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Global research priorities for youth mental health

Running title: Youth mental health research priorities

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Abstract

Aim: Over the past two decades the youth mental health field has expanded and advanced considerably. Yet mental disorders continue to disproportionately affect adolescents and young adults. Their prevalence and associated morbidity and mortality in young people have not substantially reduced, with high levels of unmet need and poor access to evidence-based treatments even in high-income countries. Despite the potential return on investment, youth mental disorders receive insufficient funding. Motivated by these continual disparities, we propose a strategic agenda for youth mental health research.

Method: Youth mental health experts and funders convened to develop youth mental health research priorities, via thematic roundtable discussions, that address critical evidence-based gaps.

Results: 21 global youth mental health research priorities were developed, including population health, neuroscience, clinical staging, novel interventions, technology, socio-cultural factors, service delivery, translation and implementation.

Conclusions: These priorities will focus attention on, and provide a basis for, a systematic and collaborative strategy to globally improve youth mental health outcomes.

Key words: mental health, youth, research priorities

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Introduction

The recognition of youth mental health as a discrete sector and service stream has created a new international paradigm for early and preventive interventions, as well as treatments for established illness. This new approach recognises the importance of understanding and appropriately responding to the mental health needs of young people aged 12 to 25 years (McGorry, 2015; McGorry, Goldstone, Parker, Rickwood, & Hickie, 2014b). Since it began in Australia, youth mental health service reform has expanded to many countries, improving access to care and the outcomes for young people with mental disorders (Correll et al., 2018; Fusar-Poli, 2019; Hetrick et al., 2017; Hilferty et al., 2015; Malla et al., 2016). Yet this transformation remains an area of ongoing development and refinement across both high-income countries (HICs) and low-middle-income countries (LMICs), necessitating the need for a globally coordinated research approach to capitalise on the progress achieved thus far and to inform new and innovative discoveries.

Burden of mental disorders

Despite the substantial progress and outcomes achieved to date, mental illness continues to disproportionately affect young people worldwide. It accounts for nearly half of the overall burden of disease between 10 and 24 years of age, making it the leading cause of disability for this age group (Gore et al., 2011). Moreover, suicide is one of the most common causes of premature death among young people (Global Burden of Disease Pediatrics Collaboration, 2016). Society as a whole is also weakened by mental disorders, with estimates projecting that by 2030, of all non-communicable diseases, mental illness will pose the greatest threat to worldwide economic growth (Bloom et al., 2011). This largely reflects the developmental timing of mental disorders, with 75% emerging by 24 years of age (Kessler et al., 2005), which encompasses productive years for education, employment and social participation. Even though symptoms may resolve by the late 20s for some conditions (Patton et al., 2014), the long-term effects on personal productivity are considerable, including poor economic and vocational outcomes (Gibb, Fergusson, & Horwood,

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2010). Together, these detrimental impacts indicate the urgent need at an individual and societal level to adequately respond to youth mental disorders.

Addressing the mental health needs of young people

Early intervention in mental health, including its focus on prevention, has attempted to close the disparities in youth mental health care, particularly in comparison to other medical fields where early intervention has long been accepted (e.g., physical health). Despite the encouraging, yet still very incomplete, adoption of early psychosis services within a number of high and middle income countries since the 1990s (McGorry, 2015), and more recently, specialised youth-specific services (McGorry et al., 2014b), the morbidity and mortality associated with mental disorders have remained largely unchanged (Global Burden of Disease Child and Adolescent Health Collaboration, 2017). Responding to the mental health needs of young people remains grossly inadequate globally. This is particularly apparent within LMICs and many communities within HICs (e.g., indigenous, multicultural), where progress has been scant, widening the treatment gap (Eaton et al., 2011). While the proportion of people living in low resource settings has reduced to 9% (Rosling, Rosling, & Rosling Rönnlund, 2018), young people in LMICs, who are often overlooked, represent a key target for mental health reform, constituting up to half of the population in developing nations (Bongaarts, 2009). A range of adverse circumstances and environments, including trauma and poverty, can significantly affect the mental health of young people, especially in LMICs (Lund et al., 2010; Stein et al., 2010). Yet, their high need for mental health care is largely unmet (Demyttenaere et al., 2004).

