DISEASE CONTROL PRIORITIES PROJECT

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Mental and Neurological Disorders

About 13 Percent of the Global Disease Burden Stems From These Illnesses, But Stigma and Lack of Resources Often Prevent Their Diagnosis and Treatment

Mental and neurological disorders affect more than 450 million people globally, causing substantial disability rates and suffering and making major contributions to the world's total disease burden. About 13 percent of disability-adjusted life years (or DALYs, a measure of the amount of health lost due to a particular disease or condition) are due to mental and neurological disorders.

These disorders bring significant economic hardship not only to those who suffer from them, but also to their caregivers—who are very often the patient's family, given the lack of health resources often found in developing countries. The costs are devastating—loss of gainful employment, the requirement for caregiving, the caregivers' loss of family income, the cost of medications, and the need for other medical services.

The absence of these disorders from lists of the leading causes of death has contributed to their long-term neglect by both donors and policymakers in developing countries. As a result, 90 percent of people with epilepsy and more than 75 percent of people with major depressive disorder in developing countries are inadequately treated. The stigmatization and discrimination associated with these illnesses also remain substantial obstacles to diagnosis and treatment.

The immediate challenge for developing countries is generating sufficient resources for primary mental health care to ensure correct diagnosis and treatment of these disorders.

For mental disorders such as schizophrenia, bipolar affective disorder, major depressive disorder, and panic disorder, the proper drugs and counseling can be cost-effective interventions. For neurological disorders such as dementia, epilepsy, Parkinson's disease, and acute ischemic stroke, interventions are inexpensive and effective, with the added benefit that they can be applied on a large scale through primary care.

Mental Disorders

Cost-Effective Interventions Are Available

The four leading contributors to mental disorders are schizophrenia and related nonaffective psychoses; bipolar affective disorder (manic-depressive illness); major depressive disorder; and panic disorder. Less than 10 percent of the disease burden for schizophrenia and bipolar disorder currently is being averted, while current levels of effective coverage avert only 3 percent to 8 percent of the existing disease burden for depression and panic disorder. But the implementation of combined interventions at a scaled-up level of coverage could avert from 14 percent to 22 percent of the burden of schizophrenia, from 17 percent to 29 percent of the burden of bipolar disorder, and at least 20 percent of the burden of disease for both depression and panic disorder.

- The most cost-effective strategy for averting the burden of *psychosis* and *severe affective disorders* in developing countries would be a combined intervention of first-generation antipsychotic or mood-stabilizing drugs along with psychosocial treatment delivered through a community-based outpatient service model.

- This combined approach would avert more than 500 DALYs per $US1 million expenditure in Sub-Saharan Africa and South Asia, and 200 DALYs in Latin America and the Caribbean. Currently, the high price of second-generation antipsychotic drugs makes their use in developing regions questionable on efficiency grounds, although this situation can be expected to change as these drugs come off patent.

- For more common mental disorders treated in primary-care settings (*depressive and anxiety*

disorders), the single most cost-effective strategy is the scaled-up use of older antidepressants.

As the price margin between older and newer generic antidepressants continues to diminish, newer generics can be expected to become at least as cost-effective as the older ones. Because depression is often a recurring condition, proactive care management, including long-term maintenance treatment with antidepressant drugs, represents a cost-effective way of significantly reducing the enormous burden of depression that exists in developing regions now—averting 400 to 1,300 DALYs per US$1 million expenditure.

For every US$1 million invested in a mental health care package containing all of the above interventions, 350 to 700 healthy years of life would be gained over what would occur without intervention. Governments also need to make children, adolescents, and aging populations a priority: In developing countries, these groups have grossly deficient mental health services.

Using Primary Health Care to Treat Mental Disorders

It is unlikely that many developing countries will be able to rely soon on the private sector to deliver services that will reduce the burden of mental disorders. In addition, for many developing countries, there is a large deficiency of psychiatric beds of any kind. The more resource-constrained a country or region is, the greater its reliance on self-help, informal community support (especially family-based), and primary health care.

