Right care, first time: a highly personalised and measurement-based care model to manage youth mental health

Ian B Hickie[1], Elizabeth M Scott[1,2], Shane P Cross[1], Frank Iorfino[1], Tracey A Davenport[1], Adam J Guastella[1], Sharon L Naismith[1], Joanne S Carpenter[1], Cathrin Rohleder[1], Jacob J Crouse[1], Daniel F Hermens[1,3]

Summary

- Mood and psychotic syndromes most often emerge during adolescence and young adulthood, a period characterised by major physical and social change. Consequently, the effects of adolescent-onset mood and psychotic syndromes can have long term consequences.
- A key clinical challenge for youth mental health is to develop and test new systems that align with current evidence for comorbid presentations and underlying neurobiology, and are useful for predicting outcomes and guiding decisions regarding the provision of appropriate and effective care.
- Our highly personalised and measurement-based care model includes three core concepts:
  - A multidimensional assessment and outcomes framework that includes: social and occupational function; self-harm, suicidal thoughts and behaviour; alcohol or other substance misuse; physical health; and illness trajectory.
  - Clinical stage.
  - Three common illness subtypes (psychosis, anxious depression, bipolar spectrum) based on proposed pathophysiological mechanisms (neurodevelopmental, hyperarousal, circadian).
- The model explicitly aims to prevent progression to more complex and severe forms of illness and is better aligned to contemporary models of the patterns of emergence of psychopathology. Inherent within this highly personalised approach is the incorporation of other evidence-based processes, including real-time measurement-based care as well as utilisation of multidisciplinary teams of health professionals.
- Data-driven local system modelling and personalised health information technologies provide crucial infrastructure support to these processes for better access to, and higher quality, mental health care for young people.

Collaborating authors: Joanne S Carpenter, Shane P Cross, Jacob J Crouse, Tracey A Davenport, Adam J Guastella, Ian B Hickie, Frank Iorfino, Dagmar Koethe, F Markus Leweke, Sharon L Naismith, Cathrin Rohleder, Ashleigh M Tickell (Brain and Mind Centre, University of Sydney, Sydney, NSW); Daniel F Hermens (Brain and Mind Centre, University of Sydney, Sydney, NSW, and Sunshine Coast Mind and Neuroscience – Thompson Institute, University of the Sunshine Coast, Birtinya, QLD); Vilas Sawrikar (Brain and Mind Centre, University of Sydney, Sydney, NSW, and University of Edinburgh, Edinburgh, UK); Elizabeth M Scott (Brain and Mind Centre, University of Sydney, Sydney, NSW, and University of Notre Dame Australia, Sydney, NSW); and Jan Scott (Brain and Mind Centre, University of Sydney, Sydney, NSW, and Institute of Neuroscience, Newcastle University, Newcastle Upon Tyne, UK).

Acknowledgements: This Supplement was made possible through a one-off grant from the Young and Well Cooperative Research Centre (2014–2016). The research described in the Supplement was supported by a number of funding sources including an Australian Fellowship (464914), a Senior Principal Research Fellowship (1046899), two Centres for Research Excellence grants for optimising treatments for young people with emerging mood disorders as well as suicide prevention (1042580 and 1061043), an investigator grant from Servier Laboratories Australia for circadian research, and the Australian Department of Health for Project Synergy which includes development of the InnoWell Platform. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing interests: Project Synergy (2014–2016) was commissioned by the Department of Health and conducted by the Young and Well Cooperative Research Centre in partnership with the University of Sydney's Brain and Mind Centre. The Department of Health (Australian Government) has further supported Project Synergy through a significant investment over 3 years (2017–2020) which led to the development of InnoWell Pty Ltd, a joint venture between the University of Sydney and PricewaterhouseCoopers (PwC) Australia. The InnoWell Platform is referred to in the Supplement as one example of a technology-enabled solution to reform mental health care services. The University of Sydney and PwC Australia each have a 45% shareholding in InnoWell. The remaining 10% shareholding is evenly shared between Professor Jane Burns and Professor Ian Hickie.

Provenance: Commissioned; externally peer reviewed. ■

[1] Brain and Mind Centre, University of Sydney, Sydney, NSW. [2] University of Notre Dame Australia, Sydney, NSW. [3] Sunshine Coast Mind and Neuroscience – Thompson Institute, University of the Sunshine Coast, Birtinya, QLD. ✉ ian.hickie@sydney.edu.au • doi: 10.5694/mja2.50383

Chapter 1

Multidimensional outcomes in youth mental health care: what matters and why?

Frank Iorfino[1], Joanne S Carpenter[1], Shane P Cross[1], Tracey A Davenport[1], Daniel F Hermens[1,2], Adam J Guastella[1], Cathrin Rohleder[1], Jacob J Crouse[1], F Markus Leweke[1], Dagmar Koethe[1], Sharon L Naismith[1], Elizabeth M Scott[1,3], Ian B Hickie[1]

Summary

- Mood and psychotic syndromes present one of the most serious public health challenges that we face in the 21st century. Factors including prevalence, age of onset, and chronicity contribute to substantial burden and secondary risks such as alcohol or other substance misuse.
- Mood and psychotic syndromes most often emerge during adolescence and young adulthood, a period characterised by major physical and social change; thus, effects can have long term consequences.
- We propose five key domains which make up a multidimensional outcomes framework that aims to address the specific needs of young people presenting to health services with emerging mental illness. These include social and occupational function; self-harm, suicidal thoughts and behaviours; alcohol or other substance misuse; physical health; and illness type, stage and trajectory.
- Impairment and concurrent morbidity are well established in young people by the time they present for mental health care. Despite this, services and health professionals tend to focus on only one aspect of the presentation — illness type, stage and trajectory — and are often at odds with the preferences of young people and their families.
- There is a need to address the disconnect between mental health, physical health and social services and interventions, to ensure that youth mental health care focuses on the outcomes that matter to young people.

Mood and psychotic syndromes (including anxiety, depression, bipolar disorder and psychosis) present one of the most serious public health challenges in the 21st century. They affect fundamental aspects of human life — our ability to work, function and develop quality social relationships — and too often lead to the early loss of life. About one in every three individuals is affected by such mental disorders over their lifetime, and studies continuously show they are a leading cause of years lost to disability.[1–3] Young people in particular are at risk, with over 75% of adult mental disorders emerging before the age of 25 years[4,5] and over 45% of the total burden of disease for those aged 10–24 years being attributed to mental disorders.[6] Consequently, a key population health priority is to reduce the burden of these disorders so that their impact does not endure a lifetime.[7–9]

Much of the burden can be attributed to prevalence and early age of onset, which influence the chronicity and secondary risks (eg, suicidal thoughts and behaviours, alcohol or other substance misuse) associated with these disorders. Lifetime prevalence estimates indicate that up to one-third of young people meet diagnostic criteria for a mental disorder,[10] while the 12-month prevalence among Australian young people aged 16–24 years was the largest across all age groups at about 26%.[11] Studies consistently report such high prevalence rates for mental disorders before the age of 25 years, irrespective of whether or not they adhere to strict diagnostic rules about symptom thresholds and impairment.[12–14] The prevalence of mental disorders during youth poses a risk for future health and wellbeing outcomes precisely due to the time at which they tend to emerge.

