

# REDUCING HEALTH CARE COSTS THROUGH PREVENTION

*The difficulty of controlling costs and improving outcomes in the US suggest the need for an innovative approach to health reform, one that emphasizes upstream efforts.*

HOMER, HIRSCH & MILSTEIN (2007)

**T**he current health care reform debate in California is driven in large part by fundamental concerns about ever-growing, unsustainable costs. Immediate cost-containment efforts are necessary, but they alone will not solve the long-term problem—more lasting changes are needed. Investment in primary prevention has the potential to be part of an enduring solution for improved health and health care.

Primary prevention is a systematic process that promotes healthy environments and behaviors *before* the onset of symptoms, thus reducing the likelihood of an illness, condition, or injury occurring. Health and rates of chronic disease are influenced by factors such as toxins in the air, water, and soil; access to healthy foods, parks, and recreational facilities; and the walkability and safety of neighborhoods. Certainly, preventive services, such as screening and disease management, that address populations at-risk and those that already have illness are important and should be part of a high-functioning health system. However, primary prevention—with an emphasis on improving the environments where Californians live, work, play, and go to school—is the prescription for reducing the health care system’s burden and thereby reducing the costs associated with paying to treat preventable conditions.

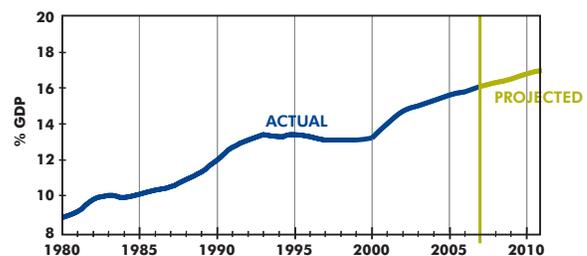
Currently, health care spending is growing at an unsustainable rate (see Figure 1) driven by both rising costs and a growing burden of disease. The costs are

bankrupting families and small businesses, putting corporations and industry at a competitive disadvantage, and straining public resources. The long-term solution must involve both cost containment and reduced demand for services.

A vital strategy for creating a sustainable health care system is to improve California’s health status through primary prevention. Primary prevention has a track record of improving health and reducing costs and has the potential to save more if applied comprehensively and strategically. A review of the literature shows the following:

**FIGURE 1. National health expenditures as a share of Gross Domestic Product (GDP)**

Between 2001 and 2011, health spending is projected to grow 2.5% per year faster than GDP, so that by 2011 it will constitute 17% of GDP.



SOURCE: CMS, Office of the Actuary, National Health Statistics Group.

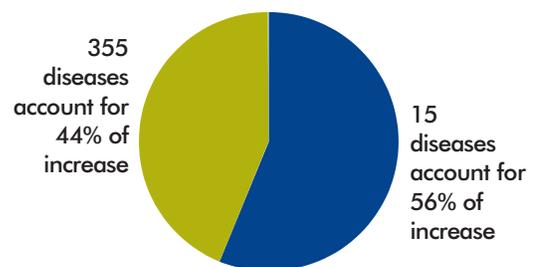
1. A majority of the most costly health conditions are preventable.
2. Health-related resources are not invested in the areas that most influence health.
3. A 5% reduction in preventable illnesses and injuries could lead to substantial savings.
4. Savings have been demonstrated and forecasted for specific prevention initiatives.
5. Prevention has the potential to reduce end-of-life care costs.
6. Savings from prevention accrue beyond the health care sector.
7. Prevention could help improve productivity and competitiveness.
8. New economic models predict potential cost savings from prevention.

Even as California figures out better ways to finance health care and meet the treatment needs of an aging, more diverse population, the State must strive for a leaner, stronger, more efficient system by minimizing the number of people in need of services as well as the reasons a particular individual might need services.

## **1 A MAJORITY OF THE MOST COSTLY ILLNESSES AND INJURIES ARE PREVENTABLE**

Inflation-adjusted national health care expenses rose from roughly \$429 billion in 1987 to \$628 billion in 2000. Fifteen costly medical conditions, including diabetes, hypertension, trauma, back problems, heart disease, and cerebrovascular disease, accounted for more than half of that overall growth (see Figure 2).<sup>1</sup> These conditions are, at least in part, preventable. Diabetes alone is estimated to cost over \$13.5 billion a year in direct medical costs in California.<sup>2</sup>

**FIGURE 2. Percentage of health care cost increase attributed to specific diseases, 1987 to 2000**



SOURCE: Thorpe KE, Florence CS, Joski P. Which Medical Conditions Account For The Rise In Health Care Spending? *Health Affairs*. 2004.

