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Preventive Medicine: A Ready Solution for a Health Care System in Crisis

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Preventive Health in the United States

A half-century journey

Prevention was a prominent feature of the health care reforms that took place in the late 1960s through the early 1970s. During that time, strategies such as universal vaccination, promotion of lifestyle changes, population screenings, and safety regulations were introduced and became widely accepted as means to improve public health while reducing health care expenditures.

Enthusiasm for prevention strategies waned in the mid-1980s when some unanticipated outcomes became apparent.

- Serious, often permanent, injuries were attributed to some vaccines used for immunizations.
- Private health insurers had begun to use lifestyle factors as the basis for raising rates and/or denying consumer eligibility for disability benefits.
- Preventive screenings had come under scrutiny as potential tools for activities ranging from denying employment to selective abortion.
- Litigation increased with suits asserting that occupational safety standards were being used to exclude people from certain jobs.[1]

Under the auspices of the Agency for Healthcare Research and Quality, the US Preventive Services Task Force (USPSTF) introduced the first edition of its *Guide to Clinical Preventive Services* in the late 1980s.[2] The recommendations contained in the guide substantiated the vital importance of preventive care by including prevention in primary health care, ensuring health plan coverage for effective preventive services, and holding health care providers and systems accountable for delivering preventive care. Updated periodically thereafter, these guidelines continue to form the basis of clinical standards for professional societies, health care organizations, and medical quality review groups. Current (2009) USPSTF recommendations for preventive services are listed in Table 1.

The managed care organizations that flourished in the 1980s and 1990s introduced the concept of insurance coverage for services emphasizing disease prevention and health education. For the first time, primary care providers were encouraged, and often "rewarded," for attending to appropriate screening and preventive care. Disease state management programs, first appearing in the early 1990s, introduced aggressive interventions aimed at preventing disease onset, progression, and complications as well as providing treatment for patients with chronic conditions.

Initiated in 1979 during the Carter administration, the Federal government initiated the Healthy People program to call attention to public health issues and establish 10-year targets for improvement in population health. Over the years, the program has worked collaboratively with public health and other organizations across the country to provide education in the form of prevention programs, information, and resources.

Current status of preventive health

Although the United States remains one of the world's richest and most technologically advanced nations, our national health continues to fall far short of expectations and the associated costs are alarmingly high. Statistical evidence is abundant:

- In 2007–2008, the age-adjusted prevalence of obesity in the United States was 33.8% overall, 32.2% among men, and 35.5% among women.[3]
- An estimated 23.6 million Americans (7.8% of the population) have diabetes. Of these, 17.9 million have been diagnosed and 5.7 million are undiagnosed.[4]
- According to the National Kidney Foundation, more than 26 million Americans have chronic kidney disease and millions of others are at risk.[5]
- According to the American Heart Association, 53.7% of American men and 55.8% of American women have developed hypertension by 55–64 years of age. By age 75, the percentages increase to 64.1 for men and 76.4 for women.[6]
- At least half of the deaths from cancers (estimated at 292,540 men and 269,800 women in 2009) could be prevented by more systematic efforts to reduce tobacco use, improve diet and physical activity, and expand the use of established screening tests.[7]

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Table 1. U.S. Preventive Services Task Force (USPSTF) recommended preventive services (2009)

