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HEALTHWAYS

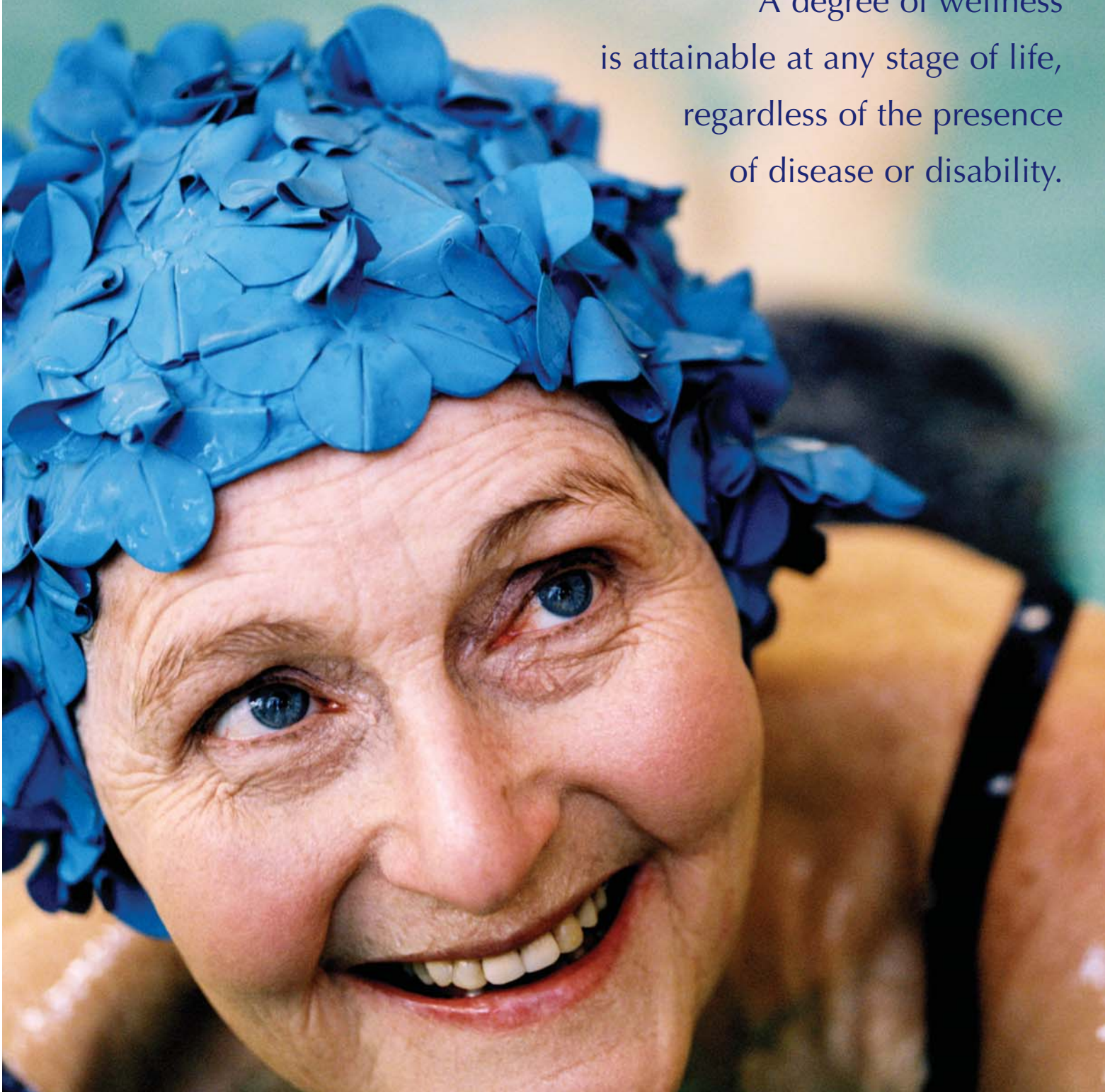
**EMBRACING HEALTH:**

TOOLS AND SYSTEMS  
FOR HEALTH PROMOTION  
AND DISEASE PREVENTION

# Wellness

is a state of balance in physical and mental health as perceived by each individual.

A degree of wellness is attainable at any stage of life, regardless of the presence of disease or disability.



# **EMBRACING HEALTH:**

**TOOLS AND SYSTEMS  
FOR HEALTH PROMOTION  
AND DISEASE PREVENTION**

6th Annual Disease Management  
Outcomes Summit  
November 2006

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## SUMMARY OF KEY FINDINGS

The 6th Annual Johns Hopkins/Healthways Disease Management Outcomes Summit brought together more than 200 practicing physicians, physician executives, thought leaders and subject matter experts from across the country with the goal of defining tools and systems to promote health and prevent disease. The result—outlined in the following report—is a guide to the barriers and the solutions to realizing the potential and the promise of prevention as a means of improving health and reducing costs. Achieving both the potential and the promise requires large-scale, long-term changes to the health system. Summit participants have put forth the elements of a national preventive health system, providing a solid steppingstone for future work toward such a goal.

In the pursuit of such a system, it is also clear that wellness must be the focus. The challenge of prevention today has shifted from such public health initiatives as handwashing, refrigeration and clean water to helping people eliminate the risk factors that lead to chronic disease, which is now the leading cause of death among industrialized nations. The goal of healthcare should be not only to control and manage risk factors, but to prevent the onset of risk factors in the first place. Wellness is not the absence of disease or even of risk factors. Rather, wellness is a relative state of being where a positive outlook results in good physical, mental and spiritual health.

### **A degree of wellness is attainable by every individual at any stage of life.**

The wellness model developed at the Summit addresses elements such as access to care, social support, a person's readiness for change, the availability of healthy food and an individual's physical environment. In addition, the model assumes that achieving wellness is a team effort whereby everyone—individuals working with their physicians, other healthcare professionals, families, friends, health support organizations, community organizations and policymakers—plays a role.

**Realizing the promise of prevention requires a combination of systemic change and personal responsibility.**

Participants identified and discussed the fundamental components of a revised health system that places a greater emphasis on health and prevention. Specifically, Summit participants offered ideas for change at the individual, provider, payer and policymaker levels.

**Individuals need:**

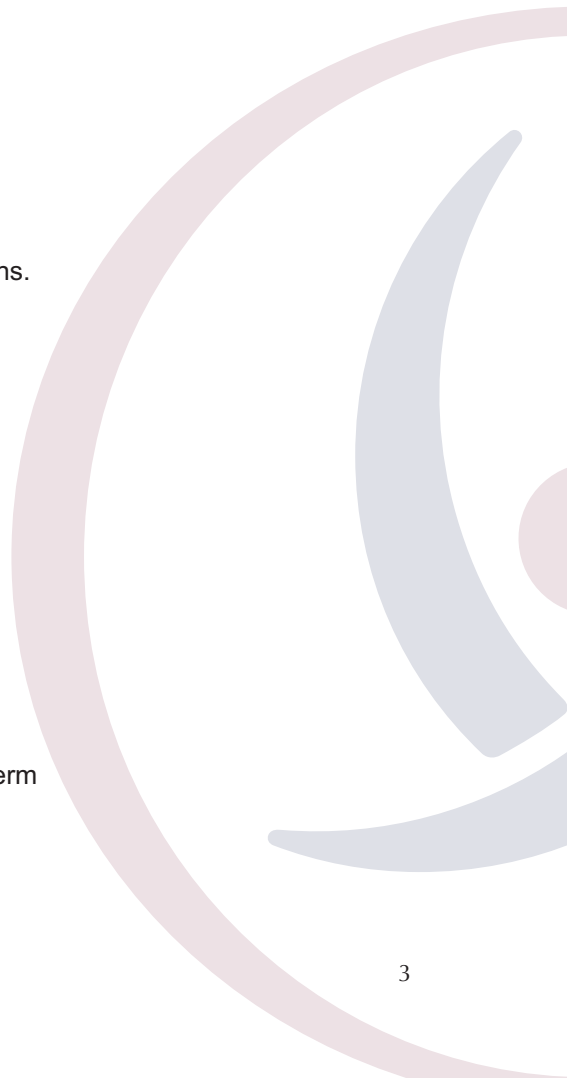
- Motivation (intent to live well).
- Knowledge (how to live well).
- Skills (ability to live well).
- Resources (opportunity to live well).

**Providers need:**

- Office-based systems to
  - Maximize the clinician's time.
  - Assist with health risk appraisals.
  - Remind providers and patients of indicated preventive interventions.
  - Delegate certain preventive services.
  - Monitor success in implementing preventive actions.
- The ability to hold group visits around prevention.
- Compensation for preventive services.
- Decision-support systems to
  - Define patient-specific risk.
  - Identify the most beneficial interventions.
  - Provide vetted information about best practices in prevention.
  - Tailor messages based on a patient's readiness to change.

**Payers can:**

- Expand prevention coverage policies for self-insured employers.
- Conduct prevention-oriented research to measure the short- and long-term economic impact of preventive interventions.
- Establish financial and nonfinancial incentives for employees to use



preventive services and adopt healthful lifestyles.

- Cover services with evidence of greatest benefit and cost-effectiveness, starting with the top 25 preventive services identified by Partnerships for Prevention.

**Policymakers can:**

- Implement tax incentives and disincentives that promote preventive care and healthy behaviors.
- Further develop Health Savings Accounts to more broadly define preventive interventions and practices.
- Establish standards and policies that promote prevention, including legislative and financial support for post-screening follow-up and treatment.
- Establish policies that influence the “built environment” to be conducive to healthy behaviors.
- Provide incentives for state and local governments to develop programs that promote prevention and healthy behaviors.
- Promote the development of a preventive health system.
- Take a more active role in measuring the quality of healthcare delivery.
- Address the need for qualified clinicians to deliver preventive health services.
- Provide special initiatives and funding for the elimination of disparities in preventive practices.
- Establish standards for collecting and sharing health information and the promotion and development of personal health records.
- Lead by example with coverage of preventive services for federal employees.
- Fund preventive interventions for Medicare and Medicaid enrollees.
- Influence societal behavior norms through public health education and social marketing campaigns.

**Maximizing health and creating a state of wellness for each individual are the goals.**

To accomplish these goals, a new approach to care must evolve that has more support systems in place to help make individual health and well-being a reality. The following report is meant to encourage all stakeholders (individuals, providers, payers, and policymakers) to rethink their definitions and their approaches to health and wellness. Our ability to attain the benefits of prevention has never been as promising as it is today.

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## FOREWORD

Few topics generate as much interest among healthcare professionals and the public at large as health promotion, disease prevention and wellness. While the topic is not new, it was selected for this year's Outcomes Summit so that Summit participants could look at it with fresh eyes and develop new ideas about how to expand its reach and effectiveness. We have seen how the tremendous power of the Internet, computers, informatics, the persuasive appeal of mass customization and other technologies have transformed much of what we do. So we at the Summit asked ourselves, how can these tools be harnessed to re-energize our quest for better health? As important, how can the benefits of prevention and wellness reach all citizens, regardless of their resources? Finally, how can our growing understanding of the social, economic, environmental, behavioral and biological determinants of disease facilitate the development of comprehensive preventive initiatives? We began our work convinced that our ability to attain the benefits of prevention has never been as promising as it is today.

Outcomes Summit participants included physicians, nurses, and health educators, as well as employers and insurers. Our overarching goal was to imagine a health system that maximizes health and wellness among all persons in its sphere of influence. We approached this goal by examining the history and the current state of prevention, subsequently expanding this concept to offer a fresh approach. We then reviewed the barriers to the implementation of preventive health systems from the perspective of the individual providers, payers and policymakers. Finally, we offered strategies that address those barriers at both the micro- and systemwide levels.

We recognized that an effective preventive enterprise requires the concerted efforts of multiple stakeholders toward common goals. Summit participants explored the perspectives of the individual, providers, payers and policymakers and offered ideas about what each stakeholder's contribution ought to be if we

are to achieve a set of goals. Outcomes Summit participants brought together the different stakeholders' perspectives and described the elements of a national preventive health system. The goals of the Summit did not include a description of how a national preventive system might actually work; however, the ideas distilled at the meeting provide a solid steppingstone for future work.

*This Summit was planned and conducted by faculty members of the Johns Hopkins Outcomes Evaluation Program and the executive leadership of Healthways. Accordingly, both organizations attest to the validity of the process leading to the Consensus Statement of the participants as presented in this document. However, the consensus reached at the 2006 Outcomes Summit does not necessarily reflect the opinions or practice of either the faculty of Johns Hopkins or that of Healthways. Neither Johns Hopkins nor Healthways is responsible for the implementation of this document's recommendations, guidelines or protocols beyond their own institutions.*





## EMBRACING PREVENTION: AN EVER-EVOLVING CONCEPT

### The triumph of public health

Until recently, the concept of prevention was most often tied to public health efforts, in particular to the prevention of infectious diseases. These preventive interventions had their root in the 1800s.

*In 1846, Ignaz Semmelweis instituted handwashing on his obstetrical ward in Vienna's teaching hospital, cutting the death rate among delivering mothers more than fivefold. Joseph Lister later credited his developments in antiseptic surgery to Semmelweis, "Without Semmelweis, my achievements would be nothing."*

*In 1854, John Snow, Queen Victoria's anesthesiologist, removed the handle from the Broad Street public water pump in London's Soho district, ending a cholera epidemic that had killed more than 70 people over two days.*

These simple but highly effective acts signaled the beginning of the triumph of prevention over infection. In fact, systemwide, population-focused interventions such as clean water, refrigeration, vaccination, and handwashing account for 25 of the 30 years gained in the average American lifespan since 1900.[1; 2]

### Prevention spreads from the public health sphere to include other health professionals

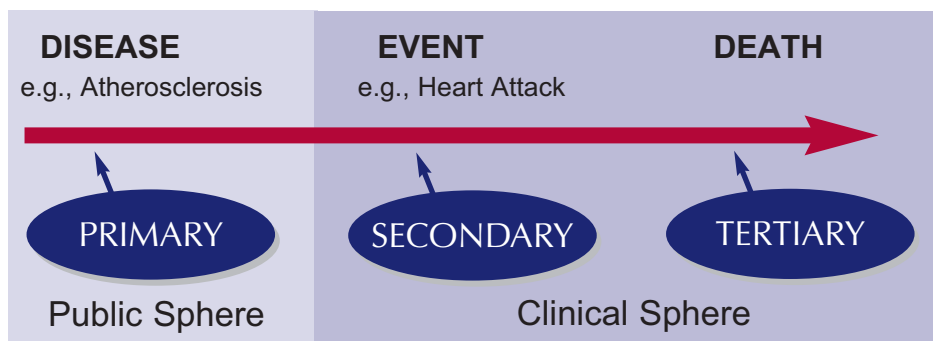
As the common causes of death have shifted from infections to cardiovascular disease and cancer, the focus of prevention has shifted as well. A significant portion of the preventive enterprise has spread, if not moved, from the public sphere to the clinician's office. Healthcare professionals are now responsible for administering vaccinations, screening for asymptomatic disease, treating risk factors, and preventing the recurrence of events.

In response to the growing importance of preventing death and disability due to chronic disease, the 1957 “Commission on Chronic Illness” codified the terms primary, secondary, and tertiary prevention.

The goal of **primary prevention** is to prevent the occurrence of disease by treating or eliminating risk factors. Routine immunizations and the fluoridation of drinking water are classic examples of primary prevention, which is often accomplished outside the clinic.

The goal of **secondary prevention** is to prevent the progression of early, usually asymptomatic disease and is most often performed in the clinical setting.

The goal of **tertiary prevention** is to prevent the recurrence of a clinical event such as stroke in a patient with atherosclerosis. Tertiary prevention is most often the purview of the clinician.



