment (e.g. psychotropic medication) is **not a factor** in the staging decision

6. As illness course is followed longitudinally, young people may transition to later stages, may continue to be symptomatic and/or impaired within the same stage, or they may remit spontaneously or respond to treatment. Where an individual has recovered or remitted, this is noted, however they still remain at their last assessed stage (see point 3).

7. Separate **risk factors** (such as the presence of childhood disorders or trauma) from the staging decision and do not confuse current distress with current stage.

8. Staging decisions are best arrived at by **consensus** by a team trained in the staging model**.** This ensures higher reliability of ratings, and serves the additional purpose of enhancing team based care.

9. At times it is difficult to make a definitive staging decision at first assessment. In this case, it is recommended that the team **rate down** (to avoid providing high risk/intensity of care than is actually needed) and then **re-assess within 4-6 weeks**.

10. Individuals may have the **same formal diagnosis** (e.g. major depressive episode) but **different clinical stages** (e.g. '1b *vs* 2') based on factors such as: symptom profile (e.g. psychomotor change, neuropsychological impairment), symptom severity, level of disability, risk of harm and need for hospital admission or comorbid symptoms (e.g. psychotic symptoms, anxiety, substance misuse, phobic avoidance)

Allocating Illness Subtype

The three pathways share key pathophysiological, symptom or illness course features and include anxious-depression, bipolar spectrum and psychotic disorder pathways[31], which represent three of the four most burdensome conditions in young people aged under 25 years(2). These pathways significantly overlap with each other at the early stages and become more discrete and distinct at the later stages (figure 1-4).

There are three illness subtypes in the model, and while these can overlap, MHPs are advised to identify a predominate type for the purpose of treatment planning.

1. Hyperarousal-anxious/depression subtype*:* young person reporting childhood anxiety and later stress-sensitivity with evolving depressive disorder symptoms are allocated to the 'hyperarousal-anxious depression' subtype. This is the default subtype for those without clear evidence for a circadian-bipolar spectrum or neurodevelopmental-psychosis trajectory.

2. Neurodevelopmental-psychosis subtype*:* young person with a primary psychotic disorder or significant and persistent developmental difficulties (such as

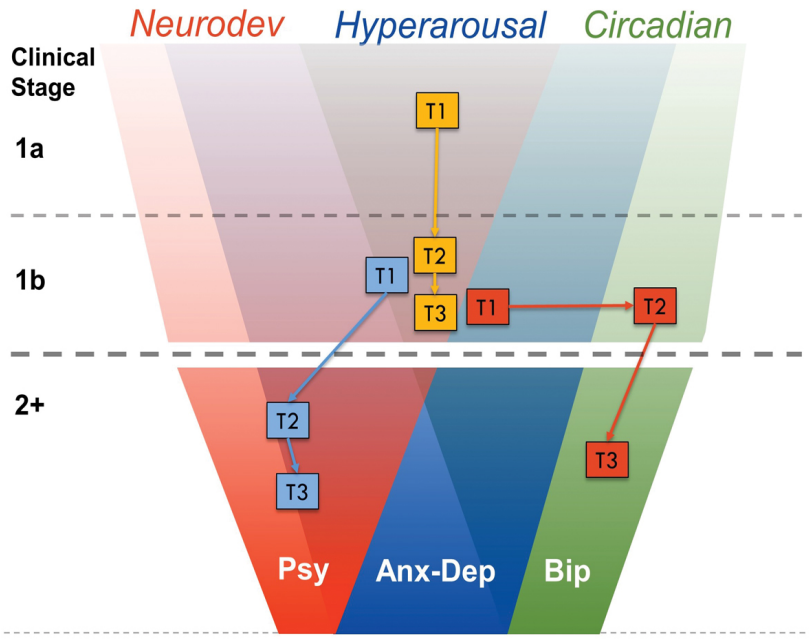
autism spectrum disorder, specific learning disability, or low IQ) are allocated to the 'neurodevelopmental-psychosis' subtype.

3. Circadian-bipolar subtype: Any young person with significant manic-like symptoms (manic, hypomanic, or brief hypomanic phenomena) or significant atypical features (e.g. reduced activation and energy, prolonged sleep, prolonged fatigue) are allocated to the 'circadian-bipolar spectrum' subtype

Stage x Pathway Matrix

After a clinical stage and predominate illness pathway has been determined, a young person can be allocated to one of the 10 positions on the stage x pathway matrix.

This allocation can be shared with young people to facilitate shared understanding of the nature of the current difficulties in decision making, and guide discussions about interventions that might be helpful.



Case examples of individual illness trajectories over time*
Anx-Dep = anxious depression. Bip = bipolar spectrum. Neurodev = neurodevelopmental. Psy = psychosis.
**T1, T2 and T3 represent time points. Yellow indicates a typical hyperarousal–anxious depression trajectory, developing from non-specific to attenuated syndrome but not progressing to a discrete disorder. Blue indicates a typical neurodevelopmental–psychosis trajectory, initially presenting with Stage 1b general depressive syndrome and then progressing to more severe psychotic-type illness. Red indicates a typical circadian–bipolar spectrum trajectory, initially presenting with Stage 1b anxious-depressive symptoms, then developing a presentation of circadian disturbance before progressing to a more distinct later stage bipolar-type syndrome.*

The following is a general guide for clinicians to match the clinical needs of a young person with an appropriate level of care.

Commonly, young people do not get the right kind or intensity of mental health care for long enough that is matched to their unique needs. These 'inappropriate' interventions may result in:

- a worsening of syndrome [77]
- unnecessary acute presentations to emergency departments
- over-utilisation of crisis services and hospitalisation
- accumulation of greater physical and mental disorder comorbidities
- ongoing functional impairment [78]

There are a variety of reasons for the poor matching of a young person's needs to an appropriate intervention:

(i) current syndrome-focused classification systems fit poorly for young people presenting with sub-threshold mental health disorders

(ii) illness extending factors such as functional impairment, self-harm and suicidality, alcohol and/or other substance misuse, and poor physical health are neglected

(iii) neurobiological profiles and pathophysiological pathways (i.e. illness trajectories) are often not recognised

(iv) the selected interventions do not always target the clinical staging (i.e. the severity and persistence of the illness)

(v) A lack of shared decision making, where an informed decision is made by the young person about the risks and burden associated with the intervention relative to benefit

The three features outlined in the Assessment section are followed here in the Intervention section (multidimensional domains, clinical staging, and illness pathway). The three concepts presented can be used parallel to expand the choice of available interventions to those that:

a. reduce functional impairment, self-harm and suicidal thoughts and behaviours, alcohol or other substance misuse, and improve physical health
b. more effectively target underlying pathophysiological trajectories driving the current phenotype
c. carefully balance the risks and benefits of proposed interventions in the context of severity and clinical stage

SECTION THREE
interventions

Interventions targeting the multidimensional domains

A focus on 'multidimensional domains' aims to capture a comprehensive and holistic representation of an individual's unique presentation and provides a broader scope of intervention options. These domains are important areas of clinical focus and are critical for preventing premature death and disability. For example, not being engaged in education, employment or training (NEET) has been associated with a 5-times greater risk of clinical stage progression [79], so supporting young people to re-engage in employment, education or training may prove more productive than the traditional focus on symptom reduction [80]. In fact, this kind of support should be provided to all young people who require it regardless of their transition outcomes [81].