Even in HICs the treatment gap is high, with past data showing that approximately 70-80% of young people do not seek professional mental health care (Slade et al., 2009), and when they do, they frequently receive minimal evidence-based mental health care (Harris et al., 2015; Sawyer, Reece, Sawyer, Hiscock, & Lawrence, 2019) despite available evidence-based therapies. Current therapies, with their predominate

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target being the acute symptoms of mental disorders, are often not oriented towards long-term relapse prevention as well as the functional disability commonly associated with these disorders. This is reflected by their limited and suboptimal short and long-term outcomes. One third to half of young people with a mental disorder do not respond to first-line treatments (Ginsburg et al., 2014; Maalouf, Atwi, & Brent, 2011) and approximately 50% experience multiple episodes (Gibb et al., 2010). To improve these outcomes, novel interventions are needed, including biotherapies and non-pharmaceutical approaches such as digital technologies (e.g., virtual reality and social media) . Although digital technologies, at present, carry similar limitations to traditional therapies (e.g., symptom-based, focus on short-term outcomes), they have the capacity to transform mental health care by reducing pressure on limited resources, improving access to therapy (in a potentially less stigmatising setting), and reducing the unmet needs of young people (Ben-Zeev, 2012; Freeman et al., 2017). Whilst preliminary evidence supports the implementation of digital mental health interventions (Alvarez-Jimenez et al., 2013; Calear, Christensen, Mackinnon, Griffiths, & O'Kearney, 2009; Firth et al., 2017), a number of challenges remain that impact its translation into current models of care. These include low patient and clinician uptake, inadequate design of interventions, ineffective implementation strategies, and determining the right balance between digital and existing service delivery platforms (Mohr, Riper, & Schueller, 2018; Torous, Nicholas, Larsen, Firth, & Christensen, 2018).

Currently, youth mental health service models strive to create youth-friendly, stigma-free cultures of care that provide effective, appropriate and meaningful services to young people and their families, with flexible tenure and re-entry to care as needed (McGorry et al., 2014b). These services are guided by the principles of integrated care, whereby clinical and non-clinical multidisciplinary care is provided within one location or otherwise integrated, guided by the needs of young people and their families (Porter & Lee, 2013). This allows primary mental health care to be delivered, where possible, within the context of physical health care, substance abuse

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care, educational and vocational support, and social care. An advantage of integrated care is that it can be delivered through various service delivery models, allowing it to adapt to the diverse socio-cultural and context-specific needs of young people across the world. Whilst this service approach has been shown to improve access to care and yield favourable recovery outcomes, there is, as yet, no single integrated service delivery model that is regarded as best practice or the gold standard (Hetrick et al., 2017). The field has now matured to develop well-designed trials that incorporate the perspective of youths to address this gap.

At a more basic level, the early detection of mental illness, a fundamental principle underlying early intervention services, is inefficient due to a variety of factors. First, there is a paucity of evidence on, and poor implementation of, effective early identification strategies that can reduce treatment delays and promote help-seeking behaviours. A further contributing factor is the limited understanding of the aetiological mechanisms underlying mental disorders, which has perpetuated the use of diagnostic systems that inadequately recognise their early stages. Unsuccessful attempts to identify disorder-specific neural markers (Goodkind et al., 2015) have inhibited a number of advances, including translation of neuroimaging findings into routine clinical practice to predict mental disorder onset, validation of diagnosis, development of targeted and personalised interventions, and prediction of treatment outcomes (Farah & Gillihan, 2012; Savitz, Rauch, & Drevets, 2013). This has continued a reliance on symptom-based diagnostic systems that lack validity and clinical utility for emerging mental disorders due to their focus on late-stage clinical presentations (Kendell & Jablensky, 2003; McGorry, 2013).