	Adults		Special Populations	
Recommendation	*Men*	*Women*	*Pregnant Women*	*Children*
Abdominal Aortic Aneurysm, Screening[1]	X			
Alcohol Misuse Screening and Behavioral Counseling Interventions	X	X	X	
Aspirin for the Prevention of Cardiovascular Disease[2]	X	X		
Asymptomatic Bacteriuria in Adults, Screening[3]			X	
Breast Cancer, Screening[4]		X		
Breast and Ovarian Cancer Susceptibility, Genetic Risk Assessment and BRCA Mutation Testing[5]		X		
Breastfeeding, Behavioral Interventions to Promote[6]		X	X	
Cervical Cancer, Screening[7]		X		
Chlamydial Infection, Screening[8]		X	X	
Colorectal Cancer, Screening[9]	X	X		
Congenital Hypothyroidism, Screening[10]				X
Dental Caries in Preschool Children, Prevention[11]				X
Depression (Adults), Screening[12]	X	X		
Diet, Behavioral Counseling in Primary Care to Promote a Healthy[13]	X	X		
Gonorrhea, Screening[14]		X	X	
Gonorrhea, Prophylactic Medication[15]				X
Hearing Loss in Newborns, Screening[16]				X
Hepatitis B Virus Infection, Screening[17]			X	
High Blood Pressure, Screening	X	X		
HIV, Screening[18]	X	X	X	X
Iron Deficiency Anemia, Prevention[19]				X
Iron Deficiency Anemia, Screening[20]			X	
Lipid Disorders in Adults, Screening[21]	X	X		
Major Depressive Disorder in Children and Adolescents, Screening[22]				X
Obesity in Adults, Screening[23]	X	X		
Osteoporosis in Postmenopausal Women, Screening[24]		X		
Phenylketonuria, Screening[25]				X
Rh (D) Incompatibility, Screening[26]			X	
Sexually Transmitted Infections, Counseling[27]	X	X		X
Sickle Cell Disease, Screening[28]				X
Syphilis Infection, Screening[29]	X	X	X	
Tobacco Use and Tobacco-Caused Disease, Counseling[30]	X	X	X	
Type 2 Diabetes Mellitus in Adults, Screening[31]	X	X		
Visual Impairment in Children Younger than Age 5 Years, Screening[32]				X

From Guide to Clinical Preventive Services, 2009. Available at: http://www.ahrq.gov/clinic/pocketgd09/gcp09s1.htm. USPSTF recommends that clinicians discuss these preventive services with eligible patients and offer them as a priority. All these services have received an "A" or a "B" (recommended) grade from the Task Force.

[1]One-time screening by ultrasonography in men aged 65 to 75 who have ever smoked.

[2]When the potential harm of an increase in gastrointestinal hemorrhage is outweighed by a potential benefit of a reduction in myocardial infarctions (men aged 45–79 years) or in ischemic strokes (women aged 55–79 years).

[3]Pregnant women at 12–16 weeks gestation or at first prenatal visit, if later.

[4]Mammography every 1–2 years for women 40 and older.

[5]Refer women whose family history is associated with an increased risk for deleterious mutations in *BRCA1* or *BRCA2* genes for genetic counseling and evaluation for BRCA testing.

[6]Interventions during pregnancy and after birth to promote and support breastfeeding.

[7]Women aged 21–65 who have been sexually active and have a cervix.

[8]Sexually active women 24 and younger and other asymptomatic women at increased risk for infection. Asymptomatic pregnant women 24 and younger and others at increased risk.

[9]Adults aged 50–75 using fecal occult blood testing, sigmoidoscopy, or colonoscopy.

[10]Newborns.

[11]Prescribe oral fluoride supplementation at currently recommended doses to preschool children older than 6 months whose primary water source is deficient in fluoride.

[12]In clinical practices with systems to assure accurate diagnoses, effective treatment, and follow-up.

[13]Adults with hyperlipidemia and other known risk factors for cardiovascular and diet-related chronic disease.

[14]Sexually active women, including pregnant women 25 and younger, or at increased risk for infection.

[15]Prophylactic ocular topical medication for all newborns against gonococcal ophthalmia neonatorum.

[16]Newborns.

[17]Pregnant women at first prenatal visit.

[18]All adolescents and adults at increased risk for HIV infection and all pregnant women.

[19]Routine iron supplementation for asymptomatic children aged 6 to 12 months who are at increased risk for iron deficiency anemia.

[20]Routine screening in asymptomatic pregnant women.

[21]Men aged 20–35 and women over age 20 who are at increased risk for coronary heart disease; all men aged 35 and older.

[22]Adolescents (age 12–18) when systems are in place to ensure accurate diagnosis, psychotherapy, and follow-up.

[23]Intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.

[24]Women 65 and older and women 60 and older at increased risk for osteoporotic fractures.

[25]Newborns.

[26]Blood typing and antibody testing at first pregnancy-related visit. Repeated antibody testing for unsensitized Rh (D)-negative women at 24–28 weeks gestation unless biological father is known to be Rh (D) negative.

[27]All sexually active adolescents and adults at increased risk for STIs.

[28] Newborns.

[29]Persons at increased risk and all pregnant women.

[30]Tobacco cessation interventions for those who use tobacco. Augmented pregnancy-tailored counseling to pregnant women who smoke.

[31]Asymptomatic adults with sustained blood pressure greater than 135/80 mg Hg.

[32]To detect amblyopia, strabismus, and defects in visual acuity.