Examples in nearly a dozen countries now show it is feasible and practicable to treat common mental disorders in primary health care settings, particularly through community approaches that use low-cost, locally available resources to improve treatment adherence and clinical outcomes. The challenge is to enhance systems of care by taking effective local models and disseminating them throughout a country. The following models are proving effective in delivering mental health care in resource-challenged situations:

- Nongovernmental organizations (NGOs) are important providers of mental health care, with an estimated 93 percent of countries in Africa and 80 percent of countries in Southeast Asia having NGOs in the mental health sector. They provide diverse services—including advocacy, informal support, housing, suicide prevention, substance misuse counseling, dementia support, rehabilitation, research, and other programs—that complement or substitute for public and private clinical services.
- Acute inpatient beds are being moved from mental hospitals into general or district hospitals. This form of service delivery has been established effectively in a number of countries.
- Nurses can replace physicians as primary health care providers without loss of effectiveness in certain circumstances.
- Psychoeducational family intervention has been shown to be suitable for rehabilitation in schizophrenia in rural China.

Neurological Disorders

Neurological disorders such as Alzheimer's disease and other dementias, epilepsy, Parkinson's disease, and acute ischemic stroke are current or emerging public health problems in developing countries. Such disorders are highly prevalent and large numbers of sufferers are untreated. But available inexpensive but effective interventions could be applied on a large scale through primary care.

Alzheimer's Disease and Other Dementias

Developing countries have a comparatively lighter disease burden from Alzheimer's disease and other dementias than do developed countries, because they occur in older individuals and life expectancy is lower in developing countries. But the burden from these diseases is relatively high in East Asia and the Pacific and South Asia relative to the level of economic development. And caregivers for patients with dementia face social isolation, psychological stress, and high rates of depression.

Treating underlying disease and risk factors for cardiovascular diseases can help prevent future cerebrovascular disease that often leads to dementia. Giving low doses of antipsychotic medication to patients with any form of dementia who also have behavioral problems may be an option for reducing caregiver stress. The model of care in developing countries should be based on home care, along with training, counseling, and cognitive and behavioral family intervention to support family caregivers.

Epilepsy

Epilepsy affects about 50 million people worldwide, of whom approximately 80 percent live in developing countries. About

Cost and Effects of a Specified Mental Health Care Package

	World Bank region					
	Sub-Saharan Africa	Latin America and the Caribbean	Middle East and North Africa	Europe and Central Asia	South Asia	East Asia and the Pacfic
Total effect (DALYs averted per year per 1 million population)						
Schizophrenia: older antipsychotic drug plus psychosocial treatment	254	373	364	353	300	392
Bipolar disorder: older mood-stabilizing drug plus psychosocial treatment	312	365	322	413	346	422
Depression: proactive care with newer antidepressant drug (SSRI: generic)	1,174	1,953	1,806	1,789	1,937	1,747
Panic disorder: newer antidepressant drug (SSRI; generic)	245	307	287	307	284	330
Total effect of interventions	1,985	2,998	2,779	2,8625	2,867	2,891
Total cost (US$ million per year per 1 million population)						
Schizophrenia: older antipsychotic drug plus psychosocial treatment	0.47	1.81	1.61	1.32	0.52	0.75
Bipolar disorder: older mood-stabilizing drug plus psychosocial treatment	0.48	1.80	1.23	1.39	0.62	0.95
Depression: proactive care with newer antidepressant drug (SSRI: generic)	1.80	4.80	3.99	3.56	2.81	2.59
Panic disorder: newer antidepressant drug (SSRI; generic)	0.15	0.27	0.21	0.23	0.16	0.20
Total effect of interventions	2.9	8.7	7.0	6.5	4.1	4.5
Cost-effectivness (DALYs averted per US$1 million expenditure)						
Schizophrenia: older antipsychotic drug plus psychosocial treatment	544	206	226	267	574	522
Bipolar disorder: older mood-stabilizing drug plus psychosocial treatment	647	203	262	298	560	446
Depression: proactive care with newer antidepressant drug (SSRI: generic)	652	407	452	502	690	675
Panic disorder: newer antidepressant drug (SSRI; generic)	1,588	1,155	1,339	1,350	1,765	1,649

Source: Hyman, S., D. Chisholm, R. Kessler, V. Patel, and H. Whiteford. 2006. "Mental Disorders." In Disease Control Priorities in Developing Countries, 2nd ed., ed. D. T. Jamison, J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Jha, A. Mills, and P. Musgrove, table 31.7. New York: Oxford University Press.