A more suitable diagnostic approach, which has been successfully applied within general medicine, is clinical staging. Clinical staging in psychiatry acknowledges the continuum of mental disorders (from asymptomatic to chronic illness) that is not captured by current diagnostic systems (McGorry, Hickie, Yung, Pantelis, & Jackson, 2006). Staging is sensitive to risk-benefit considerations and facilitates the selection

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of interventions that are proportionate with current clinical need and the risk of illness progression. Further, it offers a framework for mental health research that can promote international intervention trials, cohort studies and data sharing. At a clinical level, staging has the potential to deliver significant benefits to young people by improving service planning and guiding pre-emptive and personalised care (Cross & Hickie, 2017; McGorry et al., 2014a). However, as yet, a harmonised approach to clinical staging in psychiatry has not been achieved, leading to inconsistency in how staging has been applied. Two approaches have been proposed: single-disorder (Berk et al., 2007; Carrión, Correll, Auther, & Cornblatt, 2017; Cosci & Fava, 2013; Duffy, 2014; Fava & Kellner, 1993) and transdiagnostic models (Hickie et al., 2013). Single-disorder models rely on conventional diagnostic categories, which may fail to include early presentations characterised by mixed and fluid symptomatology that overlap discrete syndromal boundaries or do not meet diagnostic criteria for a full threshold disorder (Hickie et al., 2013; McGorry & Nelson, 2016). The single-disorder approach sits within the argument that the clinical patterns and course of mental disorders (e.g., bipolar disorders vs. schizophrenia) are distinct, however, the heterotypic as well as the homotypic patterns of progression make them unsuitable for incorporation into discrete or parallel staging approaches, as proposed by some authors (Duffy, Malhi, & Grof, 2017). Transdiagnostic staging models address the siloed approach of common diagnostic systems that do not recognise the undifferentiated clinical phenotypes for emerging mental disorders in young people (McGorry & Nelson, 2016). A transdiagnostic staging model recognises that over time, these phenotypes may progressively be subtyped into more traditional diagnostic categories whilst acknowledging the ubiquity of comorbidity and the potential non-linear progression of severity. This approach is also consistent with the shared genetic, neurobiological and neuropsychological correlates of mental disorders (Anttila et al., 2018; Goodkind et al., 2015; Lee et al., 2015; McTeague et al., 2017).

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Bridging the research-to-practice gap

With numerous research gaps remaining, adequately responding to youth mental disorders is an ongoing challenge. Even with new innovations and discoveries, translation and implementation have been a pervasive challenge for psychiatry (Insel, 2009; Nielssen, McGorry, Castle, & Galletly, 2017) that can potentially lead to fragmentation and inequality of care. This situation stands even where supporting Cochrane level 1 evidence exists as is the case for early intervention for psychosis (Correll et al., 2018; Fusar-Poli, McGorry, & Kane, 2017; van der Gaag et al., 2013) as well as individual placement and support vocational programs (Modini et al., 2018). The implementation and routine delivery of evidence-based strategies for early diagnosis and treatment remains poor (McGorry, 2017; McGorry, Ratheesh, & O'Donoghue, 2018; Nielssen et al., 2017) in spite of numerous efforts to reduce the research-to-practice gap, the development of clinical guidelines and the progress of implementation science (Powell et al., 2012; Proctor et al., 2009). Within LMICs, translation is challenging as mental health resources are often limited, inefficiently implemented and unequally distributed (Saxena, Thornicroft, Knapp, & Whiteford, 2007). These constraints are also common in HICs, especially within indigenous and marginalised communities. Although a range of evidence-based interventions are supported by economic evaluations with demonstrated cost-savings, effectively implementing these within settings constrained by limited resources remains difficult (Lund, Tomlinson, & Patel, 2016).

Investment in youth mental health

Investing in youth mental health provides value for money. There is currently extremely good cost-effectiveness evidence for early psychosis services and increasingly encouraging evidence for other youth mental health disorders (Hamilton et al., 2017). To effectively implement global change, adequate investment in youth mental health research and care is critical. As it stands, there is an unacceptable imbalance between the burden of mental disorders and the amount of research