## **2 HEALTH-RELATED RESOURCES ARE NOT INVESTED IN THE AREAS THAT MOST INFLUENCE HEALTH**

Of the more than \$1.7 trillion in health care spent nationally every year, less than 4 cents of every dollar is spent on prevention and public health.<sup>3</sup> Figure 3 shows the discrepancy between the relative influence of the four primary determinants of health and health-care expenditures. It should be noted that behaviors do not occur in a vacuum—they are shaped by environmental factors—so environment likely has even more influence than represented in the graph. Researchers have drawn a similar conclusion looking at the causes of premature death in the US: behavioral factors account for 40%; genetic predispositions, 30%; social circumstances, 15%; shortfalls in medical care, 10%; and toxins and infectious agents, 5%.<sup>4</sup> Medical care has limited determinant power in spite of consuming the vast majority of health spending.

## **3 A 5% REDUCTION IN PREVENTABLE ILLNESSES AND INJURIES COULD LEAD TO SUBSTANTIAL SAVINGS**

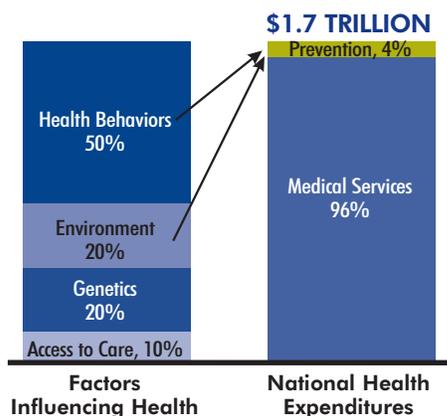
The conditions in Table 1 represent only a sampling from the larger landscape of preventable conditions that are costly to California. Potential annual savings for each condition were arrived at by reviewing recent data on incidence rates in California or extrapo-

lating national data to California. The calculated 5% reduction in medical costs is a *conservative* expectation of the impact of a concerted prevention effort. For example, smoking rates have dropped 33% since the passage of Proposition 99,<sup>5</sup> a statewide ballot initiative passed in 1988 which imposed an additional 25 cent tax, used in part to fund community-based tobacco prevention programs, on each carton of cigarettes. The reduction figures were calculated using current disease prevalence. Without prevention, the number of Californians afflicted is predicted to continue increasing, and the costs are predicted to become greater as the population ages and the effects of the conditions become more severe. In addition, chronic diseases such as diabetes and asthma become more expensive over their duration, so recent increases in prevalence portend even greater future costs.

## 4 SAVINGS HAVE BEEN DEMONSTRATED AND FORECASTED FOR SPECIFIC PREVENTION INITIATIVES

Prevention programs and policies have already demonstrated cost savings to the health care system. For instance:

**FIGURE 3. Discrepancy between health determinants and spending**



SOURCES: Lambrew JM. A Wellness Trust to Prioritize Disease Prevention. *The Hamilton Project, Brookings Institution*. 2007. Discussion paper 2007-04: 1-36. University of California at San Francisco, Institute of the Future, 2000.

**TABLE 1. Potential annual savings from a 5% change in incidence of selected illnesses, injuries, exposures and behaviors**

Heart disease. . . . .	\$861,000,000
Tobacco use. . . . .	\$341,760,600
Lead poisoning in children. . . . .	\$261,000,000
Diabetes (Type II) . . . . .	\$166,155,000
Falls among the elderly . . . . .	\$53,738,371
Breastfeeding. . . . .	\$39,081,148
DUI fatalities and injuries. . . . .	\$21,057,603
Childhood asthma. . . . .	\$9,805,065
Gunshot Wounds. . . . .	\$6,449,800
HIV . . . . .	\$5,476,244
<b>GRAND TOTAL. . . . .</b>	<b>\$1,765,523,831</b>

A complete table with sources is available in Appendix C.