All young people (regardless of what clinical stage they are assigned to) should be provided with a range of standard supports and interventions as required; which may include:

- psychoeducation on the nature of the illness (young people and their caregivers)
- inter-agency information sharing after obtaining consent
- deliberate self-harm and suicide risk management
- family support or therapy
- substance misuse reduction and harm minimisation
- educational or vocational support
- sufficient support or intervention for any persisting problems associated with a childhood onset psychiatric disorder, developmental disorder, or childhood trauma

Given the interacting nature of these domains, it is critical that outcomes are monitored across domains, even if they are not directly targeted with a specific intervention. Using general social and occupational functioning as an example, Figure 3-1[82] highlights the direct and indirect interventions that have been shown to impact this domain.

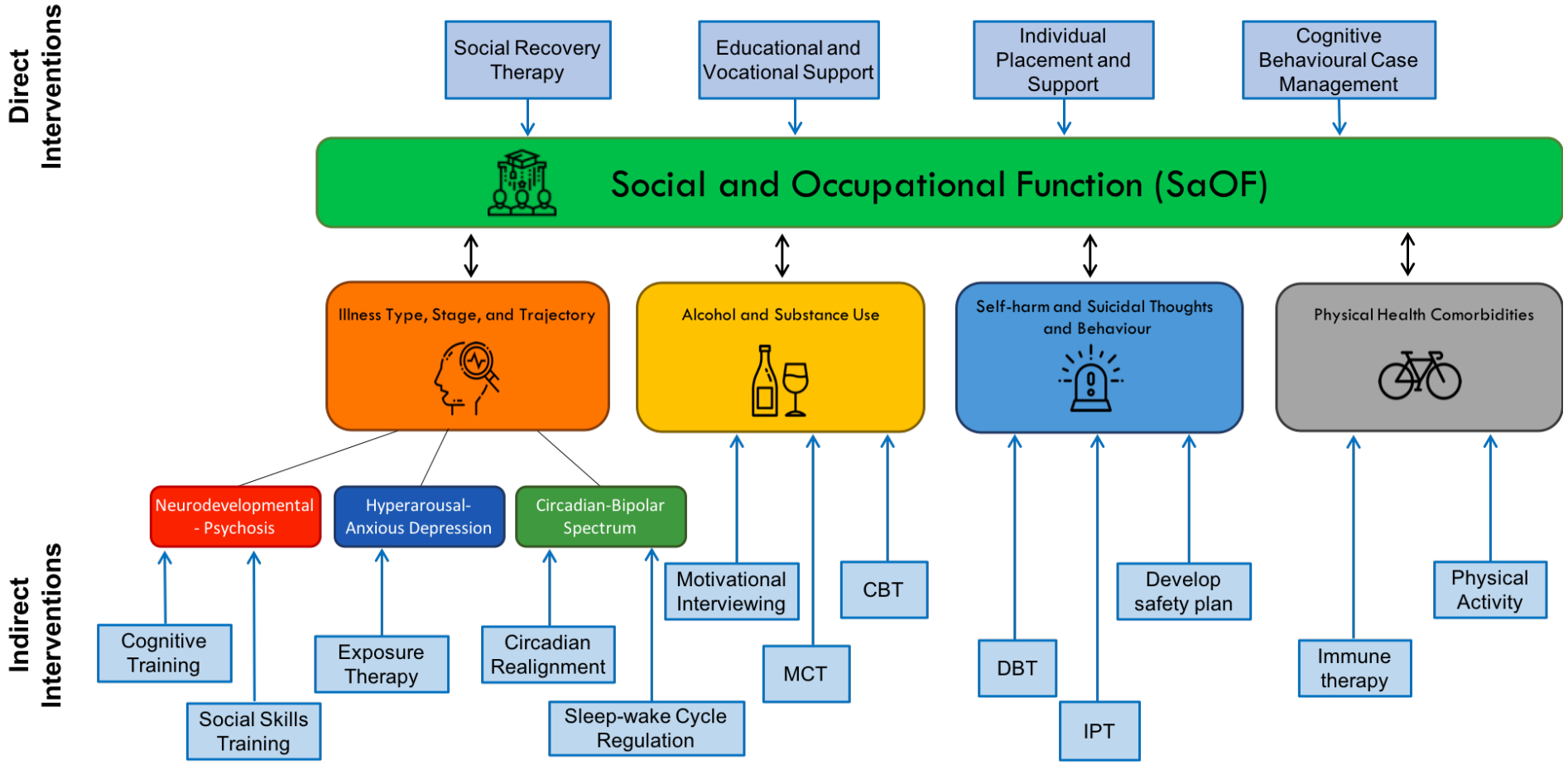


Figure 3-1. *Direct and indirect interventions targeting Social and Occupational Function (SaOF)[82]. We have outlined a wide range of assessments targeting each of multidimensional outcome domains and illness types (see Tables 1-3). Here, we emphasise the importance of SaOF as key long-term outcome in youth mental health. This is a schematic representation of those interventions that target SaOF directly ('Direct Interventions') as compared with those interventions that target the other outcome domains that have bidirectional relationships with SaOF. Consequently, these interventions may have 'indirect' effects on SaOF.*

Intervention / Treatment Planning

A key feature of the BMYM is the matching of appropriate interventions to need and stage, taking into consideration the risk/benefit profile of the intervention, the cost to the young person and the service and the informed preference of the young person[83]. This approach should guide the more effective and less harmful use of treatments matched to stage [24,30,34,53-55,60,84-87].

Intensities of interventions can be selected based on their appropriateness to clinical stage, and may involve the direct modification of malleable risk and protective factors known to be associated with illness progression[84,88].

Interventions vary according to their risk/benefit profiles, as well as their cost for both the service and YP/families. Costs for all stakeholders can be either financial or time – such as:

- a young person's (and at times their family's) time out of school or work
- cost of travel to attend a service
- the required frequency of attendance
- the number of health professionals involved
- the length of the episode of care or the setting that care is provided (inpatient versus outpatient)

Risk can be defined as the unintended consequences of the interventions, such as side effects from psychological and/or pharmacological therapies. Decisions about the duration, intensity, sequence and multidisciplinary nature of care provision, and assertive follow up and monitoring, should logically match the assigned stage and illness-type and trajectory of the young person.[89].

As a guide, the spectrum of interventions and support services should be matched against stage, and as the illness becomes more discrete, specific illness pathway. Table 3-1 summarises the kinds of interventions, treatments and services that would be defined according to their risks and the intensity (costs) of each intervention.