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funding received. In Australia, 7-8% of research funding from the peak government body for health and medical research is awarded to mental health, including substance use disorders, which stands in sharp contrast to its burden of disease, which sits at 14.6% (Batterham et al., 2016). Only 2% and 7% of public and charitable research funding is devoted to mental health in France and the UK, respectively, while in the USA, when substance use research is included, this amounts to 16% (Chevreul et al., 2012). Although the percentage of funding devoted to mental health research within LMICs is not precisely known, substantial underinvestment has been recognised within these nations (Patel et al., 2018). Pharmaceutical innovation and investment to support psychiatric treatment discoveries have also notably diminished and are exceedingly low compared to cancer research (Hyman, 2012; MacEwan et al., 2016) despite the greater societal return on investment generated through mental health care (Chisholm et al., 2016; McGorry, 2017). This underinvestment from pharmaceutical companies has essentially stalled the development of new biological interventions, which are important for early and personalised psychiatry. Such innovative discoveries, as well as mental health research in general, have the potential to reduce premature mortality, improve individual and societal productivity, and increase economic growth. However, to achieve these gains, greater investment needs to be directed towards mental health in youth, the period of life where the greatest benefits can be reaped.

International Youth Mental Health Research Network (IYMHRN)

Despite these challenges, the youth mental health sector has made significant gains internationally (Hetrick et al., 2017; McGorry et al., 2014b). This has created capacity for researchers within the field to form an international community that is unified by a common interest in globally improving the treatment and outcomes of young people with mental disorders. With this in mind, a targeted group of key youth mental health researchers convened at the Royal Society of Medicine (London) to create the International Youth Mental Health Research Network (IYMHRN) in 2016. This led to the establishment of a steering committee (PDM, MD, BD, SI, SPS) and a

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network of approximately 130 youth mental health researchers. The aims, principles and proposed activities of IYMHRN are outlined in Box 1, which includes conducting all phases of research in consultation with youth who have or are at risk of mental illness, including those with subthreshold symptoms. The global coverage and expertise of this network places it in a strong position to generate significant gains in youth mental health research through collaborations that capitalise on the wealth of data collected to date, whilst also fostering opportunities for new and innovative discoveries.

-Box 1-

Inaugural IYMHRN Meeting – Dublin, 2017

The inaugural IYMHRN meeting was held in Dublin, Ireland, in September 2017, following the biennial International Association for Youth Mental Health (IAYMH) conference. This meeting was attended by 60 IYMHRN members who represented over 30 academic and other organisations involved in youth mental health research. Attendees represented a range of disciplines including psychiatry, psychology, health economics, nursing, and social work, with many working both academically and clinically. Although a number of researchers who attended the meeting are actively involved in youth mental health research in LMIC settings, it was acknowledged that there were limitations in the breadth of international representation at this meeting. Specifically, all of the attendees were based in Australia, Canada, France, the Netherlands, USA, UK and Ireland, countries that have currently established and, in many cases, nationally supported investment in youth mental health service delivery and research.

The purpose of the Dublin meeting was to consult with key youth mental health researchers to identify critical research gaps that could inform the development of a youth mental health research priorities framework. Below we summarise the outcomes of this meeting and outline future consultation activities with all key stakeholders, including young people. The IYMHRN researchers present at the

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Dublin meeting committed to involving young people in the design, conduct and translation of research.

Methods for Developing Youth Mental Health Research Priorities

Youth mental health research priorities were developed through roundtable discussions that involved 60 IYMHRN members. Youth was defined as young people aged 12 to 25 years. IYMHRN members were self-nominated to one of eight research areas that were derived from a systematic list that was predetermined by the steering committee based on critical gaps in the existing evidence base: (1) prevention, mental health promotion and epidemiology; (2) neuroscience and development; (3) transdiagnostic clinical staging; (4) treatment and novel interventions; (5) the role of new technologies in youth mental health; (6) socio-cultural factors and youth mental health in LMICs; (7) services, delivery and innovation; and (8) translation and implementation. Session leaders oversaw and facilitated discussions within each research area to identify gaps in the evidence base and to develop youth mental health research priority recommendations. A global youth mental health perspective was encouraged to address priorities across HICs and LMICs. Additionally, there was an explicit acknowledgement of the value of youth participation across all stages of research from its design to implementation.