**Figure 1:** The traditional model of prevention

Compared to systemwide, population-level interventions such as vaccination, more focused interventions directed at secondary and tertiary prevention have had a smaller but important effect on the public’s health. Since 1972, for example, there has been a steady decrease in cardiovascular mortality in the United States, attributed, in part, to effective treatment of cardiovascular risk

factors such as hypertension and dyslipidemia.[3] However, several issues limit the applicability of this traditional perspective of, and approach to, prevention.

**Issue 1:** The designation of a preventive service as primary, secondary, or tertiary depends on one's perspective. For example, blood glucose control in a diabetic patient constitutes primary prevention for the cardiologist concerned with atherosclerosis, secondary prevention for the endocrinologist controlling diabetes, and tertiary prevention for the clinician discharging a patient with ketoacidosis.

**Issue 2:** Primary prevention is often not primary enough. Our goal should be not only to control risk factors, but also to prevent the onset of risk factors in the first place, whenever possible.[5] The risk factors themselves are products of genetic, behavioral, and environmental influences, which can often be modified at an early stage.

**Issue 3:** Health promotion should include the concept of wellness. As such, health promotion should go beyond addressing only illness (the medical model of health) or even risk factors. Wellness is not a neutral state of disease absence, but rather a positive state of good physical and mental health and spiritual well-being. Furthermore, a person can possess a state of wellness even when afflicted with disability or chronic illness. For example, a person with a terminal illness may not be physically well but may be mentally, emotionally, and spiritually well. Another person with a chronic illness or disability may define wellness as the ability to maintain independence, a particular level of physical or mental functioning, spiritual fulfillment, and a level of participation in the lives of others.

Therefore, **wellness is a relative term with multiple gradations rather than an all-or-nothing state of physical health** and depends on an individual's perception and attitude toward life.

**Issue 4:** The linear model of disease causation does not easily accommodate many key elements to success in prevention such as access to care, social support, a patient's readiness for change, availability of healthy food, normative behavior, and the built environment. These factors influence the development and expression of a disease and are essential considerations in the prescription of preventive interventions. This emphasis on myriad causes of chronic disease resembles the prior emphasis on systemwide

interventions for the prevention of infectious diseases. In an important sense, we have come full circle.

**Issue 5:** The traditional model places the responsibility for prevention on the clinician. The individual, however, represents the main driver for change and should be a focus of our efforts to promote prevention. In particular, individuals need a system that supports the provision of preventive services.

Wellness is a state of balance between physical and mental health as perceived by each individual rather than a dichotomous condition defined by the presence or absence of disease. A degree of wellness is attainable at any stage of life, regardless of the presence of disease or disability.

A wellness-oriented lifestyle integrates and balances as many of the following elements as possible: physical activity, balanced nutrition, weight management, freedom from unhealthy substances and dependency, spiritual and mental health, safe behaviors, and engagement in evidence-based preventive care.

Above all, wellness includes a positive attitude toward one's own health. This attitude may be the product of 1) a realistic sense of control over one's physical health and emotions, 2) a sense of vitality, satisfaction with life, or the ability to contribute to family or community, 3) trust in proximate caregivers and availability of a dependable support network, 4) acceptance of unavoidable limitations imposed by illness, and 5) an environmental context such as financial security, absence of war, and sense of personal safety.

A well person is associated with an:

- **Awareness** of one's physical and mental state and risk for future illness. For example, a person who believes that he or she is well but is unaware of his/her elevated blood pressure is not well.
- **Acceptance** of the importance of a physical or mental state, while accepting the unavoidable limitations imposed by illness. For example, a person who knows he is hypertensive but denies its importance is not well.
- **Appreciation** of reality and a realistic sense of control over one's

physical health and emotions. For example, a person with bipolar disorder in a hypomanic state does not have a true sense of reality and is not well, regardless of his/her perceptions to the contrary.

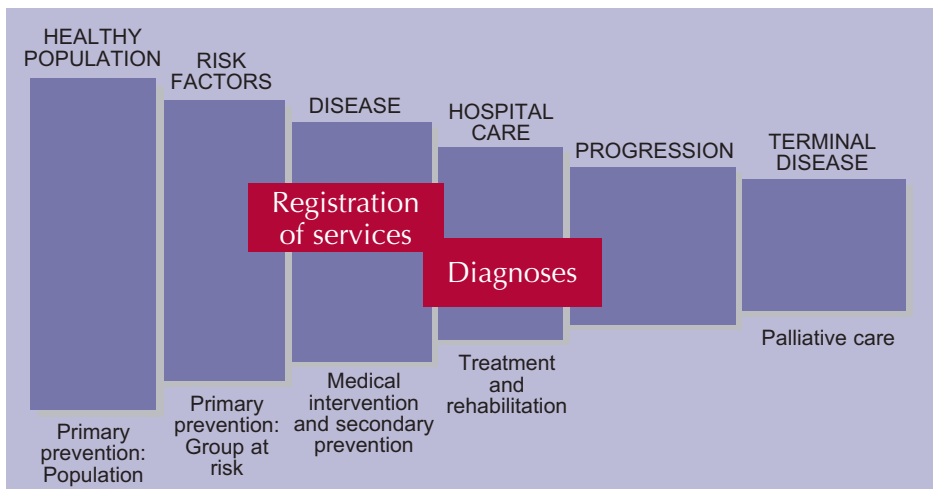
Wellness is grounded in the basic acceptance of one's physical and mental state and motivates the individual to maximize his physical and mental functioning. As our ability to modify our capacities increases, there will be increasing pressure to go beyond an individual's innate ability or to modify the normal state of mind and body. This pressure is evidenced by the prevalence of anabolic steroid use and some forms of cosmetic surgery as examples. Wellness, however, does not include enhancements to achieve a supernormal state of physical or mental ability.

## A broader approach to prevention

The **Institute of Medicine's** recent conceptualization of prevention avoids the three traditional preventive designations and takes a more holistic approach by focusing on the prevention at each point in the Health Continuum. The concept of the "Health Continuum" has been used for many years as a general reference to describe the state of health and the healthcare needs of populations across all age groups. When applied to health promotion and disease prevention, Lester Breslow, M.D., explained the concept simply,[4]

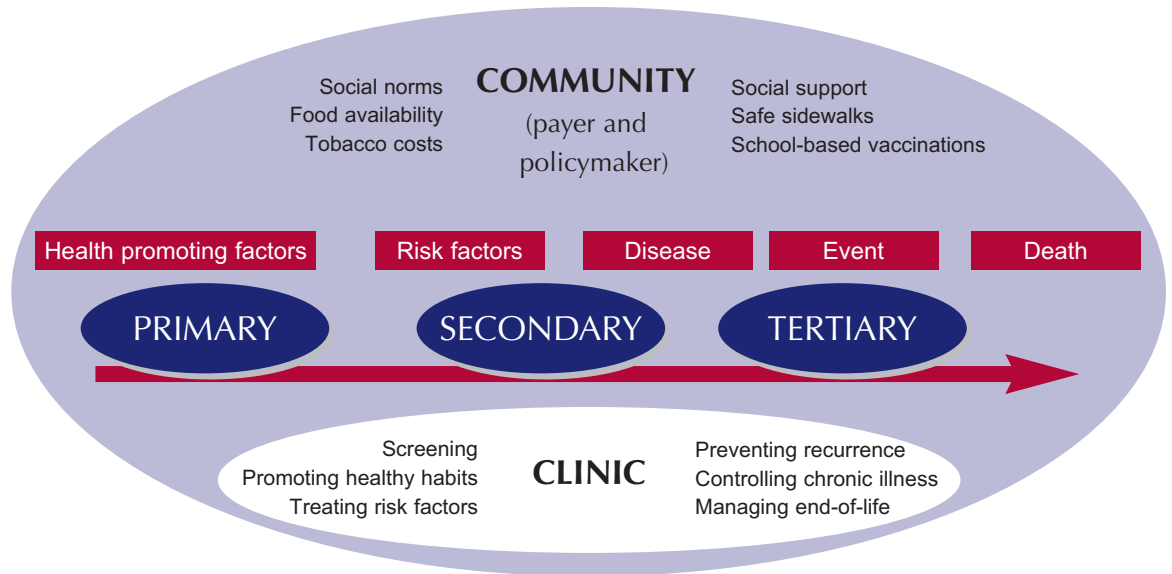
"The relationship between health promotion and disease prevention may best be portrayed as a continuum ranging from extreme infirmity to bounding health. Every person's degree of health may be found somewhere on the continuum."

The "Continuity of Care" model described by Sunol et. al.[5] and the "Life Course Model" described by Homer et. al.[6] represent variations on the same theme. All these models track populations from their healthy state through exposure to risks, the development of acute and chronic illnesses and eventually terminal conditions.



**Figure 2:** The Continuity of Care model

Our conceptualization of prevention is derived from the rich discussion among Outcomes Summit participants, adding the components from the IOM's approach, the Health Continuum, and other contextual elements. The following model highlights some of the basic elements that may act as either barriers to, or promoters of, health. We have included the clinical sphere in the model in order to specify the roles that traditional healthcare providers may play in the promotion of health, prevention of disease, and the treatment of illness.



**Figure 3:** An expanded approach to prevention emphasizing the contextual elements of health and wellness. As in Figure 1, the arrow represents an individual's experience of illness.

An ideal system of disease prevention and health promotion should:

- Address the context of illness and health including family, workplace, and culture.
- Prevent the onset of risk factors in the first place.
- Be the purview of many stakeholders including individuals, healthcare professionals, health support organizations, community organizations, and policymakers. In other words, disease prevention and health promotion do not depend on patients and physicians alone.
- Incorporate the concept of wellness.
- Align incentives to promote healthful lifestyles.
- Benefit all individuals, particularly the most vulnerable.





## PREVENTION UNREALIZED

Despite our obvious success in preventing disease and disability, most agree that we can do better. The practice of prevention is fragmented and often ineffective, and our health system is plagued with missed opportunities. For example, more than 50 percent of premature deaths are attributable to health behaviors such as smoking, poor diet, and inactivity.[7]

*“Personal health behaviors are the primary determinant of disease, disability and death and primary drivers of healthcare costs. Prevention of illness, injury and associated risk factors is the ultimate cost trend mitigation strategy.”*

Michael D. Parkinson, M.D., MPH  
Chief Health and Medical Officer  
Lumenos

Therefore, simple changes in behavior offer an opportunity to attain greater health, which ought to be good news. Yet, patients and clinicians alike are often frustrated by the difficulty of changing behavior. Even simple behaviors such as cancer screening or taking a pill are difficult to achieve. Consider:

If cancers that could be detected by appropriate screening were detected at a localized stage, the current 62 percent five-year survival rate would approach 95 percent. (American Cancer Society)

In 1999-2000, an estimated 58 percent of hypertensive persons living in the U.S. were treated and only 31 percent were controlled. In the same period, only 35 percent of persons with hypercholesterolemia were aware and only 12 percent were on treatment.[8] As a result, the inadequate control of risk factors such as hypertension and hypercholesterolemia is responsible for 14 percent of cardiovascular mortality among those without a prior history of cardiovascular disease.[9]

Not only do we need to close the gap between what we know and what we do, we need to prepare for the future. Dr. Elias Zerhouni, the director of the National Institutes of Health, imagines a healthcare future framed around the **“three P’s” of prediction, personalization, and pre-emption**. According to Dr. Zerhouni, “We expect to move away from the costly and predominantly curative model of today, which requires us to wait for the disease to occur before intervening...” Rather we must intervene to prevent the risk factors in the first place using preventive interventions customized to the individual. Biological customization is made possible by a “new understanding of molecules to identify the susceptibility of patients to develop disease.” This concept of “personalized medicine” promises therapies which are guided by far more precise information about individuals’ likelihood of treatment response or avoidance of side effects.

These new tools for risk stratification will be matched by an increasing number of options for both prevention and treatment. Choosing the best approach will require the assimilation of large amounts of data on a given person’s risks of future health conditions. This process will require computer-based algorithms that can incorporate a variety of risk measures, including genomics. These possibilities will place an even greater responsibility on all categories of providers to integrate complex information and to counsel patients about the best course of action. Primary care providers may suffer the greatest burden, since the number of clinicians providing primary care, and the financial resources available to those who do, are not sufficient for even our current healthcare needs.

At the same time, people are taking a more active role in their health and want to share in healthcare decisions. This increasing engagement is driven, in part, by the increasing number of persons 50 and older who want to live longer and better and the shift to greater consumerism in healthcare. It is therefore likely that the growing trend for shared decisionmaking will continue.

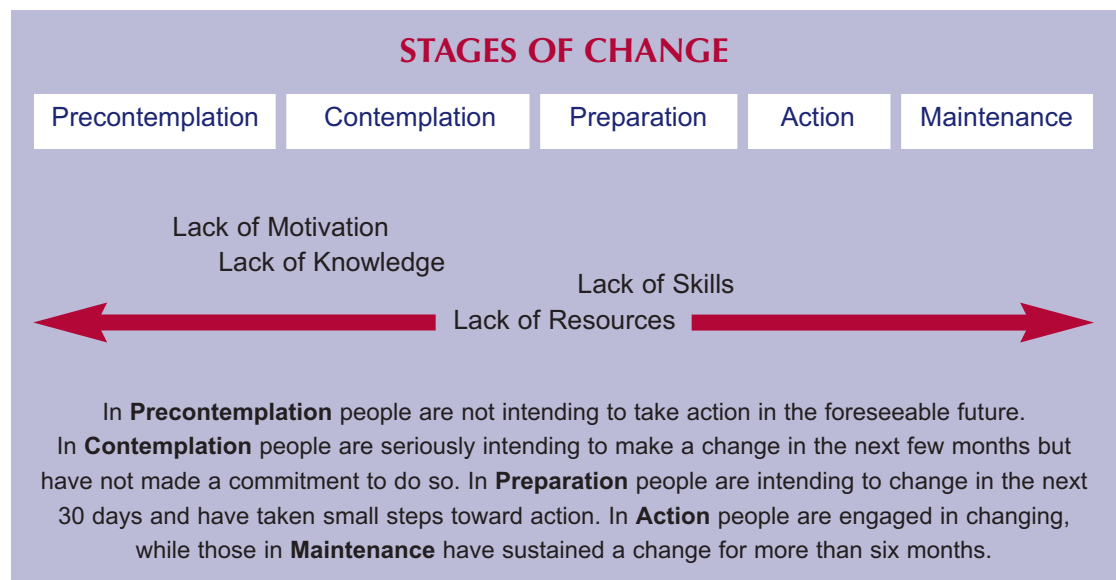
The following sections describe the Summit’s participants’ views of the current state of prevention from the perspectives of patients, providers, payers, and policymakers.



## PREVENTION UNREALIZED: THE INDIVIDUAL

Health promotion and disease prevention require personal action. Many, however, find it hard to shed unhealthy habits or to adopt new healthy ones. Salt reduction, for example, reduces blood pressure and the future risk of stroke but is rarely fully achieved.[10] Many prefer to take a pill than endure the hard work of changing ingrained habits. However, adherence to a medical regimen is not that easy either. For example, only 31 percent of people with hypertension have a blood pressure less than 140/90 mmHg despite very high awareness.[11] Nonadherence to prescribed medications is a major cause of this poor control. As many as half of patients started on antihypertensive therapy will have stopped it by six months.[12]

Nonadherence to treatment or to preventive recommendations is due to a broad range of barriers. These barriers fall into four categories involving 1) motivation, 2) knowledge, 3) skills, and 4) resources. These categories of barriers can be further organized and explained through the use of the five stages of change described by Prochaska and DeClemente in the Transtheoretical Model.[13]



**Figure 4.** The Stages of Change from the Transtheoretical Model and the predominate deficiencies found at each stage.[13]

People in Precontemplation are the least motivated, while those in Contemplation are more motivated but continue to have significant knowledge gaps. Once motivated and aware of a given recommendation, people in Contemplation or Preparation may not have the necessary skills to translate these recommendations into actionable steps. A lack of resources will impede progress at any stage. In the following section, the barriers will be described in detail.

