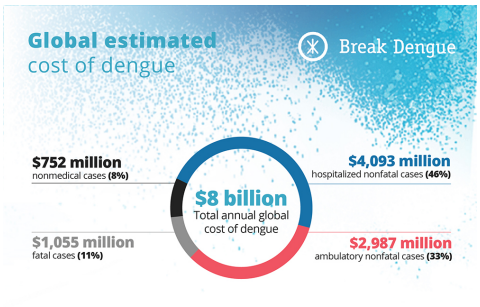
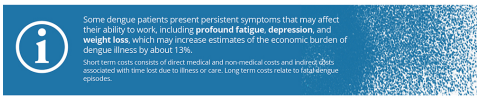
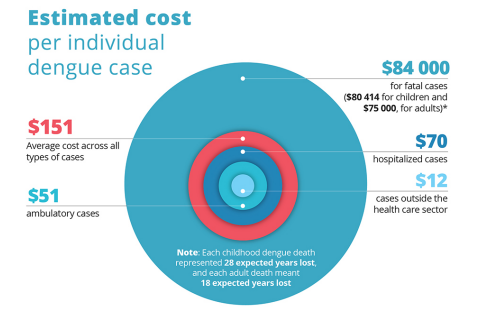
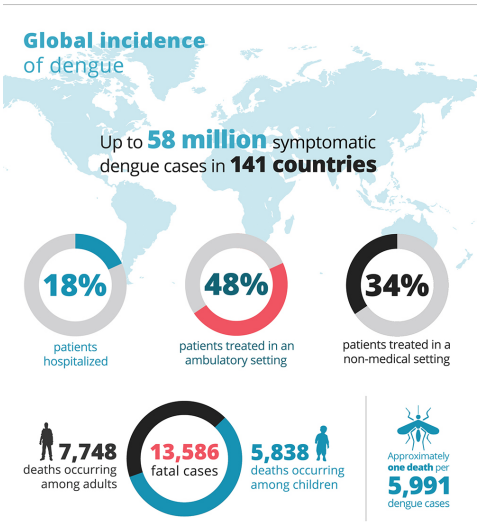
Dengue fever's economic 'bite' estimated

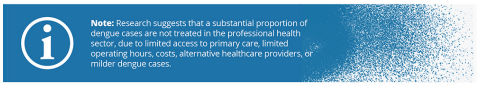
May 4 2016

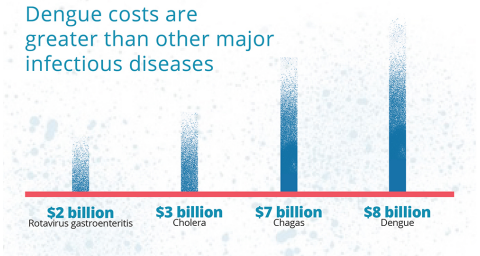












Source: Shepard, DS, Undurraga, EA, Halasa, YA, and Stanaway, JD.
The global economic burden of dengue: a systematic analysis. Lancet Infect Dis. 2016; (published online April 15.)
http://dx.doi.org/10.1016/S1473-3099(16)00146-8.

Credit: Brandeis University

In keeping with the Schneider Institutes for Health Policy's (SIHP) mandate to inform health policy through rigorous economic analyses, a group of SIHP health economists at Brandeis University's Heller School for Social Policy and Management has published a comprehensive assessment of the economic burden that dengue fever imposes on 141 countries and territories around the world where active dengue transmission has been identified.

In summary, the group found that the global cost of dengue is substantial. At an estimated cost of US$8.9 billion annually, the price tag for dengue exceeds that of several other major infectious diseases such as cholera, rotavirus gastroenteritis, canine rabies and Chagas, notes lead author Donald Shepard.

Dengue fever burden: Why does it matter?

Dengue is the world's fastest growing mosquito-borne disease, currently threatening about half the world's population or almost 4 billion people and leading to an estimated 60-100 million symptomatic dengue cases every year. The disease's common nickname in the tropical and subtropical countries where it is found is 'break-bone fever,' which attests to the degree of suffering it can inflict.

Since it is transmitted by four distinct types of viruses, dengue can hit the same individual up to four times. Dengue fever is prone to resource-intensive outbreaks that tend to hit hardest in the urban growth centers of endemic countries, like Brazil, Indonesia and India. In this way, dengue

can literally break the back of local healthcare systems and lead to intensive associated costs, related both to medical care and lost productivity.

But dengue fever is not a highly fatal disease and, therefore, it does not typically garner as much attention in terms of traditional measures of disease burden as malaria, for example. Professor Shepard and this team are an exception, however, as they published their first paper on the economics of dengue in 1993. Since then, they have also published several studies on the economic burden of dengue at the level of individual countries where dengue is a major public health threat such as India, Malaysia, Mexico, and the Philippines.

SIHP research provides a much-needed global update

Therefore, the *Lancet Infectious Diseases* article entitled 'The Global Economic Burden of Dengue: A Systematic Estimate' provides a much-needed update on the economic impact of this disease worldwide. The paper took a comprehensive view to assemble all existing evidence to generate a systematic estimate of global economic burden and, for the first time, to replicate this process 1,000 times to generate uncertainty intervals around the central estimate.

"The dearth of population-based data for many elements was the biggest challenge of us. For important parts of the tropics-especially South Asia and Africa-almost no such studies exist, in fact," notes Professor Shepard.

Clear message to global policy community

The study provides both global and regional estimates on the cost of dengue, broken down by country and various short- and long-term costs.

By putting a value on the size of the dengue problem, these estimates will help governments and donors make better-informed decisions around their dengue programs.

"In every country the public purse has more demands than it can satisfy," says Professor Shepard. "Defining dengue in monetary terms means the disease can be compared with other economic problems. Public health systems can then leverage that information to secure resources from their Ministry of Finance—and possibly the donor community—to control the disease."

In quantifying the uncertainty around the study's estimates, the study highlights the importance of conducting additional cohort studies and linking the results with routine surveillance data.

"Our hope is that a greater understanding of the main factors driving uncertainty around the burden of dengue will allow current estimates to be improved and, consequently, drive the evaluation of existing and potential future preventive and treatment approaches," concludes Professor Shepard.

More information: Donald S Shepard et al, The global economic burden of dengue: a systematic analysis, *The Lancet Infectious Diseases* (2016). DOI: 10.1016/S1473-3099(16)00146-8

Provided by Brandeis University