Table 3-1: *Description of each of the treatment intensity levels*[83]

Treatment Intensity	Description
Self-management / monitoring	i. Online psychoeducation, health information ii. Monitoring (mood, health behaviour, exercise, sleep, etc) iii. Self-managed evidence-based interventions *See http://www.emhprac.org.au/services/ for a list of apps, websites and online services*
Low	i. Clinician-supported or assisted online interventions ii. Group-based psychological interventions, iii. Brief (eg 3 sessions) face-to-face psychological therapy
Moderate	i. Longer-term psychological therapy ii. Assertive case management including social and vocational (education/ employment/ training) support, iii. Consideration of first-line pharmacotherapy where appropriate
High	i. Lengthy or intensive psychological, social and vocational intervention that may involve multi-disciplinary support ii. assertive case management, iii. Consider second-line polypharmacotherapy where appropriate
Acute and Specialist Community	i. Highly specialised mental health care typically provided by secondary/ tertiary mental health services ii. Consider inpatient hospitalisation when appropriate.

Decisions about the duration, intensity, sequence and multidisciplinary nature of care provision, and assertive follow up and monitoring, should logically match the assigned stage and illness-type and trajectory of the young person [89].

Importantly, risk versus benefit profiles of interventions are matched to the severity of the illness, such that early stage illnesses correspond with less specific and more benign treatments with proven effectiveness [24,55,90], and reserving more intensive (expensive and side-effect prone) treatments to later and more severe clinical stages [31,55]. First line (typically benign) psychological interventions (especially cognitive and behavioural therapies- CBT) are recommended for early stage illnesses and have shown to be effective across a diverse range of disorders [63-69].

Table 3-2 highlights that for individuals with a syndromal presentation that is suggestive of an attenuated or more discrete form of adult-type illness (i.e. Stage 1b or 2+), treatment options are extended to include more type-specific and targeted psychological, social, and behavioural therapies as well as those involving psychotropic medications, and logically carry more risks and more costs than those appropriate for young people with stage 1a level illness.

Table 3-2: *Summary of findings regarding intervention types for each of the clinical stages*

Stage 1a	Have been shown to benefit from brief interventions; [16] of lower intensity; such as Internet-based psycho-education and CBT (which has been shown to be as effective as face-to-face psychological therapy for mild mental health problems) [91-93]. Existing CBT techniques that target trans-diagnostic processes [69], can be modified in face-face service delivery and used to good effect, at early illness stages.
Stage 1b	Moderate symptom severity and functional impairment, have higher risks of persistent disability and a greater chance of progression to more severe illnesses, with approximately one in five progressing to a more severe syndrome within 12 months [76,79]. Logically, the emphasis for young people at this stage would be a 12-month program of clinical care and assertive follow up.
Stage 2 and beyond	YP with psychotic, manic, and severe depressive or anxiety disorders require a more intensive mix of interventions and supports, including but not limited to assertive case management, medication, CBT, psychosocial support, weight management, and vocational assistance. These interventions are often delivered directly by or in partnership with specialist secondary or tertiary level mental health services over the long term (two to five years is recommended), as outlined elsewhere [55].

Interventions targeting illness type

The selection of treatments targeting the three key illness types places a strong emphasis on the pathophysiological systems that are thought to underpin and drive the evolution of their trajectories over time. Crucially, this staged-care approach recommends a careful consideration of the clinical stage of an individual that can guide the **intensity and type** of the intervention [94]. Knowledge of the illness trajectory provides more direction to the specific **content or agent** of the intervention designed to intervention against those vulnerabilities.

Interventions specific to 'Hyperarousal – Anxiety Depression'

The '*Hyperarousal – Anxiety Depression*' trajectory is hypothesised to be underpinned by abnormalities in central nervous system arousal and reactivity[95], and interventions for YP in this illness pathway should directly target this process and assist with self-regulation. Cases with more advanced stages of illness (Stage 1b or 2+) may benefit from pharmacological intervention, using agents that dampen heightened stress-reactivity, enhance neuroplasticity, and improve functioning of neural circuits regulating mood [96].

Interventions specific to Circadian – Bipolar spectrum

The *'Circadian – Bipolar spectrum'* trajectory is hypothesised to involve dysregulation of the circadian and sleep-wake systems [95]. Behavioural interventions that support the regulation of sleep-wake timing can encourage circadian synchrony [97]. These interventions should encourage a range of behaviours including appropriate timing of meals, engagement in physical activity, adequate exposure to light, minimisation of caffeine, alcohol and/or other substances during the evening, and timing of sleep onset.

For individuals with more discrete, persistent or impairing presentations (Stage 1b+), several more intensive chronobiological treatments could be considered [98], such as light therapy. For those individuals with a more advanced stage of illness (e.g. evidence of a discrete bipolar syndrome) or those with a depressive disorder with additional evidence of underlying circadian disturbances, pharmacological intervention that helps realign the circadian clock or stabilise mood should be considered.

Interventions specific to Neurodevelopmental – Psychotic

The *'Neurodevelopmental – Psychotic'* trajectory is hypothesised to be underpinned primarily by aberrant brain development and/or functioning [95]. Increasing physical activity may result in improvements in psychiatric symptoms, [99] enhancement of brain and neurocognitive function, [100] and potentially minimising the adverse cardiometabolic effects of medication [101].

Interventions supporting and developing social skills is recommended where there is social difficulty, withdrawal or isolation. For individuals with more advanced stages of illness (Stage 1b+), interventions targeting functional disability and neurocognitive impairment are recommended, such as cognitive training [102,103] used alongside functional rehabilitation [104].

Pharmacological interventions for this illness type primarily aim to prevent neuroprogression and manage psychotic symptoms. There is some evidence that administration of omega-3 rich fish oils may reduce the risk of transition to a full-blown Stage 2+ psychotic disorder in individuals deemed at ultra-high-risk [105,106]. For those with more advanced illness pathways, pharmacological interventions should be considered, using a shared decision-making approach with the YP considering the risks and the benefits.

Guide to Person-Centred Treatment Planning

The following section outlined the steps to take to determine the appropriate level and type of care for a young person considering their current clinical needs, clinical stage, illness pathway and young person informed preference.

Using the Treatment Intensity Tool[83] (figure 3-2), find the column that aligns with the clinical stage of the young person.

1. Use the psychometric data on symptoms (eg. K10), functioning (eg (SOFAS) and suicide risk (eg SIDAS), or else use your own clinical judgement to determine the severity of the young person's current need.
2. Match the clinical stage with the severity of current need to find a recommended level of treatment intensity. Note that darker shading simply reflects the likelihood that a young person will land in that treatment intensity level, however there are occasions where for instance a young person has a very severe current need (such as acute suicidality) and low clinical stage.
3. Identify the illness pathway that best matches the young person's presentation.
4. Consider the use of an intervention that targets the illness pathway and that can be delivered within the bounds of the recommended intensity of care. See table 3-3 that provides suggestions for interventions matched by type (illness pathway) and intensity (clinical stage).

