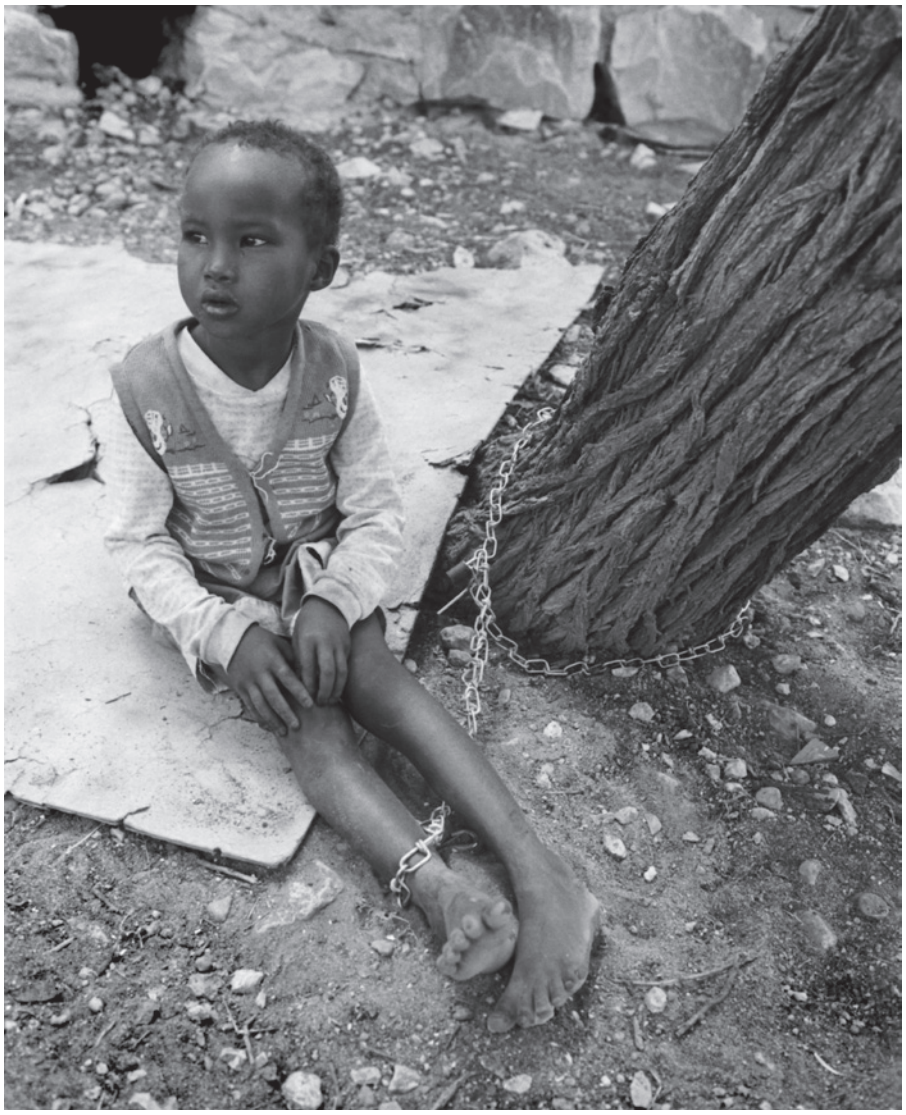
COMMENT

H. TIMMERMANS/GLOBAL INITIATIVE ON PSYCHIATRY



Improving treatment for children with mental illness, like this girl in Somalia, is an urgent priority.

Grand challenges in global mental health

A consortium of researchers, advocates and clinicians announces here research priorities for improving the lives of people with mental illness around the world, and calls for urgent action and investment.

Schizophrenia, depression, epilepsy, dementia, alcohol dependence and other mental, neurological and substance-use (MNS) disorders constitute 13% of the global burden of disease (Table 1), surpassing both cardiovascular disease and cancer[1]. Depression is the third leading contributor to the global disease burden, and alcohol and illicit drug use account for more than 5% (ref. 2). Every seven seconds, someone develops dementia[3], costing the world up to US$609 billion in 2009 (ref. 4). By 2020, an estimated 1.5 million people will die each year by suicide, and between 15 and 30 million will make the attempt[5].

The absence of cures, and the dearth of preventive interventions for MNS disorders, in part reflects a limited understanding of the brain and its molecular and cellular mechanisms. Where there are effective treatments, they are frequently not available to those in greatest need. In 83% of low-income countries, there are no anti-Parkinsonian treatments in primary care; in 25% there are no anti-epileptic drugs[6]. Unequal distribution of human resources — between and within countries — further weakens access: the World Health Organization's European region has 200 times as many psychiatrists as in Africa[7]. Across all countries, investment in fundamental research into preventing and treating MNS disorders is disproportionately low relative to the disease burden[8].

