Chapter 4. Discussion

Key Question 1. Definitions

Definitions for economic incentives are remarkably absent in the literature, not only in terms of locating the incentive intervention within larger environmental contexts, but also with regard to the function of the incentive. That is, is the incentive to function as a goal state, as an external reinforcement of behaviors until such time as the individual's internal motivation is sufficient, as a reinforcement until habituation, or perhaps as reinforcement until some learning task is accomplished, or simply as a means of directing a person's attention to a neglected area. As a whole, the studies lack a clear and commonly shared conceptual map, or set of maps, for what an incentive is, its intended purpose, and how it is hypothesized to impact the consumer.

In general, research on the effects of incentive interventions on preventive care and health promotion appears to be driven by policy considerations. Policy guidelines developed by national organizations, expert panels, and governmental bodies at the national and state levels provide the goals which in turn determine the operational definitions of preventive care. While advancing understanding for specific health conditions and constituencies, this fact also has the potential to result in a fragmented research agenda that inhibits transferring the gains across varied preventive domains.

We note the imbalance of provider research into simple preventive care, leaving complex preventive care situations quite unexplored. We can only speculate at this time whether issues of data collection, i.e., cost and difficulty, or difficulty in defining a unit of health promotion care are the greater barriers to further research.

Our approach did not address broader concepts of economic incentives such as those implied in the shift from fee-for-service payment to capitation.

Key Question 2. Do Incentives Work?

Provider

There is little evidence available to support the idea that explicit provider financial incentives, particularly of the perhaps modest and artificial nature such as were evaluated in the studies, are effective. The literature is scarce. Further, from the studies that have been performed, it appears bonuses don't work as simply and easily as some may have assumed they would. It would seem we have been functioning under core beliefs regarding the appropriateness and efficacy of financial incentives that have only recently begun to be subjected to examination through either experimentation or well-designed quasi-experimental or observational studies.

While there was some evidence that increases for preventive care were greater for group practices than solo practices, there is not enough evidence to sort out the causes. The improvements could signal increased staff and office system resources available to group practices. As the evidence isn't clear regarding whether the incentives were paid directly to the physician or to the group, the question remains open. Note Debrock and Arnould found that financial incentives were more effective if directed at individual physicians.[111]

Even in its sparseness, some lessons can be gleaned from the literature. Perhaps most obviously, incentives need to be easily understood; simple, transparent, and have a clear connection between the incentive and the desired behavior. The complexity of the clinical

practice and differing reimbursement systems should not be minimized. As MCOs are not homogenous, market penetration of MCOs in a local market is a significant factor in provider behavior.[83] Physicians may use a heuristic approach and manage their practices as an amalgam of the various guidelines and procedures required by plans and other reimbursement sources along with their own professional opinion.

Another lesson is that the effects of incentives need to be understood within the larger context of the process of preventive care and health promotion. How far down the stream of preventive care did the effects go? An intervention can change a facilitating preventive care behavior, yet not reach the outcome that is of most importance. Findings of a lack of office procedures to follow up on abnormal findings from preventive screening is an illustration of the importance of this issue.[90] Grumbach, Osmond, Vranizan et al. found that over one-third of physicians who reported facing incentives could not specify the amount of their overall income that was involved in bonus payments.[112] In addition, attention should be given to the role of other reinforcers such as profiling and feedback.

According to the National Health Care Purchasing Institute monographs,[113, 114] the key factors for a successful implementation of explicit target economic incentives, as determined in an interview with a focus group comprised of physicians and plan administrators, included:

- The size of the financial incentive
- Peer and/or consumer knowledge of individual provider performance regarding the incentive target
- Recognition among the physicians of a need for change
- Support for the incentive program among medical leadership
- The practicing physician's knowledge and understanding of the performance incentives/sanctions
- Simplicity and directness of the incentive program
- Perceived and actual accuracy of the data on which the incentives are based. There is a lack of physician trust in data and data sources.

As a warning, it must be recognized that incentive models perceived as penalizing providers for patient behavior may inadvertently create incentives for providers to drop non-adherent patients.

Consumer

We may guardedly say that in the short run, for simple preventive care and distinct behavioral goals that are well defined, economic incentives are effective. There isn't sufficient evidence to say that economic incentives are effective for promoting the long-term lifestyle changes required for health promotion.

Funding bias may be contributing to our lack of information on the long-term effects of economic incentives. Research proposals to examine whether there is extinction of behaviors after the removal of economic incentives are not as exciting as testing a new intervention.

