

## The Economic Impact of The Special Diabetes Program

### Background

In their new study, *Diabetes Research and the Public Good: Federal Support for Research on Type 1 Diabetes*, economists Robert J. Shapiro, Ph.D., and Nam D. Pham, Ph.D., analyze the extraordinary economic and human costs of diabetes and assess the likely impact of continuing the Special Diabetes Program, which funds research into treating and curing type 1 diabetes (T1D) through the National Institutes of Health (NIH), on reducing these costs. The authors conclude that failing to continue the SDP for research in type 1 diabetes would be highly ill-advised and ultimately very costly for both the tens of millions of Americans suffering from the disease and U.S. taxpayers.

According to the Centers for Disease Control and Prevention (CDC), nearly 26 million Americans had diabetes in 2011.<sup>1</sup> All told, more than 8 percent of all Americans have some form of the disease. Moreover, the incidence of diabetes is increasing faster than the population. From 2001 to 2009, type 1 diabetes (T1D) among youth increased 23 percent, and type 2 diabetes (T2D) among youth increased 21 percent.<sup>2</sup> Epidemiologists estimate that by 2020, nearly 12 percent of Americans or 39.2 million people will have diabetes, including 28.7 million diagnosed cases and 10.5 million undiagnosed cases.<sup>3</sup>

According to the CDC, diabetes is the underlying cause of death of over 70,000 Americans a year, and a contributor to an additional 160,000 deaths. People with diabetes are two-to-four times more likely than other people to die of heart disease. Diabetes is also the leading cause of kidney failure, accounting for 44 percent of all new cases, as well as the leading cause of new cases of blindness in adults.<sup>4</sup>

### Key Findings

- Treating people with diabetes cost Americans \$176 billion in 2012<sup>5</sup> or about 1.2 percent of GDP. **By 2020, these medical costs are expected to more than double**, reaching \$418 billion<sup>6</sup> or an estimated 1.8 percent of a projected GDP of \$23.1 trillion in that year.
- From 2012 to 2020, **the health-related costs of diabetes borne by taxpayers through Medicare and Medicaid are also expected to more than double**, rising from \$137 billion in 2012 to \$297 billion in 2020. The diabetes-related cost of Medicare alone is projected to rise from \$104 billion in 2012 to \$226 billion in 2020.<sup>7</sup>
- Diabetes also imposes large, non-medical costs on the economy. These include productivity losses associated with missed work, permanent disabilities and premature deaths from the disease and its complications. These non-medical costs totaled some \$79 billion in 2012, equal to 0.5 percent of U.S. GDP in that year. Based on people's average earnings in 2007 (\$45,790), the paper

estimates these costs would have covered the wages and salaries of an additional 1,738,708 full-time workers.

- By 2020, these non-medical, economic costs are expected to reach \$157 billion or more than 0.7 percent of a projected GDP of \$23.1 trillion in that year. Assuming historical trends in earnings continue, we estimate the foregone economic production related to diabetes in 2020 would cover the wages and salaries of 2,604,341 full-time workers in that year.
- **All told, in 2012, the medical and non-medical costs of people diagnosed with diabetes came to \$245 billion. By 2020, these total costs are expected to more than double to \$512 billion.**
- The NIH currently provides \$150 million per-year in support for T1D research through the Special Diabetes Program (SDP), as well as additional funds through other grant programs. The SDP has supported the establishment of research infrastructure and funded research programs that already have advanced our basic knowledge of diabetes and its causes, led to improved treatments and screening for T1D, and advanced research into potential cures.

- With 16 years of NIH support for T1D research, the likelihood of additional breakthroughs is rising if the program is renewed. **If those advances can reduce the incidence and severity of T1D by just 10 percent by 2020, we estimate the savings in medical costs would exceed \$2.9 billion per-year**, including \$2 billion in savings for Medicare and Medicaid, plus another \$1.9 billion in annual non-medical economic savings, for a total savings of \$4.8 billion a year. In this scenario, we estimate **the advances will produce an annual rate of return of 163%**, year after year.
- **If spillovers from these advances reduce the incidence and severity of T2D by just 5 percent in 2020, we estimate that would save nearly \$17.6 billion per-year in medical costs**, including more than \$12.5 billion per-year in Medicare and Medicaid costs, plus nearly \$5.6 billion per-year in non-medical economic costs.
- The estimated annual savings from a 5 percent reduction in the incidence and severity of T2D by 2020 would be more than 8 times the total projected NIH funding for SDP funded research over 22 years.
- NIH support for T1D research is also critical to the progress of the diabetes R&D programs of private pharmaceutical

firms: Researchers have found that a one percent increase in NIH-funded basic research leads to a 2.5 percent increase in private R&D spending, with a seven-year lag.<sup>8</sup>

<sup>1</sup> Centers for Disease Control and Prevention (2012).

<sup>2</sup> Mayer-Davis et al. (2012); Dabelera, D. et al. (2012).

<sup>3</sup> United Health (2010).

<sup>4</sup> Centers for Disease Control and Prevention. (2012).

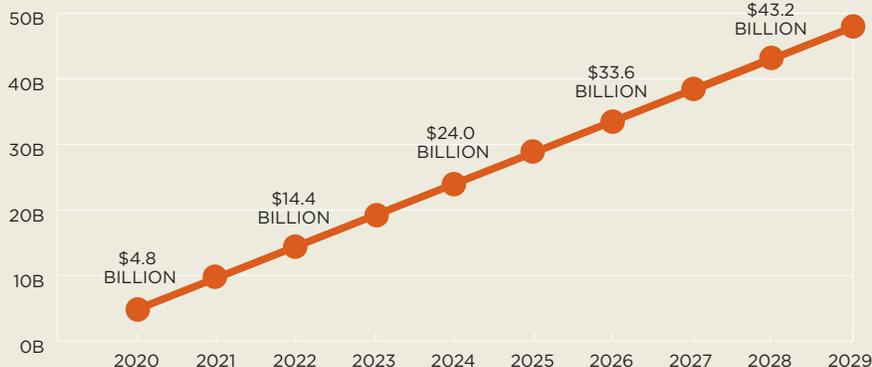
<sup>5</sup> Yang et al. (2013).

<sup>6</sup> United Health (2010). To estimate the costs in 2020, Shapiro and Pham started with the 2012 costs reported by Yang et al and applied the growth rates in costs from 2012 to 2020 projected by the United Health study.

<sup>7</sup> Costs labeled as “Medicare” do not include those eligible for both Medicare and Medicaid.

<sup>8</sup> Congressional Budget Office (2006).

**Cumulative Savings from 2020 to 2029 Created by a 10% Reduction in the Incidence and Severity of T1D**



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