To address this state of affairs, the Grand Challenges in Global Mental Health initiative has identified priorities for research in the next 10 years that will make an impact on the lives of people living with MNS disorders. The study was funded by the US National Institute of Mental Health (NIMH) in Bethesda, Maryland, supported by the Global Alliance for Chronic Diseases (GACD), headquartered in London. Answers to the questions posed will require a surge in discovery and delivery science. We use the term 'mental health' as a convenient label for MNS disorders. We exclude conditions with a vascular or infectious aetiology (such as stroke or cerebral malaria), because these fell within the scope of the two previous grand challenges initiatives — in global health and in chronic non-communicable diseases[9].

This initiative differs from previous priority-setting exercises for mental ▶

TABLE 1 | GLOBAL BURDEN OF MENTAL, NEUROLOGICAL AND SUBSTANCE-USE (MNS) DISORDERS*

	Worldwide		High-income countries†		Low- and middle-income countries	
Rank	Cause	DALYs‡ (millions)	Cause	DALYs (millions)	Cause	DALYs (millions)
1	Unipolar depressive disorders	65.5	Unipolar depressive disorders	10.0	Unipolar depressive disorders	55.5
2	Alcohol-use disorders	23.7	Alzheimer's and other dementias	4.4	Alcohol-use disorders	19.5
3	Schizophrenia	16.8	Alcohol-use disorders	4.2	Schizophrenia	15.2
4	Bipolar affective disorder	14.4	Drug-use disorders	1.9	Bipolar affective disorder	12.9
5	Alzheimer's and other dementias	11.2	Schizophrenia	1.6	Epilepsy	7.3
6	Drug-use disorders	8.4	Bipolar affective disorder	1.5	Alzheimer's and other dementias	6.8
7	Epilepsy	7.9	Migraine	1.4	Drug-use disorders	6.5
8	Migraine	7.8	Panic disorder	0.8	Migraine	6.3
9	Panic disorder	7.0	Insomnia (primary)	0.8	Panic disorder	6.2
10	Obsessive–compulsive disorder	5.1	Parkinson's disease	0.7	Obsessive–compulsive disorder	4.5
11	Insomnia (primary)	3.6	Obsessive–compulsive disorder	0.6	Post-traumatic stress disorder	3.0
12	Post-traumatic stress disorder	3.5	Epilepsy	0.5	Insomnia (primary)	2.9
13	Parkinson's disease	1.7	Post-traumatic stress disorder	0.5	Multiple sclerosis	1.2
14	Multiple sclerosis	1.5	Multiple sclerosis	0.3	Parkinson's disease	1.0

*Data from ref. 1. Examples of MNS disorders under the purview of the Grand Challenges in Global Mental Health initiative.
†World Bank criteria for income (2009 gross national income (GNI) per capita): low income is US$995 equivalent or less; middle income is $996–12,195; high income is $12,196 or more.
‡A disability-adjusted life year (DALY) is a unit for measuring the amount of health lost because of a disease or injury. It is calculated as the present value of the future years of disability-free life that are lost as a result of the premature deaths or disability occurring in a particular year.

health[10–12] in four ways. First, its scope is global. Second, it is the first to employ the Delphi method[13], a structured technique using controlled feedback to arrive at consensus within a dispersed panel of many participants. Third, it covers the full range of MNS disorders. Finally, the effort hopes to build a wide-ranging community of research funders — much as the challenge for non-communicable diseases led to the creation of the GACD.

SETTING PRIORITIES

The prioritization exercise assembled the largest international Delphi panel so far on the subject. An executive committee of leaders of key funding agencies provided broad oversight. A scientific advisory board comprising leaders in the relevant scientific disciplines guided the process. And an administrative team from the NIMH worked with the chairs of the committee and advisory board to coordinate communication and data analysis.

The advisory board nominated 594 researchers, advocates, programme implementers and clinicians; 422, working in more than 60 countries, agreed to participate. Researchers in genetics and genomics, neuroscience, basic behavioural science and neurodevelopment made up just over one-third of the panel. Mental-health services researchers constituted another quarter, and a further third were clinical researchers and epidemiologists (see Supplementary Figs 1–3).

In Round 1, panel members were asked to respond to the question "What are the grand challenges in global mental health?" by listing up to five areas they considered to be top priorities. As in previous initiatives[14,15], a 'grand challenge' was defined as "a specific barrier that, if removed, would help to solve an important health problem. If successfully implemented, the intervention(s) it could lead to would have a high likelihood of feasibility for scaling up and impact." Round 1 yielded 1,565 challenges.