## Motivation

People in Precontemplation are often uninformed or underinformed about their risks of future illness and the importance of specific preventive actions. If they understand the risks, however, they may be too demoralized from prior failures to try to change. Or they may deny that they need to do things differently, becoming defensive if pressured to take action before they're ready. As a result, many people in the Precontemplation stage cannot change without outside help.

By definition, prevention is **future-oriented**, requiring present action for future benefit. Therefore, in order to commit to prevention a person has to value not just their present health but their future health as well. Too much reliance on the future, however, may interfere with motivation for present action. For example, some expect **future technology** to rescue them from the consequences of current behaviors.

For some, however, a concern for the future is not sufficient. People must believe that their future health can be impacted by present actions. For example, many doubt their ability to impact their future, ascribing events to **fate, chance, or providence** rather than personal effort. Or in a more recent twist, people may ascribe their future health to their genetic susceptibility.

**Patient:** *I'm back from the doctor's office. It was painful.*

**Wife:** *What happened?*

**Patient:** *My doctor told me to lose weight... again. He says my heart is headed for some serious trouble.*

**Wife:** *I think he's right! But you don't listen to me.*

**Patient:** *Sure, I'm overweight, but so is everyone else in my family; it's genetic. I've tried a thousand times to lose weight. Nothing helps,*

*certainly not my doctor... he just gave me a hard time about it!*  
*Everybody is always on my case!*  
**Wife:** *I really would like to help you, but I don't know how.*

In addition, people may not be able to attend to health due to other more pressing concerns such as work or child care. These **competing values and concerns** leave little time to focus attention on changing behavior. Personal events such as divorce, job loss, or illness may also interfere.

Lastly, people may lack motivation because they become **demoralized** due to repeated failures in their attempts to change or due to medical conditions such as depression. In a similar way, a sense of **hopelessness** due to poverty, discrimination, or abuse may undermine people's motivation to change.

## **Knowledge**

Knowledge deficits take many forms. People need to be aware of the risks of current behavior, the benefits of a new behavior, and the steps needed to successfully adopt and maintain the new behavior. Knowledge deficits at each of these three levels may be due to 1) a lack of awareness, 2) misinformation, or 3) a misunderstanding. We will discuss these knowledge deficits in turn.

People may be **unaware** of their risks because they may not have access to their health information or they may not know the implications of risk factors. As will be discussed in the following section, providers may overestimate a patient's awareness of risk and, therefore, may not sufficiently address the importance of a given recommendation. In addition, an individual may be aware of his/her need to change, but this awareness may be incomplete. For example, people often underestimate the benefits of changing, but overestimate the costs. Adolescents in particular may consider themselves to be invincible, thereby underestimating the risks of many behaviors.

Many sources of information compete to fill the knowledge void. Advertising is a ubiquitous source of information that may or may not promote healthy behaviors. The Internet offers an abundance of unvetted information with questionable validity. Therefore, **misinformation** often motivates patients' actions.

Even sound, evidence-based advice may be **misunderstood**. For example, probabilistic arguments may not be persuasive; therefore, the concept of risk, as explained by the clinician, is not motivating. The patient may not trust the advice

due to the **shifting recommendations** produced by scientific and policymaking communities. For example, women and their doctors alike may be confused by the shifting recommendations regarding hormone replacement therapy, breast self-examination, and the age at which periodic mammography should begin. Finally, the provider's recommendations may not match the patient's **unrealistic expectations**. For example, a modest degree of weight loss has significant health advantages but may not be sufficient to match the cosmetic impact expected by the patient. In that situation the patient may be disappointed that he/she was unable to lose more weight. These unrealistic expectations often lead to loss of interest to persevere.

*Ali is a 44-year-old investment banker and mother. Her doctor recently told her that she had the “metabolic syndrome, for which he prescribed a low-fat diet and vigorous exercise three to four times a week. In a conversation with a friend she confided, “Despite my misgivings, I did exactly what he told me and three months later, guess what? I had only lost 5 pounds, my blood pressure barely budged, and my lipids were unchanged. And what is worse, my dress size remains the same. All that work just isn’t worth it.”*

The process of considering behavior change can be represented as the weighing of the benefits of the new behavior versus its costs. As discussed above, some people underestimate the risk of future illness or they are unaware of ways to lower their risk. Others may recognize the benefits of changing but hesitate to take action because they overestimate the costs. In other words, they remain ambivalent because the **benefits of changing do not clearly outweigh the costs**. These individuals continue to think about changing, however, telling themselves that they will act someday, just not today. For example, smokers may not want to give up their risky behavior even if they are aware of the dangers to their future health. This does not mean that the patient lacks motivation to quit but that the immediate rewards such as managing stress and the pleasure of smoking are perceived as more beneficial than avoidance of future illness. The first step toward addressing these perceptions involves the clear communication of the risk of current behavior and the benefits of an alternative. Once the knowledge deficit is corrected and the patient is convinced, however, the individual still needs to acquire the skills necessary to make the change.

## Skills

For individuals in the Preparation stage, the benefits of change clearly outweigh the costs. Many, however, do not know how to translate recommendations into actions or they **lack strategies to overcome barriers that arise**. Furthermore, those who initiate behavior change may ultimately fail, since they lack the skills needed to maintain their new behavior. Therefore, among patients who “know better,” feelings of guilt, inadequacy and powerlessness are common. It is clear that knowledge by itself is not enough to induce and maintain behavior change.

***Wayne** is a 40-year-old construction supervisor who smokes.*

***PCP:** Wayne, I strongly recommended that you quit smoking. We should set a quit date, and I suggest you avoid situations where you might feel compelled to smoke.*

***Wayne:** OK, doc. Listen, I’m a strong-minded person. I am confident I can quit without having to sacrifice Friday nights at the bar.*

*Two weeks after the quit date, Wayne returns to the clinic and admits to smoking “no more than three cigarettes...promise! And only on Fridays.”*

A barrier that decreases adherence to both treatment and preventive recommendations is the complexity of the interventions. For example, as the number of doses, and the number of pills per dose for hypertension, increases, adherence decreases. Similarly, losing weight while quitting smoking is a complex behavioral task. Ironically, guidelines are one source of the growing complexity of treatments. For example, a patient with diabetes, chronic obstructive pulmonary disease, osteoporosis, and hypertension would require 12 medications administered in 19 doses per day taken at five different times, and 14 behavioral recommendations in order to adhere to existing guidelines for these illnesses. Patients may be **overwhelmed** by the number of recommendations and do nothing at all.

Low adherence to preventive practices may be due to **low literacy**. Approximately 90 million Americans have literacy deficits that preclude them from fully functioning in today’s economy and healthcare settings. **Health literacy**, as defined by Russell Rothman, is the “ability to perform basic reading and numerical tasks required to perform in the healthcare environment.” Patients with low health literacy have poor knowledge of their disease, and worse clinical

outcomes.[14] Patients with low literacy can have trouble reading prescriptions and following medical recommendations. Language and cultural issues often compound the literacy problem.

*Roberto is a 50-year-old man from South America whose primary language is Spanish. His clinician recommended a low-fat diet, which was explained to him in English by the clinic nurse. Since his wife recently died, Roberto lives alone; however, and he has never cooked for himself (as is often the custom in South America). He has no idea how he is going to implement these recommendations, since most of his meals are eaten in restaurants.*

Individuals may lack the skills to pursue prevention, including ways to translate a recommendation into action. Once an action is taken, they may lack strategies to overcome the barriers that arise.

## Resources

A lack of resources will make change untenable at any stage.

Individuals may have **poor access to providers, medications, or facilities**. Patients may have to wait too long for appointments, revisit the pharmacy monthly, or travel a distance for care. In a survey of people with chronic illness, 12 percent couldn't get care when they needed it; 18 percent had to wait too long to see a doctor, and 12 percent couldn't even get through to the doctor's office on the phone. Therefore, inconvenience is a byproduct of poor access and an important barrier to prevention.

*John is a 55-year-old man with a family history of colon cancer. His primary provider has repeatedly urged John to go for a screening colonoscopy. However, John works night shift on an assembly line; therefore, it would be difficult to perform the bowel prep as instructed. All the employees are working long hours due to competition from*

*overseas manufacturers. Besides, he is very apprehensive about having the test done. Two years pass and John does not get his preventive procedure done.*

As the number of uninsured and underinsured continues to grow, a large number of people may be **unable to afford prevention**. Having insurance does not guarantee coverage for prevention, since some preventive interventions may not be covered. Other resources such as healthy food and exercise equipment are added costs outside the purview of health insurance.

*"I can't afford to get a membership to the gym. Besides, I'm a single mother with children and struggling to make ends meet. I just don't have time to do anything more than I am doing right now."*

Patients often **lack support** to change behavior. If other members of the household smoke, for example, it will be especially difficult to quit, and family members may impede a person's best attempts to change behavior. Furthermore, **societal norms** may not promote prevention.

**College student to his parents:** *I joined a fraternity, and I am socially a lot more connected and happy now.*

**Parent 1:** *I am concerned you are going to get into heavy drinking, and without realizing it ... you will slowly become an alcoholic.*

**Student:** *I won't. You always exaggerate.*

**Parent 2:** *The college administration knows this is a problem, and they are trying to do something about it. You know we are not worrying without reason. Peer pressure can be overwhelming.*

**Student:** *I am an adult now. I will handle my peers, don't worry.*

The **built environment**, a combination of physical surroundings and social norms, may not be conducive to prevention. For example, neighborhoods are often built around cars, not people. Therefore, walking to buy groceries is not an option.

*"Doctor, I know you have asked me to do more walking. The truth is that where I live in the country it isn't safe to walk on the roads. My husband and I have thought about moving closer to town, but I want to keep my children in the school system they're in now."*

Grocery stores and restaurants may **lack healthy food choices**, especially in poor neighborhoods.

### **McDONALD'S 55-CENT U.S. PRICE-CUTTING STRATEGY**

*USA – McDonald's announced last month that it plans to cut prices throughout the fast food restaurant chain and will offer a special 55-cent sandwich promotion, expected to boost sales and traffic (The average Big Mac price in the US is currently around US \$1.90).*

(Interactive Global News (IGN) Newsletter. March 1997

[http://www.pangaea.net/IGN/news0022.htm#2.\[15\]](http://www.pangaea.net/IGN/news0022.htm#2.[15]))

**Table 1. Barriers to prevention: The individual**

#### **Motivation**

- Future orientation
- Reliance of technological innovations
- Ascribing events to fate, chance, or providence
- Competing values and concerns
- Personal events
- Demoralization and hopelessness

#### **Knowledge**

- Unawareness of risk, poor perception of need
- Misinformation
- Misunderstanding of recommendations
- Distrust of recommendations
- Unrealistic expectations
- Perceived costs of change outweigh perceived benefits

#### **Skills**

- Lack of strategies to overcome barriers
- Lack of skills to manage treatment complexity
- Tendency to become overwhelmed by number of recommendations
- Low literacy and health literacy

#### **Resources**

- Lack of tools to assist with behavior change
- Inability to afford prevention
- Poor access to providers, medications, or facilities
- Inconvenience of prevention
- Lack of support
- Societal norms that do not promote prevention
- Built environment
- Lack of healthy food choices

## PREVENTION UNREALIZED: PROVIDERS

While patients may have difficulty adopting healthy habits, their clinicians also have difficulty assisting them in their attempts to change. Primary care providers continue to struggle to implement indicated preventive practices. According to Partnership for Prevention, an organization dedicated to the promotion of prevention through research and advocacy, seven high-impact, cost-effective preventive services are delivered to fewer than 50 percent of those who would benefit.[43] For example, pneumococcal disease caused more than 10,000 deaths in 1997, yet only 43 percent of persons age 65 or older received a pneumococcal vaccine (U.S. Department of Health and Human Services, 2000). Daily aspirin use with men over 40, women over 50, and others at risk would save 80,000 lives annually and save \$70 per person advised.[43] Yet, fewer than 50 percent of eligible patients are advised to take aspirin.

Guidelines, by themselves, do not ensure compliance. While most providers are aware of these guidelines, few are able to fully adhere to the recommendations. What are the barriers to adherence?

**Providers need more time** to attend to prevention. By necessity, as well as by tradition, providers often focus on active issues and neglect the prevention of future ones.[44-46] [50-53] This “tyranny of the acute” limits the amount of time a clinician can devote to prevention. Even if clinicians dedicated a substantial portion of time to prevention, they could not implement all the recommended services. By one estimate, applying these services would require 4.4 hours per day in a typical primary care practice.[47] Providers can delegate some of these services to nutritionists, health coaches, or the employer’s health clinic, for example. However, providers are often **unaware of these resources**. Furthermore, providers may have **insufficient skills** to pursue prevention; therefore, they may lack confidence in their ability to change a patient’s behavior. The ability to enlist other specialized providers in the implementation of prevention could provide this expertise.

**Fair compensation can be lacking.** Many preventive interventions are time-consuming and effort-intensive. Yet some insurance plans do not reimburse for some preventive services. For example, in some cases reimbursement does not cover the purchase price of vaccinations, smoking cessation or weight loss programs. While Medicare has increased its coverage of preventive practices, they pay only for specific mandates. Furthermore, pay-for-performance programs

frequently do not adequately promote prevention, especially those interventions such as lifestyle management and support programs which do not target specific risk factors. Finally, the application of these incentives is often confusing, poorly implemented and inconsistent among payers.

While most providers are aware of the guidelines, many may be too **unfamiliar with the recommendations** to implement them in practice. In an Ontario survey of physicians, 86 percent were aware of lipid guidelines but only 5 percent were familiar with the thresholds for diet therapy, what tests to use, and when to start medication.[56]

The lack of familiarity among providers may be due to **inherent problems with the guidelines**. First, the recommendations made by different agencies often conflict. Second, detailed guidelines are difficult to remember and multivariable risk scores too cumbersome to use. Third, the terminology used to grade recommendations may be confusing and differ across guidelines. Fourth, the number of guidelines can be overwhelming. At one point the AMA had catalogued more than 1,500 different practice guidelines. Finally, guidelines may turn over too rapidly, discouraging providers from expending the effort to master the recommendations.

As the armamentarium of proven preventive interventions grows, the task of choosing from among a **variety of good options** will only become more complex. If the clinical focus rests on risk factors rather than the whole person, the number of indicated interventions can quickly overwhelm patients. For example, a typical diabetic patient with hypertension and dyslipidemia may require eight or more medications to achieve adequate control. Therefore, preventive and therapeutic options will need to be prioritized in order to avoid polypharmacy in older or sicker patients.

