Chapter 1. Introduction

Overview

The IOM's recent Quality Chasm report argues that the U.S. health care system requires major re-engineering, including major realignment of incentives, if health care is to provide collaborative quality care and care management and effectively prevent and manage chronic disease.[1] Growing recognition of this need for realignment has led in recent years to "pay for quality" initiatives for providers.[2] Similar "pay for prevention" initiatives are used to address the gap between the high cost of preventable morbidity and death through recognized disease prevention and health promotion[3] and the actual practices of health providers and consumers. These initiatives use explicit, or extrinsic, incentives such as bonuses and cash or other in-kind financial incentives for providers and consumers to engage in specific preventive care or health promotion practices. This report explores the impact of explicit economic incentives targeted at motivating providers and consumers to adopt preventive health behaviors. The review is designed to 1) help develop more effective preventive strategies (evidence-based practice), and 2) help inform key stakeholders about the role of such practices, (evidence-based policymaking). It poses four key questions:

Key Question 1	How have "preventive care" and "economic incentive" been defined in the literature?
Key Question 2	Do incentives work?
Key Question 3	Is there evidence of a dose/response curve?
Key Question 4	What is the evidence for cost-effectiveness of economic incentive interventions?

Background

Conceptual Framework

Disease prevention and health promotion cover a wide spectrum of behaviors for both consumers and providers, from simple, one-time vaccinations to complex behavioral changes such as weight control. Where a particular preventive concern falls on the spectrum is determined by: 1) the complexity of attitudinal or behavioral changes and commitment required by the consumer; 2) the complexity of attitudinal or behavioral changes and commitment required by the provider; and 3) the relative complexity of the prevention technology itself, e.g., nicotine patches or counseling. For the purposes of this study, the determining factor for whether a study was classified as a simple or complex preventive health concern was whether a sustained behavior change over time was required of the consumer.

Note: Appendixes and Evidence Tables cited in this report are provided electronically at http://www.ahrq.gov/clinic/epcindex.htm

From an economist's point of view, the proper question to ask is not whether economic incentives work, but rather how large they need to be, when they should be used, and to whom they should be given. It is likely that the impact of a given incentive on preventive behavior will depend on whether the prevention is simple or complex. If one views the creation of an incentive as overcoming barriers of some sort, the magnitude of those barriers will likely be complex functions of social, psychological, and philosophical values, beliefs, attitudes, conscious and sub-conscious cognitive processes. Contextual and economic issues help define and shape the understanding of the perceived problem the incentive is intended to address, and appropriate attention to these issues would improve the potential success of the incentive.

The basic conceptual model that includes both provider and consumer actions is shown in Figure 1. This model does not reflect a specific theoretical base, but instead describes the actions that occur as preventive services are encouraged. As indicated in Figure 1, prevention and health promotion operate along a pathway of preventive behaviors. The framework condenses the process and begins with the consumer's orientation to a preventive concern. This orientation is partially determined by the level of awareness of the various preventive concerns and their impact on the consumer's health and well-being. Increased levels of awareness may lead the consumer to take responsibility for personal behavioral and lifestyle changes, to seek care or counsel from a health provider, or to be open to unsolicited preventive care or counsel from the health provider. The provider may offer preventive care and health promotion counseling, which the consumer then chooses whether to accept or not. Each place along the pathway represents a possible point to apply economic incentives to change the level of preventive care and health promotion.

Preventive services offered by a provider are likely influenced by many factors in addition to reimbursement concerns. These include factors such as convenience, held beliefs regarding the appropriateness and effectiveness of the preventive service, patient volume, external pressures on clinic office procedures arising from quality programs such as HEDIS, or uncoordinated practice guidelines from multiple managed care organizations. Barriers to changing levels of preventive services offered may include such concerns as resistance to changes in information technology systems, lack of organizational support, incongruence between economic and other philosophical views held by the provider, the opportunity cost of office visit time, and social cognition processes. Even if undertaken, the consequences of preventive care and health promotion counseling may create further unexpected barriers to change. For example, Bowman et al. found that patients reported declines in social and emotional functional status, including mental health, social health, self-esteem, and higher anxiety and depression scores for up to three months after physician recommendations for behavioral change during routine health maintenance visits and suggested such declines may inhibit a physician from making such recommendations.[4]

