



# Addressing the burden of mental, neurological, and substance use disorders: key messages from *Disease Control Priorities*, 3rd edition

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The burden of mental, neurological, and substance use (MNS) disorders increased by 41% between 1990 and 2010 and now accounts for one in every 10 lost years of health globally. This sobering statistic does not take into account the substantial excess mortality associated with these disorders or the social and economic consequences of MNS disorders on affected persons, their caregivers, and society. A wide variety of effective interventions, including drugs, psychological treatments, and social interventions, can prevent and treat MNS disorders. At the population-level platform of service delivery, best practices include legislative measures to restrict access to means of self-harm or suicide and to reduce the availability of and demand for alcohol. At the community-level platform, best practices include parenting programmes in infancy and life-skills training in schools to build social and emotional competencies. At the health-care-level platform, we identify three delivery channels. Two of these delivery channels are especially relevant from a public health perspective: self-management (eg, web-based psychological therapy for depression and anxiety disorders) and primary care and community outreach (eg, non-specialist health worker delivering psychological and pharmacological management of selected disorders). The third delivery channel, hospital care, which includes specialist services for MNS disorders and first-level hospitals providing other types of services (such as general medicine, HIV, or paediatric care), play an important part for a smaller proportion of cases with severe, refractory, or emergency presentations and for the integration of mental health care in other health-care channels, respectively. The costs of providing a significantly scaled up package of specified cost-effective interventions for prioritised MNS disorders in low-income and lower-middle-income countries is estimated at US\$3–4 per head of population per year. Since a substantial proportion of MNS disorders run a chronic and disabling course and adversely affect household welfare, intervention costs should largely be met by government through increased resource allocation and financial protection measures (rather than leaving households to pay out-of-pocket). Moreover, a policy of moving towards universal public finance can also be expected to lead to a far more equitable allocation of public health resources across income groups. Despite this evidence, less than 1% of development assistance for health and government spending on health in low-income and middle-income countries is allocated to the care of people with these disorders. Achieving the health gains associated with prioritised interventions will require not just financial resources, but committed and sustained efforts to address a range of other barriers (such as paucity of human resources, weak governance, and stigma). Ultimately, the goal is to massively increase opportunities for people with MNS disorders to access services without the prospect of discrimination or impoverishment and with the hope of attaining optimal health and social outcomes.

## Introduction

The primary goal of *Disease Control Priorities in Developing Countries*, first published by the World Bank in 1993, is to synthesise evidence of the burden of specific health disorders and, more importantly, the relative effectiveness and cost-effectiveness of interventions so as to assist decision makers in allocating often tightly constrained budgets and ensuring that health system objectives are maximally achieved. The third edition of *Disease Control Priorities* (DCP-3) aims to provide up-to-date evidence and includes several novel features that build on previous editions, for example by addressing how interventions can be packaged together across a range of delivery platforms and channels (appendix p 1).<sup>1</sup> Here we describe the key findings of the evidence related to mental, neurological, and substance use (MNS) disorders.

MNS disorders are a heterogeneous range of disorders that owe their origin to a complex array of genetic,

biological, psychological, and social factors. Although many health systems deliver care for these disorders through separate channels, with an emphasis on specialist services in hospitals, the disorders have been grouped together here because they share several important characteristics, notably: all owe their symptoms and impairments to some degree of brain dysfunction; social determinants play an important part in the aetiology and symptom expression (panel 1);<sup>2,3</sup> they frequently co-occur in the same individual; their effect on families and wider society is profound; they are strongly associated with stigma and discrimination; they often take a chronic or relapsing course; and they all share a pitifully inadequate response from health-care systems in all countries, but particularly in low-income and middle-income countries. This grouping is also consistent with the DCP-3 goals of synthesising evidence and making recommendations across diverse health disorders and with WHO's Mental Health Gap Action Programme (mhGAP).<sup>4</sup>

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**Panel 1: The social determinants of mental, neurological, and substance use (MNS) disorders**

A range of social determinants affect the risk and outcome of MNS disorders. In particular, the following factors have been shown to be associated with several MNS disorders<sup>2</sup>:

- Demographic factors such as age, sex, and ethnicity
- Socioeconomic status: low income, unemployment, income inequality, low education, low social support
- Neighborhood factors: inadequate housing, over-crowding, neighborhood violence
- Environmental events: natural disasters, war, conflict, climate change, and migration
- Social change associated with changes in income, urbanisation, and environmental degradation

The causal mechanisms of the social determinants of MNS disorders indicate a cyclical pattern: on one hand, socioeconomic adversities increase risk for MNS disorders (the social causation pathway); on the other hand, people living with MNS disorders drift into poverty during the course of their life through increased health-care expenditure, reduced economic productivity associated with disability, and stigma and discrimination associated with these disorders (the social drift pathway).

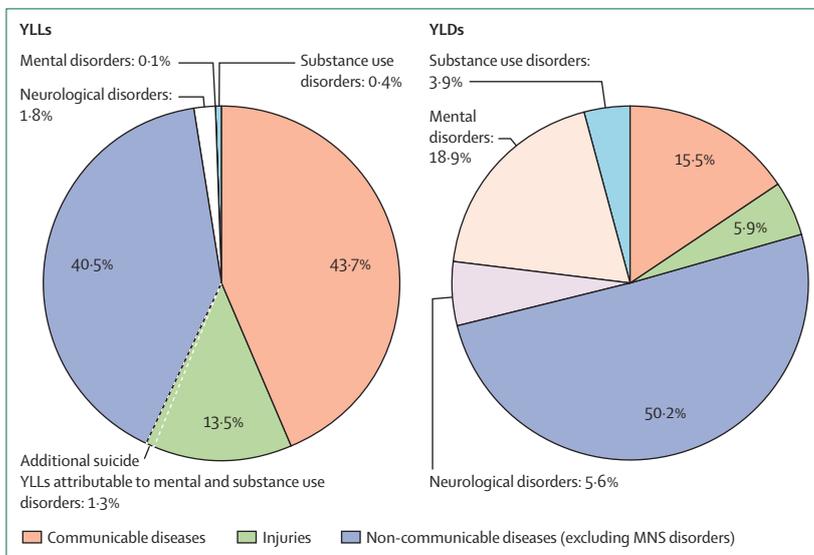
Understanding the vicious cycle of social determinants and MNS disorders provides opportunities for interventions that target both social causation and social drift. In relation to social causation, the evidence for the mental health benefits of poverty alleviation interventions is mixed but growing. In relation to social drift, the evidence for the individual and household economic benefits of MNS disorder prevention and treatment is compelling, and supports the economic argument for scaling up these interventions.<sup>3</sup>

strongly associated with MNS disorders. Within each group, we have prioritised disorders that are associated with high burden and for which evidence exists in support of interventions that are cost effective and scalable. Inevitably, such an approach does not address a substantial number of disorders (eg, multiple sclerosis as a neurological disorder and anorexia nervosa as an adult mental disorder), but our recommendations could be extended to several other disorders that have not been expressly addressed, in particular with respect to the delivery of packages for care. Additionally, some important MNS disorders or concerns are covered in other volumes of the DCP-3 series, notably, nicotine dependence, early child development, neurological infections, and stroke.