- Between 1990 and 1998 the California Tobacco Control Program saved more than \$3 billion in smoking-caused health care costs.<sup>6</sup>
  - In the first 5 years after California passed a motorcycle helmet law, \$48 million was saved in reduced direct medical costs,<sup>7</sup> and these savings continue to accumulate.
  - Kaiser Permanente concluded that infants who were breastfed for a minimum of six months experienced an average of \$1,435 less in health care claims than formula fed infants.<sup>8</sup>
- Further, researchers have projected potential savings to the health care system from prevention, such as:
- Hospitals and health care employers in California are expected to save over \$100 million per year through reduced testing costs, improved productivity, and reduced medical costs associated with transmitted disease (in particular HIV and hepatitis) after implementing the California Occupational Safety and Health Administration's requirement for safe needle devices.<sup>9</sup>
  - A 1% annual decline in adult smoking rates in the US has been estimated to result in over 30,000 fewer heart attacks, over 16,000 fewer strokes, and

## THE GROWING OVERWEIGHT CRISIS: BARIATRIC SURGERY

The US spends \$3.5 billion annually on bariatric surgery, an increasingly popular set of procedures to treat overweight people. While potentially important for individuals who are extremely overweight and unresponsive to other interventions, at up to \$50,000 per surgery and with a 1-3% mortality rate, it is not a sustainable answer to the growing epidemic of overweight Californians. Rather, the money could be better invested in improving access to nutritious food and promoting physical activity while reserving bariatric surgery as a last resort.<sup>10,11</sup>

cumulative health care savings of over \$1.5 billion over five years, with rapidly growing annual savings in the following years.<sup>12</sup>

- Increasing the percentage of breastfeeding to the surgeon general's recommended level (75% in-hospital and 50% for 6 months) would substantially improve post-natal health and annually save a minimum of \$3.2 billion nationally.<sup>13</sup>

## 5 PREVENTION HAS THE POTENTIAL TO REDUCE END-OF-LIFE CARE COSTS

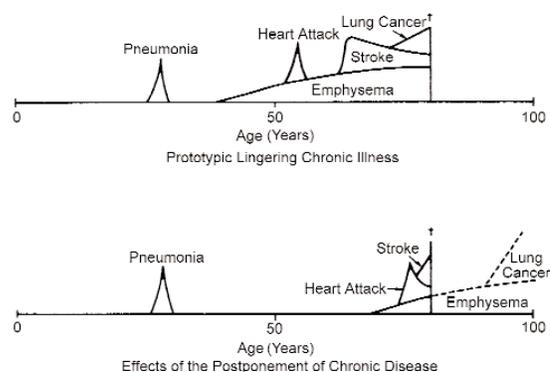
End-of-life care expenses are often discussed as a virtual fixed cost, one which can be delayed but not avoided. In fact, prevention can help reduce end-of-life care costs in several ways. First, there is an inherent benefit to delaying the onset of end-of-life medical care and expenses, in terms of increased healthy life spans, reduction in the burden on the health care system in the relative short-term, and a reduction in the average annual expense across the life span. Second, prevention supports compressing morbidity by delaying the onset of chronic illness.<sup>14,15</sup> Figure 4 shows two probable "health lives." The top one represents a typical course for someone with a significant risk factor such as tobacco addiction in which chronic illness begins early and builds along with other conditions for extended end-of-life medical care use. The bottom example reflects the benefits of reducing

risk factors: more disease free years, a shortened period of morbidity, and a reduction in the number of conditions experienced at the end of life. Thus that period can be both shorter and less expensive. As Dr. James Fries has noted, "Longitudinal studies now link good health risk status with long-term reductions in cumulative lifetime disability; persons with few health risks have only one-fourth the disability of those who have more risk factors, and the onset of disability is postponed from 7 to 12 years."<sup>16</sup> Third, prevention that targets and limits injury and illness helps to minimize the costly occurrence of comorbidities: when one condition builds upon another and the consequences are multiplied. For instance, a broken hip can lead to significantly lower physical activity, which can lead to diabetes, which in turn increases the likelihood of stroke. Decreasing the risk of a fall could significantly reduce medical consequences and cost.