Preventive services demanded by the consumer are likewise influenced by many factors. Convenience, out-of-pocket outlays, and held beliefs about the effectiveness of preventive care and health promotion efforts are clearly important, perhaps particularly for the simple preventive concerns. Complex preventive concerns and health promotion, however, requiring sustained effort, over time, may be more strongly impacted by the readiness of the consumer to embrace a behavior change, self-discipline, feelings of self-efficacy and the belief that change is possible, and the willingness of the consumer to accept the provider's authority or collaboration in matters of personal lifestyle. Again, social psychological processes and potential incongruence between economic, patient autonomy and agency, and other philosophical views of the consumer would be expected to come into play.

There are, then, many possible attitudes and behaviors within both providers and consumers, and many places along the pathways of preventive care and health promotion, which might be identified to promote or support change. Within the overarching diagram of Figure 1 are the components of simple/complex and levels of action. Providers and consumers have several options that can be influenced by incentives. Table 1 provides a few simple examples within each category. Consumers might be motivated to simply attend sessions where preventive actions might be offered, or they can be induced to actually follow the desired behavior. Likewise, providers can be encouraged to recognize the problem that needs attention and to give the preventive service needed. These actions can occur separately or they could be combined into a comprehensive program. In the case of simple preventive services, such as immunizations, the two levels of action are usually combined; getting a patient in contact with the service can usually mean administering the service.

The financial incentive to provide a service may extend beyond direct reimbursement. The provision of preventive care may enhance the provider's quality reputation and that in turn may lead to increased payments from insurers or patients. Incentives offered to providers could include direct payments to the provider or their group, bonuses, or enhanced status by virtue of profiling, or meeting external regulatory pressures (e.g., HEDIS). Incentives for consumers could include monetary payments and gifts, lower costs for designated services, coverage of necessary components, or lower premiums for those who participate.

The overall perceived value of an incentive may reflect a number of expectations and assumptions held by the provider and consumer. A provider may perceive the incentive, aggregated over the caseload, as inadequate given the case mix as defined by the stages of change. Or, a consumer may give more salience to economic incentives for simple preventive services because the decision to utilize such services requires relatively less cognitive processing. Alternatively, economic incentives may be less salient for complex decisions that require significant cognitive processing which draws on multiple sources of input. Incentives offered to consumers may affect the provider's beliefs and behaviors as well as the consumer's.

Economic and contextual issues may also affect the impact of economic incentives, even well-designed ones, through unnoticed or unintended disincentives. Perhaps of largest concern is the effect of practice environments, including managed care, group practice, and individual practice arrangements, on economic incentives. There is also the potential impact of incentives on trust and patient autonomy within the provider/patient relationship.

Applicable Theory

The purpose of financial incentives is to induce behavior that otherwise would not occur. If appropriately designed, financial incentives move providers and consumers toward better (in a societal sense) behaviors.[a] Financial incentives can take many forms. Providers can be paid per service provided (often called fee-for service, FFS), paid per service with a bonus or penalty paid based on assessed performance (often called fee-for-service with withhold) on the basis of their costs (often called cost-based or retrospective payment), a fixed payment (often called capitation or prospective payment), or a mixture of payment types.

[a] Some economists prefer to reserve "economic incentives" for situations that involve the analysis of opportunity costs, and use "financial incentives" for the kinds of questions posed in this review. Because the request for proposal for this review used the term "economic incentive" and the more general readership finds the term useful, we chose to retain the original wording.