These were distilled by the administrative team and chairs of the executive committee and advisory board into a shorter list of 154 unique challenges from which panellists selected their top 40 in Round 2 (Supplementary Table 1). The top 25 challenges from this list are shown in Table 2. Round 3 asked panellists to rank each challenge on a four-point scale for: ability to reduce disease burden; impact on equity; immediacy of impact; and feasibility (see Supplementary Methods). To arrive at the final ranked master list of grand challenges, individual rankings for each challenge were weighted, summed across all four criteria, and divided by the total number of responses (Supplementary Table 3).

THE LIST

The 25 grand challenges in Table 2 run the research gamut from preclinical questions into the aetiology and treatment of MNS disorders, to implementation and policy needs to scale up effective interventions. All the challenges emphasize the need for global cooperation in the conduct of research to create shared access to data, expertise and capacity-building opportunities. Children emerge as requiring particular attention for prevention and care. Most mental disorders involve developmental processes, so reducing the duration of untreated illness by focusing resources on the earliest definable clinical stage of illness could revolutionize treatment. Similarly, it is imperative that we explore the role of prenatal exposures and develop interventions to reduce the long-term negative impact of low childhood socioeconomic status on cognitive ability.

The challenges capture several broad themes. First, the results underscore the need for research that uses a life-course approach. This approach acknowledges that many MNS disorders either begin or manifest in early life, and is equally attentive to risk factors and disorders affecting children and the elderly. Efforts to build mental capital — the cognitive and emotional resources that influence how well an individual is able to contribute to society and experience a high quality of life — could also mitigate the risk of disorders such as depression, substance-use disorders, bipolar disorder and dementia[16].

Second, the challenges recognize that the suffering caused by MNS disorders extends beyond the patient to family members and communities. Thus, health-system-wide changes are crucial, together with attention to social exclusion and discrimination. At the same time, research into systems interventions, such as integrating care for MNS disorders into chronic-disease care, could transform health services and reduce costs.

Third, the challenges underline the fact that all care and treatment interventions — psychosocial or pharmacological, simple or complex — should have an evidence base to provide programme planners, clinicians and