Perhaps most intriguing was the psychological impact of incentives. The Melnikow et al. study showed a positive effect for free taxi rides when only one of 34 vouchers was redeemed.[77] Marcus et al. showed similar findings with the incentive demonstrating a positive effect, yet only 33 percent of the patients used the bus passes provided, and 41.7 percent of those eligible redeemed the reduced clinic fee vouchers.[60, 61] It has been noted that participants tend to underestimate the role of external incentives on their behavior.[115] This may partly underlie reports that only a handful of participants were swayed by the lotteries or gifts.[65, 92, 93]

There are also alternative views to the cognitive behavioral models in the studies which may help explain the effect of explicit economic incentives on consumer behavior. These views focus on expectations of future reinforcements or rewards as motivators and people's attributions about why they engaged in certain behaviors in the past. Deci and Ryan view the study of motivation as an "exploration of the energization and direction of behavior" and consider intrinsic motivation to be at least as important a factor in explaining human behavior as drives and external or environmental controls.[116] They argue extrinsic motivators, such as economic incentives, actually inhibit intrinsic motivation, the spontaneous, internal experiences that accompany behavior. A person who is intrinsically motivated enjoys the rewards that are inherent in the activity and perform the activity for its own sake. This has the unintended consequence of reducing the likelihood of the desired behavior in the long run.

Curry, Wagner, & Grothaus attempted to address this question directly by testing a form of intrinsic motivation, represented by personalized feedback designed to improve self-efficacy and enhance a direct cognitive link between behavior and outcome, against an extrinsic motivation of gifts and lotteries for smoking cessation.[72] While the extrinsic incentive improved participation in the smoking cessation program, abstinence rates post-program were not significantly different from the control group. The intrinsic motivation group, however, showed abstinence rates double those of the control group at followup.

Inhibition of intrinsic motivation, if this view is correct, is particularly important to the complex preventive health concerns found in the lifestyle changes for health promotion. Any economic incentive that is a reward must be viewed by the consumer as temporary support toward a personal goal. To do otherwise would not only impose an economic cost on an already strained system, and a cost that would be difficult to justify from a purely cost-effectiveness stance, it also creates a psychic environment which does not promote the personal responsibility and autonomy of the consumer for his own health.

On the other hand, if extrinsic motivations do not dampen intrinsic motivations, we are unable to infer from the given literature the rate of decline of preventive behavior back to baseline levels or the length of the time gap between the extinction of the incented preventive care behavior and the increase of the intrinsic motivation to whatever is the threshold level that would sustain the preventive or health promoting behaviors.

Special Populations Concerns

Pediatric population. The nature of incentives for children's preventive services differs from that for adults.[117] Children's healthcare needs differ from adults. First, children are in a dependent relationship with adults who may not make choices based on the best interest of the

child. Incentives need to "actively encourage such access." Second, children's preventive services take place within a very dynamic context. Children are constantly developing and changing, and it is important to provide regular care and avoid pigeonholing into a specific disease category. Third, intertemporal relationships are even more relevant. A provider of children's preventive care will not reap benefits when a child reaches adulthood. Another provider will.

Vulnerable populations. It should be noted that the use of economic incentives, and the research regarding the incentives, is not without controversy. The ethical problem seen in public programs that threatened withholding public benefits as incentive to induce parents to immunize their children is the fact that the financial penalties were threatened only to people already at high risk for economic deprivation.[118] Even simply requiring people to return more frequently to government offices to collect public benefits imposes additional costs. Further, the evaluation research of these programs is often conducted without the oversight of a Human Research Protection Review Board. The ethical imperative in research efforts is to decrease, not potentially increase, the overall risk borne by individuals already at higher risk for deprivation and poor health.[118]

It is also not surprising that studies that directly tested the desirability of different incentive were focused on high-risk and vulnerable populations, where public health policy and ethical considerations of economic incentives are at the fore. In fact, the opportunity for a natural experiment was created out of the policy decision to change from cash to non-cash incentives in AIDS/HIV prevention outreach programs, due to argument over the ethics of cash incentives to active drug users.[52]

There is also concern that incentives may further fracture care for vulnerable populations. LeBaron noted in interview followups that low SES mothers did not wish to take their children to mobile clinics for free immunizations because they preferred to see their regular providers for shots.[119] Ironically, the providers in the Fairbrother studies, who served a similar vulnerable population, didn't think of themselves as well-care providers, but rather sick-child providers.[43, 44] This is a considerable disconnect between the stated needs of the parent and the perceptions of the providers.