As suggested by the foregoing statistics, chronic diseases are the leading causes of death and disability in the United States today. In addition to causing 70% of all US deaths each year, chronic conditions limit activities of daily living for 1 in 10 Americans.[8] Most unsettling, for a majority of chronic diseases, onset can be delayed or progression limited by avoiding risky behaviors, increasing physical activity, and obtaining life-saving screening services.

The growing price tag associated with chronic conditions looms as a threat to the national economy. A recent Health and Human Services study showed that health care costs increased in 2009 at the fastest rate in more than a half century, with spending rising to an estimated $2.5 trillion. More than 60% of the nation's medical care costs are attributable to chronic conditions.

In 2006, a comparison study concluded that the US population in late middle age is less healthy than the equivalent British population with respect to self-reported chronic conditions and biological markers of disease, despite considerably greater per capita spending on health care by the United States ($5274 vs. $2164 [adjusted]).[9] The differences reportedly existed at all points of the socioeconomic status distribution.

Recent comparisons reveal that despite better access to diagnostic equipment and surgical procedures, American life expectancy is shorter than for all peer countries around the world.[10] Experts believe that this may be due in part to the United States' lag in basic preventive care (eg, annual checkups) and its heavy reliance on expensive specialists.[10]

Our national shortcomings with respect to prevention can be explained in many ways. Some point to commercial insurance carriers rationing coverage by adhering to conservative standards and recommendations. Others look to the public sector. Historically, the Medicare program has not covered preventive services for senior citizens and many Medicaid carriers restrict preventive care to minimal standards and recommendations.

Although many system issues exist, the problem is more pervasive. A national survey of 153,000 adults revealed that only 3% of US citizens adhere to the 4 key healthy lifestyle characteristics (ie, not smoking, maintaining healthy weight, eating adequate amounts of fruits and vegetables, exercising regularly).[11] Other surveys revealed that 20% of US high school students were cigarette smokers in 2007[12] and that more than 43 million American adults (approximately 1 in 5) continued to smoke tobacco in 2009.[13]

Despite these disheartening statistics, current conditions are ideal for a major transition in health care delivery. First, the aging population might exert a powerful positive effect. The 80 million "baby boomers" attaining senior status will have an unprecedented passion for enjoying longer, healthier, more active lives. Already, they are beginning to have an impact on markets, businesses, and society in general. While the costs of traditional "sick care" have continued to rise, improved medical and information technologies have enabled higher levels of personalized care to keep this population well.

Next, purchaser and consumer markets have begun to challenge traditional health care systems. Faced with increasing personal financial contributions to their health care, consumers have begun to play a larger role in managing their health. They are beginning to demand wellness and prevention services that will help them maintain or improve their quality of life as they age. Although some employers continue to provide coverage that includes preventive services, in most cases consumers are the purchasers of preventive care. The challenge for consumers is to identify how and where to purchase prevention.

Employers are increasingly embracing the value of a healthy, productive workforce. Traditionally, the effectiveness of wellness and prevention initiatives has been gauged by assessing changes in utilization and medical care costs. More recently, employers have recognized the impact of other outcomes such as health-related productivity losses due to absenteeism and presenteeism (ie, present at work but not performing at optimal levels due to a health condition or risk) as well as costs of disability benefits. The evidence favors a $1.50–$3.00 return on dollars invested (ROI) on medical and pharmacy costs in well-designed, integrated health promotion programs in industry.[14] Furthermore, a recent meta-analysis of 22 separate published studies regarding the impact of workplace wellness programs revealed that on average, for every $1 invested in comprehensive wellness programs there was a savings of $3.27 in medical/pharmacy costs and $2.73 in absenteeism costs—a 6:1 ROI, without taking into account the significant savings from improved performance at work due to better health (reduced presenteeism).[15, 16]

Increasingly, proactive preventive care is viewed as both a logical and a necessary alternative to traditional health care approaches. Screenings, risk assessments, early diagnosis, and aggressive intervention in advance of symptoms come at lower costs with greater potential for positive outcomes at the presymptomatic stage. A study assessing the potential health and economic benefits of reducing common risk factors in older Americans concluded that effective prevention could substantially improve the health of older Americans and, despite increases in longevity, such benefits could be achieved without additional lifetime medical spending.[17]

A challenge to the traditional model

Traditionally, the focus of care has been reactive, with services delivered only when a patient's illness becomes symptomatic. As our health care system has evolved, the focus has shifted steadily from reactive to proactive, preventive care in which consumers are treated on a presymptomatic basis. Not coincidentally, this concept is one that dovetails with the population health management philosophy.