Adolescence and young adulthood is a critical period of biological and social development. Usually beginning with the onset of puberty, major physical and neurobiological changes occur, characterised by the development of key brain circuits responsible for higher order cognitive and emotional functions that, if suboptimal or disrupted, can have a significant impact on behaviours and the development of disorder.[15–22] This period is also characterised by significant social development as young people embark on the early phases of their careers via education and employment, and engage in more complex relationships with friends, family, and intimate and sexual partners. During this time young people face increasing diversity in potential life trajectories as they move from relatively restricted and homogenous environments, such as school and home life, to environments characterised by greater independence and variability in new educational, employment and social environments.[23] For some, this transition may occur without major disruption; however for others, this change in context and roles can lead to maladaptive functioning or can manifest and amplify underlying problems.[24] Thus, the biological and social complexity of adolescence and young adulthood means that young people are susceptible to the onset of mental health problems that may have a long term impact on outcomes in adulthood.[15,25,26]

Evidence for a multidimensional outcomes framework

The impact of mood and psychotic syndromes extends beyond the symptoms that define them. They affect many aspects of human life which typically establish during adolescence and young adulthood (ie, social relationships, education, employment skills and experience). Thus, it is not surprising that 22 years of age is identified as the age at which the maximum negative impact of a disabling illness occurs.[27] Since young people are more likely to present with multidimensional needs,[28] health service strategies should be in place to identify and respond to a range of health and social issues with the appropriate type and intensity of intervention.[29] We propose five key domains that make up a multidimensional outcomes framework to address the specific needs of young people presenting to health services with emerging mental illness (Box 1):

- social and occupational function;
- self-harm, suicidal thoughts and behaviours;
- alcohol or other substance misuse;

[1] Brain and Mind Centre, University of Sydney, Sydney, NSW. [2] Sunshine Coast Mind and Neuroscience – Thompson Institute, University of the Sunshine Coast, Birtinya, QLD. [3] University of Notre Dame Australia, Sydney, NSW. frank.iorfino@sydney.edu.au

1 Multidimensional outcomes framework for young people with emerging mood and psychotic syndromes

NEET = Not in Education, Employment or Training. Icons from www.flaticon.com: alarm bell, bicycle and magnifying glass/brain made by Freepik; wine bottle/glass made by srip; team education made by Eucalyp. The key findings for each domain within the multidimensional outcomes framework from the Brain and Mind Centre's Optymise Youth Cohort are shown. The outer circle includes the domain headings, while the inner circle includes key clinical findings. Superscript numbers indicate in-text reference to the relevant study. ◆

- physical health; and
- illness type, stage and trajectory.

Some of the studies discussed below come from the University of Sydney's Brain and Mind Centre's Optymise Youth Cohort.[33,41] This cohort includes 6743 individuals aged 12–30 years, 57% of whom are female. They presented to the Brain and Mind Centre's youth mental health clinics in the Sydney suburbs of Camperdown and Campbelltown and, after consenting, were recruited to a research register between June 2008 and July 2018. Individuals were either self-referred, referred via a family member or friend, or the community (eg, general practitioner) to these clinics which include primary care services (ie, headspace) as well as more specialised mental health services. Demographic data, clinical data such as presentation by *Diagnostic and statistical manual of mental disorders* diagnosis, substance use, personal history of mental illness, current treatment and functional data such as scores on a social and occupational functional assessment scale and engagement in education and employment were collected from research and clinical files to assess longitudinal outcomes. Subsets of this cohort have completed neuropsychological and neurobiological assessments as part of additional associated research protocols (Chapter 3). All participants received clinician-based case management and psychological, social, and/or medical interventions as part of standard care. Data for longitudinal follow-up were collected for the duration of each participant's engagement with the clinical services and/or participation in research sub-studies.

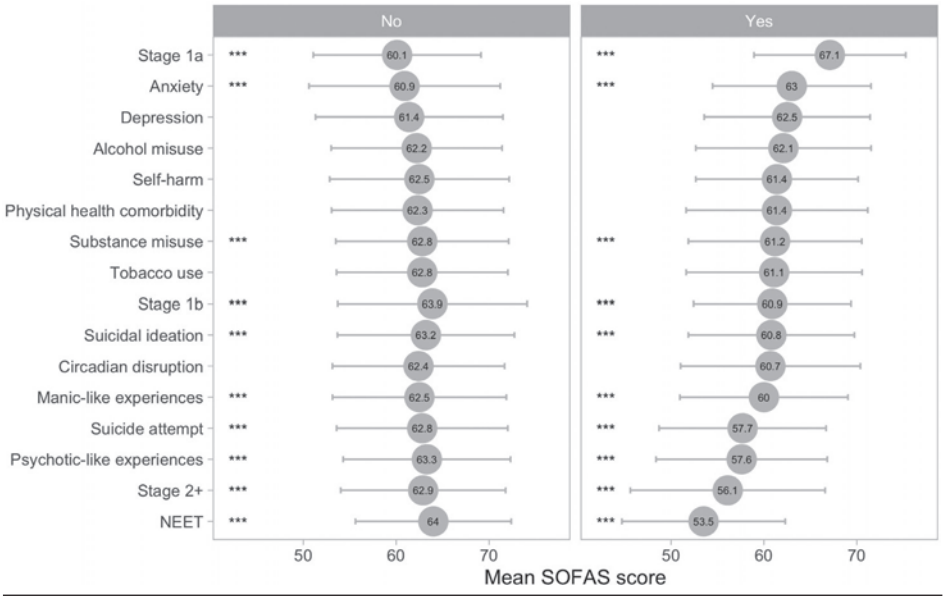
Social and occupational function

Prospective longitudinal studies have demonstrated that the presence of a mental disorder before the age of 16 years affects economic potential (ie, reduced income by 28%) and social relationships (ie, marriage instability) of adults aged 50 years.[44] Moreover, individuals who had a mental disorder between the ages of 18 and 25 years were more likely to have lower occupational participation, income and living standards by 30 years of age.[45] The effect of mood and psychotic syndromes on these outcomes is greater than the impact of physical health problems among young people,[44] and is present even when the mental disorder is subthreshold or has remitted.[46] This illustrates that even though adolescent-onset mood and psychotic syndromes may dissipate by adulthood, due to the nature of the adolescent and young adulthood period, they may have already affected an individual's ability to function economically and socially over the course of their life.