## 6 SAVINGS FROM PREVENTION ACCRUE BEYOND THE HEALTH CARE SECTOR

In addition to savings within the health care sector, California could expect to see a return on its investment in prevention in other sectors. For example, between 1990 and 1998, the California Tobacco Con-

FIGURE 4. The compression of morbidity



SOURCE: J.F. Friesand, L.M. Crapo, *Vitality and Aging* (San Francisco: W.H. Freeman, 1981)

trol Program saved an estimated \$5.4 billion in non-medical smoking-caused costs.<sup>19</sup> Lead abatement in public housing has been demonstrated to return almost \$2 for every \$1 invested as the result of a combination of reduced medical and special education costs and increased productivity.<sup>20</sup>

Other areas in which savings could accrue include:

- Reduced workers compensation payments
- Reduced disability claims
- Reduced employee absenteeism, including family absenteeism (caretaking of relatives)
- Reduced school absenteeism (affecting school attendance and school finances)
- Improved worker productivity

## **7 PREVENTION COULD HELP IMPROVE ECONOMIC PRODUCTIVITY AND COMPETITIVENESS**

Good health is fundamental for broad economic sustainability. In order to remain competitive with other states and countries, California needs a healthy workforce and, because employers are the main purchasers of health insurance for workers, its health care costs must remain within the range of other industrialized nations. The US has the highest per capita health care spending in the world, nearly double the spending in Switzerland, which has the next highest. In recent years, many companies have moved their operations overseas, laying-off thousands of workers in the process, in part, to be spared the burden of skyrocketing health care costs. California will lose its competitive edge if its population's health declines and if it continues to spend so much more on health care than any other developed nation. As one of the top ten economies in the world, with both wealth and innovation, California's goal should be the best health, not the most expensive services.

Companies, such as General Motors, Johnson and Johnson, Motorola, Safeway, and Cigna, to name a few, have come to recognize the economic value of prevention and have designed programs aimed at employee wellness (see box).<sup>24</sup> A 21-year study of well-

### **EXAMPLES OF NON-HEALTH CARE COSTS ASSOCIATED WITH POOR HEALTH**

- In year 2000 dollars, physical inactivity, obesity, and overweight cost California per year an estimated \$388 million in workers' compensation and \$11.2 billion in lost productivity.<sup>17</sup>
- In 2002, the total economic impact of asthma totaled \$14 billion. Indirect costs alone accounted for \$4.6 billion including 14 million lost school days, 14.5 million lost work days, and the productivity loss of the approximately 5,000 who died from asthma.<sup>18</sup>

ness programs by the University of Michigan Health Management Research Center found that comprehensive year-round health programs yielded cost savings of \$3 for every \$1 spent.<sup>25</sup> By adopting worksite wellness programs—with elements including fitness classes, stress management, ergonomic equipment policies, and on-site farmers' markets (at over 20 Kaiser Permanente sites in California)—companies have improved employee health and productivity, while reducing employee absenteeism and the business costs associated with poor health conditions. As Safeway's Chief Executive, Steve Burd notes, "If we can create a health care plan that contains costs or drives them down, that improves the health of the employee and extends their life, and avoids catastrophic illness and doesn't cost them any more money, why would anybody quarrel with that plan?"<sup>26</sup>

### **PRODUCTIVITY AND COMPETITIVENESS IN THE MAKING THROUGH PREVENTION**

- Motorola's Wellness Program saves the company \$3.93 for every \$1 invested in wellness benefits.<sup>21</sup>
- Caterpillar's Healthy Balance Program is projected to result in long term savings of \$700 million by 2015.<sup>22</sup>
- Johnson and Johnson's Health and Wellness Program has produced annual health care savings of \$244.66 per employee.<sup>23</sup>

## 8 NEW ECONOMIC MODELS PREDICT POTENTIAL COST SAVINGS FROM PREVENTION

As part of the research and analysis conducted for this brief, Prevention Institute and The Urban Institute developed an economic model of the impact of prevention. The model is based on available literature and interviews with researchers. Application of the model suggests that substantial savings are possible from an investment in prevention.