Converging trends are already driving these changes. A combination of factors (ie, the increasing financial transfer of the cost of care to consumers, the compelling evidence of the effect of personal health behaviors on health outcomes, the growing societal interest in health and well-being) have been gradually shifting the responsibility for health to the individual. In addition to an increase in deductibles and copayments, Health Savings Accounts, in which health spending and associated benefits are at the discretion of the consumer, are on the rise. This has triggered consumers' interest in their personal health and increased their involvement in health care purchasing and decision making.

By far the greatest challenge—and the greatest opportunity—regarding the traditional model came in the form of the recent health care reform legislation that solidified the vital role of prevention in lowering the total costs of poor health to our society, our business community, and our economy.

Health Care Reform and Prevention

There can be no doubt that the US Congress recognized the importance of addressing wellness and prevention when crafting the Patient Protection and Affordable Care Act (PL 111–148). A broad range of entitlements, programs, and interventions are evident in the synopses of related sections that follow.

Wellness Incentives (Sec. 1201) codifies an amended version of the Health Insurance Portability and Accountability Act wellness program regulations. Wellness programs, with conditions for obtaining a reward based on an individual meeting a certain standard relating to a health factor, would have to meet additional requirements. Among these requirements, the reward must be capped at 30% of the cost of the employee-only coverage under the plan (under current regulations, the cap is 20%), but the Secretaries of Health and Human Services (HHS), Labor, and the Treasury would have the discretion to increase the reward up to 50%.

Wellness and Health Promotion (Sec. 1201) requires the Secretary of HHS to develop reporting requirements for group health plans and insurers. Under this section, wellness and health promotion activities could include personalized wellness and prevention services "that are coordinated, maintained or delivered by a health care provider, a wellness and prevention plan manager, or a health, wellness, or prevention services organization that conducts health risk assessments or offers ongoing face-to-face, telephonic, or Web-based intervention efforts for each of the program's participants …"

Coverage of Preventive Health Services (Sec. 2713) stipulates that a group health plan and/or a health insurance issuer that offers group or individual health insurance coverage must provide coverage without imposing cost-sharing requirements for:

1. Evidence-based items or services that, in effect, have a rating of "A" or "B" in the current recommendations of the USPSTF
2. Immunizations recommended by the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC) with respect to the individual involved

National Prevention, Health Promotion, and Public Health Council (Sec. 4001) creates a Council with HHS to provide coordination and leadership at the Federal level, and among Federal departments and agencies, with respect to prevention, wellness, and health promotion practices; the public health system; and integrative health care in the United States. Composed of departmental secretaries from across the Federal government with the Surgeon General serving as chair, the Council is charged with developing the National Prevention Strategy.

Advisory Group of Prevention, Health Promotion, and Integrative and Public Health (Sec. 4001): The President is to appoint an Advisory Group to the National Prevention, Health Promotion, and Public Health Council. The Advisory Group is to include a diverse group of licensed health professionals, including integrated health practitioners who have expertise in specific areas including worksite health promotion and preventive medicine.

Prevention and Public Health Fund (Sec. 4002) establishes a fund to provide for expanded and sustained national investment in prevention and public health programs. Administered by the Office of the Secretary of HHS, the fund will support programs authorized by the Public Health Service Act for prevention, wellness, and public health activities including prevention research and health screenings and initiatives.

Employer-based Wellness Programs (Sec. 4303) directs the CDC to provide employers with technical assistance, consultation, and tools to evaluate wellness programs and to build evaluation capacity among workplace staff. It directs the CDC to study and evaluate employer-based wellness practices. It also clarifies that the recommendations, data, or assessments will not be used to mandate requirements for workplace wellness programs.

Grants for Small Businesses to Provide Comprehensive Workplace Wellness Programs (Sec. 10408) directs the Secretary of HHS to award grants to small businesses to provide employees with access to comprehensive workplace wellness programs. A total of $200 million in funding is available for 5-year grants to companies with fewer than 100 employees and no current wellness program.

Effectiveness of Federal Health and Wellness Initiatives (Sec. 4402) requires an HHS evaluation of all existing Federal health and wellness initiatives and a report to Congress concerning the reasons for program successes or failures including the factors contributing to these conclusions.

