



AMERICAN ACADEMY of ACTUARIES

# Examining the Health Care Equation

## Actuarial perspectives on cost and quality

ISSUE BRIEF JULY 2015

### Key Points

- Chronic diseases are a current global health challenge affecting both developed and developing countries. In 2007, the Milken Institute estimated that seven major chronic diseases have an annual impact of \$1.3 trillion on the U.S. economy.
- Two studies of South Africa's Discovery Vitality program have shown that participating members are generally healthier, experience lower average health care and chronic disease costs, and report shorter hospital stays and fewer admissions than the overall population.
- The mid-term assessment of Healthy Japan 21 (a public program) showed that among the 70 goals that were initially established, only a few showed improvement and some even worsened.
- Various programs in Israel focus on preventive medicine as well as complementary and alternative medicine approaches to alleviate chronic conditions such as obesity, diabetes, and high blood pressure.
- Further studies are needed to quantify the value of wellness programs, but it is believed that the programs can result in meaningful benefits.

### International Wellness Initiatives

**H**ealth is “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”<sup>1</sup> Maintenance and promotion of health combines ongoing physical, mental, and social measures that result in wellness or an overall well-being when balanced. Wellness is “an active process of becoming aware of and making choices toward a more successful existence.”<sup>2</sup> These choices include the use of preventive medicine, complementary and alternative medicine (CAM), and lifestyle changes to counter poor diet, smoking, and lack of physical activity. In turn, these intervention efforts can help prevent the onset of chronic diseases and improve daily existence.

The care of the population's health—in particular chronic diseases—is a current global health challenge affecting both developed and developing countries. It is a significant contributor to rising health care costs and a resulting reduction in economic output. In 2007, the Milken Institute estimated that seven major chronic diseases (i.e., cancer, diabetes, hypertension, stroke, heart disease, pulmonary conditions, and mental illness) have an annual impact of \$1.3 trillion, or 10 percent of the GDP, on the U.S. economy. Of that amount, 27 percent could be avoided by modest improvements in disease treatment and prevention over a 15-year period.<sup>3</sup> Wellness initiatives and lifestyle changes can improve health and reduce these costs. Today, governments, businesses, employers, individuals, and other stakeholders recognize the value of wellness and have placed growing emphasis on awareness and implementation of wellness programs.

1 World Health Organization. 1946. [WHO definition of Health](#), Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, June 19-22, 1946; signed on July 22, 1946 by the representatives of 61 States (Official Records of the World Health Organization, No. 2, p. 100) and entered into force on April 7, 1948.

2 This definition is by the National Wellness Institute. See Zimmer, Ben (04-16-2010). “[Wellness](#),” The New York Times.

3 Milken Institute. An Unhealthy America: The Economic Burden of Chronic Disease, Oct. 2007. Available at: [http://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/chronic\\_disease\\_report.pdf](http://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/chronic_disease_report.pdf).

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The American Academy of Actuaries' Health Practice International Committee developed this issue brief to explore the potential effects of wellness initiatives based on four international case studies:

- the public sector of Japan;
- the tiered health sector of Israel;
- the private insurance company Discovery of South Africa; and
- global employer American Express' programs in the U.S., India, U.K., and Mexico.

## Background

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### Japan

Japan is one of the healthiest countries in the world due to cultural habits and a holistic approach to health. Most Japanese are covered by a universal insurance system that pays for 70 percent of their medical services and prescription drugs, while the residents are responsible for the balance.<sup>4</sup> The insurance premium is scaled by the residents' annual income and ability to pay. Supplemental private insurance is available, providing additional coverage for cost sharing or services not covered by the universal insurance.

While Japan is recognized as one of the healthiest countries, this industrialized nation faces its own set of public health problems. In Japan, work-related stress, smoking, and aging are the primary drivers of increased health concerns. Strong work ethics are deeply rooted in Japan's demanding corporate culture. This culture, along with increasing market competition, is causing the workforce to experience long working hours in a sedentary environment, and contributes to an increased prevalence of fatigue, stress, and depression. Another issue is smoking. Japan is currently No. 2 in the world for tobacco consumption, with an adult smoking rate of 30 percent, and associated health care costs and damages are estimated at \$90 billion. While the Japanese government is concerned with the alarming smoking problem, anti-smoking campaigns have not gained a foothold because the majority of the population considers smoking a personal matter rather than a health concern.

<sup>4</sup> "The Realities of Japanese Healthcare and Private Insurance," Just Landed.com. Available at: <https://www.justlanded.com/english/Japan/Services/Health/The-realities-of-Japanese-healthcare-and-private-insurance>.

