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Saving lives efficiently across sectors: The need for a Congressional cost-effectiveness committee

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In the preamble of the United States Constitution, a primary goal of government was established: “to promote the general Welfare”. Upon the opening of the 115th US Congressional session, we suggest an evidence-based approach for the new Congress in aligning the budget process more closely with this national goal. In particular, we underscore the efficiency of the public health sector in promoting societal welfare, and reveal a relative underinvestment in public health compared to other sectors.

A corollary of the Congressional responsibility for stewardship of taxpayer money is that economic investment should be allocated to maximize societal benefit. However, as currently structured, Congress is ill-equipped to compare program efficiency across sectors.¹ Cost-effectiveness analyses can be used to standardize comparison between programs with disparate investments and outcomes. However, Congress does not have formal criteria to judge cost-effectiveness, and thereby consider the efficiency of proposed programs. Nonetheless, the budgets that are passed and declined have life-saving and life-improving repercussions. We illuminate discrepancies in the cost-effectiveness of Congressional budgetary approvals and allocations across sectors, reflecting inconsistencies in the willingness of Congress to allocate government funding to save lives. We highlight examples

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of public health interventions which remain underfunded despite favorable cost-effectiveness metrics, particularly when compared to investments in other sectors. Furthermore, we propose steps that Congress can take to integrate systematic cost-effectiveness analyses into its decision-making.

One area in which the government has made an explicit commitment to save lives is through counter-terrorism efforts. In response to the terrorism on September 11, 2001, many areas of the federal government expanded their mission and their budget. Annually, \$16.6 billion is allocated to counter-terrorism intelligence, with the explicit objective of preventing similarly catastrophic terrorist attacks in the US.² This expenditure is estimated to be double the 2001 spending on counter-terrorism intelligence. Additionally, the TSA was initiated in response to the 9/11 terrorism. Compared with the pre-9/11 status quo counter-terrorism budget, the incremental budgetary increases of \$8.4 billion from counter-terrorism intelligence and \$5.6 billion from TSA,³ together an incremental \$13.9 billion, represent the increased annual allocation by Congress to prevent comparable attacks. The death toll from the 9/11 attacks and the anthrax terrorism in their wake was 2982,⁴ compounded by physical injuries, psychological distress, emergency response expense, property destruction, and productivity loss. While these are substantial losses, it is nonetheless striking that the cost-benefit or cost-effectiveness of the counter-terrorism program has never been a formal component of Congressional deliberations on this funding stream.

In contrast to these widely supported Congressionally approved counter-terrorism measures, many other life-saving interventions of documented cost-effectiveness or even cost-savings in the public health sector have not been given the same priority. As one of many examples, the Infectious Disease Society of America recommended a \$6.3 million increase in the 2016 HIV prevention and surveillance budget of the CDC.⁵ The ultimate budget increase was only \$2 million.⁶ Expansion of HIV testing and treatment is estimated to save lives and reduce HIV-related medical expenses at a cost under \$50,000 per QALY,⁷ which represents markedly better value than Congressional appropriations for counter-terrorism intelligence and TSA. Meanwhile, the rates of HIV diagnosis and treatment in the US are far below United Nations targets, below the rates achieved by virtually every other developed country, and even below many developing countries, including Rwanda.⁸ Specifically, only 52% of people diagnosed with HIV in the US are treated, compared with 92% in Rwanda, 99% in Australia and 90% in the UK.⁸

Similarly, while a Zika pandemic flared, Congress deliberated for seven months over the allocation of \$1.1 billion in emergency funding to combat the disease. Focusing on domestic outcomes alone, the CDC estimated that approximately 8,000 prenatal Zika infections will occur in Puerto Rico by the end of this initial outbreak,⁹ with additional but comparatively limited numbers expected from the rest of the US. From these infections, it is expected that approximately 200 infants will be born with Zika-associated microcephaly.⁹ Based on conservative estimates of health impact and potential lifetime medical costs for microcephaly, the proposed Congressional investment would be very cost-effective,¹⁰ even without incorporating productivity losses incurred by families caring for affected infants. Furthermore, the CDC estimated that the costs of improving contraception access during a

Zika outbreak would be entirely offset by the averted downstream medical costs of microcephaly.¹¹

Public health interventions beyond those applicable to infectious diseases remain similarly unfunded or underfunded by Congress. For example, lead abatement programs have been underfunded despite an estimated return between \$17 and \$221 for every \$1 investment.¹² Counter to the recommendation from a Presidential Task Force sixteen years ago to invest at least \$230 million annually towards mitigating lead exposure of children,¹³ equivalent to over \$320 million in 2016 dollars, federal funding for this item remains at \$110 million.¹⁴ The repercussions are real. Fewer than half of applications to the Department of Housing and Urban Development for lead abatement were able to be fulfilled last year. While members of the US Senate across political parties decry the high-profile atrocity of lead poisoning of children in Flint, Michigan (itself a consequence of budget-cutting expediency in the provision of safe water to an impoverished community), they vote against measures that would protect children across the country from this danger.