Despite the strong and consistent evidence supporting the benefits of prevention, there are problems with the **evidence for prevention** that impede application. Providers may be concerned that bias influenced the development of guidelines. More fundamentally, providers may doubt the strength of evidence supporting the effectiveness of prevention. A growing body of evidence suggests that clinical trials often lack clinical relevance.[57] This perceived lack of generalizability is the most frequent criticism of trials cited by clinicians and is one explanation for the widespread underuse of proven interventions.[57] This sentiment may lead some to doubt the clinical usefulness of evidence-based medicine which “serves

the few and hassles the many.” Furthermore, trials focus on the average effect of a preventive intervention. This is appropriate for population-level interventions; however, in most trials there is substantial variation in response.[58; 59] How can a clinician be sure that the patient she’s considering for dietary intervention is a responder? Faced with this inability to tailor therapy, clinicians may half-heartedly recommend treatments such as sodium reduction to all of their patients, realizing that only a portion will adhere and even fewer respond. Therefore, a major obstacle to translation is the inability to tailor trial findings to individual patients who vary significantly in psychological motivation and biological responsiveness. As argued by David Mant, the question clinicians should ask is not “does it work for most patients?” but, rather, “does it work for this patient?”[60]

Even if a provider thinks a given intervention is effective, he or she may doubt that patients will change their behavior.[54] For example, 71 percent of physicians surveyed thought that **patient nonadherence** was a barrier to nutrition counseling. [55] Providers may be able to help patients overcome these barriers, however. For example, providers may overestimate the patient’s **perception of need** and, therefore, may not sufficiently address the importance of a given recommendation.

A provider’s healthcare environment may lack **adequate systems** for facilitating prevention. Furthermore, preventive care often is not integrated into regular patient care. The lack of tools such as an electronic medical record and decisionmaking support may be a barrier to the integration of preventive care into the flow of many practices. Given the absence of adequate systems for facilitating prevention, **providers may simply forget to pursue prevention** at a particular time in a particular patient due to the competing concerns of illness and treatment.

Providers may think they are **doing better than they are**. [61] Systematic review of physicians’ abilities to assess their own competence point out that perception and reality often differ. External validation of competence is the preferred approach to critical performance evaluation.[62]

Providers may not have **sufficient knowledge** regarding a given patient’s risk of developing a preventable condition. A patient’s risk for developing a specific condition often depends on multiple patient-specific factors. Algorithms such as the Framingham risk score incorporate multiple factors in the calculation of risk but are too cumbersome to use in a busy clinical practice. Furthermore, as our

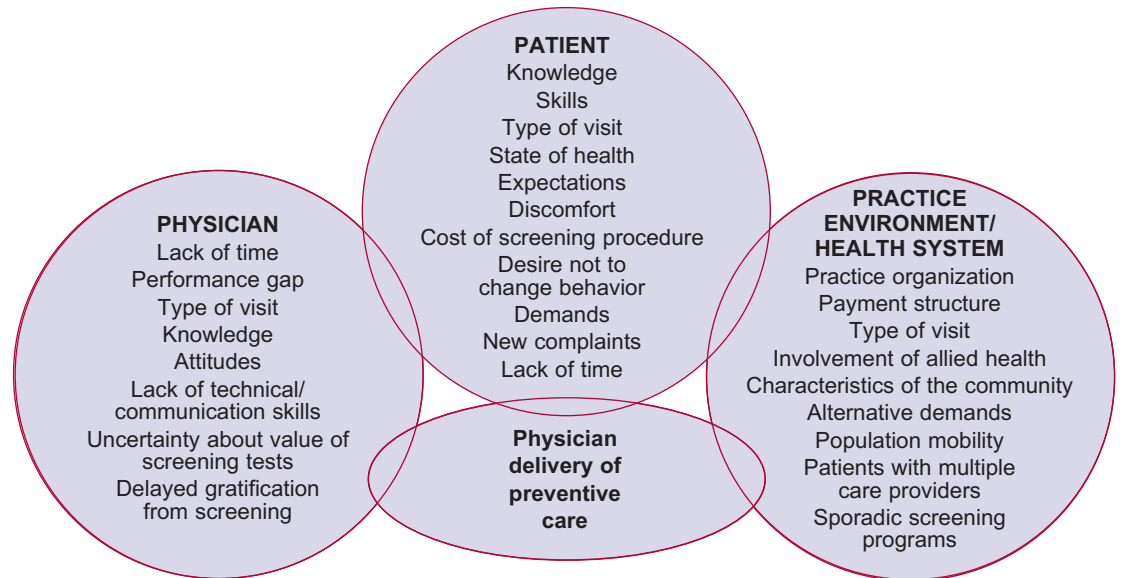
ability to predict future events increases with the incorporation of more detailed biologic information such as genetics, risk calculation will require a computer. Providers may also have **insufficient access to patient information** generated by other providers. Patient information needs to be readily accessible to providers.

Providers do not have **sufficient contact** with a large portion of their patient panel, at least not the healthy ones. Therefore, they do not have the opportunity to initiate prevention in time to prevent events. The lack of contact is even more critical for the substantial portion of the population without a primary care provider.

**Clinical inertia** may act to slow the response to new guidelines or prevent the aggressive management of risk factor levels that are too high. For example, a hypertensive patient may explain away a series of high readings in order to avoid escalation of his antihypertensive medication dose. This is also true for the clinician who will often avoid escalating a treatment dose despite evidence of inadequate control of the condition.

**Direct-to-consumer advertising** by pharmaceutical companies and other entities may counter financial incentives devised by payers and employers. Advertising can generate impressions regarding optimal therapy that may be at odds with providers' treatment plans.

Physicians and other healthcare professionals who deliver preventive services play a critical role in achieving national goals for disease prevention and health promotion. Their effectiveness is limited, however, by a range of barriers.



**Figure 5.** Barriers to clinical prevention.

Frame, P.S. Health maintenance in clinical practice: Strategies and barriers. *Am Fam Physician*, 1992, 45:1192-1200.

**Table 2. Barriers to prevention: Providers**

- Time
- Compensation for providing prevention
- Unawareness of recommendations
- Inherent problems with guidelines
- Too many good options for prevention
- Problems with the evidence
- Patient nonadherence
- Inadequate systems facilitating prevention
- Forget to implement prevention
- Unaware of their deficiencies in delivering prevention
- Unaware of patient's health risk
- Focused on treatment
- Unaware of community resources
- Fragmented patient information
- Insufficient skills to promote behavior change
- Insufficient contact with their patient panel
- Clinical inertia
- Direct-to-consumer advertising

## PREVENTION UNREALIZED: PAYERS

In the service of prevention and wellness, payers perform a critical function through their financial support, or lack thereof, of these services. For example, among clinicians who receive no external support from payers for prevention, only 32 percent are aware of the preventive guidelines. However, among clinicians who are receiving external support from payers, 60 percent adhere to the guidelines.[16] Despite the importance of payer support, fewer than 20 percent of physicians receive support from their payers consistent with the updated guideline for smoking cessation as an example. Even this limited coverage is a marked improvement over previous practice, however. Until the advent of the Health Maintenance Organization, neither private nor public insurers had covered preventive services. Historically, health insurance, like other forms of insurance, was meant to provide protection from catastrophic financial loss. Motivated in part by the recognition that prevention could decrease costs, the emergence of managed care signaled a significant change in the coverage of preventive services across a wide range of clinical areas. Despite notable improvements in the delivery of prevention, much more remains to be done.[17]

Payers vary widely in their size, structure, and primary functions. Payers include insurance companies, state and federal government, and self-insured employers. Employers and government, which often function as purchasers as well, can have very different priorities depending on their size. Large employers tend to have greater financial flexibility to make long-term strategic investments such as in preventive services. Smaller employers are more short-term-oriented and tend to buy plans with the lowest premiums, often excluding those services without an immediate benefit. We'll discuss issues common to all types of payers below. The relative importance of each issue will vary according to the size and type of payer.

Summit participants cited many reasons why **payers may not cover prevention**. First, the payer **may not save the costs of prevented events** since these events often occur after the employee or enrollee is no longer employed or covered. Second, the **workforce may be younger than the public and, therefore, has a lower risk burden** requiring fewer preventive interventions. Third, some argue that **individuals rather than employers should assume**

**more responsibility** for prevention. Fourth, many payers do not believe that **prevention contributes to profit**. Counterbalancing this argument, however, is the proven negative impact of suboptimal preventive practices on payers, particularly employers (Table 3).

**Table 3. Estimated sick days and lost productivity due to suboptimal care, U.S. Workforce, 2005 [18]**

MEASURE	SICK DAYS	LOST PRODUCTIVITY*
Depression	8.4 million	\$1.4 billion
Asthma	11.8 million	\$1.9 billion
Diabetes	17.3 million	\$2.8 billion
Hypertension	27.2 million	\$4.5 billion
Total	64.7 million	\$10.6 billion

Table modified from Figure 7 in [http://www.ncqa.org/Communications/SOHC2006/SOHC\\_2006\\_Executive\\_Summary.pdf](http://www.ncqa.org/Communications/SOHC2006/SOHC_2006_Executive_Summary.pdf)

\* includes days attributable to presenteeism when sick employees report to work but work at a reduced capacity.

Many employer-based preventive programs developed by proactive employers have demonstrated substantial savings. Participants in a Procter & Gamble worksite wellness program had 29 percent lower total medical costs when compared with nonparticipants.[19] The Washoe County School District Wellness Program resulted in three fewer missed workdays among program participants than those who did not participate. The decrease in absenteeism translated into a \$15.60 cost savings for every dollar spent on the program.[20] A mobile worksite health promotion program resulted in a 16 percent reduction in medical costs among participants and a \$3.60 in savings for every dollar spent.[21]

The strength of these **benefits of prevention may not be persuasive** enough to payers, however. The health benefits of prevention are typically demonstrated using epidemiological methods and often require **prolonged periods of observation**. Furthermore, the assessment of health benefits through the **monetizing of productivity, absenteeism and presenteeism is inherently difficult**. Finally, while the estimates of cost savings from prevention in the workplace is substantial,[17] disincentives such as **employee or beneficiary turnover** may trump these potential savings. Therefore, the long-term horizon to benefit, the dilutional effect of turnover and the inherent difficulties of monetizing

health benefits make the argument for prevention less persuasive to payers than competing alternatives. These difficulties underscore the relative absence of **long-term partnerships between payers and employers** to introduce preventive programs.

Private employers often exercise their discretion regarding coverage of preventive services and do not always base their decisions on best evidence. Surveys suggest that employers are **haphazard in their choice of preventive services to cover**.<sup>[22]</sup> For example, 71 percent cover childhood immunization, but only 55 percent cover flu vaccination. Seventy-five percent cover the gynecologic exam, but only 37 percent cover Chlamydia screening. Seventy-five percent cover the physical exam, but only 57 percent cover cholesterol screening. Lifestyle programs like smoking cessation and weight management are seldom covered. This heterogeneity of coverage among payers is due, in part, to **competition among payers**. In addition, there is a **lack of uniformity in state mandates** for coverage of preventive services. Finally, the unrelenting pressure for short-term value generation leads some employers to demand **highly customized solutions** for small populations, which tends to dilute resources that might otherwise be devoted to long-term prevention-oriented initiatives. Regardless of the cause, however, the ensuing heterogeneity makes it difficult for providers to sort out who covers what, resulting in the frequent omission of some procedures to avoid the administrative burden of payment denials.

Cuts in reimbursement and efforts to measure the quality of preventive care have resulted in a growing **lack of trust between payers and providers**. This mistrust emerged in the 1990s when Medicaid and Medicare implemented widespread cost-containment programs, resulting in cuts in physician reimbursement. The fundamental premise of the backlash that followed was that managed care organizations' dual roles of insurance provider and medical manager posed an inherent conflict of interest that could result in harm to patients.<sup>[23]</sup> Perennial suspicion about skimping on healthcare in favor of profits and images of managers, instead of physicians, making medical decisions undermined confidence in payers.<sup>[23]</sup> At the same time, studies uncovered evidence of widespread, medically unjustified variations in use of health services. Overuse of services represents poor-quality care, increases costs and exposes patients to harm unnecessarily. Trusting relationships based on transparency, fairness, mutual accountability and shared goals are necessary for building an effective and lasting prevention system. Recent signals suggest that such

collaborations dedicated to resolving these long-standing problems will benefit all stakeholders, but most importantly patients.

Providers may be **reluctant to use tools and resources offered by payers**. Many believe that administrative data readily available to payers can inform providers of gaps or redundancy in care and, thereby, lead to improvements in the quality and cost of care. However, the absence of standard communication protocols and the highly variable quality and frequent inaccuracy in “physician reports” remain difficult barriers. In the mid-1990s, a philosophical tenet in the payer community was that primary care physicians’ responsibility was to deliver primary care services and coordinate patient care, implying that the provider had some degree of control over the patient’s use of services beyond the primary care realm. In reality, many primary care physicians provide basic healthcare services but lack time, data, information systems, incentives, and efficient communication systems with their patients and other providers to coordinate care.[24] Under these circumstances, the assumptions underlying the benefit of “report cards” and other tools were not borne out in the majority of primary care physicians’ experience.[25] More recently, new efforts to support physician practices and to measure and reward quality in clinical practice are under way.[26; 27]

The **misalignment of incentives among payers, providers, and patients** discourages prevention. For example, most preventive services are best delivered at low cost and high volume. However, hospitals and providers are already working at near capacity levels; therefore, the only source of added revenue is not higher volume, but rather higher prices. By expanding the pool of beneficiaries receiving low-intensity preventive services, physicians need to develop alternative systems and restructure their practices. The new system must be capable of accommodating the demand for a high-volume, low-cost delivery model.

Employees are concerned about **privacy infringement by employers** despite the increased privacy protection afforded by recent legislation (HIPAA). While employees may fear privacy violations, historically employers have not expressed any desire, nor articulated any advantage, to accessing employees’ private health information. Moreover, employers typically insist on building privacy firewalls to protect themselves from the liability that may result from inadvertent HIPAA violations.

**Employer paternalism in designing benefits** was viewed by some conference participants as limiting employee access to preventive services. When employers decide on benefit packages that exclude certain preventive services and include others, employees lose flexibility to access services that are important to them. More, rather than less, employee flexibility may help increase use of preventive services.

**Insufficient granularity in the coding** (ICD-9 and CPT) system is a barrier to the broadest possible coverage of preventive services. Certain limitations in the current coding system preclude differentiation between preventive services and a follow-up examination for an existing problem. A good example is the current inability to differentiate a screening mammography from a follow-up on a patient with history of breast cancer. Eventual adoption of the far more detailed ICD-10-CM codes in the U.S. may decrease this problem.

**Table 4. Barriers to prevention: Payers**

- Savings in future health costs never realized by the payer
- Workforce is young and has a low risk burden
- Belief that individuals should assume responsibility for prevention
- Belief that prevention does not contribute to profit
- Belief that benefits of prevention not persuasive
- Unable to adequately measure impact of interventions
- Heterogeneity in coverage across payers
- Payers compete with each other
- State mandates are heterogeneous
- Customized solutions for small populations dilute resources
- Lack of trust between payers and providers
- Providers do not adopt tools offered by payers
- Misalignment of incentives among payers, providers, and patients
- Employees concerned about privacy infringement
- Benefits are not designed from the employees' perspective
- Insufficient granularity in coding

## PREVENTION UNREALIZED: POLICYMAKERS

There are many **barriers to better preventive policy in the public, nonprofit and private sectors**. Policymakers in general are those individuals who develop or recommend policies and procedures for funding and delivering health services. Government policymakers are elected and appointed officials in branches of county, state, and federal government. Nongovernment policymakers are executives and board members of publicly funded service agencies, nonprofit and for-profit service agencies, and professional societies. More specifically, nongovernment policymakers include associations, foundations, medical schools, consumer advocate groups, patient and business group lobbies, health systems, employers, parent-teacher organizations, and, ultimately, voters, consumers, and employees. Many of the barriers to better preventive policy are described below.

Policymakers in government and nongovernment organizations may lack appreciation for, and understanding of, the value of preventive health interventions. Policymakers may not realize the potential impact of cost-effective interventions and may also be concerned about the cost-effectiveness of implementing preventive health programs. Therefore, public health experts must educate policymakers, and the public, regarding the proven impact of systemwide, population-focused interventions.