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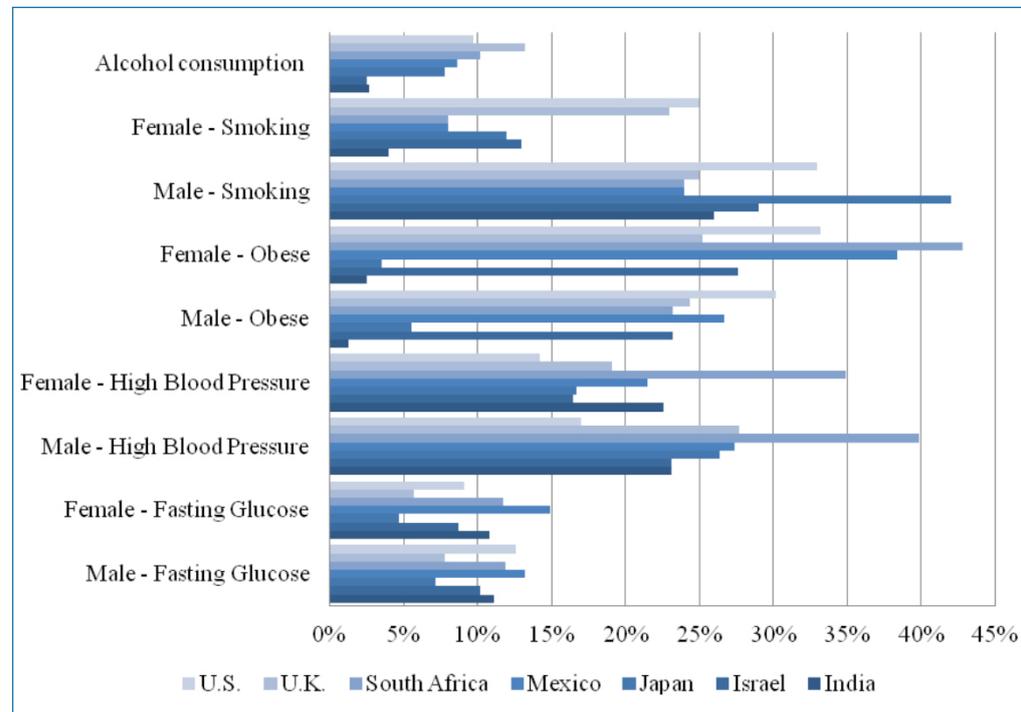
A separate issue is aging. The Japanese life expectancy is over four years longer than that of an average American according to United Nation’s data, and the Japanese population is aging much faster than that of any other country. In 2010, 23 percent of the population at retirement age, defined as 65 and older<sup>5</sup> and is projected to increase to 40 percent by 2060.<sup>6</sup> With more people entering their senior years and fewer people in the active labor force, the Japanese insurance and health care systems face significant financial and resource pressures.

## Israel

Israel’s health care system has a unique structure that consists of three tiers: 1. Universal national health insurance, 2. Supplemental health insurance, and 3. Commercial health insurance. Israel is concerned with the health of its population, as evident from its 2004 commitment to the World Health Organization: “Israel will support the adoption of the draft on Global Strategy on Diet, Physical Activity and Health. Israel finds it important and essential to promote global health. Israel promotes food items and not only good diet in its guide for dietary goals.”<sup>7</sup>

The National Health Act provides full health coverage from inception to death through a National Health Basket to all residents of Israel, and is funded by salary-based health tax and governmental budgeting.

### PREVALENCE OF HEALTH CONDITION/BEHAVIOR IN SELECTED COUNTRIES



Source: World Health Organization

5 The Population Reference Bureau, “Japan’s Demographic Future,” May 2010. Available at: <http://www.prb.org/Publications/Articles/2010/japandemography.aspx>.

6 Japan Daily Press, “By 2060 40% of Japanese Population Will Be Elderly,” June 17, 2012. Available at: <http://japandailynews.com/by-2060-40-of-japanese-population-will-be-elderly-174444/>.

7 World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, Israel, 2014. Available at: [http://www.who.int/nmh/countries/isr\\_en.pdf](http://www.who.int/nmh/countries/isr_en.pdf).