In this report, we address five themes. First, we address the question of why MNS disorders deserve prioritisation by pointing to and reviewing the health and economic burden of disease attributable to MNS disorders. Second, we review the evidence of the effectiveness of specific interventions for the prevention and treatment of the selected MNS disorders. Third, we consider how and where these interventions can be appropriately implemented across a range of service delivery platforms. Fourth, we examine the cost of scaling up cost-effective interventions and the case for enhanced service coverage and financial protection for people with MNS disorders. Finally, we consider the barriers and strategies for successful scale-up.

**Why MNS disorders matter for global health**

The Global Burden of Disease Study 2010 (GBD 2010)<sup>5</sup> identified MNS disorders as significant causes of the world's disease burden. We use GBD 2010 data to investigate trends in the burden due to MNS disorders. Between 1990 and 2010, absolute disability-adjusted life-years (DALYs) due to MNS disorders rose by 41%, from 182 million DALYs to 258 million DALYs (the proportion of global disease burden increased from 7.3% to 10.4%). With the exception of substance use disorders, which increased in prevalence with time, this increase in MNS-related DALYs was largely due to population growth and ageing. As a group, MNS disorders were the leading cause of years lived with disability (YLDs) globally (figure 1). DALYs from MNS disorders were highest during early-to-mid-adulthood, explaining 18.6% of total DALYs in individuals aged 15–49 years as opposed to 10.4% at all ages combined. DALYs from neurological disorders were highest in elderly people. The burden of these disorders contains important gender differences: men accounted for more DALYs from mental disorders occurring in childhood, schizophrenia, substance use disorders, Parkinson's disease, and epilepsy, whereas more DALYs accrue to women for all other disorders in this group. The relative proportion of DALYs from MNS disorders to overall disease burden was estimated to be 1.6 times higher in developed regions (15.5% of total DALYs) than in



**Figure 1: Proportion of global YLDs and YLLs attributable to mental, neurological, and substance use disorders, 2010**

YLLs=years lost to premature mortality. YLDs=years lived with disability. In GBD 2010 injuries included deaths and YLLs due to suicide. Mental and substance use disorders explained 22.5 million suicide YLLs, equivalent to 62.1% of suicide YLLs or 1.3% of total all cause YLLs.<sup>6</sup> Source: Whiteford et al (2015)<sup>7</sup> and <http://vizhub.healthdata.org/gbd-compare/>

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In DCP-3, we have considered interventions for five groups of disorders (adult mental disorders, child mental and developmental disorders, neurological disorders, alcohol use disorder, and illicit drug use disorders) and for suicide and self-harm, a health outcome

developing regions (9.4% of total DALYs), largely due to the relatively higher burden of other health disorders such as infectious and perinatal diseases in developing regions. Because of the larger population in low-income and middle-income countries, however, absolute DALYs from MNS disorders are higher than in high-income countries.

Burden due to premature mortality according to GBD 2010 might incorrectly lead to the interpretation that premature death in people with MNS disorders is inconsequential. This is because of how causes of deaths are assigned in the International Classification of Diseases (ICD) death-coding system used by GBD 2010. Yet, evidence shows that people with MNS disorders have a significant reduction in life expectancy, with risk of mortality increasing with disorder severity.<sup>8-10</sup> Consequently, we also explore differences between GBD 2010 estimates of cause-specific and excess mortality from these disorders and potential contributors to life-expectancy gaps. Although reported years of life lost (YLLs) accounted for only 15.3% of DALYs from MNS disorders, equivalent to 840 000 deaths, natural history

models generated by DisMod-MR estimate that substantially more deaths could be associated with these disorders.<sup>11</sup> Excess deaths from major depression alone were estimated at more than 2.2 million in 2010. This number is significantly higher than other attempts to quantify the same<sup>10</sup> and potentially indicates a much higher degree of mortality associated with MNS disorders than that captured by the assessment of YLLs in GBD 2010. However, because these estimates of excess deaths included deaths from both causal and non-causal origins, they must be interpreted with caution. In relation to excess deaths presented in table 1, comparative risk analyses<sup>12</sup> have also highlighted mental and substance use disorders as significant risk factors of premature death from a range of other health outcomes. For example, an estimated 60% of suicide deaths can be reattributed to mental and substance use disorders, which would elevate them from the fifth to the third leading cause of burden of disease.<sup>6</sup>

These estimates of disease burden do not fully take into account the substantial social and economic consequences of MNS disorders, not only for affected

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Disorder	Cause-specific deaths (uncertainty range)	Excess deaths (uncertainty range)	Contributors to excess deaths
Alzheimer's disease and other dementias	486 000 (308 000–590 000)	2 114 000 (1 304 000–2 882 000)	Lifestyle factors including smoking, hypercholesterolaemia, high blood pressure, low forced vital capacity; comorbid physical conditions including cardiovascular disease; infectious disease including pneumonia
Epilepsy	178 000 (20 000–222 000)	296 000 (261 000–331 000)	Underlying disorders including neoplasms, cerebrovascular diseases, and cardiac disease; accident or injury resultant from status epilepticus including drowning and burns
Migraine	0	0	...
Alcohol use disorders	111 000 (64 000–186 000)	1 954 000 (1 910 000–1 997 000)	Comorbid disease including cancer, mental, neurological, and substance use disorders, cardiovascular disease, liver and pancreas diseases, epilepsy, injuries, and infectious disease
Opioid dependence	43 000 (27 000–68 000)	404 000 (304 000–499 000)	Acute toxic effects and overdose; accidental injuries, violence, and suicide; comorbid disease including cardiovascular disease, liver disease, mental disorders, and blood-borne bacterial and viral infections
Cocaine dependence	500 (400–600)	96 000 (60 000–130 000)	Acute toxic effects and overdose; accidental injuries, violence, and suicide; comorbid disease including cardiovascular disease, liver disease, mental disorders, and blood-borne bacterial and viral infections
Amphetamine dependence	500 (400–600)	202 000 (155 000–250 000)	Acute toxic effects and overdose; accidental injuries, violence, and suicide; comorbid disease including cardiovascular disease, liver disease, mental disorders, and blood-borne bacterial and viral infections
Cannabis dependence	0	0	Acute toxic effects and overdose; accidental injuries, violence, and suicide; comorbid disease including cardiovascular disease, liver disease, mental disorders, and blood-borne bacterial and viral infections
Schizophrenia	20 000 (17 000–25 000)	699 000 (504 000–886 000)	Suicide and comorbid disease including cardiovascular disease and diabetes
Major depressive disorder	0	2 224 000 (1 900 000–2 586 000)	Suicide and comorbid disease such as cardiovascular disease and infectious disease
Anxiety disorders	0	0*	Comorbid disease such as cardiovascular disease and neoplasms; intentional and unintentional injuries
Bipolar disorder	0	1 320 000 (1 147 000–1 495 000)	Comorbid disease such as cardiovascular disease; causes including intentional injuries (suicide)
Disruptive behavioural disorders	0	0†	Unintentional injuries including traffic accidents; lifestyle factors such as smoking, binge drinking, and obesity
Autistic spectrum disorders	0	109 000 (96 000–122 000)	Accidents, respiratory diseases, and seizures; comorbid disorders, particularly epilepsy and intellectual disability