### Large-scale Preventive Policies

**Safety belt** use laws have increased safety belt use by a median of 33 percent and decreased fatal injuries by a median of 9 percent.[28; 29]

**Water fluoridation** has reduced tooth decay rates among children by 29 percent. Like other systemwide, population-focused interventions, fluoridation benefits all children regardless of ethnicity or socioeconomic status.[30; 31]

**Smoking cessation** decreases the risk of lung cancer, other cancers, heart attack, stroke, and chronic lung disease. Therefore, former smokers live longer than continuing smokers. For example, persons who quit smoking before age 50 have one-half the risk of dying in the next 15 years compared with continuing smokers.[32] However, education alone is insufficient to deter

tobacco sales to minors, underscoring the importance of coordinated and synergistic efforts across many sectors.[33] Successful programs in California, Massachusetts, and Oregon have demonstrated a reduction in youth smoking with well-funded programs incorporating strong mass media advertising, strong school-based smoking prevention programs, local ordinances that create smoke-free environments, and increased tobacco tax.[34]

Past accomplishments in prevention suggest that major breakthroughs are possible through enlightened public policy.

Policymakers **may not have adequate information regarding the current state of health and solutions to improve disease prevention.** Furthermore, the lack of scientific consensus regarding certain preventive health services may add confusion to policymakers' decisionmaking processes. This lack of information and scientific evidence may be more marked for disadvantaged populations, such as the poor and less educated. Inadequate information regarding solutions for diverse cultures and populations may result in poorly defined and implemented preventive policies, which may exacerbate existing health disparities.

### Disparity

The enormous success of public health over the last 100 years is impressive but seriously limited by the unequal distribution of its benefits. The life expectancy gap between the most and least healthy Americans is more than 20 years, approaching the 30 years in life expectancy gained since the turn of the century.[2] A major portion of this disparity stems from the high prevalence of treatable, and potentially preventable, diseases among racial and ethnic minorities. For example, in the United States, hypertension occurs earlier, more often, and with greater severity among people of African compared to European descent.[35] The consequences of this burden include very high rates of stroke, heart disease, and kidney failure among African-Americans. Hypertension is treatable, and its consequences preventable. Therefore, prevention, properly applied, has the potential to reduce the burden of hypertension and narrow health disparities.

In a landmark publication, “Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare,” the Institute of Medicine found that “a consistent body of research demonstrates significant variation in the rates of medical procedures by race, even when insurance status, income, age, and severity of conditions are comparable. This research indicates that U.S. racial and ethnic minorities are less likely to receive even routine medical procedures and experience a lower quality of health services.”[36] For example, 70 percent of older white adults receive a flu shot, while just over 50 percent of Hispanic or African-American adults have received one.[37]

The benefits of wellness and prevention have not benefited all Americans equally. Our view for a healthier America requires special efforts to eliminate disparities in healthcare.

Policymakers face **competing priorities and demands for limited resources**. Since financial resources are limited and since disease treatment is often viewed as a priority over disease prevention, rising healthcare costs related to the treatment may be a distraction to funding of prevention. According to the CDC, the U.S. spends 97 cents on curative treatment for every 3 cents spent on prevention.[38] Therefore, the proven cost-effectiveness of public health interventions needs emphasis. Additionally, disease prevention may not be a major priority for the voting public. Important public health issues such as vaccination rates and school lunch programs, for example, do not demand the voters’ attention. Therefore, policymakers and the public need to be reminded of the benefits of public health interventions.

**Table 5. The cost-effectiveness of prevention**

Centers for Disease Control (CDC)

INTERVENTION	DOLLARS SAVED
Water fluoridation	For every \$1 spent, \$38 saved on dental treatment costs
Smoking cessation programs	One quality-adjusted year of life is saved
School-based STD/ Pregnancy prevention	For every \$1 spent, \$2.65 saved on medical and social costs
Preconception care for women with diabetes	For every \$1 spent, \$1.86 saved by preventing birth defects
Arthritis self-help program	For every \$1 spent, \$3.42 saved in physician hospital costs
Colorectal cancer screening	Saves 5,700 – 11,900 lives annually and saves \$267 million to \$374 million in excess costs
Breast cancer screening	Saves 100 – 700 lives annually and saves \$41.9 million to \$94.2 million in hospital costs related to late stage treatments
Influenza vaccination	Saves \$117 per person vaccinated[39]
Aspirin in adults at high risk for heart attack	Saves 80,000 lives annually and \$70 per person advised[40]

If government policymakers are not sensitive to the context of health and illness, they may not appreciate the **unintended health consequences of otherwise well-intended policies**. For example, the “No Child Left Behind Act,” which has aimed to increase accountability for students’ test scores, may have unintentionally reduced the time devoted to physical education in schools. Recently instituted privacy laws may hamper collection of information regarding the state of public health. In some instances, conflicting inter-government legislation and regulations can inhibit the implementation of existing health promotions programs.

Some political decisions that could have a strong, positive impact on the public’s health have **powerful interests** allied against them. For example, a single-payer system would potentially hurt many businesses invested in the current multipayer system. Other lobbies resist legislation that would reduce use of certain foods or food additives (e.g., salt, sugar, or ‘trans-fat’ in processed food) that may adversely affect the public’s health. Even the agendas of influential special interest groups (such as disease-specific professional societies and patient advocacy groups) may be at odds with public health interests.

**Inadequate health insurance coverage** creates barriers to preventive services. Since many private health insurers follow Medicare’s coverage and payment policies, the Centers for Medicare and Medicaid Services (CMS) wields a powerful influence in the public and private insurance market. Current Medicare payment **policies are not conducive to many preventive care services**. Medicare policies formulated by CMS regarding coverage for preventive health services cause fragmentation and confusion for enrollees and providers. Generally, CMS coverage for preventive health services is incomplete and discourages preventive care.

Families and caregivers with increasingly busy lives try to find time wherever they can and often resort to fast food and food shortcuts that not only provide less nutrition but reinforce negative nutrition habits that may last a lifetime. Little time is left for adequate promotion of good health and healthy lifestyles at home.

In addition to the barriers listed, nongovernment organizations (NGOs) have a set of unique barriers and challenges. NGOs are often **competing against other interest groups** for time and attention of policymakers as well as limited economic resources. NGOs may have a **short-term focus** for an issue that may require a long-term solution. For example, NGOs need to generate profit or revenue to survive, so economic investments are often in interventions that yield

shorter-term results. Preventive health outcomes may not meet the organizations' criteria for short-term results.

**Table 6. Barriers to prevention: Policymakers**

- Lack appreciation for the value of prevention
- Lack knowledge regarding current state of health
- Lack knowledge regarding potential solutions
- Lack of scientific consensus regarding best practice
- Competing priorities and demands for limited resources
- Unintended health consequences of policies unrelated to health
- Powerful interests allied against prevention
- CMS policies regarding preventive services are inconsistent
- Inadequate teaching of prevention in educational systems
- Lack of health promotion in the home
- NGOs compete against one another for attention
- NGOs may have a short-term focus





## SPECIFYING SOLUTIONS

Motivation for change is growing. Consumers want the opportunity to live longer and better, and providers want to provide that opportunity. Employers are becoming engaged by the business case for prevention, while the obesity epidemic is activating the public and policymakers alike. Emergent motivation is not sufficient without a means to achieve the common goal of prevention and wellness. Fortunately, many solutions are available to those with the resolve to use them. In particular, a growing understanding of the process of behavior change can be combined with increasingly sophisticated information technology to create systems dedicated to prevention. The following sections, detailing ideas generated by the Summit participants, attempts to chart a way forward.

### SOLUTIONS SPECIFIED: INDIVIDUALS

In order to maximize wellness, individuals must be motivated to change, must know how to adopt and maintain healthy behaviors, and must have the resources and tools to implement the steps and the skills to overcome the barriers that inevitably arise. Such people are engaged in the process of prevention and proactive in their pursuit of health. In particular, the **proactive person**:

- Will be more engaged in the process of maintaining health and wellness, practicing continuous health and wellness improvement.
- Will make informed decisions regarding screenings, treatments, and lifestyle changes.
- Will make informed decisions regarding the choice of health plans and providers.
- Will be skilled at shared decisionmaking with a clinician.
- Will make appropriate and financially responsible use of healthcare.

Summit participants generated a list of approaches to engage individuals in

prevention. These solutions are framed in the context of the Transtheoretical Model for behavior change.

### **Motivation: Intending to live well**

The transformation of a Precontemplator into someone who is engaged and ready to change is perhaps the greatest challenge in prevention. If pressed to take immediate action, people in Precontemplation will often become defensive or demoralized. Rather, Precontemplators must become engaged in the process of change. People must first be aware of their risk of future illness and that there is something they can do to decrease this risk. Once aware of options for change, individuals may benefit from incentives that further motivate engagement in the process.

**Maximizing motivation through enhanced self-awareness:** Precontemplators may not be motivated to pursue prevention because they are unaware of their risk of future illness or of preventive interventions that can mitigate this risk. Efforts to maximize motivation should begin in **early education** through learning about risk behaviors and healthy lifestyle choices. On a population level, **public health campaigns** and even **direct-to-consumer advertising** can educate people about the risks of common behaviors and the benefits of particular actions.

On an individual level, **health risk assessment** can promote awareness of personal risk. The health risk assessment uses personal health information such as age and health habits to predict risk of future illness. The list of risk conditions generated by the assessment can be ranked by their impact on the person's biological age. The biological age is a concept used to communicate risk in terms that can be easily understood. The patient's life expectancy is calculated using patient-specific information such as age, family history, health habits, and biometric measures such as blood pressure, body mass index, and cholesterol. The patient's biological age is simply the average age of those who share that life expectancy. For example, a 40-year-old, overweight smoker might have the

life expectancy of the average 50-year-old, while a 40-year-old, fit nonsmoker who is extremely health-conscious might have the life expectancy of the average 30-year-old.

Motivation can be maximized through **incentives**. Healthy actions must compete for attention against other more pressing concerns. Prevention often falls short in the comparison. However, an individual's wellness has value for others as well. Healthy employees are more productive and are less expensive to insure. Healthy beneficiaries typically have fewer, less expensive claims with their health plans. Healthy citizens can do more for the community and require less public help for healthcare. Given these benefits, it is reasonable for employers, health plans and government agencies to incentivize prevention, moving the ratio of benefits and costs for the individual toward prevention. These financial incentives promoting healthy lifestyles such as lower co-pays and other rewards can be successful. A recent study evaluated the effect of an incentive program on indicators of health. The employer's contribution to the employee benefit package was adjusted according to results of a periodic appraisal of cholesterol, blood pressure, tobacco use, body fat, physical fitness, motor vehicle safety, nutrition, and alcohol consumption.[41] Medical claims among employees in the worst category were \$1,078 higher than those for the neutral group. The employer accrued substantial savings through reductions in medical claims and in days lost to illness.

### **Knowledge: Knowing how to live well**

Once aware of the risk of future illness and incentivized to change, individuals must learn the steps to mitigate this future risk and improve present health. People at this stage are often contemplating changing but are not yet committed to do so. One can assist Contemplators by acknowledging their ambivalence and working to resolve it by encouraging them to learn the benefits of a given action and to weigh these benefits against the costs.

Contemplators often do not take action due to the perceived costs of that action. The costs may be more perceived than real, however. A growing list of benefits can minimize the impact of costs. For example, time is the number one cost for regular exercise. But time becomes less of a barrier if one can get 40 benefits for 30 minutes of exercise a day.

Acquisition of personally relevant **health information** is an important contribution to changing individuals' perception of benefit versus risk. A system that helps individuals find reliable, high-quality health information is critical if we are to take advantage of the powerful new tools. For example, once people are aware of their health risks, they need to know what they can do to lower those risks. This could be achieved via a list of **prioritized preventive interventions** generated from an individual health risk assessment. The potential interventions can be ranked by their impact on lowering biological age. For example, smoking cessation, colon cancer screening, and consistent seat belt use might be listed in that order with estimates of the impact of each intervention on improving one's biological age. The interventions can also be prioritized by a person's stage of readiness to change in order to minimize the potentially disheartening impact of an overwhelming list of indicated interventions. Finally, the health risk assessment and the prioritized preventive interventions can be electronically linked to behavior change programs or to knowledge databases, enabling the patient to research conditions and interventions.

Of course, the benefits of wellness go far beyond the quantity of life gained and includes the **quality of life** lived. Therefore, individuals may also benefit from the awareness of the other benefits of change, such as improved fitness and diminished fatigue. Furthermore, increased knowledge regarding the stages of change and the elimination of misconceptions regarding the costs of change will also help.

Finally, the impact of the costs of changing behavior can be lessened by **testimonials** from others who once faced the same barriers. Therefore, Contemplators should be encouraged to talk with someone who has successfully changed the behavior.

### **Skills: Having the ability to live well**

While information is necessary, it is an insufficient ingredient for behavior change. A new system for prevention must help individuals develop the needed skills to change behavior and also provide opportunities to self-manage their risks.

The **steps to change** must be defined. Preventive interventions for those in Preparation should be short, focused and action-oriented. Behavior change can

be overwhelming. Therefore, the larger task of behavior change must be broken down into manageable steps. Individuals should be encouraged to take small steps toward the healthy behavior. For example, smokers can be given three choices to progress to Preparation:

1. Quit for 24 hours in the next month.
2. Delay the first cigarette by an extra 30 minutes.
3. Reduce the number of cigarettes they smoke by three or four.

Focus should be on developing a plan for doing the healthy behavior and problemsolving. **Plans need to be realistic, concrete, measurable and written down.** Furthermore, people should **tell others about their commitment** to do their new healthy behavior.

As people attempt to change, they must be **coached**, not lectured, and given praise, support, and recognition for taking small steps. An important goal is to help the individual develop a **healthier self-image**. This task can be accomplished through **motivational interviewing**. For example, clinicians, coaches, or motivational counselors can ask: “What might it be like if you became more active?”

Once they have confidence in their ability to change a well-circumscribed behavior, they can approach more difficult tasks. Confidence in one’s ability to change and maintain healthful behaviors is known as **self-efficacy**. A high degree of self-efficacy is associated with successful behavior change. The successful accomplishment of small tasks will build self-efficacy and provide a positive start to an individual’s quest for behavior change.

#### **Tailoring interventions based on patient’s readiness for change.**

Preventive interventions should incorporate **proven approaches to behavior change**. In particular, they should be tailored to patients according to their readiness for change, self-efficacy, and perceived barriers to change. Table 7 lists effective approaches to tailoring messages to maximize motivation.

**Table 7. Behavior change interventions: Best practices**

**Goals**

- Personalize goals based on risk profile
- Focus on a limited number of obtainable goals
- Goals should be clear and specific
- Incorporate a variety of interventions (e.g., tailored messages, group therapy)

**The Messages**

- Tailor messages on variables such as readiness for change, self-efficacy, and processes of change
- Should be consistent and reinforced
- Delivered on multiple occasions
- Delivered on multiple levels: individual, group, family, community
- Primary provider should provide a significant portion of authority behind message
- Ensure patient's confidence through strategies appropriate to patient's stage
- Barriers to change should be identified and addressed
- Adapt interventions as patient's risk profile and behavior change profile change

## Resources: Having the opportunity to live well

A **fully tailored, individualized expert system** would greatly assist patients in the management of their health. One component of the system is the **health profile**, consisting of the previously discussed **health risk assessment** and list of **prioritized preventive interventions**. The **Personal Health Record (PHR)**, **Information Therapy** and **Health Coaches** are three additional resources or tools that can help individuals understand, adhere to and integrate preventive health into their lives.