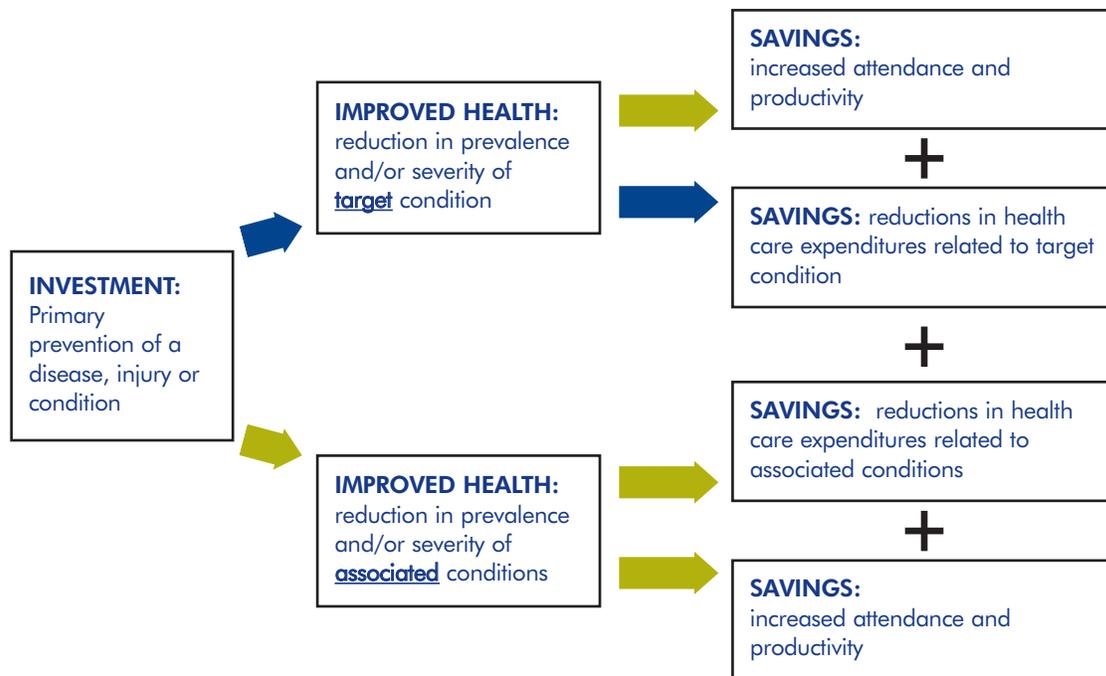
The model is based on traditional models analyzing the efficacy of prevention and the costs associated with treating preventable conditions. These traditional models have been limited in three crucial respects.

First, results are measured almost exclusively based on the effect of prevention measures on single conditions. This misses the impact that those measures have on other related conditions. Programs to lower the

incidence of diabetes by increasing physical activity could also improve outcomes for stroke and cardiovascular disease.\* Initiatives that reduce smoking affect cancer rates and also emphysema and childhood asthma. Policies aimed at improving mobility among senior citizens can reduce the incidence of falls as well as improve mental health and hypertension. Second, the models look chiefly at medical system costs, which, though a crucial measure of cost savings, are an incomplete measure because improved health results in savings beyond the health care sector. Therefore, one initiative could result in reduced costs in a number of different areas, including medical care, workers com-

\* David Chenoweth's recently published *Topline Report on the costs to California of physical inactivity and obesity* clearly illuminates the ways in which addressing one factor influencing health such as physical inactivity increase costs across a wide spectrum of health issues including diabetes, hypertension, and cardiovascular disease.

FIGURE 5. Multiplier effects



**The cumulative benefits of primary prevention:**

The blue arrows indicate the customarily studied savings pathway, but investments in primary prevention result in improved health in conditions other than the one targeted and savings accrue in three areas not captured by conventional models.

pensation payments, and disability claims. It could also result in improved worker productivity. Finally, the models generally focus on a short time frame, two to six years, while the benefits of prevention are likely to accrue over a much longer period. Illnesses and injuries typically become more expensive the older the afflicted individual is and the longer the duration of the problem, so the greatest savings from prevention will accumulate not in the immediate future but the further out as the individual remains disease-free.