Medicare Coverage of Annual Wellness Visit (Sec. 4103) calls for the creation of a personalized/individual prevention plan that includes the following:

- health risk appraisal
- up-to-date medical and family history
- list of current health care providers and suppliers
- measures of height, weight, body mass index (BMI [or waist circumference]), blood pressure, and other routine measures
- detection of cognitive impairment
- a 5- to 10-year screening schedule based on USPSTF and ACIP recommendations
- list of risk factors and conditions for which primary, secondary, and tertiary prevention services are recommended or are under way
- furnishing of personal health advice and referral, as appropriate, to health education or prevention counseling services aimed at reducing risk factors and improving self-management … including weight loss, physical activity, smoking cessation, fall prevention, and nutrition
- service delivered by physician, registered nurse, health educator, registered dietitian, or nutrition professional
- service may be furnished through an interactive telephonic or Web-based program

Demonstration Project Concerning Individualized Wellness Plan (Sec. 4206) calls for the HHS Secretary to establish up to 10 pilot programs to test the impact of providing an individualized wellness plan to at-risk populations who utilize community health centers. Programs must include 1 or more of the following: nutritional counseling, physical activity plan, alcohol and smoking cessation counseling and services, and stress management.

Incentives for Prevention of Chronic Disease in Medicaid (Sec. 4108) provides $100 million to establish grants to states (beginning in 2011) for minimum 3-year Medicaid beneficiary incentive programs. States that receive grants must provide

programs to individuals for cessation of tobacco use, weight reduction/control, lower cholesterol and/or blood pressure, diabetes avoidance or control, and outcome measurement.

Healthy Aging, Living Well: Evaluation of Community-Based Prevention and Wellness Programs for Medicare Beneficiaries (Sec. 4202) provides $50 million to the CDC to fund pilot programs operated by state and local health departments or Native American groups. Individual screening and interventions must focus on improving nutrition, increasing physical activity, reducing tobacco use and substance abuse, improving mental health, and promoting healthy lifestyles among a target population of persons 55–64 years of age.

The Preventive Medicine and Public Health Training Grant Program enables the HHS Secretary to award grants to, or enter into contracts with, eligible entities to provide training to graduate medical residents in preventive medicine specialties.

Sense of Senate concerning Congressional Budget Office scoring (Sec. 4401): The Senate found that the costs associated with prevention programs are difficult to estimate, initiatives are difficult to measure, and outcomes may not be apparent within the 5- to 10-year budget window. Given these issues, the Congress senses a need to work with the Congressional Budget Office to develop better methodologies to evaluate and score the progress made by prevention and wellness programs.

The prevention and wellness measures contained in the health care reform law help pave the way for a necessary fundamental change from cost shifting to cost reduction. Reducing the burden of health risks and illness will lead to a healthier population and measurable cost decreases.

U.S. Preventive Medicine: An Innovative Model Revisited

USPM envisions a "culture of prevention" in which the definition of "prevention" is expanded to include each individual understanding what goes on inside his or her body (eg, lifestyle factors, biometric tests, blood tests). The company's goal is to facilitate the health care system transformation necessary for this transition (Figure 1).

In the 4 years since the publication of "Preventive Medicine: A 'Cure' for the Healthcare Crisis," USPM has made considerable progress toward meeting the challenges of creating an appropriate prevention model in a changing US health care landscape. The model has evolved, shifting direction and expanding its focus to meet current needs.

USPM continues to view its role as a catalyst, coalescing divergent interests (ie, employers, consumers, providers, government) in a business model focused on creating and sustaining a "culture of prevention." Its comprehensive, individual-oriented approach is best described as a bundled clinical model of prevention that incorporates (1) primary, secondary, and tertiary prevention; (2) a novel "prevention benefit" solution; and (3) an array of high-tech/high-touch components.

The Prevention Plan

The expanded model—The Prevention Plan (TPP)—is a suite of products that includes a general prevention and wellness plan, a screening/early detection plan, a chronic condition management plan, a prevention plan directed at senior wellness and care management, and a children's prevention plan (in development) in addition to its initial product – a concierge and executive health prevention plan.

Each of the TPP plans contains 1 or more assessment elements (eg, health risk appraisals, lab tests/biometrics, physician review/recommendations, personalized plan and report, personal Web-based health record) and 1 or more interventions (eg, access to telephonic nurse coaches, how-to videos, prevention score, online education programs, progress tracking, screening/exam schedules, challenges/contests).