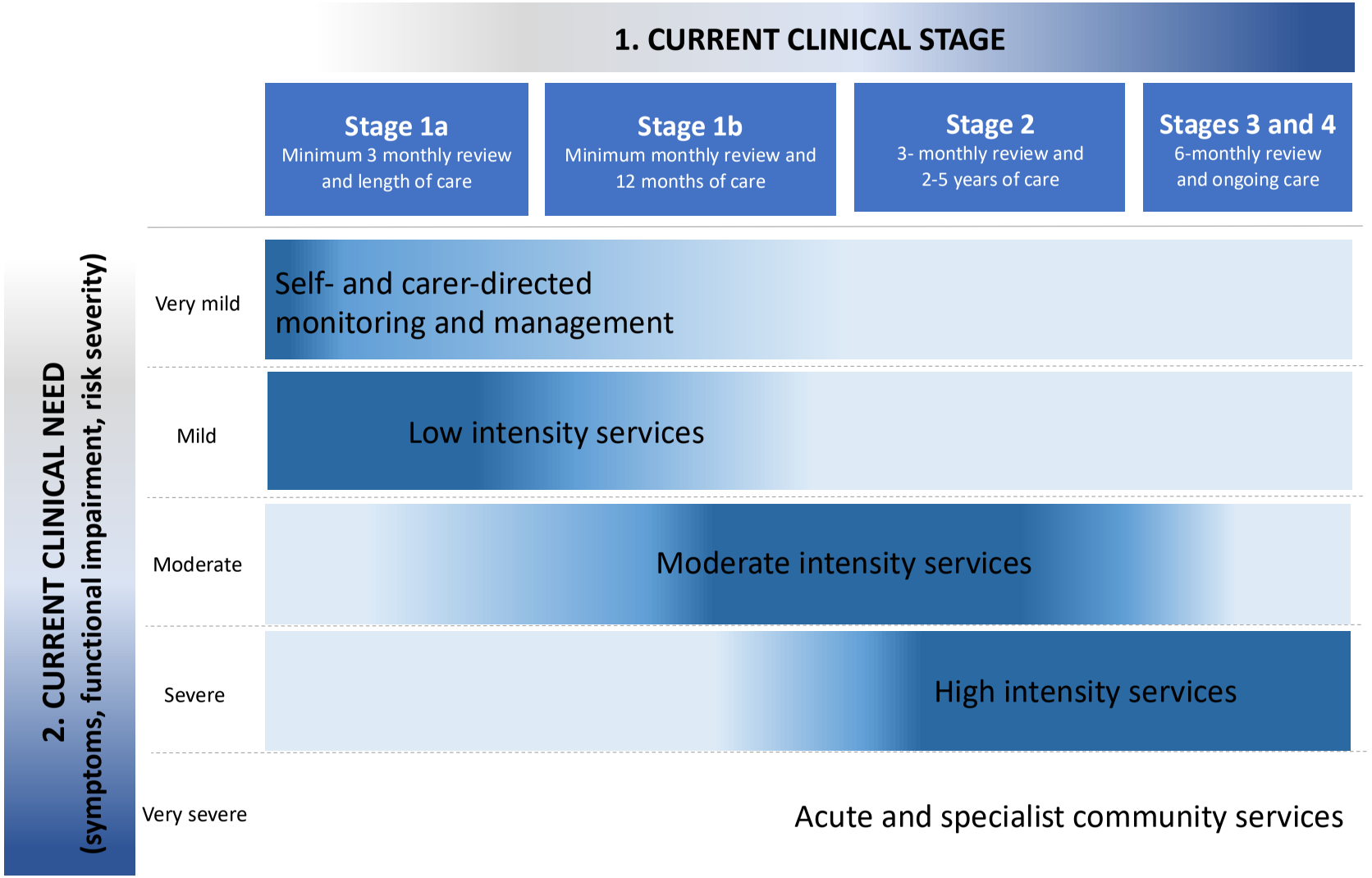


Figure 2. *Matching treatment intensity to (1) current clinical stage and then (2) current clinical need as determined by symptoms, functional impairment and risk severity. Colour gradients represent lower (light blue) or higher (dark blue) numbers of young people requiring that level of intervention across each row.*

Shared Decision Making

Before proceeding to delivering an intervention or a treatment, its vitally important that you as the clinician work with the young person (with their family if appropriate) in partnership to collaboratively devise a plan that will best meet their

Stage	Intervention Intensity	Pathway	Specific Pathway Interventions Examples
1a	Usually Low Intensity Intervention for up to 3 months	No specific pathway at this stage – either mild depressive or anxiety symptoms	CBT-based anxiety and depression management Apps CBT interventions for anxiety and depression available online (such as MoodGym, ecouch, MindSpot). http://www.emhprac.org.au/services/ Transdiagnostic CBT-based face-face interventions
1b	Usually Moderate Intensity Intervention for up to 12 months	**Neuro-Developmental (N-P)**	Psychosis-specific CBT Social Skills Training Functional Recovery Support
		Anxiety / Depression (H-A/D)	Diagnostic specific and evidence-based CBT IPT (depression) Mindfulness-based CBT or Meta Cognitive Therapy (GAD).
		Circadian- Bipolar (C-BP)	Sleep-wake Cycle/ Circadian-based CBT Behavioural regulation of sleep-wake timing Physical activity
2	Usually High Intensity Intervention for up to 2-5 years	**Neuro-Developmental (N-P)**	Psychosis-specific CBT Cognitive Training with Functional Recovery Social Skills Training Consider appropriate psychosis specific psychotropic medication
		Anxiety / Depression (H-A/D)	Diagnostic specific psychological intervention Consider appropriate psychotropic medication
		Circadian- Bipolar (C-BP)	Chronobiological treatments during depression (e.g. light therapy, sleep-deprivation therapy, sleep-phase advance) Consider appropriate psychotropic medication
3 & 4	Usually High – Acute/Specialist Community care ongoing	**All**	Ongoing treatments as above

needs. Shared decision making (SDM) is a collaborative approach that combines the best evidence regarding interventions with client preferences and capabilities. It sits between the two extremes of clinician-led treatment decisions and client-led decisions[107].

Shared decision making is best viewed as a process that involves educating the client about available treatment options and matching these with the client's needs, preferences and values. The client's family and support people can also play a major role in this process. This collaboration with the client and their carers ensures person-centred and evidence-based care to maximise treatment outcomes.

SDM aims to:

- increase a person's sense of control and ownership in order to increase treatment adherence and prevent premature drop-out or disengagement from services
- increase engagement and knowledge [108,109]
- improve client satisfaction [110]
- meet consumers preference for collaboration [111]

A Cochrane review found that decision aids increase knowledge, clarify values, and likely increase clients' risk perception and participation in decision making [112]

Although SDM is beneficial for a number of reasons, it is not commonly implemented in clinical practice. Research into the preferences of young people found that they prefer counselling over medication [113], and they want to be involved in decision making [111].

Clinician perceived impaired capacity that compromises joint decision making is cited as the main barrier to using SDM among medical practitioners (including cognitive impairment, emotional distress and complex medical presentations) [114] A summary guide to SDM is presented in figure 3-3.