The ability of several academic disciplines to provide meaningful insight into the question of effective economic incentives touched upon in this introduction, and the complexity of the processes and structures of decision making and processes of care, point out the importance of social ecological approaches to health care improvement. Addressing macro-level economic forces embedded within the health care system, and broad environmental and social supports for healthy and unhealthy behaviors, it is argued, requires multi-component interventions that address multiple factors.[2]

In a simple world, basic economic theory suggests that providers should be paid the value of their marginal product for the provision of preventive services. However, there are several real world complications that prevent this optimal payment structure from being implemented. First, there are important externalities in preventive care. Disease prevention on the part of one patient (e.g., stop smoking, vaccinations) reduces the health risk to the population as a whole.[5] Thus, paying the provider the value of the marginal benefit to a patient would lead to an under-provision of preventive care. Second, the importance of third party payers implies that patients rarely pay the full cost of their care. Third, there are important informational asymmetries between providers and patients and providers and payers. Economic theory has long recognized that the presence of informational asymmetries can result in a wedge between the actual and optimal payment levels. Agency theory and mechanism design branches of economics have arisen to study the role of information and the optimal incentive structures.

Agency theory studies the behavior of two or more groups whose welfare is interdependent but whose incentives are not naturally aligned. An example is the patient-physician relationship. Physicians and patients both need each other, however, physicians may not have the incentive to prevent illness since, in general, the sicker the patient is the more they can earn. Agency theory steps into the problem and designs a payment mechanism that brings the interests of the physician into alignment with the patient. In this example, a solution to this agency problem might be to pay the physician a capitated payment regardless of whether the patient is sick or well. Under this arrangement it is in the physician's interest to have the patient avoid illness thereby reducing the effort and expenditure the physician must spend on treating an ill patient. However, as we show in the following discussion on the basic forms of provider economic incentives, capitation generates other incentives that may be less desirable.

The payment for services is the basic form of economic incentives for providers. Roughly speaking, provider incentives may be divided into two types, FFS or capitation for some portion of the medical services under their control. These two payment methods give physician organizations differing incentives to provide preventive services.

Under FFS it may be difficult for the physician to get reimbursed for implementing preventive services (e.g. smoking/alcohol counseling). Health plans have been disinclined to cover preventive services under FFS payment system because it is difficult to verify if they have been performed. If physicians can attract more patients by performing preventive care, they may be more inclined to do so. In addition, it is difficult ex ante for patients to judge the quality of preventive services provided by physicians and thus they may be unable to select physicians on that basis. Thus, physicians may have little incentive to provide these services if they do not gain more (or better paying) patients for this provision.

Under capitation, since the risk is shifted to the provider, the physician faces many of the same financial incentives to provide preventive care as a health plan. Providers functioning as insurers face a complex web of often offsetting incentives to cover and promote the use of preventive services. They must consider the net cost of its potential preventive care promotion

versus the gain in revenue of a given program. Most preventive care, even if cost effective, is not cost saving. Thus, the incentives for a provider to cover a particular preventive service will depend on their ability to recoup the increased cost of preventive care coverage through increases in revenue or through decreased costs due to changing the risk profile of its enrollees. If enrollees appropriately value cost-effective preventive care (and there are several reasons why they may not), then the insurer may indeed increase revenues sufficiently to cover its increased costs through the provision of preventive services.

The financial incentives to provide preventive services under capitation are tied to the ability of the physician to recoup preventive care expenditures. If an enrollee stays with the provider for a long time, it is immediately in the provider's interest, independent of how the enrollees value the service, to cover and promote the use of cost-saving preventive services. However, the time lag between preventive care expenditure and benefits can be long (e.g. diet and exercise).[6] Because the provider may not keep an enrollee long enough to benefit from the provision of cost-saving care, they may have little financial incentive to provide this care in spite of the potential societal gain from the provision of these services. Given the disincentive caused by enrollee churning, it likely makes more sense for large employers to engage in preventive interventions. However, while employees stay longer with employers than with health plans, there is still significant turnover of employees and the employer faces the same dilemma as the insurer for the provision of preventive services.

The use of bonuses as a means to direct the attention of the provider to preventive services is a relatively new development within the overall provider remuneration structures. While bonus qualification may be directly linked to a specific procedure, such as immunization, it may also be linked to quality of care measures, of which preventive concerns are only contributing factors.