Among young people presenting to health services, well established social and occupational functional impairment is common. Rates of disengagement from education, employment and training are about 25%, which is nearly twice the national average for young people,[30,31,47,48] although for those engaged in employment or education, functional impairment due to mental ill health tends to manifest as higher rates of days out of role.[32] While such findings have been common in the literature on individuals at risk of psychosis and those who have experienced first-episode psychosis,[49] they have not been as extensively delineated in these early mood disorder populations. Further, greater functional impairment at entry tends to be associated with neurocognitive problems or difficulties, more severe mood or psychotic symptoms and concurrent substance (notably cannabis) misuse.[31] Over time, while impairment may vary considerably for individuals, the overall pattern is largely one of stable trajectories, whereby the degree of impairment at entry to care is the main predictor of long term course.[33,50]

Social and occupational function typically varies at entry into care and has a discrete relationship with each of the other key outcomes (Box 2). Most importantly, there is a significant subpopulation (characterised as stage 1b, see Chapter 2) of people who have not yet developed a persistent or full-threshold disorder but are already impaired and often remain largely impaired or deteriorate further despite the provision of standard clinical care.[51] As would be expected, prior research suggests that young

2 Associations between social and occupational function and other multidimensional domains at entry to care



NEET = Not in Education, Employment or Training. Unpublished data from the Brain and Mind Centre's Optimyse Youth Cohort (n = 2767). Mean Social and Occupational Functional Assessment Scale (SOFAS) scores for each of the other domains of the multidimensional outcome's framework are depicted. The grey circles and lines display the mean and standard deviation of SOFAS score for young people who have (or do not have) the corresponding outcome at entry into care (ie, "no" indicates individuals without the corresponding outcome). Differences in mean SOFAS score between these groups ("no" *v* "yes"' for each outcome) were compared using Welch's t-test and significant differences are depicted using an asterisk (*** adjusted $P < 0.001$). ◆

people 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.[51]

Self-harm, suicidal thoughts and behaviours

Mood and psychotic syndromes are consistently associated with self-harm, suicidal thoughts and behaviours, which increase the risk of death by suicide and the overall burden of these disorders.[52] Lifetime prevalence estimates indicate that almost 10% of the population across the world experience suicidal ideation and about 5% engage in suicidal behaviours (ie, plans or attempts), with the peak age of onset occurring during adolescence and young adulthood.[53,54] 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 be ongoing.[55,56] Specifically, population-based studies have shown that suicidal thoughts and 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.[46,57–59]

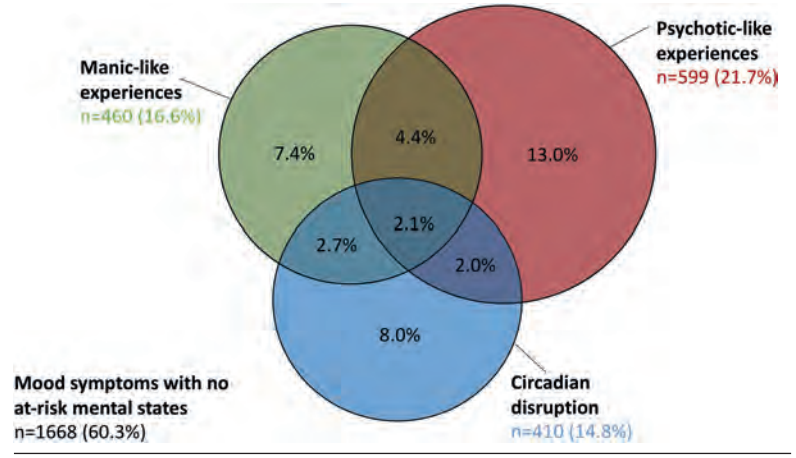
Similarly, among young people with early-stage disorders, these behaviours are not only a determinant of immediate distress and additional impairment but also a predictor of later onset of more severe illness (bipolar-type or mood instability) and greater functional impairment.[34] Importantly, at entry to services, up to one-third of young people already experience suicidal thoughts, and they are not restricted to those with more severe illness types.[35,36] This contrasts with data from an Australian survey which showed that 8% of teenagers had expressed suicidal ideation and 2% had attempted suicide in the previous 12 months.[60] While engagement with care is associated with a reduction in repeated suicidal behaviours, new experiences of suicidal thoughts and behaviours emerge during care, particularly among those whose illness course and trajectory is worsening and in association with alcohol or other substance misuse.[34] These findings have important implications for an enhanced focus on reducing self-harm, suicidal thoughts and behaviours throughout the course of clinical care for all of those who present to such services, not just those who are perceived as higher risk.

Alcohol or other substance misuse

Concurrent alcohol or other substance misuse is often recognised as an important comorbid condition for anxiety and depressive disorders but is rarely subject to systematic evaluation, or intervention within mental health care services.[61,62] Up to 15% of young people with a prior mental disorder engage in alcohol or other substance misuse,[63] while about one-third of young people have established alcohol or other substance misuse at entry to health services.[37] More frequent alcohol or other substance misuse is associated with older age, being male and having psychotic or bipolar disorders.[37]

Alcohol or other substance misuse contributes to the overall impact of mood and psychotic syndromes, since it tends to be associated with greater disability[64] and impaired productivity and interpersonal functioning.[65] The outcomes are particularly poor among those who start to use alcohol or other substances

3 Prevalence and patterns of comorbidity between at-risk mental states in the Brain and Mind Centre's Optimyse Youth Cohort (n = 2767) at entry to care

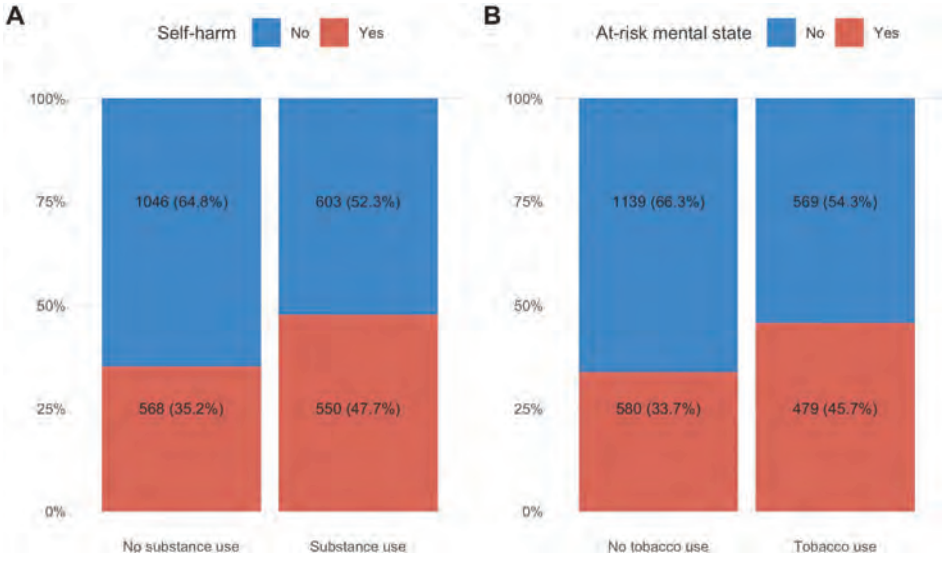


Note: Manic-like experiences, psychotic-like experiences and circadian disruption are common (~ 40% of the sample) in young people and are often comorbid phenomena. ◆

at an early age, with lower socio-occupational functioning, manic-like experiences, suicidal ideation and risky drinking being more common than among those who start later.[38]