\*In the Global Burden of Disease Study (GBD) 2010, the anxiety disorders category represents any anxiety disorder; although mortality data are available for individual anxiety disorders, estimates of mortality associated with any anxiety disorder required for GBD purposes are not available. †Insufficient data are available to derive estimates of excess mortality for disruptive behavioural disorders.

**Table 1: Cause-specific and excess deaths associated with mental, neurological, and substance use disorders (GBD 2010)**

	Type of disorder	Preventive interventions	Drug and physical interventions	Psychosocial interventions
<b>Mental disorders in adulthood</b>				
Schizophrenia (5.3% of total MNS DALYs)	Chronic or relapsing disorder characterised by delusions, hallucinations, and disturbed behaviour	..	Antipsychotic drugs*	Family therapy or support;† community-based rehabilitation;‡ self-help and support groups‡
Mood and anxiety disorders (41.9% of total MNS DALYs)	Group of disorders characterised by somatic, emotional, cognitive, and behavioural symptoms; bipolar disorder is associated with episodes of elated and depressed mood	Cognitive behavioural therapy for persons with subthreshold symptoms†	Antidepressant, anxiolytic, mood stabiliser, and antipsychotic drugs;* electroconvulsive therapy for severe refractory depression†	Cognitive behavioural therapy;* interpersonal therapy†
<b>Mental and developmental disorders in childhood and adolescence</b>				
Conduct disorder (2.2% of total MNS DALYs)	Pattern of antisocial behaviours that violate the basic rights of others or major age-appropriate societal norms	Life-skills education to build social and emotional wellbeing and competencies;† parenting skills training;† maternal mental health interventions‡	..	Parenting skills training;† cognitive behavioural therapy‡
Anxiety disorders (2.3% of total MNS DALYs)	Excessive or inappropriate fear, with associated behavioural disturbances that impair functioning	Parenting skills training;† maternal mental health interventions†	..	Cognitive behavioural therapy†
Autism (1.6% of total MNS DALYs)	Severe impairment in reciprocal social interactions and communication skills, as well as the presence of restricted and stereotypical behaviours	..	..	Parental education and skills training;‡ educational support‡
ADHD (0.2% of total MNS DALYs)	Neurodevelopmental disorder characterised by inattention and disorganisation, with or without hyperactivity-impulsivity, causing impairment of functioning	Psychosocial stimulation of infants and young children‡	Methylphenidate†	Parenting skills training;† cognitive behavioural therapy†
Intellectual disability (idiopathic; 0.4% of total MNS DALYs)	Substantially impaired cognitive functioning and deficits in two or more adaptive behaviours	Psychosocial stimulation of infants and young children;‡ perinatal interventions (eg, screening for congenital hypothyroidism;† population-based interventions targeting intellectual disability risk factors (eg, reducing maternal alcohol use)‡	..	Parental education and skills training;‡ educational support‡
<b>Neurological disorders</b>				
Migraine (8.7% of total MNS DALYs)	Episodic attacks in which headache and nausea are the most characteristic attack features; headache, lasting from several hours to 2–3 days, is typically moderate or severe and probably unilateral, pulsating, and aggravated by routine physical activity	Prophylactic drug treatment with propranolol or amitriptyline*	Drug treatment: aspirin or one of several other non-steroidal anti-inflammatory drugs*	Behavioural and cognitive interventions‡
Epilepsy (6.8% of total MNS DALYs)	Epilepsy is a brain disorder traditionally defined as the occurrence of two unprovoked seizures occurring more than 24 h apart with an enduring predisposition to generate further seizures	Population-based interventions targeting epilepsy risk factors (eg, preventing head injuries and neurocysticercosis prevention)‡	Standard antiepileptic drugs (phenobarbital, phenytoin, carbamazepine, valproic acid);* epilepsy surgery†	..
Dementia (4.4% of total MNS DALYs)	A neuropsychiatric syndrome characterised by a combination of progressive cognitive impairment, behavioural and psychological symptoms, and functional difficulties	Cardiovascular risk factors management (healthy diet, physical activity, tobacco use cessation)‡	Cholinesterase inhibitors and memantine for cognitive functions; drugs for management of behavioural and psychological symptoms‡	Caregiver education and support and behavioural training as well as environmental modifications;† interventions to support carers of people with dementia†

(Table 2 continues on next page)

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 See Online for appendix

individuals and households but also for communities and economies. Notable examples of such effects include that of maternal mental disorders on the wellbeing of their children, contributing to the intergenerational transmission of poor health and poverty; of substance use disorders on criminal behaviour and incarceration; and of a range of severe disorders on the economic productivity of affected persons and of family members engaged in caregiving.

The total economic output lost to MNS disorders globally in 2010 was estimated to be \$8.5 trillion, a sum expected to nearly double by 2030 unless a concerted response is mounted.<sup>13</sup> Economic costs attributable to alcohol use and alcohol use disorders alone are estimated to amount to the equivalent of 1.3–3.3% of gross domestic product (GDP) in a range of high-income and middle-income countries, with more than two-thirds of the loss represented by productivity