The **Personal Health Record** should record more than the biological and behavioral factors that influence health. The PHR should also incorporate patient's values, attitudes, and beliefs regarding health. A better understanding of these variables would allow the tailoring of preventive health recommendations. Consideration should also be given to the relationship of the PHR to the clinic or hospital-based medical record. As prevention is increasingly administered outside the clinic (e.g., employers and health coaches), preventive care delivery can become fragmented. Patient ownership of the medical record will facilitate communication among the disparate members of the preventive health team and support increased patient responsibility for his or her health. Alternatively, the

contents of the medical record can be made transparent to the patient and to those the patient grants permission to access it.

**Information Therapy (Ix)** is the “prescription of specific, evidence-based medical information to a specific patient, caregiver or consumer at just the right time to help them make a specific health decision or behavior change.”[42] Information prescriptions can be used to deliver prevention notices with explanations of how to prepare for any testing or screening. After the test is performed, Ix can deliver test results which are linked to decision guides and patient-centered instructions for follow-up and ongoing care. While many clinics and healthcare systems have developed a method for dispensing routine prevention messages such as flu vaccination reminders, fully tailored information prescriptions can greatly extend that service.

A fully tailored, individualized expert system for information therapy makes accessible, via the Web or phone, “evidence-based, tailored feedback to help consumers progress through the stages of behavior change.” These tailored and targeted information prescriptions can model the role of a counselor by assessing and providing individualized feedback to patients on such topics as smoking cessation, stress management, weight management, exercising regularly, adherence to medications and depression management.

**Health Coaches.** Live, real-time coaches or virtual, healthy-lifestyle coaching and patient support can be provided to maximize a patient’s ability to change. Health coaches can interact with patients at many levels, including in the clinic or community center or by telephone or the Internet. Coaching can help with stress reduction, smoking cessation, and weight and exercise management.

For example, smoking cessation program research offers strong evidence of the effectiveness of coaching and patient support in behavior change. “Although it is possible to quit without help, evidence shows that the chance of success is much higher with the use of support services.[43] They also bring services to smokers in areas that have few resources. Group cessation programs and workplace cessation programs also improve the likelihood of success. Integrated services – which link quit lines, provider services, workplace cessation initiatives, and approved pharmacotherapies – offer smokers several help options and lead to greater use of cessation services and more success.”[44]

### **Vignette**

*Group Health Cooperative of Puget Sound offers “Take Charge,” a suite of products and services to support the health and wellness of their members.*

*Key components of this program include a Web-based health profile tool that collects “important, clinically useful information (including family history, past medical history) and integrates it into the electronic medical record.*

*The information is used to drive algorithms that will provide patients and their physicians with important, customized recommendations for medical screening, chronic disease management and health promotion activities.*

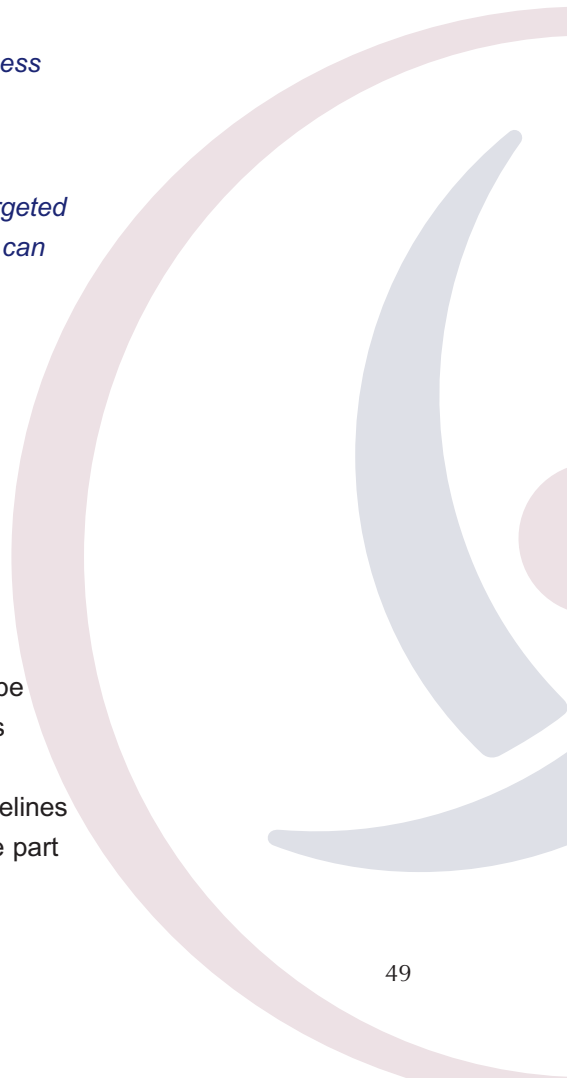
*The Take Charge program also provides access to highly trained telephonic coaches who are skilled in techniques of motivational interviewing and are available to enrollees to improve their readiness to engage in healthy behaviors.*

*Primary areas of focus include nutrition, physical activity, stress management and tobacco cessation. Coaches will reach out to targeted patients based on the results of their Health Profiles, but patients can also reach out directly to coaches for assistance.*

As discussed in the barriers section, many are denied a full opportunity to achieve wellness due to poor access to providers. This issue is further addressed in the policymaker section below.

### **SOLUTIONS SPECIFIED: PROVIDERS**

In order for solutions to be effective at the provider level, prevention must be integrated into routine patient care. There are several tools that will aid this process, but tools by themselves will not succeed. And certainly, isolated interventions focused on increasing physician adherence to preventive guidelines do not work.[45] “A system is needed to ensure that prevention is a routine part



of every patient encounter.”[46]

Perhaps one of the greatest barriers to the implementation of prevention in the clinician’s office is time. Approaches that would maximize available time include the delegation of the responsibility for delivering certain preventive services to others, the use of group visits, and the incorporation of an office-based system to improve knowledge and efficiency. Several of these innovations are discussed below.

**Responsibility for implementation of many preventive interventions should be delegated.** For example, nutritional counseling, vaccinations, and behavior-change coaching might be performed better, or more efficiently, by others within and outside the practice (**Table 8**). However, as other stakeholders assume responsibility for prevention, care can be fragmented. Therefore, care-coordination is an essential component of the preventive healthcare system extending outside the walls of the clinician’s office.

#### **Vignette**

*A communitywide effort in New England aimed to broaden the delivery of preventive measures. The model regards the physician practice as only one element of a network of coordinated prevention activities. Because of the Regional Collaborative initiative, many more people in New England are getting their vaccinations and mammograms.[47]*

**Table 8. Preventive Health Partners and their potential responsibilities**

PARTICIPANTS	RESPONSIBILITIES
Patient	Final responsibility for prevention
Primary care provider	Patient Assessment, Planning, Prescribing and Implementation
Secondary care providers (e.g., specialists)	Assessment and Implementation: Screenings, testing, interventions (e.g., colonoscopy), counseling
Workplace	Assessment and Implementation: Screenings, vaccinations, lifestyle modification
School	Assessment and Implementation: Screenings, vaccinations, lifestyle modification
Family	Implementation: Lifestyle modification, support
Community center or place of worship	Assessment and Implementation: Screenings, lifestyle modification, counseling
Organizations (e.g., Alcoholics Anonymous)	Implementation: Lifestyle modification, support
Pharmacy	Implementation: Pharmacoprophylaxis
Payers	Financial support and incentives
Government	Policy (e.g., specify responsibilities, guide reimbursement, establish legal protections, regulate built environment to maximize health)
Preventive Health Organization (For-profit or not-for-profit institution)	Build and maintain infrastructure

The use of **group visits** can be an effective means to serve large numbers of patients and to improve practice efficiency. Group visits are especially useful for conveying information regarding lifestyle change.

**Compensation** for the delivery of preventive services should be fair. For example, the enhancement of reimbursement for prevention, a focused visit for preventive services (dedicated prevention exam), and incentives for implementing the highly effective preventive practices listed by Partnership for Prevention should be instituted.

## Office-based clinical systems

Adequate office-based systems to facilitate prevention would 1) maximize the clinician's time, 2) assist with health risk appraisal, 3) allow access to vetted sources of information regarding best practices, 4) remind provider and patient of indicated preventive interventions, 5) delegate certain preventive services, and 6) monitor success in implementing preventive actions.

**An office-based clinical system for prevention** has four necessary components. First, there must be a protocol integrating a minimum core of scientifically based preventive procedures. Second, the system must have an **owner** to lead the process ("No owner, no process"). Third, the **flow of patients and materials** must be detailed. Fourth, the system must **track provider-based performance** with an audit performed at regular intervals.

### Vignette

*Tri-County Family Medicine has developed an office-based system for prevention. This system consists, in part, of the Health Maintenance Protocol and a tracking system. The development of an office-based clinical system at Tri-County Family Medicine began three decades ago.*

- *1975, Frame & Carlson articles published in the Journal of Family Practice.  
Paper health maintenance flowcharts initiated.*
- *1987 Berner & Frame show cancer detection is poor.  
Search for computer-based tracking system starts.*
- *1990 HTRAK tracking system developed.  
RCT comparing computer vs. manual systems.*
- *1997 Second-generation tracking system installed using Medical Manager.*

*The Health Maintenance Protocol is in the Addendum. Following are important characteristics of the Tri-County Family Medicine computer-based tracking system.*

- *Generates a provider reminder report as part of the encounter form for each visit.*
- *Reminders are based on the practice Health Maintenance Protocol.*

- *Providers indicate what health maintenance has been done on the form.*

*The first page of the encounter form is a health maintenance status report which allows the provider to see at a glance what health maintenance has been done and what is due.*

- *Health maintenance data is entered with the billing data.*
- *A yearly reminder letter is sent to every patient in their birth month.*
- *Variations to the Health Maintenance Protocol must be handled by invoking “Key Health Factors” for that patient.*

*Available key health factors are shown as options at the bottom of the Health Maintenance Protocol. Examples include: Pap smear not indicated, Annual PSA test, Cancel all health maintenance, Patient refused FOB test, etc.*

*The patient’s insurance can be a key health factor which triggers specific protocols.*

- *Quality assurance reports are generated to evaluate each provider’s compliance with the protocol.*

**These systems would also integrate tools that facilitate prevention.** These tools include:

- **Reminder notes for the provider** on patient charts.[48-50]
- **Reminder notes sent to the patient** through the mail or electronically.
- **Screening tools for risk factors and feedback based on readiness to change.**
- **Tools that require an electronic medical record.**
  - Patient entry of health information** into the medical record.
  - Analytic tools for risk stratification** based on risk factors.
  - Analytic tools for prioritizing interventions** based on patient’s risk and potential benefit of available interventions.
  - Ability to prescribe behavior change programs by giving access to a preventive care Web site.**

These tools form the components of a **decision-support system**. The goals of the system are to define patient-specific risk, identify the most beneficial interventions, and tailor messages based on a patient’s readiness to change. The recommendations would be based on vetted information regarding best practices in prevention.

### **Sources of vetted recommendations regarding preventive interventions**

United States Preventive Services Task Force  
<http://www.preventiveservices.ahrq.gov/>

Centers for Disease Control and Prevention Advisory Committee on  
Immunization Practices (ACIP)  
[www.cdc.gov/nip/publications/acip-list.htm](http://www.cdc.gov/nip/publications/acip-list.htm)

Agency for Healthcare Research and Quality  
[www.ahrq.gov](http://www.ahrq.gov)

Agency for Healthcare Research and Quality: Put Prevention into Practice  
Program  
[www.ahrq.gov/clinic/ppipix.htm](http://www.ahrq.gov/clinic/ppipix.htm)

These recommendations include preventive services that should be applied universally and those that should be applied to selected groups at increased risk for a particular condition. For example, all adults should receive a tetanus booster every 10 years, while only people older than 50 require colon cancer screening. As our ability to specify an individual's risk increases through the use of **genomics and predictive modeling**, we will be able to more narrowly target preventive interventions in order to maximize effectiveness and patient adherence and minimize costs and side effects. This level of personalization will require the adoption of clinical systems capable of estimating risk using a range of individual-level information. Therefore, while clinical systems are useful now, they will become essential in the future world of genomics and predictive modeling.

Protocol-based approaches to chronic disease management are effective in the timely control of risk factors such as blood pressure. Therefore, the protocol-based expert system could diminish the influence of **clinical inertia** on the parts of the patient and provider in the care of chronic disease and the implementation of preventive interventions.

### **Engaging patients in prevention**

While a redesign of a clinical practice will improve implementation of prevention, other stakeholders in the preventive enterprise must adopt new methods to

effect real change. As previously discussed, **patients should be encouraged to take more responsibility** for prevention through shared ownership of personal health information, patient reminders, tailoring of prevention and education.

Efforts in prevention would not be effective without the active engagement of individuals who stand to benefit. The pre-eminent role of patients/consumers has been recognized in previous Outcomes Summits.

*“Increasingly, they [patients] are not simply recipients of care or subjects of research but active, informed individuals who wish to know more about their condition and exert greater control over their own care.”*

(Outcomes Summit 2003)

When people take the initiative to learn about prevention, they adopt behaviors that lower their risks. Community-based support organizations that facilitate individuals’ self-health promotion are proliferating.

## **SOLUTIONS SPECIFIED: PAYERS**

The necessary changes in clinical practice require strong leadership, appropriate incentives, and effective improvement strategies from the organizations that pay for health. However, clinical practice is not a sufficient target for change. Concerted efforts in medical and allied healthcare professional education, aggressive and continuous public education, and prevention-enabling legislation must take place simultaneously. In particular, the role of payers is critical to effect enduring implementation of prevention.

Employers know the benefits of a healthy workforce. Health promotion and disease prevention **increase productivity, lower absenteeism and disability, increase company loyalty and lower direct medical costs**. Therefore, employers’ thoughtful preventive activities can have a real impact on the health risks of their employees. Examples of these include...

- In a study of 15 manufacturing sites aimed at improving smoking cessation rates among workers, the combination of health promotion and occupational health interventions were shown to effectively increase quit rates.[51]
- An employer offered its employees with high LDL cholesterol either a \$100 incentive or access to a low-cost, multidisciplinary educational program to

help employees lower their LDL. Both interventions proved to be effective in reducing LDL-Ch by more than 11 percent.[52]

- The Johnson & Johnson Pathways to Change worksite health promotion program showed that participants outperformed their nonparticipant counterparts in lowering six health risk categories but performed worse in five other categories that were not specifically targeted by the high-risk program.[53]
- The United Auto Workers (UAW) and General Motors offered a worksite health promotion program which demonstrated a greater decrease in the number of health risks with increased program participation.[54]
- Among working adults who received the flu vaccine there is a 25 percent decrease in episodes of upper respiratory illness, 43 percent fewer days of sick leave from work due to upper respiratory illness and 44 percent fewer visits to physicians' offices for upper respiratory illnesses. The cost savings were estimated to be \$46.85 per person vaccinated.[55]

Coupled with this evidence of improved employee health, a strong business case for prevention should stimulate **expansion of current coverage policies** for self-insured employers.[56] To help make the business case for prevention more tangible to payers, **prevention-oriented research** should measure the short- and long-term economic impact of preventive interventions. Employers argue that even when preventive services are available, however, employees often fail to take advantage of those services. Therefore, a growing number of employers are offering financial and nonfinancial incentives for employees to use preventive services and adopt healthful lifestyles.[57]

Given the evidence, it is not surprising that the National Business Group on Health (NBGH) encourages wellness and prevention activities among its members. Based on a survey of its member organizations, the NBGH recommends that prevention be defined as a corporate priority, that preventive services be structured as part of the health benefits, and that those benefits be augmented through access to health promotion and disease prevention programs.[58] Specific recommendations include the establishment of:

- High-level corporate expectations for prevention.
- A list of prevention priorities.