Psychological studies have demonstrated that some dangers tend to evoke exaggerated fear that results in disproportionate perception of actual risk.¹⁵ Ironically, chronic conditions, above all heart disease and related conditions such as obesity and type 2 diabetes, pose the greatest risk to American life and health, but their very commonality tempers our perception of their threat. The under-funding of preventative measures in the US health system leads to a confluence of poorer health outcomes and an over-reliance on expensive downstream care. Consequently, the US ranks first internationally for per capita medical spending,¹⁶ but only 31st for life expectancy.¹⁷ Public health programs including population sodium reduction,¹⁸ diabetes prevention,¹⁹ food and vegetable subsidies,²⁰ and smoking cessation for Medicaid recipients²¹ are all predicted to be highly cost-effective or cost-saving. Despite this evidence, current budget proposals aim to reduce federal funding for chronic disease prevention. Specifically, the recent Congressional proposal to replace the Affordable Care Act with the American Health Care Act will eliminate the Prevention and Public Health Fund (PPHF), the first mandatory funding stream dedicated to improving the nation's public health system and to the prevention of chronic disease. Under the current Congressional proposal, efficient public health programs operated under the PPHF would be dismantled. One of many such programs includes the "Living Well" initiative, which not only improves health for the elderly and disabled but entirely recoups its programmatic costs through reduced Medicare costs.²² Additionally, Congressional deliberations are underway regarding the White House budget proposal, which includes a \$52 billion increase in the budget of the Defense Department, but an 18% reduction in funding for the Department of Health and Human Services. If passed, this reallocation would exacerbate the underinvestment in public health compared to other sectors.

Compounding this psychological bias, the disconnect between allocations for many government expenditures versus public health arises from the siloed structure of Congress and of government agencies, whereby each committee or agency operates without regard to the priorities of other sectors.¹ For example, the staff responsible for developing the counter-terrorism budget are not tasked with considering whether the resources could be more effectively allocated to lead abatement. Furthermore, each sector may prioritize different

outcomes,²³ complicating standardization. Nonetheless, oversight of the complete budget is indeed the responsibility of our Congressional representatives, and an evaluation of these trade-offs is necessary for judicious stewardship of national resources.

There is no time like the present to address this challenge. A fundamental component of the solution could be a Congressional committee on cost-effectiveness, whose objectives are to transparently rank risks by both their magnitude and likelihood, identify misallocations of resources on the basis of cost-effectiveness analyses, and initiate legislative corrections.¹ Quantitative methods developed to prioritize investment across terrorism targets²⁴ could be expanded to compare investment across sectors. An additional responsibility of this committee could include an accounting of cross-sectoral impact, widening the usual horizon of assessment to consider repercussions and countervailing risks, as is the new standard for cost-effectiveness evaluations in health.²⁵ As with terrorist attacks, the ramifications of outbreaks and other crises can include trauma, reduced economic productivity, and political instability. A framework which assigns weights to quantify the disparate impacts of terrorism²⁶ could be applied to the multi-faceted repercussions of other national emergencies in a comprehensive and standardized accounting of societal impact. By transcending sectoral boundaries, a Congressional committee on cost-effectiveness would both improve budget efficiency and maximize societal benefit.

An evidence-based cost-effective approach could also allow for more flexible federal funding streams, which are essential to facilitate a rapid response during public health emergencies. For infectious disease outbreaks in particular, intervening as early as possible is most cost-effective, given that the effort necessary to control an epidemic expands exponentially with the spread of the disease. An epidemic preparedness reserve fund could be established under the administration of the US Department of Health and Human Services through the directors of the National Institutes of Allergy and Infectious Diseases (NIAID), the Centers for Disease Control and Prevention (CDC), and/or the Office of the Assistant Secretary for Preparedness and Response (ASPR). To facilitate immediate mobilization in a public health emergency, a clear chain of command and response steps must be established upon initiation of the fund. Appropriate triggers for the release of funds could include rapid threat and cost-effectiveness assessments. Analogous to the disaster relief fund (DRF) directed and coordinated by the Federal Emergency Management Agency (FEMA), such a mechanism would avoid the tragic delays that stymied public health readiness for Zika during the summer of 2016.

We advocate for a broader and more equitable allocation of taxpayer money to protect wellbeing and save lives. Each infant death due to Zika infection is no less tragic than a death from a terrorist attack-- and in fact, the former may be more straightforwardly preventable. As the 115th Congress deliberates on the new federal budget, we urge representatives toward a more comprehensive budget evaluation, weighing the trade-offs across sectors among benefits, risks, and costs to optimize the life-improving and life-saving impact of federal investment.

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