Type of disorder	Preventive interventions	Drug and physical interventions	Psychosocial interventions
(Continued from previous page)			
<b>Substance use disorders</b>			
Alcohol use disorders (6.9% of total MNS DALYs)	Harmful use is a pattern of alcohol use that causes damage to physical or mental health; alcohol dependence is a cluster of physiological, behavioural, and cognitive phenomena in which the use of a substance takes on a much higher priority for a given individual than other behaviours that once had greater value	Excise taxes;* restriction on sales;† minimum legal age;† drink driving countermeasures;† advertising bans;‡ restrictions on density;‡ opening and closing hours, and days of sale;† family interventions‡	Naltrexone, acamprostate‡
Illicit drug use disorders (7.8% total MNS DALYs)	A pattern of regular use of illicit drugs characterised by significantly impaired control over use and physiological adaptation to regular consumption as indicated by tolerance and withdrawal	Psychosocial interventions with primary school children (eg, Good Behaviour Game or Strengthening Families Programme)‡	Opioid substitution therapy (eg, methadone, buprenorphine)*
<b>Suicide and self-harm</b>			
Suicide and self-harm (1.47% of GBD; 22.5 million YLLs or 62.1% of suicide YLLs are attributed to mental and substance use disorders in 2010)	Suicide is the act of deliberately killing oneself; suicide attempt refers to any non-fatal suicidal behaviour and refers to intentional self-inflicted poisoning, injury, or self-harm which may or may not have a fatal intent or outcome	Policies and legislations to reduce access to the means of suicide (eg, pesticides);† decriminalisation of suicide;‡ responsible media reporting of suicide‡	Effective drug interventions for underlying MNS disorders;† emergency management of poisoning†
MNS=mental, neurological, and substance use disorders. DALYs=disability-adjusted life-years. ADHD=attention-deficit hyperactivity disorder. GBD=Global Burden of Disease Study. YLLs=years of life lost to premature mortality. *Evidence of cost-effectiveness. †Strong evidence of effectiveness but not of cost-effectiveness. ‡Modest evidence of effectiveness, and either not cost effective or no evidence of cost-effectiveness.			
<b>Table 2: Effective interventions for the prevention, treatment, and care of MNS disorders</b>			

losses.<sup>14</sup> The global cost of dementia in 2010 has been estimated to be \$604 billion, equivalent to 1% of global GDP.<sup>15</sup> Additionally, a rising tide of social adversities are recognised to be associated with MNS disorders, with large and growing proportions of the global population affected by conflict or displacement due to environmental degradation and climate change, which bodes for a grim forecast on the future burden of these disorders. Finally, disease burden estimates do not account for the substantial hazards faced by persons with MNS disorders who face the systematic denial of basic human rights, ranging from limited opportunities for education and employment and extending to torture and denial of freedom, sometimes within health-care institutions.<sup>16</sup>

### What works? Effective interventions for the prevention and treatment of MNS disorders

The evidence on interventions builds on the recommendations of the second edition of Disease Control Priorities (DCP-2)<sup>17–19</sup> and is derived from several sources: the mhGAP guidelines developed by WHO for use in non-specialist health settings, which reviewed the literature published up to 2009 using the Grading of Recommendations Assessment, Development and Evaluation (GRADE);<sup>20</sup> other recent reviews where appropriate (eg, Strang and colleagues [2012]<sup>21</sup> for illicit drugs); interventions that required a specialist for delivery, but which had not been addressed by mhGAP or DCP-2, assessed using GRADE; and a review of all reviews, including systematic reviews, and any type of assessment evidence from a low-income and middle-income country

published since mhGAP, assessed using GRADE. Our findings are summarised in table 2.

A wide variety of effective interventions comprising drug-based, psychological, and social interventions can prevent and treat the range of the priority MNS disorders. As shown in table 2, a set of essential medicines (such as antipsychotic, antidepressant, and antiepileptic drugs) and essential psychosocial interventions (such as cognitive behavioural therapy and parent skills training) can be identified for this group of disorders. Although very few curative interventions for any of these disorders exist, the severity and course of most disorders can be greatly attenuated by psychosocial treatment or generic formulations of essential drugs, including combination drugs tailored to the needs of the individual. A few patients with more severe, refractory, or emergency clinical presentations will need specialist interventions, such as inpatient care with expert nursing for acute psychosis, modified electroconvulsive therapy for severe depression, or surgery for epilepsy. It is important to acknowledge that certain preventive interventions that are primarily intended to target disorders covered in other volumes of DCP-3, such as cardiovascular diseases or neurocysticercosis, will also have benefits for people with MNS disorders such as dementia and epilepsy, respectively. Conversely, some interventions targeting MNS disorders are also associated with benefits to health outcomes for people with other disorders: for example, injury prevention as a result of reduced alcohol or drug use or effective treatment of attention-deficit hyperactivity disorder, and improved cardiovascular health as a result of recovery from depression. Even for those primary

disorders for which no highly effective treatments exists, such as autism and dementia, psychosocial interventions have been shown to effectively address their adverse social consequences and support family caregivers.

Despite this evidence, a large proportion of persons affected by MNS disorders do not have access to these interventions. The poor adoption of effective interventions is often affected by concerns about financial resources, an issue that is now being addressed by a mounting evidence base in support of the effectiveness of delivery by non-specialist health workers<sup>22</sup> as well as their cost-effectiveness.<sup>23</sup> A related resource constraint relates to the low availability of appropriately trained mental health workers. Cultural attitudes and beliefs might also pose specific barriers; for example, the symptoms associated with depression or anxiety disorders are commonly interpreted as being normative consequences of social adversity, and proven biomedical causal models are rare, leading to low demand for care and low visibility of the disorder from the view of health policy makers and providers.<sup>24</sup> These competing views will clearly affect the societal preference for and acceptability of investment in the wider adoption of effective interventions for MNS disorders. More generally, stigma, poor awareness, and discrimination are major factors behind the low levels of political commitment and the paucity of demand for care for people with MNS disorders in many populations.<sup>25</sup>

### How to deliver effective interventions?

The implementation of evidence-based interventions for MNS disorders seldom occurs through the delivery of single vertical interventions. More frequently, these interventions are delivered via so-called platforms—the level of the health or welfare system at which interventions or packages can be most appropriately, effectively, and efficiently delivered. A specific delivery channel (such as a school or a primary health-care centre) can be viewed as the vehicle for delivery of a particular intervention on a specified platform. Identification of the set of interventions that fall within the realm of a particular delivery channel or platform is of interest and relevance to decision makers because it enables potential opportunities, synergies, and efficiencies to be identified. The identification of interventions that are relevant for a particular platform also reflects how resources are often allocated in practice (eg, to schools or primary health-care services rather than to specific interventions or disorders). We identified three broad platforms to deliver interventions for MNS disorders: population, community, and health-care platforms. Although a fair amount of good evidence from high-income countries exists in support of interventions across these platforms and along the continuum of primary, secondary, and tertiary prevention, the evidence base is far less robust for low-income and middle-income countries. Recommendations for best

practice interventions and good practice interventions for these platforms are set out in the table in figure 2. Best practice interventions were identified on the basis of evidence for their effectiveness and contextual acceptability and scalability in low-income and middle-income countries, plus evidence of their cost-effectiveness, at least in high-income countries; good practice interventions were identified on the basis of sufficient evidence of their effectiveness in high-income countries or promising evidence of their effectiveness in low-income and middle-income countries, or both. That evidence of cost-effectiveness does not exist for most interventions in low-income and middle-income countries reflects the absence of evidence rather than the absence of cost-effectiveness.