Fully accredited by both the National Committee for Quality Assurance and the Utilization Review Accreditation Committee, TPP plans are portable, independent of but synergistic with traditional health insurance, and can be integrated with employer and/or public health benefits packages.

Using detailed information from a person's medical history along with data from blood tests, biometric screenings, and self-reported risk behaviors, TPP creates a personal risk analysis and customized plan. This "road map" identifies the person's health risks and recommends a personalized program to minimize those risks. In addition to the robust online tools, a health coaching team led by nurse advocates provides support and the individual also has the option of having his or her plan

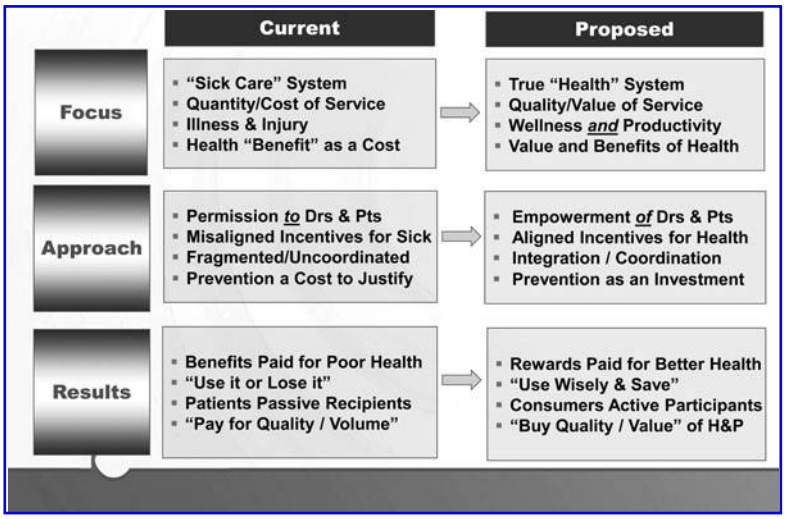

FIG. 1. Transformation of the health care system.

reviewed by a physician. In this way, the participant receives a comprehensive personal plan for health, similar to someone getting financial advice and a plan from a financial planner.

The Prevention Score. A unique feature of TPP is the Prevention Score. This score differs from a health risk score in that it measures a person's proactive behavior by incorporating and offering "points" for key metrics and for completing educational sections, screenings, and other components of TPP.

The Prevention Score is an effective tool to engage individuals in their own health on a year-to-year basis. The underlying assumption is that knowing one's score will encourage the person to strive for improvement. The only circumstance under which a person receives "0" points is when he or she does nothing. Merely joining the program earns a point.

Key to the scoring system is the tracking of individuals' progress by comparing their baseline metrics at the beginning of each year with their metrics at the beginning of the following year. At the end of each year, individuals receive their Prevention Score based on the sum of points from this comparison and points from their participation level in TPP (eg, completion of educational sections, screenings). Thus, the final Prevention Score is a reflection of each person's efforts in the previous year—improvement on their metrics over baseline and their involvement in recommended activities during that year. Incorporation of key metrics, together with the dynamic nature of the score, encourages each person to learn the reasons for a low score and provides the knowledge, tools, and incentive to improve. The maximum Prevention Score is 1000 points. Participants can see the points they have earned in real time and they are given customized recommendations on how they can accrue additional points.

TPP interventions are designed to elevate a person's concern about his/her health, to make wellness and prevention easy to understand and to achieve, and to foster social networking and community. More than 15 customized Action Programs are built into the model. Personal pointers are developed to connect the person to all of the necessary pieces of prevention on an individual basis. Educational information is updated regularly by collecting and/or synthesizing thousands of condition-related articles to make them readily accessible and relevant to participants.

In addition to the collection of bundled benefits, TPP offers challenges and contests to engage employers and members alike. For example, TPP offers individual members the opportunity to compete in teams against other members and offers employees a chance to compete in teams against their colleagues within the same employer group.

For the "Historic Trail" Challenges, members record their physical activity throughout the week and translate that activity (using a calculator provided by TPP) into virtual miles walked along an historic route such as the Pony Express or The Iditarod. As members reach certain points along the trail, they learn interesting historical facts. By recording these activities in their Prevention Plan, members also earn points in their Prevention Score and are entered into random drawings for prizes such as a $500 shopping spree or cruise package.