These results emphasise the importance of early assessment regarding the potential contribution of alcohol or other substance misuse to the individual's current impairment and any self-harming behaviours which may be present, as well as the potential impact on physical health, illness type (particularly bipolar disorders) and illness course. Additionally, these data emphasise the potential for secondary prevention of alcohol or other substance misuse by active management of common mood and psychotic syndromes before the age of likely exposure to such substances. Again, broad-based secondary prevention strategies should be a core feature of service delivery — particularly for younger people (ie, under the age of 18 years) presenting for care. Active management of comorbid disorders early in the course of illness has the potential to not only reduce longer term substance misuse-determined morbidity and mortality but significantly improve functional outcomes more broadly and reduce the morbidity due to self-harm and suicidal thoughts and behaviours.

4 Illustrative relationships between some of the domains in the multidimensional outcomes framework



Unpublished data from the Brain and Mind Centre's Optymise Youth cohort (n = 2767). Group differences were compared using a χ^2 test. Panel A shows the relationship between self-harm and substance use, whereby 47.7% of those with substance misuse also self-harmed ($\chi^2(1) = 43.71$; $P < 0.001$). Panel B shows the relationship between at-risk mental states (psychosis-like experience, manic-like experiences and circadian disturbance) with tobacco use, whereby 45.7% of those who frequently smoke tobacco also reported at least one of the at risk mental states ($\chi^2(1) = 39.46$; $P < 0.001$). ◆

Physical health

The pervasive impact of mood and psychotic syndromes extends to other chronic physical illnesses, such as diabetes and cardiovascular disease,[66,67] and is particularly evident in the relationship between depression and early death due to cardiovascular disease.[68] All mood and psychotic syndromes 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 such syndromes.[69] The comorbidity between physical and mental health conditions is associated with an increased burden of disease, with evidence suggesting that comorbidity is more burdensome than physical health conditions alone or in combination.[70]

While the adverse physical health consequences of persistent mental illness in middle-aged people is now well recognised, the opportunity to prevent this morbidity and premature mortality in those who present with adolescent-onset mood and psychotic syndromes has not yet been realised. Current data suggest that physical health problems and risk factors for later poor physical health are common in young people presenting to care, with up to one-third smoking daily, which is three times higher than the age-matched Australian population.[39] While, the 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 that of the general population at 10%.[39] Youth cohorts engaged in mental health care tend to have increased weight and often develop insulin resistance,[71] and recent evidence suggests that increasing body mass index is associated with emerging insulin resistance.[40]

These data highlight key opportunities, notably related to cessation of smoking tobacco, preventing weight gain and providing early active interventions for metabolic disturbance, hormone dysfunction or concurrent autoimmune and other inflammatory conditions. Given the notable emergence of comorbid physical health problems in those who continue to engage with care, particularly among those who are treatment-resistant or develop significant neurological or metabolic side effects from medications,[39] there is a gap in knowledge and thus a need for more interventional studies that attempt to reduce risks of later onset cardiovascular disease,[72] or more proactive approaches (eg, metformin therapy) for those at risk of developing insulin resistance.[73] It is likely that we will need to develop and evaluate new screening and active intervention protocols to achieve better outcomes in this at-risk population. While a current focus on dealing with these risks in early psychosis cohorts is laudable, we need to adopt a much more proactive and evidence-informed approach to the clinical care of those with adolescent-onset mood and psychotic syndromes.

Illness type, stage and trajectory

Many mood and psychotic syndromes that emerge early in life persist into adulthood, particularly those with longer duration of illness or recurrent episodes in adolescence.[25,74–76] While diagnostic manuals are used to guide the diagnosis and treatment of these disorders, they have been heavily criticised for their lack of validity and inability to account for the huge heterogeneity of disorders among young people.[77–81] Consequently, there has been a major shift towards transdiagnostic approaches among younger populations, to better match diagnosis and treatment with the common developmental psychopathology of mood and psychotic syndromes and specific service settings.[9,81,82] Part of this shift has been to apply clinical staging as an adjunct to formal diagnosis. Clinical staging recognises that the boundaries between common mood and psychotic syndromes are often

unclear and that an approach which accounts for their comorbidity is needed (Chapter 2).[43,79,83–87]

The comorbidity between different mood and psychotic syndromes has been well established in both clinical and community samples.[88–91] About 40% of adolescents with one mental disorder meet the criteria for two or more lifetime disorders[25] and studies consistently show that major depression and anxiety disorders are particularly comorbid conditions.[92] The presence of comorbidity is associated with greater illness severity,[75,93] poorer response to treatment,[94] greater role impairment,[92,95] and higher rates of suicidality.[96–98] Thus, young people with mood and psychotic syndromes are not only at risk of persistent disorders in adulthood, but at risk for multiple disorders that often lead to poorer outcomes.

In addition to clinical staging, knowledge of the underlying pathophysiology (Chapter 2) which may be driving the development of a mental disorder is important for guiding treatment decisions. The validity of three common illness subtypes (psychosis, anxious depression and bipolar spectrum) based on proposed pathophysiological mechanisms (neurodevelopmental, hyperarousal and circadian) is supported by demographic, family history and neuropsychological data (Chapter 2).[39,42] In the Brain and Mind Centre's Optymise Youth Cohort, psychotic or bipolar phenomena (including psychosis-like experiences, mania-like experiences and circadian disruption) are common, occurring in 40% of the sample, and are often comorbid, with considerable overlap between these phenomena[41] (Box 3). Our previous work has demonstrated the extent to which