Comparison of Provider and Consumer Incentive Research

Research shows a tendency to favor different rubrics for providers and consumers. Consumer research shows much more attention to psychological and behavioral theories. Provider research approaches research from an economics/business perspective. This is perhaps to be expected, given the roles consumers or providers play, and unfortunate in that both roles are played by humans who share in common many social, psychological, and philosophical qualities.

Both provider and consumer incentives evidenced "gaming the system," that is, adjusting behavior to maximize income production without necessarily increasing the desired behavior. In physicians there was an adjustment in documentation and reimbursement behaviors.[43, 44] In turn, consumers appeared to have adjusted where, rather than how much, they exercised.[97] Further, Breen, Feuer, Depuy et al. found little increase in reported mammography rates but an increase in reporting using public payment sources for the mammograms after Medicare extended its mammography benefit to reimburse for breast cancer screening mammograms.[120]

It may seem reasonable to speculate that target incentives for preventive care might be generally welcomed by both providers and consumers as a structurally reinforced motivation for appropriate and quality care. There is evidence from the physician perspective that bonuses based on quality of care, including preventive measures, may promote job satisfaction among physicians.[112] Consumers may view bonuses for increasing a service, signaling the health of the consumer comes first, as inherently more trustworthy than financial incentives linked to physician resource use. Incentives of this kind lead to the Supreme Court case regarding the patient's right to sue HMOs for such cost containment efforts.[29, 121]

In summary, the findings that "artificial" explicit economic incentives do work, but modestly and in the short term, fit well with the growing call for multi-component system changes are often needed to for prevention and health promotion.[36, 122]

Key Question 3. Dose Response

The reviewed literature cannot answer whether there is a dose response for provider incentives. There does appear to be the possibility of a dose response for consumer incentives. What is perhaps most interesting for consumer incentives is the effectiveness of relatively modest-sized incentives. The threshold for the question "how much" appears low. However, the literature, at best, provides only a tantalizing prospect.

Key Question 4. Cost-Effectiveness

As noted earlier, only a minority of studies addressed cost-effectiveness at all, and most of those came at the question from the more limited perspective of finding a less expensive way to achieve a determined preventive target. None of the provider studies and only a few of the consumer studies under review in this report undertook to address the larger and ultimately more policy-relevant question of the cost per quality life years (QALYs) gained. For the latter question, the cost-effectiveness of an economic incentive ultimately depends on the cost-effectiveness of the underlying preventive service. To evaluate the value of a given financial incentive mechanism, it ultimately requires assessing the benefits of the additional preventive care (usually expressed in terms of QALYs gained) against the total cost of the implementation of the intervention. The first step in this analysis should be the determination of whether the preventive service is, without the extra cost of the financial incentive, cost-effective. As noted by Tengs, Adams, Pliskin et al.,[123] many preventive services are not cost-effective—in particular, many screening activities fall into this category. Many of the services targeted in this review did not fall within those identified elsewhere as being adequately cost-effective.[124]

The relative cost of achieving a preventive goal must consider whether the goal is equally achieved under different strategies and how large a gain was achieved. In some instances, different approaches may prove more effective with different populations or different preventive goals. For example, lower income populations may be more responsive to economic incentives than are wealthier people. Economic incentives appear to work best for more discrete preventive targets.

From the provider perspective, one potential factor not considered as an incentive in the literature is the benefit of free or reduced cost changes for new office/clinic procedure startup costs. Studies that implemented provider feedback or patient followup procedures often provided

such services prior to the intervention. Reduced startup costs such as this would allow a provider to reduce investment costs in systems that support preventive care.

An area that has received little attention in analyses of cost-effectiveness with regard to almost any shift in medical practice is the law of unforeseen consequences. Presumably, if a physician is incented to change his/her practice to spend more time on preventive activities, s/he will spend less time on other activities. This shift in emphasis could have health consequences, which are rarely explored. Fontanesi, DeGuire, Holcomb et al. provide one illustration of this concern.[125] A question was how physicians were to reasonably "comply with the 136 pediatric preventive quality indicators suggested by the 1997 RAND recommendations, the 25 well-child preventive "interventions" recommended by the US Preventive Services Task Force; the 22 requirements for well-child visits in Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) visits funded by the Health Care Financing Administration (HCFA); the National Committee for Quality Assurance (NCQA) pediatric quality measures; and the AAP's recommendations for anticipatory guidance in place at the time of the study." The study addressed this issue of tradeoff between services using a time and motion analysis of pediatric well-child visits that did and did not include immunizations in a patient population with unmet primary care needs. The study found no significant difference in total clinic duration or direct patient-provider duration between visits during which patients were immunized and visits during which patients were not immunized, yet charting and updating patient immunization cards alone required over three minutes in time. The investigators suggested that the "price" of immunization delivery in terms of record gathering, review, writing orders, administering the vaccine, and providing parent information is an opportunity cost that comes at the expense of other health care activities.