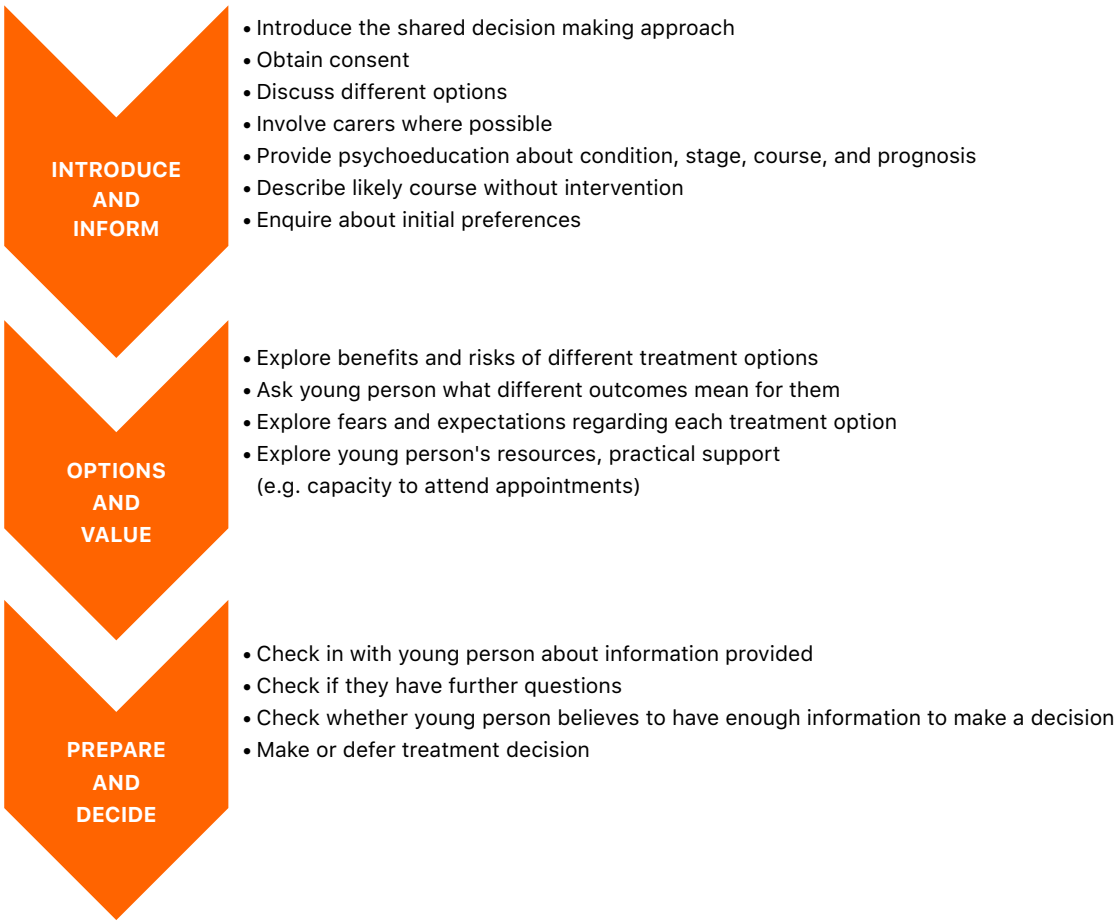


Figure 3-3: *A summary of shared decision making steps* [115] [116]

SECTION FOUR

Monitoring outcomes and changing treatment intensity

The importance of measuring outcomes

Research and clinical experience tells us that young people vary widely in their response to treatment. Some improve quickly, others deteriorate and get worse, while most seem to remain with ongoing concerns, distress and impairment. What we know from the research is that the use of clinician judgement alone to decide whether a young person is responding positively or negatively to treatment or care, and correspondingly, whether a change in treatment plan is required, is often inaccurate.

Unfortunately, the use of measurement in mental health to guide treatment decisions is not very common. While many of us are required to enter data into data systems for funding purposes, the use of measures to guide clinical decisions is infrequent.

Box 4-1: Key facts about outcome monitoring and measurement-based care

- Clinicians on average believe that about 85% of their patients improve or recover[2]
- When the clinical file notes of those patients who left care in a dramatically worse state than when they entered care were reviewed retrospectively, there was very little mention of deterioration by the treating clinician[6].
- 12 randomised control trials have shown that routine outcome monitoring (ROM) reduces deterioration in treatment and enhances treatment effect sizes[8].
- When clinicians are provided with regular feedback regarding patient progress in care it has been shown to result in an over 2.6 times higher odds ratio of reliable improvement compared to when clinicians do not receive routine progress feedback[13].
- 'Reliable improvement' occurs for 26% of YP for the K10, and 31% for the SOFAS. Additionally, 8% and 16% of patients showed 'reliable deterioration' on the K10 and the SOFAS, respectively (Debra J Rickwood et al., 2015)
- YP at stage 1b demonstrate the same degree of improvement between baseline and last measure on both the K10 and SOFAS as the less severe group (stage 1a). However, as those at stage 1b typically began treatment with greater levels of distress and impairment, their final clinical outcomes over the same period were significantly poorer than those at stage 1a[16].

Box 4-1 outlines some of the surprising research findings that show how important it is to measure outcomes in the young people we are providing assistance to. Measurement in its own right is therapeutic, and significant additional improvements in outcome have been observed just by monitoring change and sharing this information with young people. Imagine a GP managing diabetes without measuring blood sugar levels, and relying on their 'impression' as to whether the patient is getting better or not.

Many young people present to care with pre-treatment negative illness

trajectories. If we don't measure outcomes, we run the risk of not identifying those who are getting worse under our watch. Proactive and objective monitoring of outcome is essential. MHPs must integrate routine outcome monitoring and measurement based care into their practices for individual young people to receive more personalised and responsive care.

The repeated administration of the psychometric measures outlined in Appendix 5 will assist clinicians to alter treatment intensity and plans as necessary. Figure 3-2 outlines the frequency of review recommended by stage, where lower or higher intensity interventions may be provided for YP at certain stages/ illness pathways depending on the severity of the symptoms, functional impairment and risk.

Changing Treatment Intensity as Needs Change (stage-based stepped care)

Only a small proportion of YP change treatment intensity over the course of their care, and unfortunately, many young people leave care well before changes are made to their initial treatment plan. This is often because there is a lack of outcome monitoring linked to updated treatment planning in service delivery, and therefore a lack of appreciation of the diverse outcomes (better, worse or no-change) experienced by young people in care[16,117].

Figure 3-2 provides guidance to clinicians in determining the appropriate intensity of care for a young person at any time throughout their treatment journey[83]. It guides clinicians to suggests intervals between review, and encourages re-assessment of clinical need, clinical stage and illness pathway, with shared decision making used to determine the specific interventions provided within that intensity level[83].

The use of the Treatment Intensity Tool[83] at over the course of care can guide changes to care intensity based on progression to a higher clinical stage and/or changes to symptom, functioning or risk severity. While a YP cannot 'go backwards' in clinical stage, their clinical needs may decrease as they recover and their treatment intensity would be altered as these needs change, even though clinical stage remains constant.

APPENDICES

Appendix 1: Summary of Brain and Mind Centre research findings supporting clinical staging in youth mental health

The following table summarises the research conducted at the Brain and Mind Centre that has found significant demographic, clinical and neurological differences between young people at various clinical stages, highlighting the usefulness of this approach in youth mental health.