The identified youth mental health research priorities were presented to 28 members of the International Alliance of Mental Health Research Funders (IAMHRF) who represented 22 potential mental health funding bodies across 10 countries (Australia, Canada, Sweden, Belgium, Switzerland, France, Netherlands, USA, UK and Ireland), enabling valuable insight into their priorities for youth mental health research and strategies to enhance funding.

The drafted youth mental health research priorities were disseminated to all members of IYMHRN and those presented here were agreed upon by the steering committee and session leads.

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Youth Mental Health Research Priorities

In total, 21 youth mental health research priorities were identified across the eight research areas, as outlined in Box 2. These were developed with consideration to overarching principles, including youth engagement and participation, translation and implementation, and global perspectives. A range of factors were identified to support the identified research priorities (Box 3), including engaging with young people during all stages of research (planning, conducting and translating) to ensure that research questions, measures and outcomes are relevant and culturally appropriate.

-Boxes 2 and 3-

Funders acknowledged that youth mental health is increasingly a key area of focus for many funding bodies globally. To capitalise on this opportunity and enhance funding success, funders suggested a range of possible strategies such as further increasing capacity within the youth mental health sector and building on the lessons learnt within other disciplines (table 1). It was acknowledged that there is a need for greater representation of LMICs within IYMHRN to enhance collaborations and outcomes in LMICs, and also to systematically consult with young people in reviewing and evolving these draft priorities.

-Table 1-

Future Directions

The youth mental health field has emerged and matured over the last two decades. To capitalise on this growth, it is critical that the sector internationalises, collaborates and explores effective methods to implement findings that deliver improved outcomes for young people worldwide. Whilst a number of research priorities have been proposed previously (Collins et al., 2011; National Institute for Mental Health, 2017; Patel, Flisher, Nikapota, & Malhotra, 2008; Sharan et al., 2009; Tomlinson et al., 2009; Wykes et al., 2015), these have either not exclusively focused on youth (i.e., adolescents and young adults) or are directed towards specific geographical

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locations. The current priorities recommended provide a youth-specific draft framework to develop a systematic and global strategy for new research as well as the translation and implementation of existing evidence, in collaboration with key stakeholders, including young people, their families, mental health clinicians and service providers, and policy makers.

The youth mental health research priorities recommended here were reviewed, further refined and endorsed by a second major meeting of the IYMHRN held on 6th October 2018 in Boston at the 11th IEPA conference. These priorities will be further strengthened and refined through additional consultation with key stakeholders to ensure that they are inclusive of all perspectives and do not solely reflect those of researchers and funders. In particular, the views of a wide range of young people and their families across the globe are essential to determine whether these priorities are meaningful to them and represent the views of those directly impacted by mental disorders. A key action for IYMHRN is to engage with all relevant stakeholders to generate consensus-based priorities using those reported here as an initial basis. At the same time, the network will seek to broaden its membership to ensure that a range of LMICs are represented and that the consensus youth mental health research priorities also reflect their perspectives. The IYMHRN also intends to develop an action plan to facilitate implementation and monitoring of the research priorities framework, which will include leveraging existing research where possible. Key actions identified by the IYMHRN have already commenced, which includes establishing a Lancet Commission on Youth Mental Health (McGorry, 2019) and developing an international consensus statement on clinical staging for young people.

Despite the proposed further consultation, the current recommended research priorities provide an immediate step towards strengthening the evidence-base for youth mental health and its implementation. In particular, they support the development of novel methods for prevention, prediction, diagnosis and intervention, which can lessen the burden of mental illness, enhance opportunities for early

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detection and recovery, and improve the clinical utility of diagnosis. Key targets for prevention, intervention and health promotion could be revealed through a better understanding of the social determinants and malleable risk factors of mental disorders across HICs and LMICs, including those influencing illness onset, help-seeking and treatment outcomes (Patel et al., 2007). From a service level perspective, the priorities can serve to identify effective service features and recommend a best practice model of care for young people. The integration of digital technologies within such a model (i.e., offering face-to-face, mobile and online services) has the potential to enhance help-seeking behaviours, access to therapy, service engagement, and cost-effectiveness (Alvarez-Jimenez et al., 2012; Burns et al., 2016; Lal & Adair, 2014; Rickwood, Webb, Kennedy, & Telford, 2016). For LMICs in particular, approaches that incorporate digital technologies, lay health workers and the integration of mental health care into larger frontline primary health and community development initiatives could reduce the treatment gap (Arjadi et al., 2018; Patel et al., 2008).