Population platform interventions typically apply to the entire population and primarily address the promotion of population mental health, prevention of MNS disorders, and demand side barriers such as stigma. Best practice packages include legislative and regulatory measures to restrict access to means of self-harm or suicide (notably pesticides) and reduce the availability of and demand for alcohol (eg, through increased taxes on alcohol products). Good practice packages include interventions aimed at raising mental health literacy and reducing stigma and discrimination. The criminal justice system offers an important channel for delivery of interventions for a range of MNS disorders, notably those associated with alcohol and illicit drug use, behaviour disorders in adolescents, and the psychoses. Other preventive and promotion interventions do not require such a population-wide approach and are best delivered by targeting a group of people in the community who share a certain characteristic or are part of a particular setting; this platform is referred to as the community. Best practice packages at the community level include life-skills training to build social and emotional competencies in children and adolescents, and good practice packages include parenting programmes for parents with infants to promote early child development. Several other good practice packages are reported in figure 2.

The health-care platform comprises three specific delivery channels: self-management and care, primary health care, and hospital care. Examples of best or good practice packages for self-care include the self-management of disorders, such as migraine, and

**Figure 2: Table of intervention priorities for MNS disorders by delivery platform**  
Red font denotes urgent care, blue font denotes continuing care, and black font denotes routine care. Recommendations in bold font denote best practice, and recommendations in normal font denote good practice. MNS=mental, neurological, and substance use disorder. ADHD=attention-deficit hyperactivity disorder. \*The management of these complex disorders has no fixed timepoint; for example, in the management of depression, some individuals need relatively short periods of engagement (eg, 6–12 months for a single episode), whereas others might need maintenance care for several years (eg, when there is a relapsing course).

	Population platform	Community platform	Health-care platforms			
			Self-care	Primary health care	First-level hospital care	Specialised care
<b>All MNS disorders</b>	Awareness campaigns to increase mental health literacy and address stigma and discrimination Legislation on protection of human rights of persons affected by MNS disorders	Training of gatekeepers (eg, community workers, police, teachers) in early identification of priority disorders, provision of low-intensity psychosocial support, and referral pathways Self-help and support groups (eg, for alcohol use disorders, epilepsy or parent support groups for children with developmental disorders, and survivors of suicide)				
<b>Adult mental disorders</b>	Child protection laws	Workplace stress-reduction programmes and awareness of alcohol and drug abuse	Physical activity Relaxation training Education about early symptoms and their management Web-based and smartphone-based psychological therapy for depression and anxiety disorders	Screening and proactive case finding of psychosis, depression, and anxiety disorders <b>Diagnosis and management of depression (including maternal) and anxiety disorders*</b> <b>Continuing care of schizophrenia and bipolar disorder</b> Management of depression and anxiety disorders in people with HIV, with other NCDs*	<b>Diagnosis and management of acute psychoses</b> Management of severe maternal depression* Management of depression and anxiety disorders in people with HIV, with other NCDs*	<b>Electroconvulsive therapy for severe or refractory depression</b> Management of refractory psychosis with clozapine
<b>Child mental and development disorders</b>	Child protection laws	Parenting programmes in infancy to promote early child development <b>Life-skills training in schools to build social and emotional competencies</b> Parenting programmes in early and middle childhood (2–14 years) Early child enrichment and preschool educational programmes Identification of children with MNS disorders in schools	Web-based and smartphone-based psychological therapy for depression and anxiety disorders in adolescents	Screening for developmental disorders in children Maternal mental health interventions Parent skills training for developmental disorders <b>Psychological treatment for mood, anxiety, ADHD, and disruptive behaviour disorders*</b> Improve the quality of antenatal and perinatal care to reduce risk factors associated with intellectual disability	Diagnosis of childhood mental disorders such as autism and ADHD Stimulant medication for severe cases of ADHD Screening of newborn babies for modifiable risk factors for intellectual disability	
<b>Neurological disorders</b>	Policy interventions to address the risk factors for cardiovascular diseases (eg, tobacco control) Improved control of neurocysticercosis		<b>Self-managed treatment of migraine</b> Self-identification or management of seizure triggers Self-management of risk factors for vascular disease (healthy diet, physical activity, tobacco use)	<b>Diagnosis and management of epilepsy and headaches</b> Screening for detection of dementia <b>Interventions to support caregivers of patients with dementia</b> <b>Management of prolonged seizures or status epilepticus</b>	Diagnosis of dementia and secondary causes of headache	Surgery for refractory epilepsy
<b>Alcohol and illicit drug use disorders</b>	<b>Regulate the availability and demand for alcohol (eg, increases in excise taxes on alcohol products, advertising bans)</b> Penalise risky behaviours associated with alcohol (eg, enforcement of blood alcohol concentration limits)	Awareness campaigns to reduce maternal alcohol use during pregnancy	Self-monitoring of substance use	<b>Screening and brief interventions for alcohol use disorders</b> <b>Opioid substitution therapy (eg, methadone and buprenorphine) for opioid dependence</b>	<b>Management of severe dependence and withdrawal</b>	Psychological treatments (eg, cognitive behavioural therapy) for refractory cases*
<b>Suicide and self-harm</b>	<b>Control the sale and distribution of means of suicide (eg, pesticides)</b> Decriminalise suicide	Safer storage of pesticides in the community and farming households	Web-based and smartphone-based treatment for depression and self-harm	<b>Primary health-care packages for underlying MNS disorders*</b> Planned follow-up and monitoring of suicide attempters* <b>Emergency management of poisoning</b>	Specialist health-care packages for underlying MNS disorders	Specialist health-care packages for underlying MNS disorders

**Panel 2: Country case studies on scaling up interventions for mental, neurological, and substance use disorders****The 686 Project: China<sup>30</sup>**

The Central Government Support for the Local Management and Treatment of Severe Mental Illnesses Project was initiated in 2004 with the first financial allotment of ¥6.86 million (US\$829 000 in 2004), as a result of which, it was subsequently referred to as the 686 Project. Modelled on WHO's recommended method for integration of hospital-based and community-based mental health services, this programme provides care for a range of severe mental disorders through the delivery of community-based packages by multidisciplinary teams. The interventions are functionality oriented and are delivered through free outpatient treatment through insurance coverage (New Rural Cooperative Medical Care system) along with subsidised inpatient treatment for poor patients. The programme covered 30% of the Chinese population by the end of 2011. Programme evaluation showed improved outcomes for the more than 280 000 registered patients as the proportion of patients with severe mental illnesses who did not suffer a relapse for 5 years or longer increased from a baseline of 67% to 90% along with large reductions in the rates of so-called creating disturbances and causing serious accidents. The programme investment by the Chinese Government amounted to ¥280 million in 2011, and its key innovations were the increase in the availability of human resources, including both the involvement of non-mental-health professionals and intensive capacity building, which have increased the number of psychiatrists in the country by one-third.