Israel also has its own set of public health issues. Its people suffer from the common developed countries' ailments, including obesity, lack of physical activity, stress, depression, smoking-related diseases, diabetes, cardiovascular and heart diseases, occupational diseases, environmental pollution, and overuse of medications. These health issues present considerable demand for a healthier lifestyle, and are being addressed through many channels, including hospitals, corporations, the private insurance market, government programs, and the sick funds. The existing wellness offerings include a combination of preventive medicine, CAM, diet and nutrition counseling, and promotion of physical activity.

### **South Africa—Discovery**

In South Africa, a transition in disease burden from infectious diseases such as HIV and tuberculosis to chronic diseases is taking place. This transition is being driven by aging and an increasingly urbanized lifestyle and aging. Urbanization has increased the prevalence of poor behaviors, such as tobacco use, physical inactivity, unhealthy diet, and alcohol abuse. In the 1950s, Sidney Kark studied the South African population and coined the term “Community Syndrome of Hypertension and Diabetes” in recognition of this process.<sup>8</sup> Overall health continues to diminish with the addition of stressful sedentary jobs, long work hours, and convenient, yet poor, food choices.

Similar to Israel, South Africa recognizes the role of stakeholders in creating an environment that enables and encourages healthy behavior change to increase the well-being of its population. This issue brief explores Discovery's Vitality program, which provides wellness offerings in response to deteriorating health in South Africa. The program recognizes the need to understand the spectrum of health levels, tailors its offerings to each individual's risk profile, and provides services that range from lifestyle intervention to disease management.

### **U.S., U.K., India, and Mexico—American Express**

Each country has its own culture, public-health issues, financing, and care-delivery approaches, which result in different lifestyles and risk profiles that call for tailored wellness programs. In the fourth case study, this issue brief explores how a global employer, American Express, has strived to reduce employee health care costs and improve employee productivity through wellness engagement.

Traditionally, employers used approaches to control employee health care costs that included cost-shifting to employees through reduced contributions or benefits buy-downs and implementation of utilization-management tools such as prior authorization. In the past decade, worksite wellness has become a popular concept. Many employers have teamed up with wellness or health service vendors to deliver multifaceted programs to encourage adoption of healthy lifestyles by their employees. American Express is one of the employers that leads this effort with its worksite wellness program. The corporation operates in more than 40 markets with more than 50,000 employees worldwide and is challenged with addressing different health issues, cultures, levels of acceptance, and availability of wellness offerings in the different countries in which it operates.

<sup>8</sup> Kark SL. *The Practice of Community-Oriented Primary Health Care*. USA: Prentice Hall International, 1989.

In the four American Express markets studied—the U.S., India, the U.K., and Mexico—obesity and stress are the prevalent health issues. Market-specific health and lifestyle issues include lack of physical exercise and nutrition in the U.S., cardiovascular disease and diabetes in India, musculoskeletal problems and smoking in the U.K., and musculoskeletal problems and excessive Caesarean section deliveries in Mexico.

Differing efficiencies of the care-delivery systems in various countries present additional challenges. Consequently, the demand and design of the wellness offerings differ from country to country. For instance, in India, the top health issues driving the strategy are stress, work-life issues, and nutrition and healthful eating; whereas in the U.S., they are physical activity/exercise, nutrition and healthful eating, and chronic disease.

## Wellness Programs

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### Japan

Each country differs in implementation and acceptance of wellness programs. In Japan, the acceptance of prevention as a better way to control the rising health expenditures (relative to treatments) has gained political support over time. In 2000, the Japanese government launched a 10-year national campaign, Healthy Japan 21, to promote healthful lifestyles and build a healthier environment with support and leadership from local communities, worksites, and health care professionals. The campaign established national guidelines to assist local governments in implementing wellness initiatives. The focus included food and nutrition, physical activities, mental health, tobacco, alcohol, oral health, diabetes, cardiovascular diseases, and cancer.

In 2008, in order to preempt the growing global obesity trend, the Japanese government undertook an ambitious campaign (“Metabolic Syndrome Campaign”) that aimed to reduce the weight of the population in order to prevent the onset and progression of related lifestyle diseases. The targeted population was those aged 40 to 74. National legislation followed that required employers and local governments to provide their constituents with annual health checkups that check blood pressure, blood tests, EKGs, waistline measurements, and urine tests.

### Israel

Israel offers a number of wellness and healthy lifestyle programs. Indeed, when performing online searches for wellness programs in Hebrew, the most successful search is “healthy lifestyle.” These are closely related to CAM, for which many programs offer combinations of alternative medicine, diet promotion, and other supportive measures. The programs are offered by the government, the sick funds, hospitals, universities, corporations, and the private insurance market. The Israeli government also created a website devoted to health, with information on physical exercise, healthful lifestyles, addiction and rehabilitation, and health issues for various age groups.<sup>9</sup>

<sup>9</sup> Israel Government Portal. Available at: <http://www.gov.il/firstgov/english>.