TPP also allows organizations, such as a hospital or retailer, the opportunity to sponsor a community-wide challenge in their local market. The sponsor recruits other employers to participate for the chance to win The Prevention Cup and be recognized as the healthiest company in that community.

In order to participate, companies must first install TPP within their employee group. As employees progress through their individual Prevention Plan, they contribute to their employer's aggregate Index Score in the community challenge. Points are earned based on the percentage of employees engaged in TPP, the percentage of employees who participate in community activities, BMI reduction and weight management, and average Prevention Score for the group. Competitions among companies and communities are under way in several regions of the country.

Financial model. TPP is designed to be completely scalable. It is available to individual direct-to-consumer members, as well as to companies of 1 to 1 million employees. Current USPM contracts include 2-employee companies as well as organizations with up to 10,000 employees. An online platform enables employers and public program purchasers to select from a range of prevention modules and prices.

Although all employees are automatically enrolled in TPP, employers are charged only for those employees who participate. TPP provides de-identified aggregate data to the employers on employee participation and Prevention Score levels. One mid-Atlantic car dealer created a surcharge for nonparticipating employees. The TPP was budget neutral, but the employer benefited from healthier, more productive employees.

USPM International Advisory Board

USPM sees itself as being on the threshold of an unparalleled opportunity to make a positive, lasting difference in the United States and the world by helping people to manage their health and prevent or delay the onset of chronic illness. With a wide range of stakeholders involved in this enterprise, it is important to recognize different perspectives and address issues specific to each. Once again, USPM sought the expertise of the Jefferson School of Population Health in enlisting a panel of experts to serve as impartial consultants to the company's strategy team (Table 2).

David B. Nash, MD, MBA, of the Jefferson School of Population Health and Ronald Loeppke, MD, MPH, of USPM are the cochairs of the International Advisory Board (Board) and co-facilitated the Board meeting on March 25–26, 2010, in Jacksonville, Florida. The principal aims were to obtain objective feedback regarding the company's progress toward achieving its goal of transforming preventive health care and to elicit critique with respect to its current programs and business perspectives.

The Board was created to bring thought leadership, expertise, and feedback to USPM across a variety of important domains including employers, academia, researchers, physicians, hospitals, professional societies/organizations, insurers/brokers, health benefits, and health management in order to:

- Mobilize thought leaders and professional organizations that are focused on the clinical, educational, and practical elements of prevention.
- Synthesize the literature and research findings of the scientific and economic case for prevention including evidence-based clinical prevention guidelines.
- Crystallize a global research agenda to evaluate the value of health and the power of prevention

Table 2. U.S. Preventive Medicine (USPM) International Advisory Board. *Denotes USPM affiliation

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National Business Coalition on Health (NBCH)
Washington, DC

USPM 2010. Reporting on its programs and progress since the previous meeting in 2006, USPM described its expanded distribution channels, which include major global insurance brokers and global benefits consultants in addition to health systems, local and regional health insurance agencies, and employers of all sizes. Currently, the company operates programs in 46 states and the United Kingdom.

Over the past 4 years the company has enhanced its "high-touch" components and created a more robust communication system. Participants' personal health records are updated and tracked by means of TPP's electronic health information system, which includes an age- and gender-based schedule for prevention according to guidelines. At present, participants may print personal health and/or educational materials to share with their physicians. USPM is working toward integrating its health information system with other provider and payer electronic records.

An opportunity exists for TPP to integrate with and/or supplement the Medical Home Model by functioning as a virtual medical home. Between office visits, relevant laboratory reports and TPP physician reviews may be shared with the primary care physician.

Employers receive participating employee health data (eg, population risks and Prevention Score) in aggregate form to provide a gauge of the collective health of employees.

Current projects include a prevention, wellness, and chronic care management program for employers and state governments that provides customized materials and personal coaching for moderate and high-risk individuals on a 1:1 basis.

Evaluation of TPP. A recent study[18] provided evidence that TPP positively impacts 15 key employee risk factors and is effective at migrating employee populations to lower

overall health risk levels. A Markov chain analysis revealed that approximately 49% of participants moved from high-risk category (5 or more high health risks) to moderate-risk category (3–4 high health risks) and approximately 46% moved from moderate-risk category to low-risk category (0–2 high health risks) over a 1-year period.