The pressing policy question is ultimately whether economic incentives are the most cost-effective strategy to promote the delivery of preventive care. If policy makers or providers have made the commitment to invest in more preventive care, specific studies are needed that directly compare the effectiveness (and cost-effectiveness) of economic incentives against other strategies such as information systems, registries, or better information or advertising. Because the infrastructure costs of these approaches are quite different, the cost-effectiveness is likely to vary substantially. These studies may prove to vary with the nature of clientele and the preventive goal.

Assessing the relative cost-effectiveness of interventions to improve provider and consumer participation would pit economic incentives against infrastructure changes. The outcome of the comparison will depend on the time frame. In the short run, economic incentives are likely to prove less expensive, but there is scant evidence that the behavior will sustain once the incentives are withdrawn. Infrastructure changes, by contrast, are more expensive to implement, but once established they should continue to produce their effect.

It is easy to envision infrastructure changes for providers. They might be variations of information systems, such as tickler files or special tags for persons at risk of needing the service; they could even involve systematic searches of the patient data files to develop alert notices. Infrastructure changes for consumers are harder to consider. Most would seem to revolve around some form of direct to consumer advertising, either broadly targeted through the media or by specific target such as educational materials for persons identified as at risk.

Other Perspectives

The Medicare/Medicaid demonstrations illustrate the complexity of understanding the effects of price changes on both the providers who supply the service and the consumer who "purchases" the service. The demonstration projects have provided useful information on the impact of increased benefit coverage and other population or clinic-based efforts to improve preventive services. However, a considerable amount remains to be learned.

General Discussion

Physicians make decisions in an attempt to influence and control patient states. Patients, in turn, make decisions based on their personal values and life context, plus the actions of physicians and other aspects of the heath care environment they experience. Patient and provider decisions interact in the management of the patient's health/disease state over time.

Good decisions typically have high outcome benefits relative to the costs of achieving them. Some decisions are judged to be good because they are capable of achieving positive outcomes. Other decisions are driven by an attempt to avoid negative outcomes. Patient decisions reflect a process of self-regulation in which outcomes are pursued over time in the face of challenges, temptations, and frustrations associated with the experience of their heath-related condition and the health care system that is mobilized to address it.[126]

Patients' capacity to make decisions is enhanced when 1) patients are given specific information regarding their progress in achieving established health outcomes and 2) this information is discussed with their health care providers.[127] Improved patient decision-making impacts patient care by modifying the process physicians use to make decisions. Provider decisions regarding appropriate treatment goals, expectations of patient compliance, as well as actions to ensure progress toward targeted states are altered by informed interaction with knowledgeable patients.

The success of patient decision-making efforts depends on feedback from the consequences of previous actions. Despite having the necessary information, patients frequently fail to act so as to achieve their goals. When individuals fail to act in their own best interests they are often considered to lack the necessary personal agency or self-efficacy.[128] Examples of health behaviors related to self-efficacy recently reviewed include exercise, nutrition, weight control, dental health behavior, sexual risk-taking behavior, and addictive behaviors.[129]

One means of increasing belief in personal agency is to provide information designed to improve the ability to construct, regulate, and evaluate potential courses of action. In the environment of health care, such information can include knowledge of one's health state plus the nature of the health care system and its associated treatment regimens. Especially important is knowledge that enhances patients' capacity to participate in the process of setting goals and choosing means of achieving them.[130]

For feedback to be effective in altering behavior, it needs to be tailored to the conditions of the task on which performance is assessed.[131] Simple outcome feedback is often only weakly related to improvements in performance for single judgments as well more complex problem solving and decision-making tasks.[132, 133]

In medicine, feedback has been shown to be most effective in bringing about change in physician behaviors when it is keyed to specific components in diagnostic and patient

management tasks.[134-136] More recent work in a variety of domains has shown that strategies based on customized/personalized information have widespread applicability (and success) in modifying individual decision-making and choice behavior.[137, 138]

Incentives affect behavior within a framework of patient and provider decisions. In one view, incentives may be thought of as forms of feedback that increase (or decrease) the likelihood of some specific behavior. Incentives in this sense are labeled as either positive or negative depending on the direction of change in behavior they produce.