Conditional upon their health insurance status, consumers typically face a less complex array of direct financial incentives for obtaining preventative services. They may have to pay a co-pay to visit the provider and, if the service is not covered under their insurance or they do not have health insurance, they may have to pay a substantial amount to receive preventative care. Perhaps more relevant for consumers in determining their preventive behavior is the opportunity cost. If the care requires a trip to the physician, the transportation, opportunity cost in time, and the psychological cost of the physician visit may loom larger than the out-of-pocket expenditures. If the preventive activity requires a sustained behavior change (e.g. weight loss), the primary disincentive to engage in this behavior may simply be the cost of the time devoted to preventive care and the discomfort that the new behavior may induce. For example, the financial incentives designed to induce weight loss will have to be sufficient to overcome these time costs and the psychic cost of discomfort.

The first managed care organizations emphasized the role of preventive services in maintaining the overall health of their enrollee population. However, there is a sense that the emphasis on preventive care that was one of the hallmarks of the first HMOs is no longer common among managed care organizations. Thus, it is reasonable to ask: "If health care consumers value preventive services, what might deter health plans from offering these services?" Below we discuss some of the market imperfections that may impede individuals from getting the right amount of care.

First, we note that individuals appear to be price sensitive towards preventive services. Kenkel finds that women with insurance are five percentage points more likely to have breast exams and cervical screenings.[7] Mullahy finds that those with insurance are three percentage points more likely to get a flu shot.[8] Cherkin et al. finds that $5 co-pay resulted in fewer physical

exams.[9] In the Rand Health Insurance experiment women with free care were three to seven percentage points more likely to receive preventive care.[10]

Individuals seeking preventive care face monetary, time, and psychological costs. Poor segments of the population may simply not have the monetary means as they may not have health insurance or the access to the necessary infrastructure (e.g. transportation) to obtain preventive services. Many preventive behaviors by individuals require them to make significant time investments. Changing life style by exercising or quitting smoking is psychologically more costly than getting an immunization. It means giving up things that are pleasant. Sustained change is harder to achieve than one-time events.

Recent developments in economic theory have emphasized the importance of observed departures from the rational decision making model.[11-13] These models highlight that individuals may have time-inconsistent preferences and are therefore procrastinators. That is, individuals know that certain behaviors are bad for them, but they are unable to change their behavior even though they realize that changing their behavior would ultimately make them better off. Therefore, in these models, individuals who engaged in unhealthy behaviors may be better off if commitment mechanisms are put in place to help them change their behavior.[11]

Since many individuals have access to health insurance (or certainly will at age 65) they have less incentive to engage in preventive care, as they will not have to pay the direct cost of treatment. However, the evidence on this indicates that insured individuals are less likely to engage in "dangerous" health behaviors.[14] That is, those who select into insurance are likely to be less risk averse or have lower discount rates and therefore invest more in their health. Individuals may already have an incentive to engage in healthy behavior to avoid the disutility of illness.

Information may be an important barrier for individuals in seeking out preventive care. Many individuals rely on their physicians to inform them on what preventive services they should have performed and, as discussed above, physicians may not have the appropriate incentives to inform their patients. It is possible that individuals may not know about the health benefits/risks of certain behaviors/screening. However, there is evidence that people do respond to information regarding health consequences of behavior (e.g., Surgeon General's Report on Smoking, 1962) and diet.[15,16] Furthermore, individuals may not be able to assess their risk of various diseases. There is mixed evidence on whether individuals under or over estimate the risks of particular behaviors. Viscusi et al. find that smokers overestimate the risks associated with smoking.[17-19] However, Schoenbaum finds that heavy smokers over-estimate the likelihood they will live to 75.[20]

Designing the appropriate incentive structures are non-trivial problems requiring an understanding of the information structures (e.g. who knows what and what behaviors are observable or measurable) and the responsiveness of providers, consumers, and payers to different incentive structures. The economics literature within the field of "mechanism design" has devoted significant amounts of effort to understanding the structure of the optimal incentive design. Viewed somewhat differently, instituting a new incentive structure is presumably a response to a perceived problem in how actors in the health care system are currently behaving. It is important to recognize that understanding the source of the problem is required in order to create an appropriate incentive design.