- Corporate goals for clinical preventive services usage rates.
- A corporate culture that supports employee usage of preventive services.
- Support for and participation in prevention-related activities from upper management.
- Useful data to inform decisionmaking (claims data audits, HRAs, etc.).
- A network of stakeholders from across an organization including disability, EAP, benefit managers, and others.[59]

Some Summit participants suggested that, given the proven benefits of many preventive interventions, failure to deliver prevention should be subject to the same quality improvement effort as the elimination of more traditionally defined medical errors.

Some employers are better prepared than others to **design a balanced benefit package** that values and promotes prevention. Traditional, off-the-shelf benefits packages should be carefully scrutinized for the appropriate mix of benefits promoting prevention. For example, conference participants suggested that payers should take a more consultative approach to improve employers' strategies to provide health and wellness.

Building communities where prevention is valued requires collaboration among payers and purchasers. Examples of such collaborative efforts to understand, develop, measure, and incentivise preventive services are emerging as part of the **pay-for-performance** movement. Examples include Bridges to Excellence and California's pay-for-performance initiative, both of which focus on chronic care. Other initiatives such as the Leapfrog Group's "Never Events" focus on patient safety.

Beyond incentives, conference participants identified other activities that would support a wider adoption of preventive service by providers. For example, more effective **communication between payers and providers** about changes in prevention-related coding and other payment rules would enhance providers' appropriate use of those codes.

More payers and purchasers are adopting plans that reward individuals who achieve healthy lifestyle goals with **lower premiums** (within the framework of the law). The Johnson & Johnson Health Management program is one of a number of successful examples. In this case, the company offered \$500 in benefit credits to participating employees. The participating employees had

significantly lower medical expenses, lower cholesterol, blood pressure and higher smoking cessation rates. The program, which included 18,000 employees for approximately four years, was credited with annual savings of \$8.5 million.[60] To be effective these programs must balance “carrot and stick” elements. A properly balanced program must be viewed as neither too coercive nor totally “elective” by employees.

Government should provide leadership in **payment for preventive services**. Medicaid, for example, has used incentive programs successfully. Valuable examples are available online.[61] Moreover, lessons can be learned from the experience in other countries. For example, several countries have implemented incentives to promote childhood immunization. A comprehensive review of these incentive programs demonstrated that “groups receiving the incentives were up to three times more likely to be immunized and had overall immunization rates up to 17 percent higher than comparison groups.”[62]

As previously discussed, the heterogeneity of coverage discourages providers from providing the full gamut of indicated services to their patients. Therefore, all payers should, at a minimum, **cover those services with evidence of greatest benefit and cost-effectiveness**. Partnerships for Prevention has ranked the top 25 preventive services, making this task significantly easier. These “Priorities for America’s Health” include those that provide the greatest gain in health for the least cost and were selected based on recommendations from the U.S. Preventive Services Task Force and Advisory Committee on Immunization Practices.[63]

Employers/payers play an important role in the dissemination of preventive practices because they can reach thousands of individuals at the worksite. Furthermore, employers and payers can leverage incentives to achieve the desired preventive goals.

## **SOLUTIONS SPECIFIED: POLICYMAKERS**

Consumers may drive healthcare, but policymakers provide the leadership. We first examined the expanded role the government can play in promoting disease prevention and health promotion. The government can support prevention by

embracing its role as policymaker, as purchaser of healthcare for government employees and enrollees in Medicaid and Medicare, and as supporter of public institutions that promote prevention. Indeed, the government is already providing important support in these areas.

## Prevention through enlightened public policy

Enlightened public policy can have a major impact on health behavior. As discussed in the opening section, public policies are responsible for 25 of the 30 years of life expectancy gained since the 19th century. The government's role in prevention policy includes:

- Implementation of taxation policy.
- Development of standards, policies and guidelines that promote prevention.
- Development of and support of a public preventive health system.

**Implementation of Policy Regarding Tax Incentives.** The government can use tax incentives and disincentives aimed at companies to promote preventive care and health behaviors. These incentives may encourage employer coverage of prevention and individual enrollment in health insurance. For example, premium assistance or tax credits can encourage employers to cover prevention services. Tax incentives and disincentives should also be aimed at individuals to promote enrollment in preventive healthcare programs that promote healthy behaviors.

The government can further develop **Health Savings Accounts** for healthcare. These programs can be extended to include more broadly defined preventive interventions and practices. Targeted taxes can fund public preventive services. For example, proceeds from tobacco sales can fund tobacco use cessation campaigns.

**The government can support the development of standards and policies that promote prevention.** The government must ensure that prevention policies are written in a manner that is clearly and easily understood by the general public. The government can increase access to prevention through insurance market regulation, coverage mandates for private insurers, or advancing public program health coverage. Policies to financially support post-screening follow-up and treatment should be fully mandated and funded.

Government policies at the federal, state and local levels should influence the **“built environment”** to be conducive to health behaviors. City planning and “smart growth” initiatives should emphasize policies that encourage walking

rather than driving. As an example in chronic disease prevention, public health rules such as banning smoking in public places have had a strong influence on personal health choices.

The federal government should develop policies that encourage state and local government to develop and fund programs that promote preventive care and healthy behaviors among people, including parents and other caregivers. Regulatory bodies should consider the needs of disadvantaged populations when drafting public health guidelines. Furthermore, the government should tag special funding for the elimination of disparities in preventive practices.

The government should continue to promote **development of a preventive health system** through the Public Health Service and other means. The government sponsors the development of preventive health guidelines, which should also continue. The government should also take a more active role in measuring the quality of healthcare delivery. Furthermore, the government must address the shortage of qualified clinicians to deliver preventive health services. Potential solutions include redesigning the system of healthcare professional education to encourage graduates focused on the delivery of health prevention, and addressing tort reform in the area of prevention.

Policymakers must also seek to overcome **racial or ethnic disparities**. Resources, including tools for behavior change, should be available to all ethnic and economic groups in order to reduce disparities. Similarly, tools must be language- and culture-specific, utilizing simple terminology and accounting for varying levels of literacy.

Policymakers should establish standards for the collection and sharing of health information and the promotion and **development of personal health records**. Summit participants were more cautious in their support of a computerized personal health record. Computerized records have many advantages. In particular, they can facilitate communication among the patient, clinician, and other providers, thereby minimizing fragmentation of care. Before computerized records can fulfill this potential, however, standards must be developed, the financial impact on clinicians must be minimized, and privacy must be ensured. The President's Technology Initiative, described below, is designed to address many of these issues.

### **Vignette: President George W. Bush's Technology Initiative**

*Computerized health records are a part of the national agenda.*

*"By computerizing health records, we can avoid dangerous medical mistakes, reduce costs, and improve care." – President George W. Bush, State of the Union Address, January 20, 2004*

***"President Bush has outlined a plan to ensure that most Americans have electronic health records within the next 10 years. The President believes that better health information technology is essential to his vision of a healthcare system that puts the needs and the values of the patient first and gives patients information they need to make clinical and economic decisions – in consultation with dedicated healthcare professionals."***

*In order to accomplish this goal...*

***"Doubling Funding to \$100 Million for Demonstration Projects on Healthcare Information Technology.*** *To build upon the progress already made in the area of health information technology standards over the last several years, the President's proposed FY 2005 budget includes \$100 million for demonstration projects that will help us test the effectiveness of health information technology and establish best practices for more widespread adoption in the healthcare industry."*

***"Using the Federal Government To Foster the Adoption of Health Information Technology.*** *As one of the largest buyers of healthcare – in Medicare, Medicaid, the Community Health Centers program, the federal Health Benefits program, veterans' medical care, and programs in the Department of Defense – the federal government can create incentives and opportunities for healthcare providers to use electronic records, much like the private sector is doing today."*[64]

Source: [http://www.whitehouse.gov/infocus/technology/economic\\_policy200404/chap3.html](http://www.whitehouse.gov/infocus/technology/economic_policy200404/chap3.html)

Enlightened public policy has benefited millions of Americans. The future of prevention depends on continued support from public and private policymakers in the form of enabling legislation and support of prevention-oriented research.

### **The government as a purchaser of prevention for employees and the provider of prevention for enrollees in public programs**

As the single largest purchaser of healthcare, the government can take the lead in implementing prevention for federal employees. The federal employee benefit plan should cover preventive services and health promotion as a model to other employers. For example, the government can mandate implementation of cost-effective interventions, allow nonphysician healthcare providers to administer services, and offer support for behavior change. The government as employer can also eliminate time barriers to prevention by allowing employees to take time from work for preventive activities.

As a provider of health insurance for enrollees in public programs, the government should fully fund preventive interventions for Medicare and Medicaid enrollees. In that many private health insurers follow Medicare's coverage and payment policies, the Centers for Medicare and Medicaid can set market expectations and ground rules for coverage and costs.

### **The government as a funder of public institutions that promote prevention**

Government-funded institutions such as the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) must be encouraged to emphasize preventive care research and studies of health as well as disease.

The government can influence societal behavior norms through public health education and social marketing campaigns. Preventive health campaigns could educate employers about healthy solutions in the workplace. The government must be less neutral regarding employers and institutions that promote unhealthy behaviors.

Preventive health and public health education should begin in the public school systems. More aggressive government policies could encourage and fund

improved food services with healthy nutritional choices, removal of soda machines, and increased physical education. Schools can also take a more active role in prevention by assuming responsibilities for being healthy role models to students. Schools and workplaces can also serve as a resource for vaccinations and the dissemination of child and family health risk assessments through school-based and work-based clinics.

**Vignette: Arkansas' School-based Obesity Program**

*The Arkansas School BMI Assessment Project was mandated in 2003. The project promotes healthier foods and increased physical activity at school and measures the BMI of every public school student annually. Parents receive a health report detailing their child's anthropometric measurements. If the child is overweight, the letter will suggest dietary changes and activities designed to reduce weight. Recent data suggests that the rates of obesity in Arkansas children have leveled. ([http://www.cbc.ca/consumers/market/files/health/bmi/docs/Summit\\_Media\\_Kit.pdf](http://www.cbc.ca/consumers/market/files/health/bmi/docs/Summit_Media_Kit.pdf))*





## PREVENTION IN ACTION: A VIGNETTE BASED ON AN IDEALIZED PREVENTIVE HEALTH SYSTEM

Isolated changes at any level will have minimal impact on health outcomes. However, “there is increasing evidence that many of these barriers can be overcome through a formal system for delivering clinical preventive services.” [45; 46; 68; 73] Systems contained within a clinical practice[44; 46], as described above, are effective at increasing adherence to preventive guidelines. However, these systems do not adequately address patient-specific barriers to prevention. Nor will they be able to incorporate the coming expansion of clinical information made possible through the development of genomics. These issues are better addressed through the integration of practice-based preventive systems into a larger system connecting patients to clinics, community organizations, the workplace and schools, and other providers.[74]

In a model developed by Ed Wagner and others at Group Health, the problem of chronic disease care and prevention is approached from a health system perspective. This model recommends that in order to be most effective, a health system focused on either chronic care management or prevention must have six components:

1. The **organization of care** at the health system level which **makes prevention a priority**, demonstrates strong leadership, commits resources including incentives, and links to the community.
2. The **provision of clinical information systems** which incorporate patient-specific information systems and track process variables.
3. The **delegation of specific prevention interventions** to professionals with specific behavioral and clinical experience.
4. The **provision of decision support** tools and applications including protocols, prompts, and reminders.

5. The **provision of self-management support** including tailored educational resources, skills training, and psychosocial support.
6. The **provision of links with community** resources.

Wagner's model needs to have patient responsibility added and include interventions outside of the medical system. Who drives the system, and who owns it? Guiding question: What are the fundamental components of a revised system to self-organize in a way that is different from how it is today?

The following vignette follows a patient as he navigates a hypothetical integrated health system that uses Personal Health Information/Records designed to maximize wellness and prevention.

## VIGNETTE

*The following vignette exemplifies one of many possible case scenarios in which an efficient and effective preventive system accomplishes its goals. Variations in patients' characteristics such as access to health insurance, ethnic background, degree of motivation and the many environmental factors influence how preventive services are used. A flexible and effective preventive system should be responsive to all individuals, including the most vulnerable.*

*John is a 48-year-old, overweight smoker with a family history of colon cancer who is otherwise healthy. John schedules an appointment with a primary care provider after reading in a health newsletter sponsored by his employer that he is at higher risk for colon cancer because of his family history. Moreover, the newsletter announced a new employee-incentive program promoting prevention and wellness. John can reduce his health insurance premiums by as much as 20 percent by adopting certain healthful lifestyles, maintaining his immunization schedule, and adhering to selected early detection tests and to worksite safety practices. The incentive program and his new awareness of colon cancer risk compel John into action.*

## At home

John calls Dr. Smith's office to relay his concerns about colon cancer and to schedule a new-patient appointment. During the call, the scheduler notices John's command of English and how he learned about his risk for colon cancer. The scheduler concludes that John's health literacy level is quite high and that sending printed materials would be suitable. The scheduler asks John to check his mail for instructions and information about his upcoming visit. He is told that if he has access to a computer, he could get additional information by going to the practice's Web site. John decides to read the mailed materials and to access the Web site on his daughter's new computer.

Within a week, John completes and mails back the questionnaire. While exploring the Web site, he is directed to a secure, interactive health risk assessment module where he records his medical history as he had done earlier on the paper version. He records his current medications, family history, health habits, and personal values regarding his health. John is asked more detailed questions depending on his responses. John recognizes immediately that the paper version did not have this capability. For example, he is asked several questions characterizing his readiness to quit smoking and assessing his level of support. Given John's family history, he is asked about the occurrence of colon cancer in his first- and second-degree relatives. John's risk of developing colorectal cancer is calculated automatically.

After the assessment is complete, a **Personal Health Record** is produced. This report describes his medical history, risks and recommended preventive services. A link to a knowledge database provides simple explanations about his health risks and the corresponding recommendations. Reflecting John's most immediate concerns, a colonoscopy for colon cancer screening is at the top of the list. He is referred to his provider for the details regarding risks and benefits of the test. Smoking cessation is next on the priority list. John is not confident that he can quit smoking due to past failures; therefore, he is prompted to ask his physician about new approaches to quitting. The list also includes tetanus vaccination, moderate exercise (fast-paced walking 30 minutes every day), and dietary modification. He is shown actual pictures of meals made up of foods he had listed earlier as among his favorites. Each picture has different size versions with a clear sign showing how many fewer calories the smaller portion size represents compared to a typical meal size. John realizes how many extra calories he has

been consuming over the years and how relatively small changes in his eating habits can prevent weight gain over time. He is further advised to restrict his fat intake and to discuss aspirin chemoprophylaxis with his provider.

John returns to the Web site several times before his clinic visit, picking up each time where he left off. Given the potential importance of the PHR as a means of communication between John and members of his healthcare provider network, the program asks John whom he wants to authorize to access the specific aspects of the PHR. Once John authorizes his physician to access the PHR, the information will become part of John's electronic medical record.

John believes that he has never been as well-prepared for his visit with his doctor. He better understands his current state of health and risk of future illness. He has a list of steps he can take to maximize his wellness. He has also printed a list of questions he should ask his doctor. Given this preparation, John is confident that he can now participate more actively in his own care decisions.

### **At the clinician's office**

As instructed, John arrives 15 minutes early to his appointment. A physician assistant asks John questions from his health risk assessment that were unanswered and enters the answers directly into John's electronic PHR.

The physician is ready to see him at the scheduled time. The office-based clinical system displays the day's schedule for Dr. Smith listing each patient, reason for the visit and overall status.