**The National Depression Detection and Treatment Programme (Programa Nacional de Diagnóstico y Tratamiento de la Depresión): Chile**

The National Depression Detection and Treatment Programme is a national mental health programme in Chile that integrates detection and treatment of depression in primary care. The programme is based on the scaling up of an evidence-based collaborative stepped-care intervention in which most patients diagnosed with depression are provided drugs and psychotherapy at the primary care clinics, whereas only severe cases are referred to specialists. Launched in 2001, the programme operates through a network of 500 primary care centres and presently covers 50% of Chile's population. A large number of psychologists have been added to the primary care, with a 344% increase between 2003 and 2008. Enrolment of the patients has grown steadily, with about 100 000–125 000 patients starting treatment each year from

2004 to 2006, and nearly 170 000 patients starting treatment in 2007. Nationwide implementation of the programme has led to a greater use of health services by women and the less educated people, contributing to reduced health inequalities. The programme's success can be attributed to the use of an evidence-based design that was made available to policy makers, teamwork and proactive leadership, strategic alliances across sectors, sustained investment and ring-fencing new and essential financial resources, programme institutionalisation, and sustained development of human resources that can implement the programme.

**Building back better: Burundi<sup>31</sup>**

Civil war in the last decade of 20th century and first decade of this century resulted in widespread massacres and forceful migrations and internal displacement of about 1 million individuals in Burundi. To address this humanitarian crisis, HealthNet Transcultural Psychosocial Organization (TPO) started providing mental health services in Burundi in 2000 when the then Ministry of Public Health had no mental health policy, plan, or mental health unit and almost all the psychiatric services were provided by one psychiatric hospital. HealthNet TPO first assessed the needs and then built a network of psychosocial and mental health services in communities in the national capital, Bujumbura, and in seven of the country's 17 provinces. A new health worker cadre, the psychosocial worker, played a pivotal role in the delivery of these services. Substantial progress has been made in the past decade, with the government now supplying essential psychiatric drugs through its national drug distribution centre, and outpatient mental health clinics are established in several provincial hospitals. From 2000 to 2008, more than 27 000 people were helped by the newly established mental health and psychosocial service. Between 2006 and 2008, the mental health clinics in the provincial hospitals registered almost 10 000 people who received more than 60 000 consultations. Most (65%) of these people had epilepsy. In 2011, funding from the Dutch Government enabled HealthNet TPO and the Burundian Government to initiate a 5-year project aimed at strengthening health systems. One of the project's components is the integration of mental health care into primary care using WHO's Mental Health Gap Action Programme (mhGAP) guidelines. The government has now established a National Commission for mental health, and appropriate steps are being taken to support provision of mental health care in general hospitals and follow-up within the community.

(Continues on next page)

For more on the Programme for Screening, Diagnosis, and Comprehensive Treatment of Depression in Chile see <http://mhinnovation.net/innovations/program-screening-diagnosis-and-comprehensive-treatment-depression#.VVYpd46qqkq>

web-based psychological therapy for people with depression and anxiety disorders, increasingly enabled by internet and smartphone-based delivery. At the primary health-care level, a range of detection and diagnostic measures as well as the psychological and pharmacological management of disorders, including

depression, anxiety disorders, migraine, and alcohol and illicit drug use disorders, can be effective, as can continuing care for severe disorders such as epilepsy or psychosis. The recommended delivery model is that of collaborative stepped care, in which patient care is coordinated by a primary health-care-based,

(Panel 2 continued from previous page)

#### **Suicide prevention through pesticide regulation: Sri Lanka<sup>32</sup>**

In Sri Lanka as well as in other Asian countries, pesticide self-poisoning is one of the most common methods of suicide. Suicide rates in Sri Lanka increased eight times from 1950 to 1995, and the country had the highest rate of suicide worldwide (about 47 per 100 000 population) during this period. A series of policy and legislative actions during this time reduced the suicide rates. Findings from an ecological analysis<sup>32</sup> of trends in suicide and risk factors for suicide in Sri Lanka from 1975 to 2005 suggests that the marked decrease in Sri Lanka's suicide rates in the mid-1990s coincided with the culmination of a series of legislative activities that systematically banned the most toxic pesticides that had been responsible for most

pesticide deaths in the preceding two decades. The Registrar of Pesticides banned methyl parathion and parathion in 1984 and gradually phased out all the remaining class I (the most toxic) organophosphate pesticides during the following years, culminating in July, 1995, with bans on the remaining class I pesticides monocrotophos and methamidophos. By December, 1998, endosulfan (a class II pesticide) was also banned as farmers had substituted class I pesticides with endosulfan. By 2005, suicide rates had been halved to about 25 per 100 000 population. This case study underlines the fact that, in countries where pesticides are commonly used in acts of self-poisoning, regulatory controls on the sale of the most toxic pesticides could have a favourable effect on suicide.

non-specialist case manager who performs a range of tasks including screening, provision of psychosocial interventions, and proactive monitoring, liaising closely with and acting as a link between the patient, the primary care doctor, and specialist services.<sup>22,26</sup> At the hospital level, first-level hospitals, typically district hospitals, can offer a range of medical care services that provide integrated care for people with MNS disorders by implementing the same packages as recommended for the primary health-care channel, particularly in those domains where MNS disorders frequently co-occur, such as in maternal health, other non-communicable diseases, and HIV.<sup>27-29</sup> In specialist services, which might either be offered within first-level hospitals or in separate specialist hospitals (such as psychiatric hospitals or alcohol and illicit drug treatment centres), interventions focus on the diagnosis and management of complex, refractory, and severe cases of MNS disorders, for example of psychosis, epilepsy, or alcohol use disorders. A small minority of individuals with MNS disorders would need ongoing care in community-based residential facilities because of their disability and lack of alternative sources of care and support. Community-outreach teams that can provide variable levels of intensity of care appropriate for the individual's needs have a crucial role because their support enables these individuals to function in an independent and supported way, in the community, alongside close liaison with general primary health-care services and other social and criminal justice services.

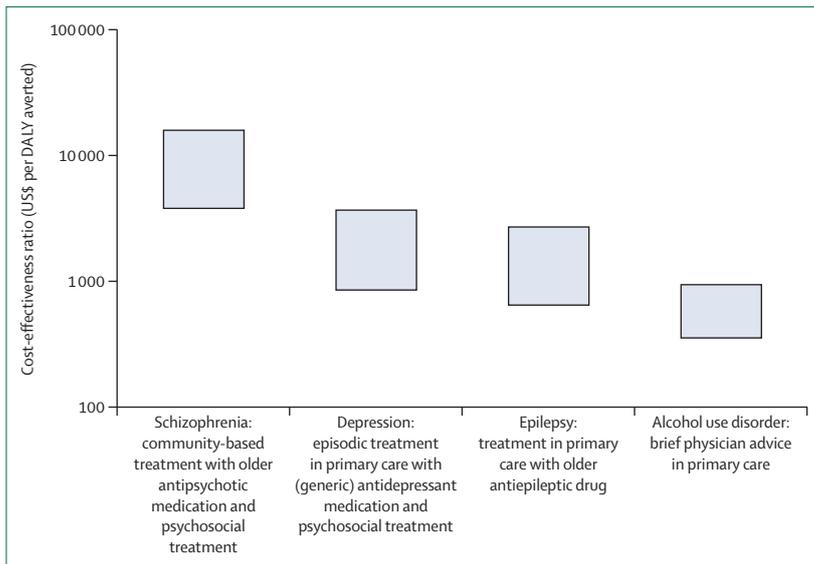
In humanitarian contexts and emergency-affected populations, such as those arising from conflict or natural disaster, the humanitarian aid and emergency response platform is another delivery channel for much-needed mental health care. These populations are at an increased risk of MNS disorders, which can overwhelm the local capacity to respond, particularly if the existing infrastructure or health system was already weak or might have been rendered dysfunctional as a result of the emergency situation. There is a heightened