TABLE 2 | GRAND CHALLENGES FOR MNS DISORDERS

	Top 25 challenges*	Illustrative research questions
Goal A Identify root causes, risk and protective factors	• Identify modifiable social and biological risk factors across the life course • Understand the impact of poverty, violence, war, migration and disaster • Identify biomarkers	• What is the relationship between early fetal and child development and the onset of MNS disorders? • What are the phenotypes and endophenotypes of MNS disorders across cultural settings? • What gene–environment interactions are associated with the increased risk for mental disorders? • What factors promote resilience and prevent mental disorders in persons at extreme social disadvantage? • What role does social context play in the persistence of MNS disorders throughout life?
Goal B Advance prevention and implementation of early interventions	• Support community environments that promote physical and mental well-being throughout life • Reduce the duration of untreated illness by developing culturally-sensitive early interventions across settings • Develop interventions to reduce the long-term negative impact of low childhood socioeconomic status on cognitive ability and mental health • Develop an evidence-based set of primary prevention interventions for a range of MNS disorders • Develop locally appropriate strategies to eliminate childhood abuse and enhance child protection	• Which behavioral skills can enhance executive function, resilience and cognitive flexibility throughout life? • What neuroprotective agents and/or cognitive retraining paradigms can be used during the period of rapid brain development to reduce vulnerability to disorders in adolescence? • How effective are home- and school-based interventions for child abuse and neglect?
Goal C Improve treatments and expand access to care	• **Integrate screening and core packages of services into routine primary health care** • **Reduce the cost and improve the supply of effective medications** • Develop effective treatments for use by non-specialists, including lay health workers with minimal training • Incorporate functional impairment and disability into assessment • **Provide effective and affordable community-based care and rehabilitation** • **Improve children's access to evidence-based care by trained health providers in low- and middle-income countries** • Develop mobile and IT technologies (such as telemedicine) to increase access to evidence-based care	• How effective are brief screening tools for the detection of MNS disorders in routine care settings? • How effective are interventions for serious mental disorders delivered by lay health workers? • How will increased understanding of neural circuits lead to alternatives to current pharmacological interventions? • How can mobile-phone technology be used to monitor seizure frequency? • How can video games and other electronic media be used for cognitive remediation across cultural settings? • What psychosocial interventions produce the best outcomes for community-based care for MNS disorders across cultural settings?
Goal D Raise awareness of the global burden	• Develop culturally informed methods to eliminate the stigma, discrimination and social exclusion of patients and families across cultural settings • Establish cross-national evidence on the cultural, socioeconomic and services factors underlying disparities in incidence, diagnosis, treatment and outcomes • Develop valid and reliable definitions, models and measurement tools for quantitative assessment at the individual and population levels for use across cultures and settings • Establish shared, standardized global data systems for collecting surveillance data on the prevalence, treatment patterns and availability of human resources and services	• What are the components of effective interventions to reduce stigma associated with MNS disorders? • What interventions to reduce stigma and discrimination can be targeted to and implemented in health and social service settings in different health-system environments? • What is the impact of macroeconomic factors (such as unemployment rates, international trade, national income) on the prevalence of MNS disorders over time? • What is the impact of policy initiatives on the coverage of treatment for MNS disorders? • What measurement factors contribute to differences in the prevalence of mental disorders across ethnic groups within and between countries?
Goal E Build human resource capacity	• Increase capacity in low- and middle-income countries by creating regional centers for mental-health research, education, training and practice that incorporate the views and needs of local people • Develop sustainable models to train and increase the number of culturally and ethnically diverse lay and specialist providers to deliver evidence-based services • **Strengthen the mental-health component in the training of all health-care personnel**	• What is the most effective way to train primary health-care workers to deliver evidence-based care with adequate fidelity to guidelines? • What is the comparative effectiveness of care for MNS disorders by different cadres of health-care providers? • What are the views of low-income communities in high- and low-income countries on the priority research questions for MNS disorders?
Goal F Transform health-system and policy responses	• Establish and implement minimum health-care standards for MNS disorders around the world • Redesign health systems to integrate MNS disorders with other chronic-disease care, and create parity between mental and physical illness in investment into research, training, treatment and prevention • Incorporate a mental-health component into international aid and development programmes	• What can we learn from different approaches (and associated costs) to integrated delivery of care across health systems? • What are the most effective health-system-wide strategies to reduce consumption of alcohol and illicit drugs? • What is the impact of legislation that ensures parity between mental and other illnesses on access to mental-health services?
Summary principles	• *Use a life-course approach to study*	• *Use system-wide approaches to address suffering*	• *Use evidence-based interventions*	• *Understand environmental influences*

*The order in which the challenges are presented does not indicate frequency of endorsement or relative importance. **Bold type** denotes the top five challenges ranked by disease-burden reduction, impact on equity, immediacy of impact and feasibility.

T. DIRVEN/PANOS

Women in Priluki psychiatric hospital, Ukraine.

policy-makers with effective care packages. Finally, the panel's responses underscore important relationships between environmental exposures and MNS disorders. Extreme poverty, war and natural disasters affect large swathes of the world, and we still do not fully understand the mechanisms by which mental disorders might be averted or precipitated in those settings.

NEXT STEPS

There have been some major advances in our understanding of the aetiology and treatment of MNS disorders. Future breakthroughs are likely to depend on discoveries in genomics and neuroscience, in tandem with exploration of the role of sociocultural and environmental contexts. The top five challenges ranked by disease-burden reduction, impact on equity, immediacy of impact, and feasibility should serve as a starting point for immediate research and prioritization of policies (see bold lines in Table 2).

Action on all the challenges will require long-term investment. Substantial research progress can be achieved in the next ten years if funding begins immediately. Already, the NIMH's initiative, Collaborative Hubs for International Research in Mental Health, has committed to support research on the use of non-specialist mental health-care providers and research training in low- and middle-income countries. But a wider set of stakeholders must also be engaged, particularly in problems that require integrated research and policy interventions.

The WHO should disseminate information on these challenges to its member countries' health ministries and research councils to shape research and action priorities. Given the intimate relationship between economic and social development and the needs of people with MNS disorders, the World Bank, regional development banks, national development agencies, foundations, non-governmental organizations and the global business community should all participate in addressing the challenges.

Researchers and funders have tremendous responsibility in this context. Consortia and networks, advocacy organizations, universities and their partners should organize their activities around one or more of the goals and the attendant grand challenges. The leaderships of the Grand Challenges in Global Mental Health, the GACD and their partners will meet in October to develop a strategy for regular monitoring of progress.

Even incremental progress in addressing the grand challenges in global mental health could lead to significant economic and quality-of-life benefits — including reductions in inappropriate use of health care and increased productivity for years to come[17] — that would far outweigh investment costs. Although the greatest challenge — the elimination of MNS disorders — may not be attainable within the next 10 years, the research suggested above must be conducted forthwith. ■

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