Authors	Sample (stage, N)	Study Design	Key Results	Other relevant information
Hamilton et al. 2011	1a = 110; 1b = 126; 2 = 47; 3+ = 24	Clinical, cross-sectional	Distress, disability and socio-occupational functioning all gradually worsened with higher stages of illness	Age and gender did not predict clinical stage
Scott et al. 2012	1a = 293; 1b = 292; 2 = 121; 3+ = 133	Clinical, cross-sectional	Clinician-rated SOFAS strongly related to stages; later stages having more impaired role function	Stage 2 had highest levels of distress and role function impairment
Lagopoulos et al. 2012	1b = 23; 2+ = 24	Neuroimaging, cross-sectional	2+ had decreased GM in frontal brain regions cf. 1b	Cf. controls, lb showed similar pattern of GM loss, albeit not to the same degree as their peers in 2+
Naismith et al. 2012	1b = 28; 2+ = 16	Circadian, cross-sectional	2+ had markedly reduced levels of melatonin secretion cf. their peers in 1b	In 2+ only, melatonin correlated with verbal memory
Hickie et al. 2013	1a = 21; 1b = 112; 2 = 53	Clinical, longitudinal	Transition (med = 48 wks): 11% of 1a; 19% of 1b; 33% of stage 2	Those who remained within the same stage may have had persistent symptoms / dysfunction or responded to clinical interventions

Lagopoulos et al. 2013	1b = 73; 2+ = 69	Neuroimaging, cross-sectional	Both 1b & 2+ showed ê WM integrity in left ACR; 2+ had additional demyelination	ACR = junction point of 3 major long association fibres; Impacts projections from thalamus to frontal lobes
Hermens et al. 2013	1b = 94; 2+ = 100	Neuropsychological, cross-sectional	2+ had most impaired neuropsychological profile; 1b had intermediate profile (cf. controls)	Greatest impairments in verbal memory and executive functioning.
Hickie et al. 2013	1b = 286; 2+ = 289	Clinical, cross-sectional	Impairments in functioning and general behavioral disturbance were less marked in 1b cf. 2+	Interaction between stage and tripartite classification; 1b less common in developmental-psychosis
Purcell et al. 2015	1a = 285; 1b = 412; 2+ = 96	Clinical, cross-sectional	1a better than 1b & 2+ on all symptom & functioning scores	1b & 2+ comparable on all measures (except CGI, SOFAS)
Scott et al. 2016	1a = 18; 1b = 82; 2+ = 54	Circadian, longitudinal	Delayed sleep phase (weekdays) é progressively across illness stages	é age, medication & later sleep offset strongest predictors of later stage
Cross et al. 2016	1a = 601; 1b = 257	Clinical, longitudinal	Psychological distress and SOFAS improved over 1 to 6 to 10 sessions of care for both 1b and 1a	1b remained impaired after 10 sessions; 1a commenced with better SOFAS, less psychological distress
Cross et al. 2017	1a = 579; 1b = 249	Clinical, longitudinal	1b made & missed more appointments than 1a	Social functioning best predictor of female attendance; age & stage best predicted male attendance
Tickell et al. In press	1b = 262; 2+ = 235	Neuropsychological, longitudinal	Baseline: 2+ worse than 1b in verbal learning, verbal memory, visual memory, set shifting. Both showed stability in processing speed, sustained attention and visual memory at follow-up	Neuropsychological stability corresponded with stability in clinical and functional status, despite stage of illness

Appendix 2: Summary of research findings across multidimensional domains for young people[48]

General Functioning	The presence of a mental health disorder in early adulthood is associated with reduced workforce participation, lower income and lower standards of living by the age of 30[118]. Adult family incomes are reduced by 28% by age 50 for those who experience psychological and physical health problems as children [119]. The effect of mental health disorders on these outcomes is greater than the impact of physical health problems among young people,[119] The effects are still present even when the mental health disorder is subthreshold or has remitted.[120] Even when transition to higher clinical stages does not occur, functioning is still significantly poorer level than non-psychiatric patients over at least 2 years[121]. For most over time, the degree of impairment at entry to care is the main predictor of long-term course.[122,123] Many YP present to care with significant functional impairment, and many of these YP are characterised as Stage 1b.[124]. YP who present with greater impairment and further developed mental health syndromes require more intensive treatments and resources yet are less likely to recover. In contrast, those with milder symptoms and impairment are more likely to recover after a briefer period of care.[124]
Employment, Education and Training	Among young people presenting to health services, rates of disengagement from education, employment and training are approximately 25%, which is approximately twice the national average for young people.[125-128] And even when YP are engaged in employment or education, functional impairment due to mental ill-health tends to manifest as higher rates of days out of role.[129]. In one study, 32% of YP at stage 1b were 'NEET' [79], which is much higher than rates reported elsewhere in similar clinical settings (19%)[80], the general population in Australia (11%)[80] and in the OECD (13%)[130]. In the same study, those at stage 1b who were NEET were 5.2 times more likely to transition from a stage 1b to a stage 2 syndrome[79] and similar results have been found in studies into transition to psychosis[81,131]. Being unemployed at service entry has been shown to translate to poor functioning up to six years later in young people[132,133]. NEET status may be a consequence of mental and substance use problems[130], which suggests that treating earlier forms of mental ill health may reduce the risk of NEET status, which may in turn reduce transition risk. From a pragmatic viewpoint, NEET status is a simple objective marker that MHPs can use as a high-risk criterion to identify a subgroup of YP who may benefit from ongoing monitoring and/or early referral for further/more intensive intervention.

Self-Harm, Suicidal Thoughts and/or Behaviours	Mental health disorders are consistently associated with self-harm, suicidal thoughts and/or behaviours, which increase the risk of death by suicide and the overall burden of these disorders.[134] Lifetime prevalence estimates indicate that almost 10% of the population across the world engage in suicidal ideation and approximately 5% engage in behaviours (i.e. plans or attempts) with the peak age of onset occurring during adolescence and young adulthood.[135,136] The overall rate of these behaviours is up to three times higher among young people than older adults, yet young people are also less likely to die from a suicide attempt indicating the potential for these behaviours to have a wider, ongoing impact on young people.[137,138] Population-based studies have shown that suicidal thoughts and/or behaviours among young people are associated with the onset and persistence of mental health problems, physical health comorbidity, and poorer social and occupational outcomes in adulthood.[120,139-141] Among young people with early disorders, these behaviours are a predictor of later onset of more severe (bipolar-type or mood unstable) illness and greater functional impairment.[142] At entry to services, up to a third of young people already experience suicidal thoughts, and they are not restricted to those with more severe illness types.[143] This compares with Australian data of 7.5% of teenagers expressing suicidal ideation and 2.4% attempting suicide in the previous 12 months.[144] While engagement with care is associated with a reduction in repeated suicidal behaviours, new experiences of suicidal thoughts and/or behaviours emerge during care, particularly among those whose illness course and trajectory is worsening and in association with alcohol and/or other substance misuse.[142], highlighting the importance of monitoring self-harm, suicidal thoughts and/or behaviours throughout the course of clinical care for all– not just those who are rated as 'higher-risk'.
Alcohol and/or Other Substance Misuse	Concurrent alcohol and/or other substance misuse are often recognised as important co-morbid conditions for anxiety and depressive disorders but are rarely subject to systematic evaluation, or intervention within such mental health care services.[145,146] Up to 15% of young people with a prior mental health disorder engage in alcohol and/or other substance misuse,[147] About one third of young people have established alcohol and/or other substance misuse at entry to youth mental health services.[148] More frequent alcohol and/or other substance misuse is associated with older age, being male and having psychotic or bipolar disorders.[148] Alcohol and/or other substance misuse contributes to the overall impact of mental health disorders, since it tends to be associated with greater disability[149] and impaired productivity and interpersonal functioning.[150] The outcomes are particularly poor among those who start to use alcohol and/or other substances at an early age with lower socio-occupational functioning, manic-like experiences, suicidal ideation and risky drinking being more common than those who start later.[151]