need to identify and allocate resources for the provision of mental health care and psychosocial support in these settings, both for people with disorders induced by the emergency and for people with pre-existing disorders. In several countries, such emergencies have actually provided opportunities for systemic change or service reform in public mental health care (panel 2).<sup>33</sup> Alongside efforts to improve levels of contact coverage and bridge the treatment gap for people with MNS disorders, it is imperative to also enhance the quality of service delivery. Quality of care should not be subservient to the quantity of available and accessible services, not least since robust quality improvement mechanisms ensure efficient use of limited resources, and good quality services build people's confidence in health care, thereby fuelling the demand and increasing use of preventive and treatment interventions.

#### **How much will it cost? Universal health coverage for MNS disorders**

For successful and sustainable scale-up of effective interventions and innovative service-delivery strategies (such as task-sharing and collaborative care), decision makers need not only evidence of an intervention's effect on health, but also their costs and cost-effectiveness. Even when this cost-effectiveness evidence is available, the question remains of whether or how an intervention might confer wider economic and social benefits to households or society, such as restored productivity, reduced medical impoverishment, or greater equality. The methods used for our economic analyses included a review of existing cost-effectiveness evidence and exploratory analyses of the distributional and financial protection effects of interventions (appendix p 2).

A small but growing economic evidence base exists to inform decision making in low-income and middle-income settings; this evidence base is mainly focused on the treatment of specific disorders such as epilepsy, alcohol use disorders, depression, and schizophrenia. Analysis undertaken at the global level



**Figure 3: Cost-effectiveness of selected interventions for mental, neurological, and substance use disorders in low-income and middle-income countries, 2012**

Previously published estimates have been updated to 2012 values (in US\$). Bars show the range in cost-effectiveness between six low-income and middle-income world regions defined by the World Bank: sub-Saharan Africa, Latin America and Caribbean, Middle East and North Africa, Europe and Central Asia, South Asia, and East Asia and Pacific (appendix p 3). Source: Hyman et al (2006);<sup>18</sup> Chisholm and Saxena (2012).<sup>23</sup>

by WHO, updated to 2012 values for DCP-3, reveals a marked variation in the cost per DALY averted, not only between different regions of the world but also between different disorders and interventions; figure 3 shows the range for the most cost-effective intervention identified for each of the four disorders mentioned above (appendix p 3).<sup>18,23</sup> Brief interventions for harmful alcohol use and treatment of epilepsy with first-line antiepileptic drugs fall towards the lower (more favourable) end of cost per DALY averted, whereas community-based treatment of schizophrenia with first-generation drugs and psychosocial care falls towards the upper end of cost per DALY averted. Estimates from comparable national studies in Brazil, Nigeria, and Thailand, again adjusted to 2012 values, fall in the range of \$100–2000 per DALY averted.<sup>34–36</sup> With the exception of an analysis of alcohol-demand reduction measures—which estimated that one DALY could be averted for as little as \$200–400 through increases in excise taxes on alcoholic beverages and for \$200–1200 through comprehensive advertising bans or reduced availability of retail outlets<sup>37</sup>—hardly any published evidence exists on the cost-effectiveness of population-based or community-level strategies in or for low-income and middle-income settings.

The combined cost of implementing these alcohol-control measures in low-income and middle-income settings has been estimated to be \$0·10–0·30 per head.<sup>37</sup> A new cost analysis for DCP-3 estimates that a school-based life-skills programme would cost \$0·05–0·25 per head (appendix p 5). The annual cost of delivering a

defined package of cost-effective interventions for schizophrenia, depression, epilepsy, and alcohol use disorders in two WHO sub-regions (one in sub-Saharan Africa, the other in south Asia) has been estimated to be \$3–4 per head.<sup>23</sup> In more affluent regions or in upper-middle-income countries, the cost of such a package is expected to be at least double this amount (appendix p 3).

Beyond health improvement, other important goals or attributes of health systems can be considered, including equity and financial protection. Since many MNS disorders run a chronic and disabling course, often go undetected, and are regularly omitted from essential packages of health care or insurance schemes, they pose a direct threat to the wellbeing and economic viability of households as a result of private out-of-pocket expenditures on health services and goods as well as diminished production or income opportunities.<sup>38</sup> It is therefore incumbent upon governments to ensure that intervention costs are largely met through financial protection measures such as health insurance schemes. In the many low-income and middle-income settings in which rates of service availability and uptake remain very low, however, enhanced financial protection measures alone will not move the population of people with MNS disorders substantially towards a goal of universal health coverage. For that goal to be progressively realised, financial coverage of people with MNS disorders needs to be accompanied by substantially scaled up service coverage.<sup>39</sup>

### How to scale up? Health system barriers and opportunities

Despite the evidence summarised in the preceding sections, most low-income and middle-income countries are taking relatively little action to address the health care and other needs of people with MNS disorders. Perhaps the most important reason for this failure to act is the overall poor political commitment to MNS disorders, as evident from the fact that less than 1% of the health budget in most low-income and middle-income countries is allocated to mental health.<sup>40</sup> Similarly, despite the evidence-based calls to action to scale up services for almost a decade,<sup>41</sup> less than 1% of development assistance for health is devoted to mental health care.<sup>42</sup> Key reasons for the absence of political will and consequently low levels of resource allocation include the low demand for mental health-care interventions (in part due to low levels of mental health literacy and high levels of stigma associated with MNS disorders); the absence of technically sound leadership in designing and implementing evidence-based programmes; the absence of adequate absorptive capacity in the existing health-care system; competing policy priorities and vested interests (eg, in relation to the alcohol beverage and pharmaceutical industry and the medical profession); the absence of effective agency and advocacy by affected people; and the persisting

**Panel 3: Proposed regional framework to scale up action on mental health in the WHO Eastern Mediterranean Region<sup>45</sup>****Leadership and governance***Strategic interventions*