5 Various stakeholder perspectives of what should be the focus for mental health care across multidimensional domains

	Young people	Families and carers	Mental health professionals and service providers	Policy makers and funders
Social and occupational function	• Rate importance of social relations higher for quality of life than health professionals[101] • Forced to coordinate their own social needs[102] • Social function rated higher than vocational function[103] • Recovery must focus on economic and social inclusion[104]	• Family members value more social and community involvement[104]	• Recent move from service activity, to clinical outcomes, quality of life and recovery-oriented measures[105] • Often a disconnect between mental health care and social services[106]	• Major focus on improving educational and economic participation[102,106] • Targeted interventions for economically inactive young people to prevent chronic disability and poorer illness trajectories[107] • Recognise the costs of mental illness for society as a whole and of the health benefits of employment[108]
Self-harm, suicidal thoughts and behaviours	• Want to be involved in improving policy and services to address suicidal thoughts and behaviours[109] • Forced to navigate the health care system to manage suicidality[102]	• Families often first point of call, but can be unhelpful in response[109] • High burden placed on families to navigate the health care system to access support for suicidality[106]	• Many health professionals or service providers are unwilling to engage with suicidal individuals[110]	• Participation in whole-of-community responses to reducing suicide[111]
Alcohol or other substance misuse	• Low rates of access to mental health services by young people linked with high rates of alcohol or other substance misuse[112] • Relatively small numbers of consumers seek help for substance misuse, and will often instead present with other physical or mental health-related complaints[113]	• Major challenges for families to deal with both mental health and substance misuse	• There is often a disconnect between mental health care and addiction services[106,114] • Active exclusion of individuals with substance misuse from mental health services • Negative attitudes towards patients with substance use disorders[113]	• Integrating mental health and alcohol or other substance use treatment is often recommended but poorly resourced or organised[106]
Physical health	• Rate physical health higher for quality of life than health professionals[101] • Often forced to manage these needs themselves[102] • Value overall health higher than the general public[103] • Recovery must include medical care[104]	• High burden placed on families to navigate the health care system to access support for physical health needs[102] • Carers often want to help their young people reduce smoking habits, yet feel isolated and that there is limited support from services to assist them[115]	• Despite increased physical and sexual health risks, a young person's mental illness often becomes the single focus • There is often a disconnect between mental health care and medical services[106] • Avoidance of responsibility for reducing smoking among people with mood and psychotic syndromes[116]	• Social, existential, mental, substance misuse and somatic care should be integrated at the local level[106] • A focus on reducing risk factors that contribute to morbidity and premature mortality[111]
Illness type, stage and trajectory	• Do not rate symptom reduction as highly as health professionals for quality of life[101] • Those with severe symptoms value symptom reduction higher[103] • Believe recovery should go beyond symptom control[104]	• Formal diagnostic processes are largely relevant to gaining access to care	• Rate symptom reduction for quality of life higher than young people[101] • Most outcome measures focus on symptoms[105] • Services are focused exclusively on group level symptom reduction[106]	• Social, existential, mental, substance misuse and somatic care should be integrated at the local level[106]

Note: The findings presented here are based on a literature review. The shading of each box indicates the priority level for each of the domains across the different stakeholder groups, based on group consensus of the available literature. Dark shading = high priority; medium shading = moderate priority; light shading = low priority. ◆

psychosis-like experiences and circadian disruption predict progression to more severe mood and psychotic syndromes, as determined by clinical staging.[41] In this cohort, these phenomena were measured at a low threshold and were not necessarily sufficient to warrant inclusion in a psychotic or bipolar illness category; however, the data demonstrate the overlap in key characteristics, softening the boundaries between different illness types and trajectories.[41]

Expanding the focus in youth mental health care

Collectively, these studies underscore the broader impact of mood and psychotic syndromes on the capacity of young people to make the transition into adulthood and reach their actual health, social and economic potential. It is also clear that impairment and concurrent morbidity are well established among young people by the time they present for mental health care (Box 4). These results emphasise the extent to which the treatment of mood and psychotic syndromes should not be limited to a discrete set of symptoms, but rather, focus more broadly on outcomes across multiple domains to address the core needs of young people with emerging disorders. Psychological symptoms, such as depression or anxiety, are often reported as the main reason for presentation to services;[99,100] however, as discussed above, educational, vocational, social and physical health problems are also prevalent issues.

The extent to which the focus of mental health care extends beyond mental illness type or psychological symptoms is variable. The priority for focus differs depending on whether you are a young person, family member or carer, health professional or service provider, policy maker or funder (Box 5). Young people do not tend to rate symptom reduction as high as health professionals in relation to quality of life, whereas they do tend to rate social relationships and physical health as more important for quality of life.[101,103] This type of mismatch in focus, or expectations about positive outcomes, is often reflected in the outcomes on which services and health professionals traditionally focus. Most outcome measures focus on symptoms, and services tend to focus exclusively on group-level symptom reduction as indicators of improvement or positive outcomes.[103,105,106] The consequences of this are that young people are left to coordinate their own social and physical health needs, which places increased burden on family and carers who try to help them navigate the health system to get the support they require for these areas.[102–104] Together, this emphasises the need to address the disconnect between mental health, physical health and social services and interventions, to enable mental health care to focus on the outcomes that matter most to young people.

Conclusion

Young people with mood and psychotic syndromes are susceptible to poorer social, physical and mental health outcomes — many of which are already present and well established at their entry into care. This emphasises the need for models of care which prioritise a multidimensional outcomes framework and more closely align to their preferences and needs, as well as those of their families. We believe this will give them the best chance of leading fulfilled and engaged lives in adulthood.

1 Whiteford HA, Degenhardt L, Rehm J, et al. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *Lancet* 2013; 382: 1575–1586.

2 Vos T, Barber RM, Bell B, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2015; 386: 743.

3 Steel Z, Marnane C, Iranpour C, et al. The global prevalence of common mental disorders: a systematic review and meta-analysis 1980–2013. *Int J Epidemiol* 2014; 43: 476–493.

4 Jones PB. Adult mental health disorders and their age at onset. *Br J Psych* 2013; 202 Suppl 54: s5–s10.

5 Kessler RC, Berglund P, Demler O, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2005; 62: 593–602.

6 Gore FM, Bloem PJ, Patton GC, et al. Global burden of disease in young people aged 10–24 years: a systematic analysis. *Lancet* 2011; 377: 2093–2102.

7 Insel T, Fenton W. Psychiatric epidemiology: it's not just about counting anymore. *Arch Gen Psychiatry* 2005; 62: 590–592.

8 Patel V, Flisher AJ, Hetrick S, et al. Mental health of young people: a global public-health challenge. *Lancet* 2007; 369: 1302–1313.

9 Hickie IB, Scott J, Hermens DF, et al. Clinical classification in mental health at the crossroads: which direction next? *BMC Med* 2013; 11: 125.

10 Merikangas K, Nakamura EF, Kessler RC. Epidemiology of mental disorders in children and adolescents. *Dialogues Clin Neurosci* 2009; 11: 7.

11 Slade T, Johnston A, Oakley Browne MA, et al. 2007 National Survey of Mental Health and Wellbeing: methods and key findings. *Aust N Z J Psychiatry* 2009; 43: 594–605.

12 Copeland WE, Shanahan L, Costello EJ, et al. Cumulative prevalence of psychiatric disorders by young adulthood: a prospective cohort analysis from the Great Smoky Mountains Study. *J Am Acad Child Adolesc Psychiatry* 2011; 50: 252–261.

13 Roberts RE, Fisher PW, Turner JB, et al. Estimating the burden of psychiatric disorders in adolescence: The impact of subthreshold disorders. *Soc Psychiatry Psychiatr Epidemiol* 2015; 50: 397–406.

14 Angst J, Gamma A, Neuenschwander M, et al. Prevalence of mental disorders in the Zurich Cohort Study: a twenty year prospective study. *Epidemiol Psychiatr Sci* 2005; 14: 68–76.

15 Paus T, Keshavan M, Giedd JN. Why do many psychiatric disorders emerge during adolescence? *Nat Rev Neurosci* 2008; 9: 947–957.