The question necessarily arises then – what would an effective economic incentive arm of a multi-component intervention for preventive care and health promotion look like. This is itself a complex question. While remaining mindful of the larger health care quality context, we can

deepen our understanding of the role of economic incentives for preventive care by confining an examination of the literature to those studies which allow us to directly address the effectiveness of economic incentives for preventive care and health promotion.

This review focuses on evaluating the evidence for an intervention intended to modify behaviors, not health states. That is, we are looking for marginal changes in specific behavior embedded within a complex context. As such, study outcome measures should focus on measuring behaviors, such as utilization of preventive services, rather than, or in addition to, patient health outcomes.

This review does not directly assess the impact of HMOs and other managed care organization risk-sharing and payment mechanisms as compared to FFS. While there is considerable and understandable interest in the effects of these larger economic incentives, the focus is on explicit economic incentives for preventive care. In addition, the potentially numerous confounding factors derived from different patient populations, physician populations, and structures and processes of different systems might overwhelm the potential usefulness of a review of explicit incentives.[21]

Cost Effectiveness

A frequent criticism of the US health care system is that not enough preventive care is performed. In these critiques, several reasons for the dearth of preventive care are usually offered, and the list of causal forces that cap the level of care below what it "should" be is that providers and consumers are not given the appropriate economic incentives to perform or seek out preventive care. However, while the calls for more preventive services have been made, it is unclear whether more preventive services would make the health care system more cost-effective.[22]

Cost-effectiveness can be thought about in two basic ways: 1) achieving a given preventive goal at a lower cost (sometimes called productive efficiency) and 2) achieving an improvement in health per unit of cost that exceeds a societally acceptable threshold (sometimes called allocative efficiency). Most of the work addressed here is restricted to the first definition, although ultimately the cost effectiveness of the incentive will depend on the cost effectiveness of the underlying preventive behavior it is designed to encourage. Screening for diseases and prevention of illness is very expensive. Russell estimates that if the recommendations of the US Preventive Services Task Force and the American Cancer Society were followed, screening for cervical cancer, prostate cancer, and cholesterol alone would cost as much as $80 billion per year.[22] Tengs and Graham conclude that the most cost-effective interventions are not those most frequently used, suggesting that what is needed is not more preventive care, but rather a reallocation of preventive services.[23] The Tengs and Graham finding also suggests that the appropriate incentives (financial or otherwise) are not currently in place for providing the right mix of preventive services.

Definitions of Terms for the Study

Prevention. Clinical preventive medicine is that part of preventive medicine concerned with the maintenance and promotion of health and the reduction of risk factors that result in injury and disease.[24] The three main types of prevention are primary prevention aimed at not allowing a disease or adverse event to occur, secondary prevention aimed at the early detection of an

asymptomatic disease, and tertiary prevention aimed at reducing the adverse consequences of a diagnosed disease. Immunizations are primary preventive acts. So is health promotion, such as smoking cessation, exercise, and attention to nutrition.

In the current environment of growing chronic illness burden and improving identification of risk factors for major diseases such as heart disease, the boundaries between primary, secondary, and tertiary prevention begin to blur. For example, high cholesterol and hypertension, though risk factors, are identified as treatable conditions. However, the purpose of treating high cholesterol is prevention of full-blown heart disease.

The fuzziness of the distinction between prevention and treatment compelled us to place specific boundaries on the literature search in order to narrow the scope of the project. For the purposes of this report, we defined preventive care and health promotion as involving those situations where consumers may consider themselves healthy or physically at risk but not yet labeled with a diagnosis. This would include individual-based health promotion and preventives services as defined in Healthy People 2000 and 2010, but excluding mental health, substance abuse, and health protection concerns such as injury prevention, occupational health and safety, environmental health, and oral health. Tertiary care, including self-care and management of diagnosed chronic illnesses such as diabetes and heart disease, was also excluded. The scope definition accords with the recent US Preventive Services Task Force's scope and selection of topics.[12]

Prevention and health promotion is the purview of both medical and public health professionals. We recognized this shared contribution by including non-clinical settings, such as worksite and community-based health promotion settings.

Economic Incentive. This review examines explicit incentives targeted at specific individuals, either providers or consumers. Consumer incentives are fairly straightforward and include cash, gifts, lotteries, and other free or reduced price goods and services for the benefit of the specific consumer.