Disability-Adjusted Life Years by Cause and Region, 2001 (thousands)

Condition	Global Total			East Asia and the Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa	High-income countries
	Both sexes	Males	Females							
AD and other dementias	17,108	6,092	11,016	4,110	1,612	1,215	292	1,955	450	7,468
Epilepsy	6,223	3,301	2,922	1,303	354	737	248	1,741	1,373	464
PD	2,326	1,124	1,202	435	228	90	81	303	100	1,086
Cerebrovascular disease	72,024	35,482	36,542	25,832	12,616	3,936	1,948	13,184	5,125	9,354

90 percent of people with epilepsy in developing countries are inadequately treated, and epilepsy imposes a large economic burden on patients and their families.

Phenobarbital, which can be provided for as little as US$5 to US$10 per year, is the drug of choice for large-scale, community-based epilepsy treatment programs in developing countries, particularly in rural and remote areas of developing countries. Phenobarbital should be recommended for widespread use: The cost per DALY gained of using it in low- and middle-income countries (LMICs) is estimated at US$89, making it highly cost-effective.

Parkinson's Disease

As Parkinson's disease is a disease of older age, the disease burden is generally higher in high-income countries with longer life expectancies. But Parkinson's disease imposes many of the same costs that many other forms of dementia do, including loss of labor for both patients and caregivers.

Because specific curative or neuroprotective treatments for Parkinson's disease have not been established, interventions are primarily directed at alleviation of symptoms and include drugs, surgery, physical therapy, and traditional medicine. Indigenous systems of medicine such as ayurvedic treatment (common in India) have proven to be more cost-effective for managing Parkinson's disease than expensive Western medications or surgical procedures.

Stroke

The incidence of stroke is increasing around the world, with ischemic stroke making up about 70 percent of the total. Health experts anticipate that the number of stroke cases (and survivors with disabilities) will increase, particularly in developing countries, because of aging populations and increased exposure to major risk factors such as hypertension, smoking, diabetes, obesity, physical inactivity, and rheumatic heart disease. Some developing countries (such as Tanzania) already have mortality rates from stroke that are much higher than those for the developed world.

Aspirin is by far the most cost-effective intervention both for treating acute stroke and for preventing a recurrence. It is easily available in developing countries, even in rural areas. The cost per DALY averted of using aspirin in LMICs for treatment of acute stroke is estimated at US$150. It cost US$70 per DALY averted to use aspirin to prevent a second stroke within two years of a first stroke. Other interventions to curb the risk of stroke include tobacco and alcohol control, labels showing the fat content of foods, and public education about the harm caused by high-fat foods.

Research and Development

The populations of most developing countries are aging rapidly, and many neurological disorders frequently occur in the elderly—posing a growing public health problem in these countries. Developing countries should begin or expand their research and development agendas to address issues related to the prevention, identification, and management of neurological disorders. Specific areas for research and development include:

- Conducting population-based epidemiological studies;
- Enhancing existing health care delivery systems, especially in rural areas using community-based health care providers;
- Developing cheaper and more efficacious medicines;
- Studying and promoting the use of indigenous systems of medicine, and
- Launching stigma removal campaigns.

For More Information

See the following chapters in Jamison, D. T., J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Jha, A. Mills, and P. Musgrove. 2006. Disease Control Priorities in Developing Countries, 2nd ed. New York: Oxford University Press.

Hyman, S., D. Chisholm, R. Kessler, V. Patel, and H. Whiteford. 2006. "Mental Disorders." 605-26.

Chandra, V., R. Pandav, R. Laxminarayan, C. Tanner, B. Manyam, S. Rajkumar, and others. 2006. "Neurological Disorders." 627-44.