The Ministry of Education established 2012 as a healthy and active lifestyle year, providing many wellness-related programs and activities in the educational system and including an Education for Health project.<sup>10</sup> The sick funds recognized the value of preventive medicine by providing various wellness and CAM programs and workshops. The hospitals have concentrated on patient-mobility and diet programs. Universities now provide degree programs related to healthier lifestyles. Large corporations have provided facilities and time for wellness activities for their employees. Finally, similar to the U.S., the private insurance market offers a multitude of programs, including gym memberships, nutritional and weight control programs, and alternative medicine services.

### **South Africa—Discovery**

In South Africa, the Discovery Vitality program is an example of private-sector efforts to promote wellness and lifestyle changes through consumer education and engagement. The program promotes healthy behavior and individual accountability through financial incentives.<sup>11</sup> People enter the program through a premium-paid policy, similar to a health insurance contract. Members complete a health-assessment questionnaire and biometric screening that assesses their overall health-risk level. The results are used to design personal healthy behavior goals. Members are rewarded with points to complete tasks; the points may be redeemed for movie passes, restaurant discounts, electronic goods, and even airline flights and hotel stays. In addition, members have access to Discovery's health and fitness partner discounts. The program also encourages physicians to prescribe lifestyle modifications such as smoking cessation, healthy nutrition, and regular exercise instead of chronic medication as appropriate. This coordination provides additional support for member education and engagement.

### **U.S., U.K., India, and Mexico—American Express**

Among all the employers that provide wellness programs, this issue brief notes greater challenges for a company with a multinational presence than those that only operate in a single country. These challenges include cultural differences, employees' acceptance, the availability of wellness programs, and underlying health issues. American Express first launched its comprehensive health and wellness program, Healthy Living, in the U.S. market and later extended it to India, the U.K., and Mexico.<sup>12</sup> The program provides tools to manage chronic conditions and lifestyle issues, including free preventive drugs and dietary supplements, health coaching, and wellness activity facilities. In addition, American Express makes health information and education material available online, and contributes to employee health savings accounts to encourage participation in its Healthy Living program.

<sup>10</sup> "A Health In All Policies Approach to Promote Active, Healthy Lifestyle in Israel," Yannai, Kranzler, et al., *Israel Journal of Health Policy Research*, April 2013. Available at: <http://www.ijhpr.org/content/2/1/16>.

<sup>11</sup> "The Association Between Medical Costs and Participation in the Vitality Health Promotion Program Among 948,974 Members of a South African Health Insurance Company," Patel, Deepak N., et al., *American Journal of Health Promotion*, January 2010. Available at: <http://ajhpcontents.org/doi/abs/10.4278/090217-QUAN-68R2.1>.

<sup>12</sup> Workforce, "Wellness Isn't Such a Foreign Concept to American Express Employees Overseas," May 16, 2012. Available at: <http://www.workforce.com/article/20120516/NEWS02/120519964/wellness-isnt-such-a-foreign-concept-to-american-express-employees>.

While the main offerings of the program are the same in the four countries, the program in each market has been tailored to respond to the underlying differences in culture and health issues. For example, responding to the inconvenient access to medical services in India and Mexico, American Express established onsite wellness clinics. In the U.K., the program offers coordinated medical care that includes elements such as occupational health, government and private medical care, and employee-assistance programs. In Mexico, the utilization of the Caesarean section is significantly higher. As such, the program includes a special maternity program to support healthy pregnancy and efficient delivery.

## Results

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While the results are mixed and difficult to quantify, each program shows promise in reducing the proliferation of chronic diseases and health risks.

### Japan

In Japan, the mid-term assessment of Healthy Japan 21 was far from satisfactory. Among the 70 goals that were initially established, only a few showed improvement; some even worsened under the program. For example, obesity in the population has increased, the number of possible diabetics has not shown any sign of decline, and the smoking rate declined for men but not women. To counter the disappointing results, additional measures were taken to counteract the lifestyle-related diseases, such as adding health checkups and counseling.

