(air pollution and lead exposure) accounted for about 28%. Although most of the risk attribution information is not novel, many of the risks are modifiable and have been shown to reduce stroke, and thus, are important to track and emphasise in relation to continued stroke prevention efforts.

Despite the reduction in age-standardised stroke death rates and a decrease in stroke incidence in most regions, with the exception of east Asia and southern sub-Saharan Africa, stroke is still prevalent and remains disabling, with more than 80 million stroke survivors worldwide and an increasing absolute number of DALYs. It has become apparent that population growth and ageing have the potential to result in a greater absolute pool of people at risk of stroke and people who will have a stroke, despite the current declining stroke incidence. A forecast in the USA up to year 2050 suggests a doubling of the number of strokes, largely occurring in people aged 75 years and older and in minority ethnic groups such as Hispanic people.[5] Additionally, improved stroke survival portends a higher prevalence of chronic stroke.[3]

Based on the current forecasts, prevention of stroke in people aged 75 years and older will be an important target to relieve future global burden of stroke. Additionally, we will need to continue to support efforts to prevent stroke by risk factor modification, make stroke prevention available in low-income areas of the world where stroke incidence might be high, and discover novel stroke prevention and rehabilitation strategies.[5,6] Promotion of a healthy environment, which is often overlooked, also might pay substantial dividends.[7]

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My employer receives payment for work as a major cardiovascular event adjudicator for a number of pharmaceutical companies. I have received personal fees for serving on the Bayer ARRIVE study steering committee, outside the submitted work.

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The global burden of neurological disorders

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See **Articles** page 459

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The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2016 on neurological disorders published in *The Lancet Neurology* is another milestone in the history of global health metrics.[1] The GBD enterprise, as it has been referred to, grew from the 1990 World Bank study that was commissioned to comprehensively measure the status of world health. Coauthored by the now head of the Institute of Health Metrics Evaluations (IHME), Chris Murray, the 1990 study set the benchmark for successive studies. The 2010 study published in *The Lancet* in 2012 established not only new methods and estimates of global burden of diseases from 1990 to 2010 in a series of papers, but also the successful cooperative arrangement between *The Lancet*, WHO, IHME, and the Bill & Melinda Gates Foundation, with annual updates of GBD. The 2015 study introduced a more meaningful and broader measure of socioeconomic demographics than previously, the Socio-demographic Index (SDI). Further expansion by inclusion of more diseases and risk factors occurred with GBD 2016.

The neurological diseases GBD overview in *The Lancet Neurology* is the latest update on specific categories of neurological disorders. With the acknowledgment of stroke as a neurological disorder in the International Classification of Diseases (ICD) 11,[2] the impact of neurological diseases can now be more fully appreciated. In the neurological diseases GBD, the prevalence, deaths, years of life lost (YLLs), years lived with disability (YLDs), and disability-adjusted life-years (DALYs) by age and sex have been estimated from 195 countries from 1990 to 2016 for 15 neurological disorder categories, which now also include brain and spinal cord trauma. With 9·0 million (95% uncertainty interval [UI] 8·8–9·4) deaths and

16·5% (16·1–17·0) of global deaths, neurological disorders is the second leading cause of death after heart disease and with 276 million (247–308) DALYs and 11·6% (10·7–12·4) of global DALYs, it is the leading cause of disability. This prominence in the global burden of disease is consequent upon both the increasing numbers of people affected by neurological disorders and the longevity of affected people living with disability, despite stabilised age-standardised rates of DALYs and mortality for each disease; it also results in the continuing divergence between communicable and non-communicable diseases (NCDs) due to increasing numbers of people affected by NCDs.[3]

The increase in numbers of people with NCDs will place a heavy demand on societies and their health-care systems. Because the resources and the ability of health-care systems facing this increasing demand vary by nation and the neurological diseases GBD provides the most detailed picture of burden faced by every nation, the national and regional needs can be more realistically matched. With new graphics and improved data capture, the increasing population growth and ageing means the magnitude of the global, regional, and national disease-specific burdens can be appreciated more fully than ever before. Disconcertingly, in concluding that more effective risk factor modification was required to reduce the increased burden, researchers found little or no causative explanation for the neurological diseases among the 84 risk factors that were quantified (from four hierarchies) in the neurological disorders GBD, apart from stroke and to a lesser extent, Alzheimer's disease and other dementias and idiopathic epilepsy. Consequently, the need to understand and develop disease-modifying strategies is of paramount importance.

A major concern in the collection of data for this study, acknowledged by the IHME researchers, is its quality and uniformity. This was especially the case with the estimates for Alzheimer's disease and other dementias. Although high-income countries had excellent coverage, low-income countries did not. From 237 literature sources, 230 ways to diagnose dementia were described and even among the 68% using the mini mental state examination, diagnostic cutoffs ranged from 18–28 of the total score of 30.

In parallel with the need to accord basic and translational research the highest priority to avert the burden on people with neurological disorders and national health systems, a matching urgency exists to correct the wide variation in national resources. In the context of the neurological disorders GBD, the global inequities of access to good-quality neurological care and the accompanying early diagnosis hinder essential interventions and the implementation of modifiable disease strategies at all levels of SDI. Not only must the increasing burden of NCDs be recognised, but also the persisting inadequacies of our collective response. For now, high-income countries with established research institutions need to lead and low-income and middle-income countries need to prepare to introduce minimum levels of care that incorporate these research results.

No longer can nations and people rely on hope, they must begin to act collectively to provide the required resources identified through the already published GBDs and future studies of scientific and social research to identify and implement disease-modifying strategies and programmes. However, as noted by the UN General Assembly report of December, 2017, progress up to now in reducing the burden from NCDs, including neurological disorders, is insufficient to meet the UN Sustainable Development Goals targets by 2030.[1] Global, national, and regional neurological and disease-specific organisations such as the World Federation of Neurology, the World Stroke Organisation, and Alzheimer's International must join with WHO to attain the necessary momentum to meet this growing challenge.[4] Brain health is one of humankind's most precious resources at all ages and at all levels of human activity. It deserves to be allocated the acknowledgment and resources appropriate to it.

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