16 Swartz JR, Williamson DE, Hariri AR. Developmental change in amygdala reactivity during adolescence: effects of family history of depression and stressful life events. *Am J Psychiatry* 2015; 172: 276–283.

17 Gross C, Hen R. The developmental origins of anxiety. *Nat Rev Neurosci* 2004; 5: 545–552.

18 Heim C, Newport DJ, Mletzko T, et al. The link between childhood trauma and depression: insights from HPA axis studies in humans. *Psychoneuroendocrinology* 2008; 33: 693–710.

19 Uys JD, Marais L, Faure J, et al. Developmental trauma is associated with behavioral hyperarousal, altered HPA axis activity, and decreased hippocampal neurotrophin expression in the adult rat. *Ann N Y Acad Sci* 2006; 1071: 542–546.

20 Perry BD, Pollard RA, Blakley TL, et al. Childhood trauma, the neurobiology of adaptation, and "use-dependent" development of the brain: how "states" become "traits". *Infant Ment Health J* 1995; 16: 271–291.

21 Sheline YI, Price JL, Yan Z, et al. Resting-state functional MRI in depression unmasks increased connectivity between networks via the dorsal nexus. *Proc Natl Acad Sci USA* 2010; 107: 11020–11025.

22 Kendler KS, Thornton LM, Gardner CO. Genetic risk, number of previous depressive episodes, and stressful life events in predicting onset of major depression. *Am J Psychiatry* 2001; 158: 582–586.

23 Shanahan MJ. Pathways to adulthood in changing societies: variability and mechanisms in life course perspective. *Annu Rev Sociol* 2000; 26: 667–692.

24 Schulenberg JE, Sameroff AJ, Cicchetti D. The transition to adulthood as a critical juncture in the course of psychopathology and mental health. *Dev Psychopathol* 2004; 16: 799–806.

25 Merikangas K, He J-p, Burstein M, et al. Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2010; 49: 980–989.

26 Walker EF, Sabuwalla Z, Huot R. Pubertal neuromaturation, stress sensitivity, and psychopathology. *Dev Psychopathol* 2004; 16: 807–824.

27 Murray CJ, Lopez AD. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020: summary. Geneva: WHO, 1996. https://apps.who.int/iris/bitstream/handle/10665/41864/0965546608_eng.pdf (viewed Sept 2019).

28 Burnett-Zeigler I, Walton MA, Ilgen M, et al. Prevalence and correlates of mental health problems and treatment among adolescents seen in primary care. *J Adolesc Health* 2012; 50: 559–564.

29 Fleury MJ, Bamvita JM, Grenier G, et al. Adequacy of help received by individuals with severe mental disorders after a major healthcare reform in Quebec: predictors and changes at 5-year follow-up. *Adm Policy Ment Health* 2016; 43: 799–812.

30 O'Dea B, Lee RS, McGorry PD, et al. A prospective cohort study of depression course, functional disability, and NEET status in help-seeking young adults. *Soc Psychiatry Psychiatr Epidemiol* 2016; 51: 1395–1404.

31 O'Dea B, Glozier N, Purcell R, et al. A cross-sectional exploration of the clinical characteristics of disengaged (NEET) young people in primary mental healthcare. *BMJ Open* 2014; 4: e006378.

32 Scott J, Scott EM, Hermens DF, et al. Functional impairment in adolescents and young adults with emerging mood disorders. *BJPsych Int* 2014; 205: 362–368.

33 Iorfino F, Hermens D, Cross SPM, et al. Delineating the trajectories of social and occupational functioning of young people attending early intervention mental health services in Australia: a longitudinal study. *BMJ Open* 2018; 8: e020678.

34 Iorfino F, Hermens DF, Cross SPM, et al. Prior suicide attempts predict worse clinical and functional outcomes in young people attending a mental health service. *J Affect Disord* 2018; 238: 563–569.

35 Scott EM, Hermens DF, Naismith SL, et al. Thoughts of death or suicidal ideation are common in young people aged 12 to 30 years presenting for mental health care. *BMC Psychiatry* 2012; 12: 234.

36 Iorfino F, Davenport TA, Ospina-Pinillos L, et al. Using new and emerging technologies to identify and respond to suicidality among help-seeking young people: a cross-sectional study. *J Med Internet Res* 2017; 19: e247.

37 Hermens DF, Scott EM, White D, et al. Frequent alcohol, nicotine or cannabis use is common in young persons presenting for mental healthcare: a cross-sectional study. *BMJ Open* 2013; 3: e002229.

38 Crouse JJ, Chitty KM, Iorfino F, et al. Exploring associations between early substance use and longitudinal socio-occupational functioning in young people with mental illness engaged in clinical care. *PloS One* 2019; 14: e0210877.

39 Scott EM, Hermens DF, White D, et al. Body mass, cardiovascular risk and metabolic characteristics of young persons presenting for mental healthcare in Sydney. *Australia. BMJ Open* 2015; 5: e007066.

40 Scott EM, Carpenter JS, Iorfino F, et al. What is the prevalence, and what are the clinical correlates, of insulin resistance in young people presenting for mental health care? A cross-sectional study. *BMJ Open* 2019; 9: e025674.

41 Iorfino F, Scott EM, Carpenter JS, et al. Clinical stage transitions in persons aged 12 to 25 years presenting to early intervention mental health services with anxiety, mood and psychotic disorders. *JAMA Psychiatry* 2019; https://doi.org/10.1001/jamapsychiatry.2019.2360 [Epub ahead of print].

42 Hickie IB, Hermens DF, Naismith SL, et al. Evaluating differential developmental trajectories to adolescent-onset mood and psychotic disorders. *BMC Psychiatry* 2013; 13: 303.

43 Hickie IB, Scott EM, Hermens DF, et al. Applying clinical staging to young people who present for mental health care. *Early Interv Psychiatry* 2013; 7: 31–43.

44 Goodman A, Joyce R, Smith JP. The long shadow cast by childhood physical and mental problems on adult life. Adm Policy Ment Health. *Proc Natl Acad Sci USA* 2011; 108: 6032–6037.

45 Gibb SJ, Fergusson DM, Horwood LJ. Burden of psychiatric disorder in young adulthood and life outcomes at age 30. *Br J Psychiatry* 2010; 197: 122–127.

46 Copeland WE, Wolke D, Shanahan L, et al. Adult functional outcomes of common childhood psychiatric problems: a prospective, longitudinal study. *JAMA Psychiatry* 2015; 72: 892–899.

47 Australian Institute of Health and Welfare. Australia's welfare 2017 (Australia's Welfare Series No. 13. AUS 2140). Canberra: AIHW, 2017. https://www.aihw.gov.au/getmedia/088848dc-906d-4a8b-aa09-79df0f943984/aihw-aus-214-aw17.pdf.aspx?inline=true (viewed Sept 2019).