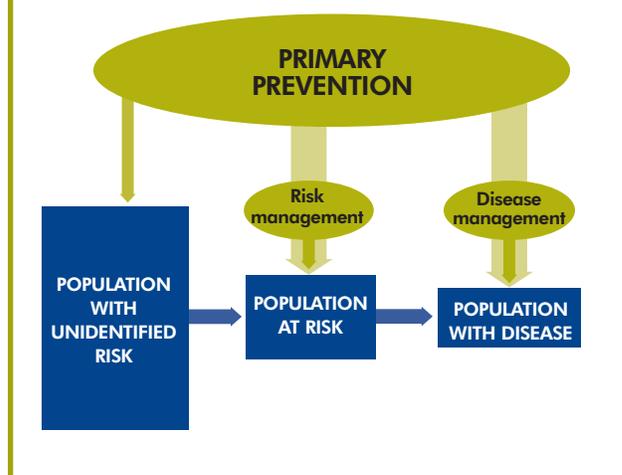
These limitations mean that the models do not show all possible savings resulting from prevention measures. Due to the inadequacies of the available data, the model presented here shares these limitations—it is an attempt to refine existing approaches and better capture the actual savings potential of primary prevention—and as a consequence the results and conclusions drawn here should be considered to be very conservative. For instance, researchers who have looked at the relationship between savings to the health care system and returns in other areas from improved health have concluded that the direct medical costs savings should be multiplied to account for the overall savings (see Figure 5). Estimates of the multiplying factor range from two to twelve times the medical cost savings.<sup>27,28</sup>

## OVERVIEW OF THE URBAN INSTITUTE MODEL

The model developed for this brief is based on a stock-and-flow conception of the health process. That is, it takes into account the number of people that are potentially at risk of a particular condition and the factors that influence whether the individual progresses to that condition over time. It then considers the influence of primary prevention on that process, the resulting prevalence of the condition, and the implications for health care expenditures. (The full model is presented in Appendix B.) The key features of the model are:

- Individuals are presumed to be in one of three groups with respect to a given condition
  - ▼ Not identified as at risk

**FIGURE 6. The influence of primary prevention**



- ▼ Identified as at risk
- ▼ Having the disease/condition.
- For each group, there is a knowable probability of moving to another group:
  - ▼ Individuals not identified as at risk may be so identified (e.g., a child may be recognized as at risk for asthma when s/he develops wheezing)
  - ▼ Individuals at risk may progress to full-blown disease (e.g., someone with pre-diabetes may develop diabetes)
  - ▼ Individuals with disease may get their condition under control (e.g., someone with hypertension may achieve normal blood pressure through some combination of weight control, exercise, diet, and medication)
- Primary prevention affects all three groups by changing the probability that the individual will move to another group (see Figure 6). For individuals identified as at risk or with the condition, primary prevention increases the effectiveness of the risk management or disease management offered by the health care system and may reduce disease severity as well as incidence (e.g., improving the walkability of a neighborhood improves access to physical activity for individuals in all three groups).

- Health care expenditures vary with both the prevalence of the targeted condition and the severity.
- The net benefit of prevention takes into account the reduction in disease and disease severity as well as the cost of the prevention intervention.

## CONCLUSION

The current attention focused on improving health care presents an opportunity for policymakers to take action that creates a sustainable, cost-effective approach to health. Although more research should be conducted to better understand primary prevention's benefits, the information currently available makes a compelling argument for including primary prevention measures as a significant component of the State's health care reform plans.

Individuals have a responsibility for their own health. Equally, the State has an interest in creating health-promoting environments that support individuals. Californians depend on Government to address basic health determinants such as clean air and water and safe food, and it is just as appropriate for the State to promote health in response to the more complex challenges of the current day. Building upon individuals' responsibility for their own health by enhancing health-promoting environments and practices requires implementation of quality prevention at the State level.

Government is the only entity with the ability to recognize the short- and long-term benefits of prevention, the breadth to enact systematic change, and a stake in the health of all Californians. With the increases in chronic disease and an aging population, government is going to end up expending increasing resources on health and would be wise to invest in

prevention now. As researchers who have studied Vermont's investment in prevention concluded, "Prevention may be a "bargain" only in relation to more costly alternatives we face if we don't invest preventively. Prevention can reduce demand for high-cost services, permitting more discretion in the use of existing resources. Lower demand created opportunities for continuing prevention investments, further lessening long-term demand."<sup>29</sup>

If a patient meets with a doctor and is displaying clear early signs of a condition, and the doctor does not respond to this information, we'd consider that doctor careless or neglectful. The doctor has missed a vital chance to protect the patient's health. Decision makers about California's health care system are in the same circumstance: investing a comparatively small amount now in primary prevention would yield important benefits. Not only does primary prevention leave individuals and communities physically healthier by preventing debilitating illnesses and injuries, it would make the State—and its economy—fiscally healthier for many years to come.