Report on UK Preventive Medicine: Prevention-Oriented Global Research. The issues of chronic illness and spiraling health care costs are not unique to the United States. The United Kingdom's National Health Service operates much like a very large self-insured employer. Health care funding has become a critical issue in the United Kingdom due in large part to utilization increases associated with chronic illness. The private health insurance companies that operate in the United Kingdom are experiencing issues similar to those in the United States.

In the midst of a bleak economic climate, the financial burden of illness has climbed dramatically. The UK government bears the brunt of income support for its workers who are on medical leave and/or disability in addition to paying for direct medical care. Like their US counterparts, employers in the United Kingdom have increasingly recognized the full costs associated with poor health for workers on medical leave and/or disability as well as the value of improved employee performance/productivity.

Research is being conducted with respect to worker well-being and the effectiveness of interventions aimed at keeping people healthy and in the workplace. Professor Jaspal Kooner, the Medical Director of UK Preventive Medicine in London, reported on a study that revealed genetic variations in vulnerability to cardiac risks for different populations. After cell samples were taken from a 30,000 person cohort, subjects were characterized phenotypically for cardiovascular risk factors (eg, coronary artery disease, renal disease). The goal is to identify high-risk individuals early and implement interventions to modify behaviors, thereby reducing long-term adverse outcomes. One caveat is that, even with a full risk assessment including genetic risks, personalized prevention approaches will remain a key element.

Board Reaction to The Prevention Plan Model. Board members continued to be in agreement that the USPM model for personal preventive medicine represents a promising alternative to conventional "public health" approaches.

Board recommendations regarding USPM's research and analytic agenda:

- A study of covered persons who do not engage in TPP, recognizing that biometric and health risk assessment data on nonparticipants may not be available for such analysis.
- Aggregate a multiemployer data set in a large integrated data repository with as many components of health-related metrics as possible that measure the total value of the investment in better health rather than merely the traditional medical/pharmacy cost savings (ROI). Ideally, this would include participation/engagement rates, health risks transitions, evidence-based medicine prevention, screening and medication/condition management adherence rates, productivity measures of presenteeism and absenteeism days lost due to health-related issues, reduction in hospitalization and emergency room utilization rates, medical/pharmacy costs, disability costs, workers' compensation costs, turnover rates, and employer performance measures (including revenue per employee and earnings per share).
- Determine the full range of metrics that can be modified through prevention and health enhancement interventions. Significant impact may be overlooked by examining only physical metrics in the traditional medical model.

Research questions suggested by the Board:

- What moves people to "higher performance" in life?
- What data should be collected on a worldwide basis?

A recurring comment was that wellness is not merely the absence of illness or lack of health risk factors. Wellness is also vitality, energy, engagement and balance in work and life, resilience, meaningful relationships, and social connectedness. Health enhancement and prevention programs that target individuals are important but it is equally important to create healthy work environments.

The conversation turned frequently to the value proposition (ie, results must be translated into value). Targeting future medical cost savings may not convince employers to invest in prevention—particularly small company employers. The Board encouraged USPM to view prevention as a benefit similar to an annuity over life—"a gift that keeps on giving."

Board members spoke of creating a community-level health care transformation with the use of convincing, evidence-based information. Such efforts might be supported by civic leaders who care about the health of the community.

Summary

Over a half century, some improvements have been realized from the efforts of health plans, disease management companies, and public sector agencies. Unfortunately, health care in the United States continues to fall short of expectations. Explanations for this failing range from health system issues to consumer behavior issues. It is clear that the United States is in the midst of a health care crisis dominated by a chronically ill, aging population and the spiraling costs of treatment. It is equally clear that more accessible, personalized prevention is a promising and value-based solution. The historic enactment of health care reform legislation earlier this year recognizes the vital role of preventive medicine and opens new opportunities for improvement in our national health status.

TPP is a personal health model that incorporates a range of technologies to identify risk factors, screen for and monitor chronic conditions, and - most importantly - to keep healthy people healthy. Knowledge and minimization of personal risk factors, early diagnosis, and appropriate treatment are essential to achieve optimal outcomes. The goal is to facilitate a transition from a culture of "sick care" to a "culture of prevention."

Although one approach is highlighted in this supplement, there are other possible routes to improve the health of our nation. The overarching message is that, by building on the pillars of primary, secondary, and tertiary prevention, we are

continuing to make progress toward a meaningful solution to the health care crisis in the United States.

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