48 Purcell R, Jorm AF, Hickie IB, et al. Demographic and clinical characteristics of young people seeking help at youth mental health services: Baseline findings of the Transitions Study. *Early Interv Psychiatry* 2015; 9: 487–497.

49 Griffiths SL, Wood SJ, Birchwood M. Vulnerability to psychosocial disability in psychosis. *Epidemiol Psychiatr Sci* 2019; 28: 140–145.

50 Lee RSC, Hermens DF, Scott J, et al. A transdiagnostic study of education, employment, and training outcomes in young people with mental illness. *Psychol Med* 2017; 47: 2061–2070.

51 Cross SPM, Hermens DF, Hickie IB. Treatment patterns and short-term outcomes in an early intervention youth mental health service. *Early Interv Psychiatry* 2016; 10: 88–97.

52 Harris EC, Barraclough B. Suicide as an outcome for mental disorders: a meta-analysis. *Br J Psychiatry* 1997; 170: 205–228.

53 Nock MK, Borges G, Bromet EJ, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *Br J Psychiatry* 2008; 192: 98–105.

54 Nock MK, Green JG, Hwang I, et al. Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement. *JAMA Psychiatry* 2013; 70: 300–310.

55 Crosby A, Gfroerer J, Han B, et al. Suicidal thoughts and behaviors among adults aged ≥ 18 Years — United States, 2008-2009. *MMWR Surveill Summ* 2011; 60: 1–22.

56 Goldsmith SK, Pellmar TC, Kleinman AM, Bunney WE, editors. Reducing suicide: a national imperative. Washington, DC: National Academies Press, 2002.

57 Goldman-Mellor SJ, Caspi A, Harrington H, et al. Suicide attempt in young people: a signal for long-term health care and social needs. *JAMA Psychiatry* 2014; 71: 119–127.

58 Fergusson DM, Horwood LJ, Ridder EM, et al. Suicidal behaviour in adolescence and subsequent mental health outcomes in young adulthood. *Psychol Med* 2005; 35: 983–993.

59 Brière FN, Rohde P, Seeley JR, et al. Adolescent suicide attempts and adult adjustment. *Depress Anxiety* 2015; 32: 270–276.

60 Zubrick SR, Hafekost J, Johnson SE, et al. Suicidal behaviours: Prevalence estimates from the second Australian Child and Adolescent Survey of Mental Health and Wellbeing. *Aust N Z J Psychiatry* 2016; 50: 899–910.

61 Compton WM, Thomas YF, Stinson FS, et al. Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the national epidemiologic survey on alcohol and related conditions. *Arch Gen Psychiatry* 2007; 64: 566–576.

62 Kessler RC, Angermeyer M, Anthony JC, et al. Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry* 2007; 6: 168.

63 Conway KP, Swendsen J, Husky MM, et al. Association of lifetime mental disorders and subsequent alcohol and illicit drug use: results from the National Comorbidity Survey-Adolescent Supplement. *J Am Acad Child Adolesc Psychiatry* 2016; 55: 280–288.

64 Dawson DA, Li T-K, Chou SP, et al. Transitions in and out of alcohol use disorders: their associations with conditional changes in quality of life over a 3-year follow-up interval. *Alcohol Alcohol* 2009; 44: 84–92.

65 Rehm J, Mathers C, Popova S, et al. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet* 2009; 373: 2223–2233.

66 Scott D, Happell B. The high prevalence of poor physical health and unhealthy lifestyle behaviours in individuals with severe mental illness. *Issues Ment Health Nurs* 2011; 32: 589–597.

67 Patten SB, Williams JV, Lavorato DH, et al. Major depression as a risk factor for chronic disease incidence: longitudinal analyses in a general population cohort. *Gen Hosp Psychiatry* 2008; 30: 407–413.

68 Goldstein BI, Carnethon MR, Matthews KA, et al. Major depressive disorder and bipolar disorder predispose youth to accelerated atherosclerosis and early cardiovascular disease: a scientific statement from the American Heart Association. *Circulation* 2015; 132: 965–986.

69 Scott KM, Lim C, Al-Hamzawi A, et al. Association of mental disorders with subsequent chronic physical conditions: world mental health surveys from 17 countries. *JAMA Psychiatry* 2016; 73: 150–158.

70 Moussavi S, Chatterji S, Verdes E, et al. Depression, chronic diseases, and decrements in health: results from the World Health Surveys. *Lancet* 2007; 370: 851–858.

71 Goldstein BI, Blanco C, He JP, et al. Correlates of overweight and obesity among adolescents with bipolar disorder in the National Comorbidity Survey-Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2016; 55: 1020–1026.

72 Gehue LJ, Scott E, Hermens DF, et al. Youth Early-intervention Study (YES) — group interventions targeting social participation and physical well-being as an adjunct to treatment as usual: study protocol for a randomized controlled trial. *Trials* 2015; 16: 333.

73 Rosenblat JD, McIntyre RS. Pharmacological approaches to minimizing cardiometabolic side effects of mood stabilizing medications. *Curr Treat Options Psychiatry* 2017; 4: 319–332.

74 Patton GC, Coffey C, Romaniuk H, et al. The prognosis of common mental disorders in adolescents: a 14-year prospective cohort study. *Lancet* 2014; 383: 1404–1411.

75 Ormel J, Raven D, van Oort F, et al. Mental health in Dutch adolescents: a TRAILS report on prevalence, severity, age of onset, continuity and co-morbidity of DSM disorders. *Psychol Med* 2015; 45: 345–360.

76 Kessler RC, Avenevoli S, Costello EJ, et al. Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Arch Gen Psychiatry* 2012; 69: 372–380.

77 Scott J, Davenport TA, Parker R, et al. Pathways to depression by age 16 years: examining trajectories for self-reported psychological and somatic phenotypes across adolescence. *J Affect Disord* 2018; 230: 1–6.

78 Hansell NK, Wright MJ, Medland SE, et al. Genetic co-morbidity between neuroticism, anxiety/depression and somatic distress in a population sample of adolescent and young adult twins. *Psychol Med* 2012; 42: 1249–1260.

79 Scott J, Leboyer M, Hickie IB, et al. Clinical staging in psychiatry: a cross-cutting model of diagnosis with heuristic and practical value. *Br J Psychiatry* 2013; 202: 243–245.

80 Cuthbert BN. The RDoC framework: facilitating transition from ICD/DSM to dimensional approaches that integrate neuroscience and psychopathology. *World Psychiatry* 2014; 13: 28–35.

81 Casey BJ, Craddock N, Cuthbert BN, et al. DSM-5 and RDoC: progress in psychiatry research? *Nat Rev Neurosci* 2013; 14: 810–814.

82 Insel T, Cuthbert B, Garvey M, et al. Research domain criteria (RDoC): toward a new classification framework for research on mental disorders. *Am J Psychiatry* 2010; 167: 748–751.

83 McGorry P, Nelson B. Why we need a transdiagnostic staging approach to emerging psychopathology, early diagnosis, and treatment clinical staging in emerging psychotic illness. *JAMA Psychiatry* 2016; 73: 191–192.