Any provider fee or reimbursement system within health care is by definition an economic incentive. Financial incentives are paid at the organizational level, both at health plan to independent practice associations (IPA), and from IPAs to medical groups. Financial incentives are paid at the direct provider level as well. Financial incentives can be designed to direct attention to different measures of quality of care, utilization management, and other administrative and organizational concerns regarding shared risk and profits. As we are focused on target incentives for specific individuals for preventive care, this review examines incentives that are below the organizational level, directly payable to physicians or other health care staff members, and affect the providers' marginal income, not base income.

Incentives offered to providers could include direct payments or bonuses to the provider or his/her group. It was expected that economic incentives would vary considerably by the nature of the incentive, the components involved, size, frequency, duration, and the conditions that triggered payment of the incentive.

The definitions of preventive care and economic incentives given above are not easily applied cleanly to the literature. Research questions regarding the effectiveness of financial incentives are conceptualized such that they shade into questions regarding insurance status, access to care, and utilization of resources, rather than preventive care behaviors and outcomes. For example, Adams investigated whether fee generosity for Medicaid's Early and Periodic Screening, Diagnostic, and Treatment (EPSTD) program affects the number of physicians providing the services and improved access to care for an underserved population.[25] Also, as

stated previously, prevention is often used as only one component of quality of care when measuring effectiveness of incentives. For example, Dudley conducted a literature review on the effect of financial incentives on quality of care that relied on IOM's definition of quality (the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge) and included a general category of preventive services utilization as one of eight study outcome measures.[26, 27]

Figure 1. Conceptual framework

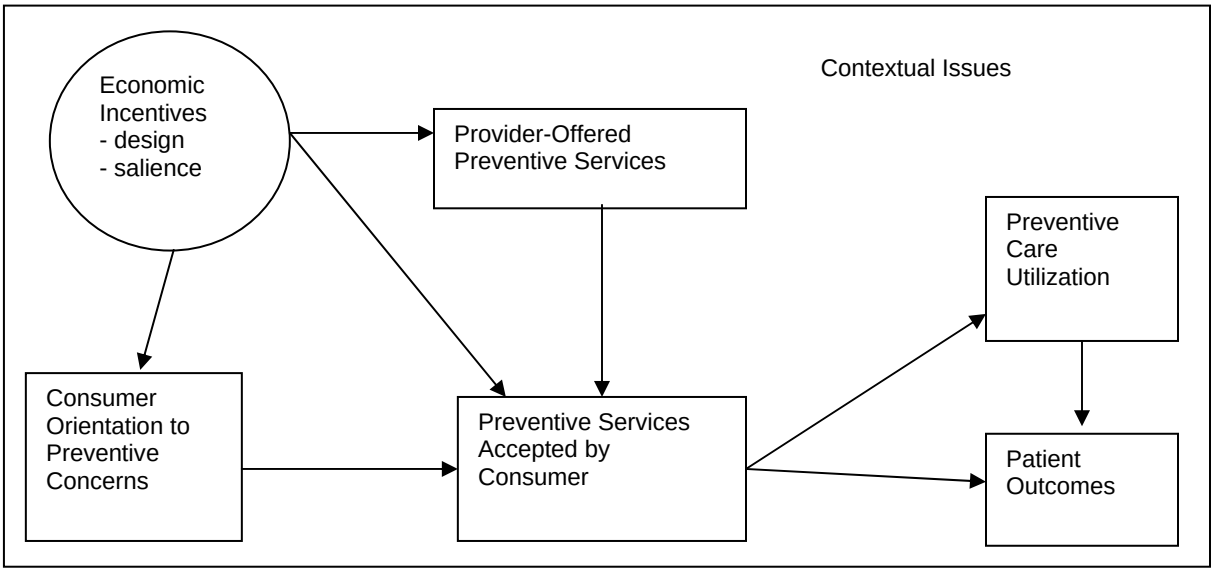

Table 1. Conceptual framework: Level of action

	Participate	**Act**
Consumer	Attend educational sessions	Accept service Change behavior
Provider	Identify prevention needs	Give service