As Dr. Smith prepares to enter the exam room, she reviews the encounter form detailing John's medical history including active and inactive conditions and current and past treatments. Based upon John's previous authorization, Dr. Smith has access to the health summary John received at the completion of his health risk assessment. John's "chief complaint" is concern regarding his risk of colorectal cancer. She notes that the score calculated by the decision-support tool in the medical record places John as having a moderate probability of familial colon cancer. Dr. Smith also notes that he is a smoker, is inactive, and consumes a high-fat diet. The biologic information includes vital signs, waist circumference, and BMI. Finally, prioritized recommendations are listed, including colonoscopy, smoking cessation, tetanus booster, increased physical activity, and dietary modification. For each recommendation, the various approaches are listed with

their estimated effectiveness, cost to the patient, and probability of side effects.

In the course of the visit, Dr. Smith is pleasantly surprised about how much information John already has about colon cancer screening, smoking cessation, and the tetanus booster. The conversation is to-the-point and substantive. In fact, it is much shorter with John than it usually is with uninformed or, worse, misinformed patients. Dr. Smith explains the importance of a screening colonoscopy and gives John a thorough overview of risks and benefits. John has no further questions and agrees to undergo the test as soon as possible. The conversation now moves to colon cancer risk-reduction measures, including dietary modification. John happily reports that he has already increased his dietary fiber, which, Dr. Smith adds, will also help lower his cholesterol. He has also begun to reduce his portion size and fat intake.

The physician's body language clearly communicates her approval of John's proactive steps on key preventive measures. She congratulates John for his proactive approach and positive attitude.

Given John's history of unsuccessful attempts at quitting, Dr. Smith discusses all the options, including a new drug that helps smokers; but she recommends a combination of nicotine replacement and bupropion. These prescriptions are automatically written and reviewed by Dr. Smith. Information regarding the use of these medications will also be printed for John after the visit. As a part of the treatment plan, Dr. Smith and John agree on a quit date, which is noted on the encounter form. John also agrees to a smoking cessation group visit at the YMCA and to work with a behavioral lifestyle coach to assist him with quitting and proactive weight control. Finally, he is given an easy-to-read pamphlet about quitting smoking and he is told to access more information regarding smoking cessation on the practice Web site. At the end of the conversation, John confesses his fear of gaining weight. Dr. Smith lists some strategies to address this issue and directs John to links that are also on the clinic Web site for more information.

Dr. Smith reminds John that he is due for a tetanus booster, reviews the encounter form for contra-indications, and checks the tetanus booster on the form. John gets his tetanus booster before leaving the clinic.

Finally, Dr. Smith affirms John's decision to eat a diet rich in fruits and vegetables, low in saturated fat and salt, and equal to his estimated daily caloric needs. She

tells him that there will be more information about this diet and strategies for achieving this dietary goal in the report he will receive at the end of the visit. Dr. Smith is unable to discuss further the importance of this dietary change at this visit but encourages John to address this topic with his nurse care manager, who will contact him at a convenient time in the next couple of weeks.

Privately, Dr. Smith wonders if the financial incentive offered by John's employer played the strongest role in motivating John to see her. However, she understands that many factors are important in promoting prevention, and she's gratified to see that incentives work. She then remembers that her practice is involved in an incentive plan that rewards physicians for higher use of proven preventive services, such as all the ones discussed during the visit. She mentions this to John, who offers Dr. Smith a parting handshake and the following statement: "Dr. Smith, it looks like with this arrangement I will be helping both of us do well in more than one respect."

At the end of the visit, the clinician's encounter form is saved into the PHR, which is automatically updated with the specifics of the visit, including assessments, prescriptions, and recommendations. A group visit is scheduled for smoking cessation at the YMCA. A print-out of the above is handed to John and he is told to go to the practice Web site for more specific information regarding the recommendations or to change a scheduled appointment.

## **In the community**

Dr. Smith's group is working closely with an organization dedicated to improving patient self-management skills and increasing adherence to recommended regimens. The organization provides periodic feedback to the primary care physician and specialists involved in the patient's care. The health support organization has access to John's insurance claims data, which informs them of John's encounters with the healthcare system. A nurse care manager calls John three days before his colonoscopy to confirm his understanding of the preparation for the procedure. Using a checklist to cover all items, she concludes that John is well-prepared for his test.

An online expert system accessed via the clinic Web site sends a reminder to John the day before his smoking quit date and reminds him to apply the nicotine patch before going to bed. The system will send frequent notes of encouragement over the first few days and ask about specific barriers encountered, including

side effects to the patches. Periodically the system will remind John of the advantages of not smoking, such as the health benefits to himself and others, improvement in his appearance, and the substantial cost savings. He is also told to consider sending personalized messages to family and friends to inform them that he's quit and to enlist their support. The nurse case manager who had called earlier regarding the colonoscopy calls again to provide assistance and encouragement during the most difficult early quitting days.

John elects to enter an exercise program at work. John grants the program nurse limited access to his PHR including Dr. Smith's clearance for John to participate in the program. The nurse also has access to those variables likely to be affected by exercise, including blood pressure, cholesterol measures, and anthropometrics. The work program performs an initial metabolic assessment, which measures VO2 max, strength, and body composition. This data is also entered into John's PHR. As John progresses through the program, the gains in endurance, strength, and muscle mass are noted and graphed. These variables are used to update John's biological age, which continues to fall.

John enters a program at his local grocer designed to assist its customers in the preparation of a diet rich in fruits and vegetables, low in saturated fat and salt, and equal to his daily caloric requirements. John is notified of cooking classes in his neighborhood, food specials at the store, and "recipes of the week." John requests help from the "diet manager" at the store, who uses his shopping profile, cooking aptitude, and dietary goals to design a weekly meal plan. John does not elect to have the groceries delivered to him, preferring instead to walk to the store. John makes note of his participation in this program in his PHR. A portion of the costs of the consultation with the diet manager is reimbursed from the pre-tax dollars in his Preventive Health Spending Account.

John's colonoscopy is normal. In the course of the visit the specialist discusses briefly the possibility of a condition called heritable nonpolyposis colorectal cancer and suggests additional testing and follow-up.

### **Back in the clinic**

Dr. Smith reviews the lipid panel she had ordered for John and forwards the results after accepting or modifying the brief explanation of each value. These results become a part of John's PHR.

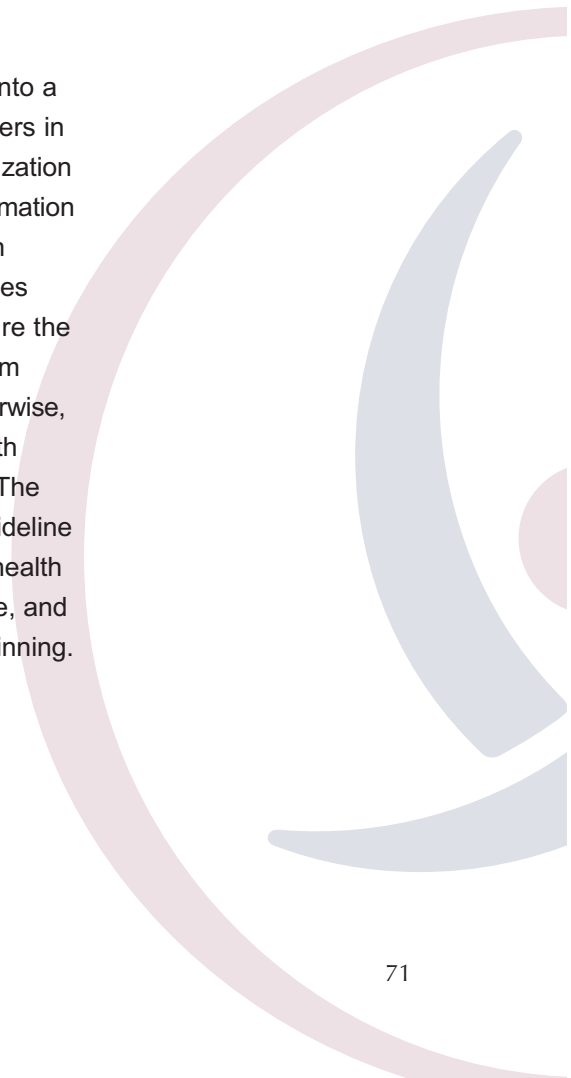
Dr. Smith reviews the laboratory values. Nearly all of them show improvements. She also notes that John has been tobacco-free for two months, congratulates him for his accomplishment, and reinforces the need to stay the course.

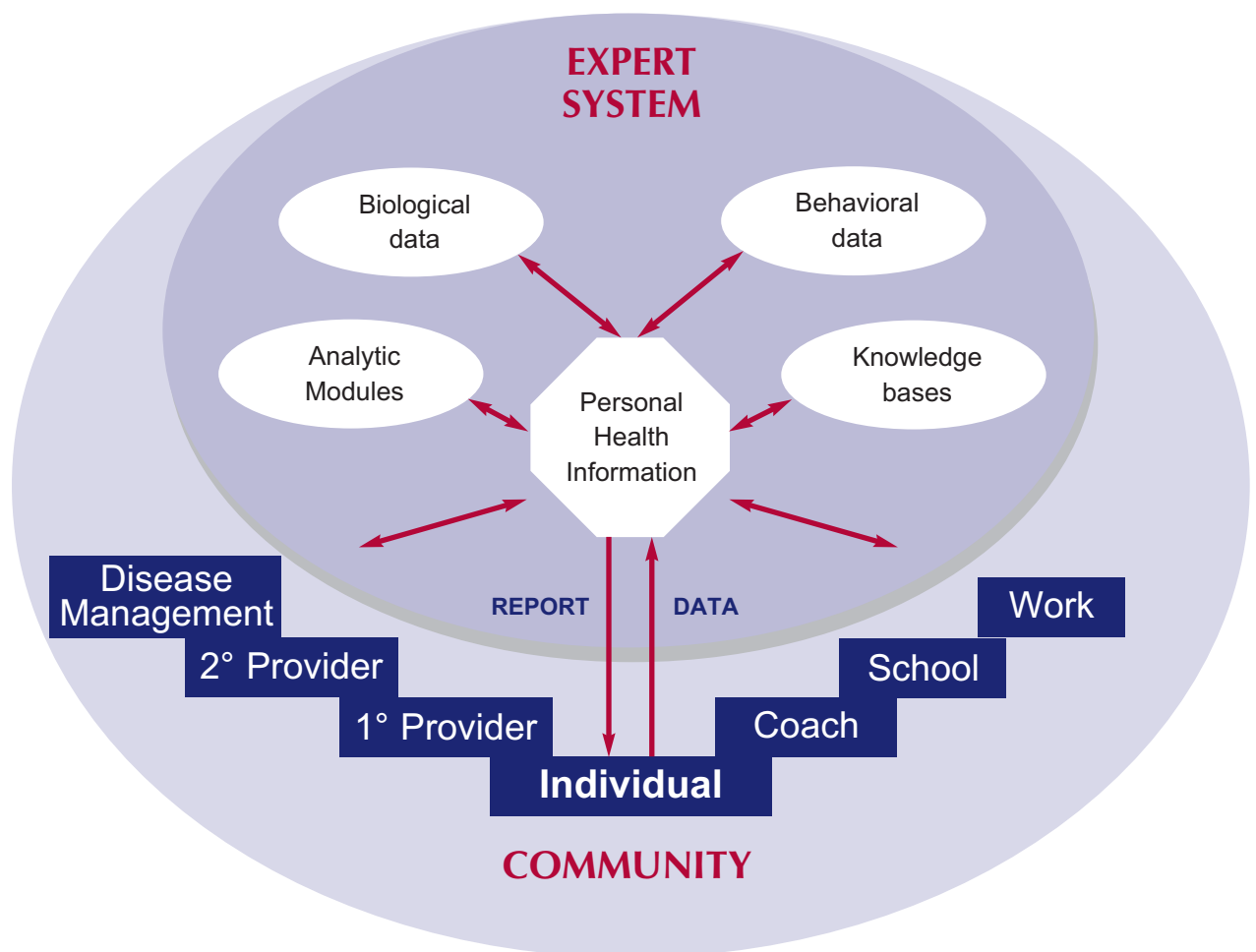
John reports that his energy level is greatly improved, and that he and his wife and daughter are pleased with his emerging new, thinner appearance. Although difficult to describe, his new sense of wellness is quite palpable. He has estimated the total savings from his reduced health insurance premiums and is quite thankful to his employer. "Until now, my health insurance premiums had only gone up every year!"

John tells Dr. Smith that he has been courted by a competitor for a position with a slightly higher pay; however, his loyalty to his current employer, especially this new benefit package, makes him very hesitant to even consider changing jobs.

## PREVENTIVE HEALTH SYSTEM

The vignette attempts to capture the experience of a patient as he enters into a health system focused on prevention and on integrating multiple stakeholders in the common pursuit of health and wellness. Figure 6 is just one conceptualization of the organization of such a system. In this model, the personal health information integrates the various components of the system, preventing fragmentation through a common source of patient-specific information. The system utilizes various tools to address both provider and patient barriers and would require the support of both payers and policymakers to work. At a minimum, the system would require methods of sharing information among the stakeholders. Otherwise, however, the system could grow in scope and capability as preventive health partners and new tools go online. Again, this is just one conceptualization. The task at the Outcomes Summit is to go beyond current ideas to create a guideline for the pursuit of a preventive health system that addresses the context of health and wellness, that works to prevent the onset of risk factors in the first place, and that integrates all the stakeholders in the process. This model is only a beginning.





**Figure 6.** Prevention-focused health system. A concept of how a system focused on prevention and integration of multiple stakeholders in the common pursuit of health and wellness could be organized.





## ADDENDUM

### Highest Priority Clinical Preventive Services: Partnership for Prevention

Services	Population	CPB*	CE+	Total
Aspirin chemoprophylaxis	Men 40+, wm 50+	5	5	10
Childhood immunizations		5	5	10
Smoking cessation advice and help to quit	Adults	5	5	10
Colorectal cancer screening	Adults 50+	4	4	8
Hypertension screening and treatment	Adults	5	3	8
Influenza immunization	Adults 50+	4	4	8
Pneumococcal immunizations	Adults 65+	3	5	8
Problem drinking screening and counseling	Adults	4	4	8
Vision screening	Adults 65+	3	5	8
Cervical cancer screening	Wm	4	3	7
Cholesterol screening and treatment	Men 35+, wm 45+	5	2	7
Breast cancer screening	Wm 40+	4	2	6
Chlamydia screening	Wm under 25	2	4	6
Discuss calcium supplementation	Wm	3	3	6
Vision screening	Children	2	4	6

\* CPB: clinically preventable burden that would be prevented if the service were delivered to all people in the target population. CPB was measured in quality adjusted life years (QALYS), a measure of mortality and morbidity.

+ CE: cost-effectiveness which compares the net cost of a service to its health benefits. Net cost was defined as the cost of the service minus the cost avoided because of the service.

**The Tri-County Family Medicine Health Maintenance tracking system**

**Tri-County Family Medicine Preventive Protocol for Health Maintenance in Asymptomatic Adults: April 2006**

History of tobacco use	All adults every four years
History of alcohol use	All adults every four years
Blood pressure	All adults every two years
Weight	All adults every four years
Total and HDL cholesterol	All adults every four years to age 70
Fecal occult blood test	All adults annually after age 50
Td booster	All adults every 10 years
Clinical preventive exam	At age 50-55 for midlife counseling
Aortic aneurysm screen	Male smokers at age 65
Pneumovax	Once in all adults over 65
Pap smear	Women every two years to age 70
Clinical breast examination	Women every two years after age 40
Mammogram	Women ages 40-49 annually, over age 50 every two years.
Assess osteoporosis risk	Women every five years over age 50
Influenza vaccination	Annually after age 65
Discuss prostate screening	Men every five years ages 50-70
Optional:	
Sigmoidoscopy	Every five years
Colonoscopy	Every 10 years

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