84 Plana-Ripoll O, Pedersen CB, Holtz Y, et al. Exploring comorbidity within mental disorders among a Danish national population. *JAMA Psychiatry* 2019; 76: 259–270.

85 Fava GA, Kellner R. Staging: a neglected dimension in psychiatric classification. *Acta Psychiatr Scand* 1993; 87: 225–230.

86 McGorry PD, Hickie IB, Yung AR, et al. Clinical staging of psychiatric disorders: a heuristic framework for choosing earlier, safer and more effective interventions. *Aust N Z J Psychiatry* 2006; 40: 616–622.

87 Kapczinski F, Magalhães P, Balanzá-Martinez V, et al. Staging systems in bipolar disorder: an International Society for Bipolar Disorders Task Force Report. *Acta Psychiatr Scand* 2014; 130: 354–363.

88 Angold A, Costello EJ, Erkanli A. Comorbidity. *J Child Psychol Psychiatry* 1999; 40: 57–87.

89 Seligman LD, Ollendick TH. Comorbidity of anxiety and depression in children and adolescents: an integrative review. *Clin Child Fam Psychol Rev* 1998; 1: 125–144.

90 Kessler RC, Berglund P, Demler O, et al. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA* 2003; 289: 3095–3105.

91 Merikangas K, Akiskal HS, Angst J, et al. Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication. *Arch Gen Psychiatry* 2007; 64: 543–552.

92 Kessler RC, Sampson NA, Berglund P, et al. Anxious and non-anxious major depressive disorder in the World Health Organization World Mental Health Surveys. *Epidemiol Psychiatr Sci* 2015; 24: 210–226.

93 Fichter M, Quadflieg N, Fischer UC, et al. Twenty-five-year course and outcome in anxiety and depression in the Upper Bavarian Longitudinal Community Study. *Acta Psychiatr Scand* 2010; 122: 75–85.

94 Jakubovski E, Bloch MH. Prognostic subgroups for citalopram response in the STAR* D trial. *J Clin Psychiatry* 2014; 75: 738.

95 Ormel J, Petukhova M, Chatterji S, et al. Disability and treatment of specific mental and physical disorders across the world. *Br J Psychiatry* 2008; 192: 368–375.

96 Nock MK, Hwang I, Sampson NA, et al. Mental disorders, comorbidity and suicidal behavior: results from the National Comorbidity Survey Replication. *Mol Psychiatry* 2010; 15: 868–876.

97 May AM, Klonsky ED, Klein DN. Predicting future suicide attempts among depressed suicide ideators: a 10-year longitudinal study. *J Psychiatr Res* 2012; 46: 946–952.

98 Hoertel N, Franco S, Wall M, et al. Mental disorders and risk of suicide attempt: a national prospective study. *Mol Psychiatry* 2015; 20: 718–726.

99 Rickwood D, Telford NR, Parker AG, et al. headspace — Australia's innovation in youth mental health: who are the clients and why are they presenting? *Med J Aust* 2014; 200: 108–111. https://www.mja.com.au/journal/2014/200/2/headspace-australias-innovation-youth-mental-health-who-are-clients-and-why-are

100 O'Reilly A, Illback R, Peiper N, et al. Youth engagement with an emerging Irish mental health early intervention programme (Jigsaw): participant characteristics and implications for service delivery. *J Ment Health* 2015; 24: 283–288.

101 Kravetz S, Faust M, Dasberg I. A comparison of care consumer and care provider perspectives on the quality of life of persons with persistent and severe psychiatric disabilities. *Psychiatr Rehabil J* 2002; 25: 388.

102 Eiring Ø, Landmark BF, Aas E, et al. What matters to patients? A systematic review of preferences for medication-associated outcomes in mental disorders. *BMJ Open* 2015; 5: e007848.

103 Crowe J. Reform, revolution and disruption in mental health care: a consumer's perspective. *Public Health Res Pract* 2017; 27: pii: 2721711.

104 Wallcraft J, Amering M, Freidin J, et al. Partnerships for better mental health worldwide: WPA recommendations on best practices in working with service users and family carers. *World Psychiatry* 2011; 10: 229–236.

105 Thornicroft G, Slade M. New trends in assessing the outcomes of mental health interventions. *World Psychiatry* 2014; 13: 118–124.

106 van Os J, Guloksuz S, Vijn TW, et al. The evidence-based group-level symptom-reduction model as the organizing principle for mental health care: time for change? *World Psychiatry* 2019; 18: 88–96.

107 Scott J, Fowler D, McGorry P, et al. Adolescents and young adults who are not in employment, education, or training. *BMJ* 2013; 347: f5270.

108 Organisation for Economic Cooperation and Development. Mental health and work: Australia. Paris: OECD, 2015. https://doi.org/10.1787/9789264246591-en (viewed Sept 2019).

109 Robinson J, Bailey E, Browne V, et al. Raising the bar for youth suicide prevention. Melbourne: Orygen, The National Centre of Excellence in Youth Mental Health, 2016. https://www.orygen.org.au/Policy-Advocacy/Policy-Reports/Raising-the-bar-for-youth-suicide-prevention/orygen-Suicide-Prevention-Policy-Report.aspx?ext (viewed Sept 2019).

110 Linehan MM, Comtois KA, Ward-Ciesielski EF. Assessing and managing risk with suicidal individuals. *Cogn Behav Pract* 2012; 19: 218–232.

111 National Mental Health Commission. Contributing lives, thriving communities: report of the National Review of Mental Health Programmes and Services. Vol. 2. Sydney; NMHC, 2014. https://www.mentalhealthcommission.gov.au/media/119929/Vol%202%20-%20Review%20of%20Mental%20Health%20Programmes%20and%20Services.pdf (viewed Sept 2019).

112 Baker D, Kay-Lambkin F. Two at a time: alcohol and other drug use by young people with a mental illness. Melbourne: Orygen, The National Centre of Excellence in Youth Mental Health, 2016. https://www.orygen.org.au/Policy-Advocacy/Policy-Reports/Alcohol-and-other-drug-use/alcohol_and_other_drug_policy_paper_2016.aspx?ext= (viewed Sept 2019).

113 Van Boekel LC, Brouwers EP, Van Weeghel J, et al. Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug Alcohol Depend* 2013; 131: 23–35.

114 Derges J, Kidger J, Fox F, et al. Alcohol screening and brief interventions for adults and young people in health and community-based settings: a qualitative systematic literature review. *BMC Public Health* 2017; 17: 562.

115 Lawn S, McNaughton D, Fuller L. What carers of family members with mental illness say, think and do about their relative's smoking and the implications for health promotion and service delivery: a qualitative study. *Int J Ment Health Promot* 2015; 17: 261–277.

116 Rowley D, Lawn S, Coveney J. Two heads are better than one: Australian tobacco control experts' and mental health change champions' consensus on addressing the problem of high smoking rates among people with mental illness. *Aust Health Rev* 2016; 40: 155–62. ■