When considering global priorities for youth mental health, it is important to recognise that the priorities for HICs may not necessarily align with those for LMICs (Yasamy et al., 2011) and that models of care effective in HICs may simply not be 'transportable' to or even advisable to be implemented in LMICs. Unmet needs and poor quality care are the norm in both HICs and LMICs, hence youth mental health remains a global challenge. Solutions may need to be staged or modified according to the resource levels of individual countries and of resource settings within individual countries of all kinds. While innovation in some areas is possible for LMICs, for instance those that are based on using trained non-professional resources and/or technology, other aspects of innovation such as new drug development will be largely limited to HIC settings due to reasons such as availability of technological expertise, workforce and resources. A caveat here however, is that the classification of countries as low, middle or high-income countries over-simplifies reality and is arguably becoming obsolete. The majority of previously labelled middle-income

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countries now contain substantial segments of high resource settings. Conversely, most notionally high-income countries contain middle and low resource settings. It will be more productive from a research and translation perspective to focus research agendas according to high, middle and low resource *settings* across national boundaries; a version of "research without borders."

The strategic approach recommended here can catalyse research progress and ensure that research efforts are directed towards areas that are likely to generate the greatest impact on youth mental health. While the engagement of funders in the present study revealed their valuable perspective to support research progress, a long-term investment and commitment to youth mental health research is essential to capitalise on available global resources and develop new innovations. This also requires a collaborative and coordinated response among youth mental health researchers that is guided by a priorities framework and supported by networks such as the IYMHRN.

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Box 1. The aims, principles and proposed activities of the International Youth Mental Health Research Network (IYMHRN)

Aims:

The IYMHRN aims to bring together researchers and research institutions with an interest in youth mental health from across the world to:

- Collaboratively establish a set of international research priorities in youth mental health
- Enable the generation of new knowledge through innovation and the exchange of research outcomes
- Establish an evidence-based case for increased funding and investment in youth mental health research and service delivery
- Identify, nurture and professionally develop a team of high quality researchers and research leaders
- Consult with young people and families in framing and progressing these aims, principles and priorities

Key Principles:

- The inclusion of young people in a full range of IYMHRN activities
- The importance of the families and carers in supporting young people
- The fostering of strong collaborations throughout the conduct of research through the sharing ideas, methods and data
- Open access
- Interdisciplinarity
- A focus on applied solutions
- A strong focus on implementation and translation of research findings
- A focus on global representation within the network to foster international collaborations between high income countries and low-middle income countries

Proposed Activities (2018-2023):

- Regular international meetings of researchers linked to the International Association for Youth Mental Health (IAYMH) conference (www.iaymh.org) and other forums, on at least an annual basis
- Develop a Youth Mental Health Research Priorities Framework for the next five years
- Engage with the broader youth mental health sector, including young people, during the development and implementation of the research priorities framework
- Scope the potential for international data harmonisation and a data platform
- Better linking of clinical research with data analysts to drive the interpretation and utilisation of large-scale data sets
- Scope the feasibility and viability of establishing a journal devoted to youth mental health research

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Box 2. Research priorities for youth mental health