The results of the Metabolic Syndrome Campaign are mixed as well. While the number of metabolic syndrome tests increased, there was a decrease in cancer tests based on a survey. Moreover, the Japanese Ministry of Health found in 2010 that measuring waistlines to judge whether someone has metabolic syndrome lacks scientific evidence. Despite the controversies concerning the wellness initiatives championed by the Japanese government, the current initiatives suggest that a transition from a treatment-based to a prevention-based approach for modern ailments is under way.

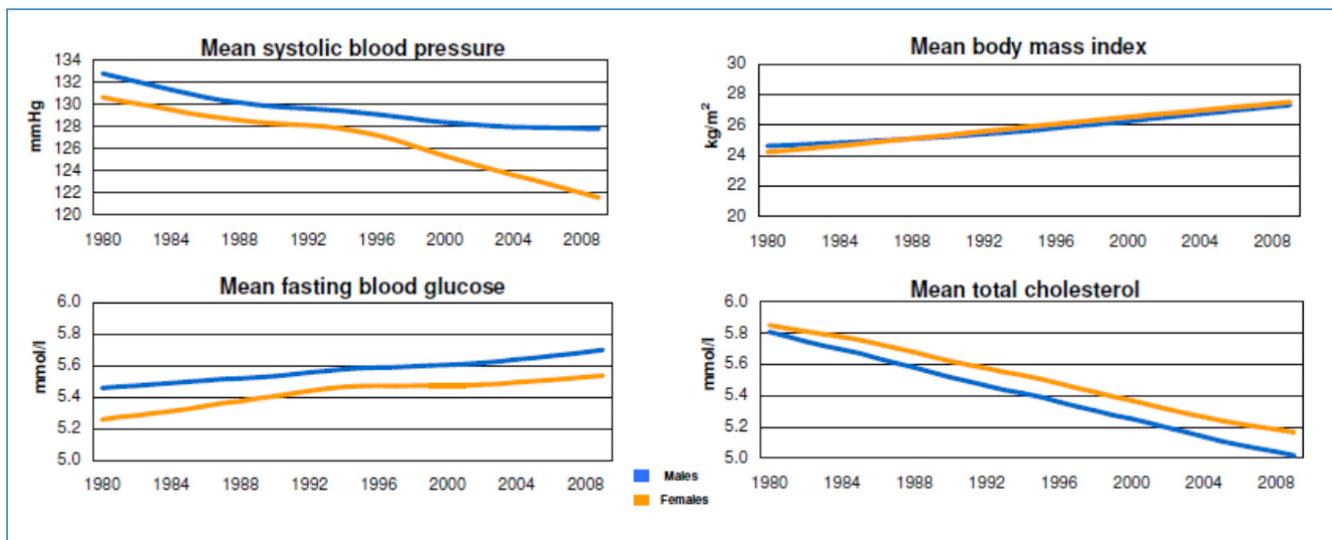
### Israel

Israel's 2004 statement to the World Health Organization stated that "from our experience, it is clear that industry, when guided by health authorities, has the willingness and capability needed to promote health."<sup>13</sup> This pursuit involves many national issues like fighting obesity, decreasing salt, fat, and sugar in food items, etc. The strategy on diet, physical activity, and health is a lever to mobilize national policy and changes in attitudes and behaviors of individuals. The charts below show improvement in blood pressure and total cholesterol, but also show some worsening levels in blood glucose and body mass index.<sup>14</sup>

<sup>13</sup> World Health Organization -Noncommunicable Diseases (NCD) Country Profiles, Israel, 2014. Available at: [http://www.who.int/nmh/countries/isr\\_en.pdf](http://www.who.int/nmh/countries/isr_en.pdf).

<sup>14</sup> Ibid.

Since the mid-1990s, major changes in the status and influence of CAM occurred in Israel. Over 20 forms of CAM are in widespread use: 6.1 percent of the adult population consulted with CAM in 1993, and more than 12.2 percent did so in 2007. During this period, alternative medicine moved from its infancy into a mainstream health commodity. Still, it should be noted that usage and acceptance of CAM and wellness programs differ significantly among disparate population segments, with Arabs and ultra-Orthodox Jews showing lower acceptance, and poorer health results, than the overall Israeli population. These examples highlight the importance of education and promotion of wellness programs for all sectors of society.