Physical Health

The pervasive impact of mental health disorders extends to other chronic physical illnesses, such as diabetes and cardiovascular disease,[152,153] and is particularly evident in the relationship between depression and early death due to cardiovascular disease.[154]

All mental health disorders are associated with an increased risk for the onset of a range of chronic physical health conditions with population estimates suggesting that the onset of up to 13% of physical health conditions could be attributed to specific mental health disorders.[155]

The comorbidity between physical and mental health conditions is associated with an increased burden of disease with evidence suggesting that such comorbidity is more burdensome than physical health conditions alone or in combination.[156]

Current data suggest that physical health problems and risk factors to later poor physical health are common in young people presenting to care with up to one-third of young people smoking daily, which is three times higher than the age-matched Australian population.[157]

Patterns of overweight (20%) and obesity (10%) are comparable to the age-matched Australian population, the rate of women who are underweight is higher than the general population at 10%.[157]

Youth cohorts tend to gain weight and develop insulin resistance in association with engagement with care,[158] and recent evidence suggest that increasing body mass index is associated with emerging insulin resistance.[159]

Appendix 3: Summary of characteristics and features of young people in each of the 3 pathways

Illness Pathway	Characteristics	Features
Circadian/ bipolar subtype:	Any YP with significant manic-like symptoms (manic, hypomanic, or brief hypomanic phenomena) or significant atypical features (e.g. reduced activation and energy, prolonged sleep, prolonged fatigue) are allocated to the 'circadian-bipolar spectrum' subtype.	A greater proportion of YP with a bipolar course of illness have a delayed sleep-wake profile (over 60%) compared to those with unipolar mood disorders (30%) and controls (10%).[160] Circadian rhythm abnormalities appear to accompany these sleep-wake delays, with reduced and delayed evening melatonin secretion profiles in bipolar as compared to unipolar youth.[161] Those with delayed sleep and circadian rhythms, which is not exclusively restricted to a 'bipolar diagnosis' according to traditional classification systems.[162-164] Sleep-wake disturbances are predictive of increased manic symptoms at follow up.[165] YP in the circadian-bipolar spectrum group are more likely to have a family history of anxiety and bipolar disorders [74]. A family history of bipolar disorder has also been linked to specific subjective and objective sleep-wake cycle disturbances in our cohort including increased sleep time and more variable sleep-wake patterns.[166]
Neuro-developmental/ psychosis subtype:	YP with a primary psychotic disorder or significant and persistent developmental difficulties (such as autism spectrum disorder, specific learning disability, or low IQ) are allocated to the 'neurodevelopmental-psychosis' subtype.	There is evidence linking neurodevelopmental abnormalities with increased risk of developing psychotic phenomena.[167-170] This group are more likely to be male, are older at presentation to services, and present with less severe anxiety and depressive symptoms, distress, and suicidality.[74] This group also presents with poorer social and occupational functioning, and lower premorbid IQ as well as poorer performance on neuropsychological measures, including marked dysfunction on tests of mental flexibility and verbal learning and memory. They are more likely to have a family history of psychotic disorders and less likely to have a family history of depression [74]. Young people with global neuropsychological impairment and poorer functioning over three years are more likely to have psychotic illness.[171]
Hyperarousal-anxious depression subtype	YP reporting childhood anxiety and later stress-sensitivity with evolving depressive disorder symptoms are allocated to the 'hyperarousal-anxious depression' subtype. This is the default subtype.	Stress-sensitivity in anxiety and unipolar mood disorders, and with models of neural fear-circuitry, prolonged stress responses, and glucocorticoid-dependent arousal.[172-175] More likely to have a family history of depression.[74]

Appendix 4: Multidimensional outcome measures[176].

Domain	Self-report or clinical measures
Social and occupational function	▪ Education or employment engagement (i.e. **Not in Education or Employment [NEET] status**) ▪ ***Social and Occupational Functioning Assessment Scale (SOFAS)***[177]: a global rating of current functioning ranging from 0 to 100, with lower scores denoting lower functioning. ▪ Everyday function and daily activity, for example: – ***Work and Social Adjustment Scale (WSAS)***[178]: a five-item scale of functional impairment attributable to an identified problem. ▪ Social relationships and support, for example: – ***Schuster's Social Support Scale (SSSS)***[179]: a 15-item measure of social support used to examine an individual's social relationships with others (relatives, friends, spouse) and the associated impact on their emotional functioning.
Self-harm, suicidal thoughts and/ or behaviour	▪ Suicidal ideation frequency and severity, for example: – ***Suicidal Ideation Attributes Scale (SIDAS)***[180]: a five-item self-report questionnaire assessing the frequency, controllability, closeness to attempt, distress, and interference with daily activities over the past month. ▪ Engagement in self-harm and suicidal behaviours, for example: – ***Columbia–Suicide Severity Rating Scale (C-SSRS)***[181]: a questionnaire used for suicide assessment intended to be used by individuals who have received training in its administration. The questions contained in the C-SSRS are suggested probes. The scale comprises three sections: suicidal ideation, intensity of ideation, and suicidal behaviour. – ***Brief Non-suicidal Self-Injury Assessment Tool (B-NSSI-AT)***[182]: the short version of the NSSI-AT to assess primary (such as form, frequency, and function) and secondary (including but not limited to NSSI habituation; contexts in which NSSI is practiced; and NSSI perceived life interference, treatment, and impacts) NSSI characteristics.
Alcohol and/ or other substance misuse	▪ Alcohol misuse, for example: – ***Alcohol Use Disorders Identification Test (AUDIT)***[183]: a 10-item transcultural screening tool to detect excessive alcohol consumption, dependence, and alcohol-related problems first developed by the World Health Organization in 1989. Both a clinician-administered and a self-report version are provided. ▪ Alcohol and/or other substance misuse, for example: – ***World Health Organisation Alcohol, Smoking and Substance Involvement Screening Test (WHO-ASSIST)***[184,185]: addresses the need for a reliable, culturally adaptable, valid screening test for problematic or risky substance use. The WHO-ASSIST (version 3.1) is an eight-item questionnaire and screens for use of tobacco products, alcohol, cannabis, cocaine, amphetamine-type stimulants (ATS), sedatives and sleeping pills (benzodiazepines), hallucinogens, inhalants, opioids, 'other' drugs. ▪ Tobacco use, for example: – ***Hooked on Nicotine Checklist (HONC)***[186]*:* a measure of the loss of autonomy over tobacco use in youths. It comprises 10 questions that assess if the sequelae of tobacco use, either psychological or physiological, present a barrier to quitting.
Physical health	▪ **Height, weight, and waist circumference** ▪ Physical activity, for example: – ***International Physical Activity Questionnaire (IPAQ) – short version***[187,188]: a seven-item questionnaire providing internationally comparable data on health-related physical activity. – *Activity trackers*, such as Fitbit ▪ Physical health comorbidity (e.g. metabolic, endocrine or autoimmune disorders). This requires further laboratory assessments