Prevention, Mental Health Promotion and Epidemiology
• Identify malleable risk and protective factors for preventive interventions. • Develop an accepted common language and terminology for positive mental health and mental illness. • Focus on high-risk groups, notably LGBTIQ, refugees, indigenous populations, culturally and linguistically diverse populations, and young people in out-of-home and statutory care. • Conduct international comparative population and cohort studies. • Develop an internationally standardised toolkit of assessment and outcome measures for youth mental health, including a core instrument or set of instruments, that is used transnationally to evaluate and compare service outcomes and to identify effective or ineffective service features.
Neuroscience and Development
• Conduct biomarker studies in broader transdiagnostic samples of patients from the earliest stages of mental ill-health, using multiple methods and more potent statistical tools. • Enable the better prediction of outcome in young people with mental ill-health by developing relevant developmental trajectory curves (including brain and epigenetic age, and cognitive development) that can use neurobiological data combined with clinical and functional data to map the impact of treatments. • Proactively link to general population neurological and development research and build on these findings with a focus on mental health.
Transdiagnostic Clinical Staging
• Develop an international consensus statement for clinical staging in youth mental health that will enhance clinical practice, support youth mental health service planning, and can provide a framework for research.
Treatment and Novel Interventions
• Accelerate the development of new and novel interventions and the translation of knowledge through sector networking, knowledge sharing and supporting study designs. • Re-engage with the pharmaceutical industry to support the creation of new biological therapies. • Build on virtual technologies by investing in research and development for psychosocial therapies that incorporate virtual or augmented reality.
The Role of New Technologies in Youth Mental Health
• Build new service delivery models that incorporate technology and ensure these models can (i) promptly and effectively adapt to technological advances and (ii) be supported by rapid and iterative development and evaluation approaches, using methodologies such as co-design with young people to ensure their involvement in the process of continuous improvement.
Socio-Cultural Factors and Youth Mental Health in Low-Middle-Income Countries (LMIC)
• Capitalising on the already existing broader global health and mental health sector (that is already significantly funded by organisations such as Grand Challenges Canada and the National Institutes of Health) by becoming more

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involved in and partnering with initiatives and organisations already working in these areas. • Investigate the opportunities to conduct a World Health Survey focused on young people that includes a wider range of LMICs given the large population of young people within these nations.
Services, Delivery and Innovation
• Develop robust trial methodologies that are applicable across a range of mental health systems (i.e. established or minimally established) and would allow the youth mental health sector to make more definitive statements about the key aspects of the ideal youth mental health service delivery model. • Transnationally test a consensus model of care that can be implemented in a range of HIC and LMIC settings, and that accounts for all countries' financial and infrastructure constraints. This includes models utilising lay health workers within LMICs, which may also be applied to certain settings within HICs (i.e., remote and low-resource areas, indigenous communities).
Translation and Implementation
• Model consumer and stakeholder preferences for knowledge translation, transfer and exchange approaches to determine what works for whom. • Build the capacity of youth mental health researchers to conduct translational research and develop a technical assistance centre to support researchers internationally in developing and delivering implementation science. • Invest in training and education to build the capacity of the broader youth mental health workforce (including fellowships, global exchanges) for knowledge translation and implementation. • Develop online courses, including massive open online courses, to facilitate knowledge transfer and translation at a global level.

The order of research areas and priorities does not represent ranking.

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Box 3. Overarching considerations for youth mental health research priorities

- Processes and resources to facilitate the involvement and meaningful participation of youth in all aspects of youth mental health research
- The need for grant funding for large, prospective and longitudinal transnational studies on key research questions, agreed upon at an international level
- Processes and resources to enable the translation and implementation of research findings and current knowledge in a timely and cost-effective manner
- The need to create and support Centres of Excellence, with each offering unique expertise in different areas to reduce duplication
- The promotion and enabling of leadership exchanges
- Supporting the growth of the next generation of youth mental health researchers and clinicians
- Establishing a Lancet Commission on Youth Mental Health

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Table 1. Opportunities to strengthen the viability of youth mental health research being funded: suggestions from funders

Area of opportunity	Potential actions
Building on the work in other areas of social and health research internationally	• Identify current and past examples in established health areas (e.g. HIV, maternal health) and explore their lessons learnt • Develop intersectoral action and collaboration across disciplines • Address cross-sectoral issues for models of care, including the intersection with employment, housing, physical health and economics
Increasing the profile and scale of youth mental research globally	• Establish a global campaign for policy and funding that targets politicians but also considers other methods (e.g., collaboration with public figures and the wider society) • Explore less traditional funding models to support research at an international level
Demonstrate the impact and outcome for low- and middle-income countries (LMICs)	• Ensure LMIC involvement and representation • Assess the transferability of models of care in high income countries to LMICs • Be open to multi-directional learning to drive the development of cost-effective, innovative and sustainable ideas

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