Source: World Health Organization

### South Africa—Discovery

In South Africa, the Discovery Vitality program has shown positive results based on two studies:

- The five-year Longitudinal Study for Discovery Health and Vitality that focused on subsidized access to national fitness center chains.<sup>15</sup>
- The one-year Vitality Association Study of cross-sectional measurement of the relationship between the level of wellness engagement and hospital claims experience (i.e., admission rates, length of stay, and costs).<sup>16</sup>

The studies have shown that participating members generally are healthier, experience lower average health care and chronic disease costs, and report shorter hospital stays and fewer admissions than the overall population. These outcomes could be due to the selection of these programs by healthier people. The results of the longitudinal study suggest that physical-activity interventions, such as subsidized gym memberships, may increase the level

<sup>15</sup> “The Science of Health Promotion,” American Journal of Health Promotion, January 2010. Available at: <http://ajhpcontent.org/doi/abs/10.4278/090217-QUAN-68R2.1>.

<sup>16</sup> Ibid.

of members' physical activity and help mitigate their future health care costs. Additionally, the cross-sectional study suggests that members who are more engaged in the wellness program will experience lower hospital costs per day, shorter hospital stays, and fewer admissions compared to those who are less engaged. The results are particularly telling for hospital admissions related to lifestyle diseases such as cardiovascular diseases and diabetes.

#### LONGITUDINAL STUDY RESULTS

Gym Visits		Hospital Admissions	
Year	% of Members Using Gym	Gym Visit Frequency	Probability of Admissions
1	27.0%	1+ every 2 weeks	97%
2	31.1%	1+ per week	93%
3	31.8%	3+ every 2 weeks	90%
4	32.1%	2+ per week	87%
5	33.1%		

**Average Costs Per Admission in Years 4 and 5 Given Levels of Engagement in Fitness-Related Activities in Years 1-3**

Member Activity in Years 1-3	Average Costs per Admission in Years 4 and 5
Inactive, no change	\$861
Inactive to More Active	\$805
Active to Less Active	\$797
Active, no change	\$750
Active to More Active	\$725
Control Group, Not enrolled	\$817

#### CROSS-SECTION STUDY RESULTS

**Adjusted % Difference in Hospital Costs and Admission Rates per Member for Persons Engaged in Vitality Compared With All Other Members**

Chronic Condition	% Difference in Costs: Highly Engaged vs. Other Members	% Difference in Admission Rates: Highly Engaged vs. Other Members
Cancers	-15.09%	-13.17%
Cardiovascular disease	-7.17%	-7.37%
Endocrine and metabolic disease	-21.38%	-20.66%
Musculoskeletal conditions	-17.44%	-15.60%

Source: "The Science of Health Promotion," American Journal of Health Promotion, January 2010. Available at: <http://ajhpcontent.org/doi/abs/10.4278/090217-QUAN-68R2.1>.

### **U.S., U.K., India, and Mexico—American Express**

The wellness program results published by American Express were positive, demonstrating strong program engagement and early success. In the U.S., flu shots given to employees and family members increased 150 percent from 2008 to 2009; health screening participation delivered at 28 locations increased 180 percent; and health assessment completion increased 430 percent. In addition, employee walk-in appointments at onsite clinics increased 14 percent in 2009. The results also show a high compliance rate with maintenance medications for high cholesterol and blood pressure.

In India, employee participation in the wellness program exceeded 50 percent. Family member participation also was greater than the industry average. In the U.K., employees were 100 percent satisfied and enthusiastic about the program. In Mexico, the Caesarean-section rate was 43 percent among women who completed the maternity coaching program, which was 20 percentage points lower than those who did not enroll in the program.<sup>17</sup>

### **Conclusion**

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Continued studies are needed to quantify the value of wellness programs. The committee feels that this new emphasis on wellness versus sickness is warranted. This could be a component in lowering health care costs in order to achieve success with any wellness program, stakeholder engagement is key. Thus, it is critical to recognize the differences in culture and lifestyle, and identify the main issues in each country or region. A culture that promotes wellness and prevention needs to be nurtured and will be successful only if it penetrates all levels of society and corporate culture. Wellness programs must provide relevant resources and information for targeted constituents and be geared to enhance the awareness of the benefits of a healthy lifestyle. The programs should coordinate all health- and wellness-related functions and activities and ensure that all relevant resources are structured to support the goals of the programs. Finally, it may take several years to start realizing the impact and benefits of wellness programs.

<sup>17</sup> The Metlife Study of Global Health and Wellness: A Look at How Multinational Companies are Responding to the Need for a Healthier Workforce, September 2010. Available at: [https://www.metlife.com/assets/institutional/products/benefits-products/MetLifeGlobalHealthWellness\\_exp0116.pdf](https://www.metlife.com/assets/institutional/products/benefits-products/MetLifeGlobalHealthWellness_exp0116.pdf).