Appendix 5: Psychometric tools recommended for further mental health assessment[176]

Illness type	Brief self-report (SR) or clinician-rated (CR) measures	Comprehensive/further assessment self-report (SR) or clinician-rated (CR) measures
Neurodevelopmental – Psychotic	▪ Psychotic syndrome – ***Prodromal Questionnaire (PQ-16)***[189]: a brief 16-item version of the 92-item Prodromal Questionnaire.[190] This self-report screen is used to select subjects for interviewing for psychosis risk. The PQ16 consists of three subscales: "perceptual abnormalities/ hallucinations", "unusual thought content/ delusional ideas/ paranoia" and "negative symptoms". **SR** ▪ Social cognition – ***Empathy Quotient (EQ-15)***[191,192]: a short version of the 60-item self-report EQ questionnaire measuring empathy. **SR** ▪ Neurodevelopment, for example: – ***Autism spectrum Quotient questionnaire (AQ10)***[193]: a 10-item self-report questionnaire for adolescent or adults with a possible autism spectrum disorder who do not have a moderate or severe learning disability. The AQ-10 helps to identify whether an individual should be referred for a comprehensive autism assessment. **SR**	▪ Psychotic syndrome – ***Community Assessment Psychic Experiences (CAPE-42)***[194]: a 42-item questionnaire that evaluates the positive, negative and depressive dimensions of psychotic symptoms. **SR** – ***Comprehensive Assessment of At Risk Mental States (CAARMS)***[195]: a semi-structured interview that assesses psychopathology thought to indicate imminent development of a first-episode psychotic disorder, and determines if an individual meets criteria for being at ultra-high risk (UHR) for onset of first psychotic disorder. **CR** ▪ Social cognition – ***Social Responsiveness Scale (SRS)***[196]: a 65-item screening tool to identify social impairment associated with autism spectrum disorders and quantifies it severity. A self-report version is available. **SR**

Hyperarousal – Anxious depression	▪ Depressive syndrome – ***Patient health questionnaire (PHQ-9)***[197]: a nine-item self-report questionnaire for common mental disorders, which scores each of the nine DSM-IV depression criteria as 0 (not at all) to 3 (nearly every day). **SR** ▪ Anxiety syndrome – ***Overall Anxiety Severity and Impairment Scale (OASIS)***[198]: a five-item self-report measure that can be used to assess severity and impairment associated with any anxiety disorder or multiple anxiety disorders. It evaluates frequency of anxiety, intensity of anxiety symptoms, behavioural avoidance, and functional impairment associated with anxiety. The instructions for the OASIS ask the patient to consider a variety of experiences such as panic attacks, worries, and flashbacks and to consider all of their anxiety symptoms when answering the questions. The OASIS is therefore potentially applicable to any anxiety disorder and should be able to simultaneously assess severity and impairment associated with multiple anxiety disorders. **SR**	▪ Depressive syndrome – ***Quick Inventory of Depressive Symptomatology (QIDS)***[199]: a rating scale that assesses the nine criterion symptom domains (sleep, sad mood, appetite/ weight, concentration/ decision making, self-view, thoughts of death or suicide, general interest, energy level, and restlessness/ agitation) designated by the DSM-IV to diagnose a major depressive episode. The short version includes 16 questions with equivalent weightings (0-3) for each symptom item and is available as a clinician-rated and self-report scale. **SR** ▪ Anxiety syndrome – ***Generalised Anxiety Disorder Questionnaire (GAD-7)***[2003]: a seven-item, self-report screening tool and severity indicator for generalised anxiety disorder (GAD), developed to increase the recognition of GAD in primary care settings. – ***YBOCS*** – **Social Phobia Scale**
Circadian – Bipolar spectrum	▪ Manic syndrome, for example: – ***Altman Self-Rating Mania Scale (ASRM)***[201]: a five-item self-rating scale, designed to assess the presence and/or severity of manic symptoms. Each question measures a specific manic symptom (i.e. elevated mood, inflated self-esteem, decreased need for sleep, pressured speech and psychomotor agitation). Items are rated in increasing severity from 0 (absent) to 4 (present to a severe degree). **SR** ▪ Circadian and sleep-wake cycle, for example: – ***Pittsburgh Sleep Quality Index (PSQI)***[202]: a nine-item self-report questionnaire to measure the quality and patterns of sleep, whereby seven domains are assessed (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction).	▪ Manic syndrome, – ***Young Mania Rating Scale (YMRS)*** ▪ Circadian and sleep-wake cycle, for example: – ***Munich ChronoType Questionnaire (MCTQ)***[203,204]*: a 13-item self-report questionnaire to assess the individual phase of entrainment on work and work-free days. The tool collects primary sleep times, such as bed- and rise-times, plus the clock time of becoming fully awake as well as sleep latency and inertia, in addition to other time points and rate themselves as one of the seven chronotypes.*

Appendix 6: Standard and further assessments for key neuropsychological, neurobiological and physiological factors[176].

	Standard assessments	Suggested further assessments

Neuropsychological function	• Online neuropsychological testing (e.g. 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 and circadian cycles	• Sleep diary • Timing of sleep-onset, sleep-offset, time in bed (e.g. Pittsburgh Sleep Quality Index) • 24-hour actigraphy measurements with standard devices (over at least a two-week period)	• Overnight melatonin and cortisol assays • Nocturnal core body temperature

Metabolic and immune function	• 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 (e.g. Homeostasis Model Assessment)
		• Autoantibody screening (e.g. N-methyl-D-aspartate receptor, glycine receptor, metabotropic glutamate receptor 5)
		• More extensive inflammatory marker screening (e.g. tumor necrosis factor, interleukin)

Brain structure and function	*Recommended for all Stage 2+ patients and Stage 1b patients with a psychotic or circadian-bipolar 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 (e.g. glutathione, creatine, N-acetyl-aspartate)

***Note**: Assessment of neuropsychological function, sleep-wake and circadian cycles, and metabolic and immune function is recommended as part of standard clinical practice in all individuals attending services. 'Standard assessments' are recommended based on their importance to functioning and physical and mental health outcomes. Structural brain imaging is recommended as a standard assessment in all Stage 2+ presentations and Stage 1b patients with an emerging neurodevelopmental-psychotic or circadian-bipolar spectrum phenotype. Repeated structural brain imaging is recommended in those who experience illness progression. 'Further assessments' may help to refine the phenotype (e.g. neurocognitive impairment, presence of anti-neuronal antibodies, advanced sleep phase) or guide targeted interventions (e.g. cognitive training, immune therapy, light ther*

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