Two Estimates to the Health and Economic Burden of Chronic Disease in San Diego County

Estimate One: The Health Care Cost Burden of Heart Disease and Diabetes in San Diego County as Reported in the Economic Burden of Chronic Disease in California, updated to 2017

In 2014, California spent $292 billion dollars on health care; $7,549 for each California resident. Twenty-one percent ($62 billion) was paid for by Medi-Cal, the state Medicaid program. In recent years, health spending in California has been growing faster than for the nation as a whole. California's Medicaid program spending has sharply increased following the implementation of the Affordable Care Act and the subsequent expansion of Medi-Cal.[1]

The California Department of Public Health estimates that 80 percent of California's health care expenditures are for persons with chronic health conditions. Chronic diseases are the leading causes of death, disability, and poor health in California and are largely preventable. Eighty percent of cardiovascular disease, stroke, and Type 2 diabetes, and 30 percent of cancers can be prevented or delayed by stopping smoking, improving diets, and increasing physical activity.[2]

Understanding the economic burden of largely preventable chronic health conditions provides useful information on the enormous opportunity cost we incur by not investing in prevention programs. These numbers also reveal the magnitude of the potential savings that could be realized if the prevalence of chronic diseases was decreased.

In 2015, the California Department of Public Health published the Economic Burden of Chronic Disease in California 2015.[3] Using methodology developed by Paul Brown and colleagues, the report examined the 2010 cost of six chronic health conditions in each of the state's 58 counties.[4] The costs for these health conditions represented 42 percent of California health care expenditures in 2010.

This report updates the state and county-level cost estimates for the three chronic health conditions in the report associated with tobacco use, poor nutrition, and physical inactivity by accounting for changes in population size and for health care cost inflation.[5,6]

In 2017 it is estimated that California statewide expenditures for these three conditions exceeded $83 billion dollars annually, of which it is estimated that Medi-Cal paid $17.5 billion.[1]

In 2017, it is estimated that the cost of cardiovascular disease in San Diego County was almost $4 billion and the cost of diabetes was almost $1.3 billion. A 10% reduction in prevalence would translate into an annual savings of $395 million in CVD costs and $129 million in diabetes costs, a total of $524 million in savings if the prevalence of both diseases was lower. Such a reduction could substantially reduce private insurance costs and save $110 million in Medi-Cal expenditures. Savings of this magnitude would make possible substantial investments in prevention or in other essential services.

Estimate Two: Estimating the Value of a Goal to Reduce AMI Hospitalizations in Its Working Age Population by 20% by 2030

San Diego County has set a goal of reducing hospitalizations for acute myocardial infarctions (AMIs) in its working age population by 20% by 2030. This analysis seeks to estimate the impact of this goal on health, health care costs, and worker productivity.

Diabetes and heart disease impact San Diego's productive workforce, impacting the lives of employees and their families and costing employers in higher health care premiums and lost productivity. San Diego County has set ambitious but attainable goals to reduce these impacts.

San Diego County has already demonstrated that it is possible to reduce AMI hospitalizations and health care costs. In 2011, a population health collaborative launched *Be There San Diego* to spread best practices for blood pressure, lipid level and blood sugar control designed to prevent heart attacks. Over a six-year period, AMI hospitalizations decreased by 22 percent in San Diego County compared to eight percent in the rest of the state thus avoiding an estimated 3,826 hospitalizations and generating $86 million in savings.

This analysis estimates the number of potential AMI hospitalizations for avoided, the associated health care costs, the number of days lost from work for persons experiencing AMIs and their caregivers, and the value of that lost productivity from a 20% reduction in AMI hospitalizations in the period of 2020 to 2030 in San Diego County residents ages 18 to 64.

This analysis began by extending the 2018 analysis and took the following steps:

- We projected population growth from 2017 to 2030 for two groups, those age 18 to 44 and those age 45 to 64.
- Using the mean of annual rates of AMI hospitalization for 2012 to 2016 for each age group and assuming that decreases had ceased, we projected the number of AMI hospitalizations in the absence of any further interventions each year from 2017 to 2030.
- We estimated the average annual decrease in rates of AMI hospitalizations for each age group to project decreases in AMI hospitalizations over the period of 2017 to 2030. We slowed the rate of the decrease in the 45 to 64-year-old age group to align with a 20% reduction in AMI hospitalizations. (This was a conservative approach and aligned more closely with the rate of decrease in the younger age group.)
- We calculated total AMI hospitalizations avoided from 2020 to 2030 by comparing the number of projected AMI hospitalizations in the group which had no interventions with the group that received interventions.
- To estimate health care costs saved, we multiplied the number of potential AMI hospitalizations avoided by the cost of an AMI hospitalization. We used the previously reported cost of $22,427 for San Diego County.[7] This cost is similar to the AHRQ reported national average cost of $21,500 for a 5.3 day stay.[8]

- To estimate productivity losses we estimated the number of days lost for persons experiencing an AMI and their caregivers based on recently published European data and multiplied this figure by the total number of AMI hospitalizations avoided.[9] We assumed caregivers were members of the working age population.
- To estimate the value of productivity losses we multiplied the total number of days lost by the value of a work day.[10] We updated previously published work day value to 2019 using the Federal Reserve wage tracker.[11] We calculated the value of a lost work day to be $233.
- We added hospitalization costs avoided and productivity losses associated with AMI hospitalizations to estimate the total cost of AMI hospitalizations in the working age population of San Diego County.

Results

A ten-year program designed to address the risk factors for and management of heart disease in the working age population in San Diego County could potentially result in 3,348 fewer hospitalizations for AMI, 234,366 lost work days (933 work years assuming 250 work days per year), save over $75 million in health care costs associated with hospitalizations, almost $55 million in lost productivity for a total economic value of $129 million.

San Diego County Potential AMI Hospitalizations 2020-2030			
	18-44	**45-64**	**Total**
Hospitalization w/out Interventions	1,564	15,187	16,751
Hospitalizations w/ Interventions	1,408	11,995	13,403
Hospitalizations Avoided	156	3,192	3,348
Percent Hospitalizations Avoided	9.991%	21.017%	19.987%
Dollars saved @ $22,427 per hosp	$3,504,873	$71,582,550	$75,087,423
Days Productivity Lost (70 per AMI)	10,940	223,426	234,366
Value Productivity Lost ($233 per day)	$2,549,679	$52,073,935	$54,623,614
Total Cost Saved Preventing AMI	$6,054,552	$123,656,485	$129,711,037

Note: If we have a case fatality rate for an AMI, we could also estimate deaths prevented.

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