- Establish or update a multisectoral national policy or strategic action plan for mental health in line with international or regional human rights instruments
- Establish a structure, as appropriate to the national context, to facilitate and monitor implementation of the multisectoral national policy and strategic action plan
- Review legislation related to mental health in line with international human rights covenants and instruments
- Include defined priority mental health disorders in the basic health delivery package of the government and social and private insurance reimbursement schemes
- Increase and prioritise budgetary allocations for addressing the agreed upon service targets and priorities, including providing transitional or bridge funding

*Proposed indicators*

- Country has an operational multisectoral national mental health policy or plan in line with international or regional human rights instruments
- Country has an updated mental health legislation in line with international and regional human rights instruments
- Inclusion of specified priority mental health disorders in basic packages of health care, of public and private insurance and reimbursement schemes
- Reorientation and scaling up of mental health services

**Reorientation and scaling up of mental health services***Strategic interventions*

- Establish mental health services in general hospitals for outpatient and short-stay inpatient care
- Integrate delivery of evidence-based interventions for priority mental health disorders in primary health care and other priority health programmes
- Enable people with mental health disorders and their families through self-help and community-based interventions
- Downsize the existing long-stay mental health hospitals

*Proposed indicators*

- Proportion of general hospitals that have mental health units including inpatient and outpatient units

- Proportion of persons with mental health disorders using health services (disaggregated by age, sex, diagnosis, and setting)
- Proportion of primary health-care facilities having regular availability of essential psychotropic medicines
- Proportion of primary health-care facilities with at least one staff member trained to deliver non-pharmacological interventions
- Proportion of mental health facilities monitored annually to ensure protection of human rights of persons with mental health disorders using quality and right standards

**Promotion and prevention***Strategic interventions*

- Integrate recognition and management of maternal depression and parenting skills training in maternal and child health programmes
- Integrate life-skills education, using a whole school approach
- Reduce access to means of suicide
- Employ evidence-based methods to improve mental health literacy and reduce stigma

*Proposed indicators*

- Proportion of community workers trained in early recognition and management of maternal depression and to provide early childhood care and development and parenting skills to mothers and families
- Proportion of schools implementing the whole school approach to promote life skills

**Information, evidence, and research***Strategic interventions*

- Integrate the core indicators within the national health information systems
- Enhance the national capacity to undertake prioritised research
- Engage stakeholders in research planning, implementation, and dissemination

*Proposed indicators*

- Routine data and reports at national level available on core set of mental health indicators
- Annual reporting of national data on numbers of deaths by suicide

belief in the importance of hospital-based specialised models of care, which continue to absorb disproportionate amounts of the already meagre budgetary allocations for this sector.<sup>25</sup> To add to this list is the reality that the evidence synthesised in this paper has limitations, particularly the substantial gaps in the evidence in support of some interventions in low-income and middle-income countries and limited effectiveness of the best available interventions for some disorders. To address this formidable list of barriers, the scaling up of interventions for people with MNS disorders will require an approach that embraces public

health principles, systems thinking, and a whole-of-government perspective, as has been shown by several countries (panel 2).

Key strategies necessary for health-system strengthening include: the mainstreaming of a rights-based perspective throughout the health system and ensuring health policies, plans, and laws are updated to be consistent with international human rights standards and conventions; implementation of multi-component initiatives to address stigma, enhancement of mental health literacy and demand for care, and mobilisation of people with the disorders to support each

other and be effective advocates; engagement of other key sectors that work to improve services for people with MNS disorders, notably the social care, non-governmental organisations, private sector, criminal justice, education, and indigenous medical sectors, as they may have complementary roles; provision of inpatient care in the form of general or district hospital units rather than stand-alone psychiatric hospitals; the creation of a non-specialist cadre for human resources that can be case managers and coordinate the delivery of collaborative care in primary care and other health-care platforms; ensuring the supply of essential medicines at relevant platforms; and investment in research across the translational continuum (from basic scientific discoveries to effective clinical applications to interventions for improving public health). Financing options could include the raising and diversion of income taxes on unhealthy products (such as alcohol and tobacco); emphasis on the use of low-cost generic drugs throughout the health-care system; and reallocation of expenditure on ineffective or low-value interventions (such as irrational use of benzodiazepines and vitamins in primary care). Finally, the embedding of health indicators for MNS disorders within national health information and surveillance systems will be important so that progress and achievements can be monitored and assessed.<sup>43</sup> The WHO Comprehensive Mental Health Action Plan<sup>44</sup> offers a clear roadmap for countries at any stage of the journey to scale up efforts. Some WHO regions (such as the Eastern Mediterranean) have adapted this new policy instrument to initiate consultations with international experts and regional policy makers to develop frameworks for action (panel 3) across all four domains of the Plan, along with priority interventions and indicators for assessment of progress.<sup>45</sup>

### Time to act, now

MNS disorders account for a substantial proportion of the global disease burden. This burden has increased dramatically since 1990 and is expected to rise in line with the epidemiological transition from infectious disease to non-communicable disease, with demographic transition in low-income and middle-income countries, and with the increase in the prevalence of several social determinants associated with these disorders. New analyses presented here suggest that the mortality-associated disease burden is very large and previously underestimated. We have also summarised evidence of several effective treatment and prevention interventions that are feasible to implement across diverse socioeconomic and cultural settings for a range of priority MNS disorders. A very relevant aspect of these disorders is their propensity to strike early in life, which is a key factor behind their large contribution to the global burden of disease. Although several important health-system barriers need to be addressed to scale up

the recommendations outlined in this paper, country case studies (panel 2) show that the most important driver of change is political will and commitment in countries and development agencies to allocate the necessary resources and provide technical leadership.

The analyses presented in this DCP-3 volume will be synthesised over the coming months along with the findings and recommendations of eight other volumes, with a view to inform ongoing deliberations around the implementation of the Sustainable Development Goals and other policy agendas. The evidence from this volume alone makes a compelling case to scale up interventions to address the avoidable toll of suffering caused by MNS disorders, not least among the poorest people and least resourced countries in the world. Although our analyses have presented the strong public health and economic evidence to support this investment, a moral case must ultimately be made for the scaling up of health care for the hundreds of millions of people whose health-care needs have been systematically neglected and whose basic human rights routinely denied.<sup>46</sup> The time to act on this evidence is therefore now.

### Contributors

VP and DC provided overall leadership in conceptualising the work described in this paper, conceptualised the structure of the paper, drafted the key messages, and sections of the paper. All authors contributed to drafting of specific sections of the paper and reviewing and commenting on successive drafts including reviewing and approving of the final submission. Specifically, GT and HW helped VP and DC in framing the design of the study. CL, DC, and RL contributed to discussion on cost-effectiveness. RS and CLU contributed to discussion on health-care platforms. IP contributed to discussion on population and community platforms. FJC, LD, AJF, and HW contributed to the section on burden. SH contributed to discussion on adult mental disorders. TD contributed to the discussion on neurological disorders. LD contributed to discussion on illicit drug dependence. JS contributed to discussion on child disorders. LV contributed to discussion on suicide.

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#### Declaration of interests

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