Incentives are also associated with terms such as reward and punishment and are used by researchers to explain how attention is directed to features of the environment that comprise what is to be learned as well as the strength of the change in behavior they produce. Incentives are also treated as goal objects for decision making, in which case they are associated with the idea of motivation and treated as drivers of behavior.

An important aspect of research on incentives is that they are often linked to the variability of behavior. Thus when the events comprising an incentive are perceived as positive, the variability of an agent's behavior typically decreases as it progresses toward some goal state. However, when an event is perceived as punishment, the variability of responses typically increases, making goal attainment more difficult.

It is often unclear why the behavior of interest (the target of intervention) was not originally demonstrated by the individuals in question. Because patients often adapt to the conditions of the health states they experience, the problem confronting the researcher is to move individuals away from conditions and behaviors with which they are comfortable.[139] Without understanding the basis for these adaptations, efforts to accomplish behavioral change (whether on the part of physicians or patients) can be fraught with unanticipated difficulties.[140] Under these conditions it may not be surprising that 1) efforts to bring about change frequently meet with failure and 2) the behavioral changes that do occur, are seldom sustained over time.

Practical Implications

Concerns over the quality of care have prompted increasing attention to how to change providers' behaviors. Educational strategies such as guidelines and protocols alone have not proven particularly successful. Economic incentives seem a more direct approach, but this review raises several cautionary flags. The desired behaviors must be very specific and easy to track. Complex rules for success are less effective. The incentive must be of sufficient size to make it worthwhile for the provider to change practice behaviors. In general, offering a chance to win a large prize may be less attractive than the promise of a modest but substantial prize. Moreover, relying on incentives may prove dangerous because it may foster dependency on them. If the provider behaviors are not ingrained, they may disappear when the incentives end or when a new topic is selected to be incentivized.

Those planning to use incentives should be very clear about their goals. Is this intended as a temporary change in behavior or an inducement to make a permanent change? Practitioners feel under great stress and harried by many competing demands for their time. Incentives may buy a temporary priority from the provider, but sustained change in the operation of the practice will require an investment of energy to address the underlying mechanisms that can reinforce the desired behaviors. One might hope that a brief experience in delivering care in a new way, fostered by financial incentives, might lead to permanent changes in the modus operandi of the practice, but there is little empirical evidence to support this hope. Some incentives may be

permanent, a direct reward to doing a defined task. Under those conditions, the necessary shifts in practice behavior may be incorporated, but it may be possible to catalyze this transition by studying the logistics of the practice. In many cases, the critical actions rely on simple changes to prompt actions and delegation of authority to support staff. In those cases, the resources earmarked for incentives may be put to more efficient use elsewhere.

The enthusiasm for consumer incentives may be driven by some of the same concerns. Pressures to improve preventive performance may motivate some health care organizations to induce their enrollees to become more active in their own care and health promotion activities. In some cases, it may be possible to simultaneously incent both consumers and providers towards synergistic ends. Consumers seem to be more susceptible to incentives, even modest ones. At least some patients may appreciate the attention that incentive programs represent. However, there is always a temptation to pick the low hanging fruit. The recalcitrant consumers may not be as easily swayed by incentives. The energy required to reach and persuade non-adherent patients may still be high.

Limitations

Although our literature search was thorough and rigorous, it cannot be described as wholly systematic. Our searches started with well-defined search strategies. However, the literature is sparse, crossing many areas, not necessarily tagged by the MeSH headings, and key word searches using “incent$” is not as discriminatory as we would prefer. As noted in Chapter 2, we asked many consultants and colleagues to review the reference list and note if it was missing important studies. No further references were generated through this effort.

As was noted earlier, the heterogeneity of the literature with regard to variety of populations, settings, the nature of the interventions, and outcome measures precluded the more common approaches to aggregating the data such as meta-analysis or even simple comparisons of odds ratios. The research studies were often far more complex or multi-faceted than typical RCTs or observational studies.

Future Research

Overall

As this review highlights, the current evidence is extremely limited in its ability to inform future health care efforts. The limited success of modest and “artificial” incentives to induce long-term change supports the current push for multi-component interventions based on the full environmental or social ecological perspectives such as the McKinley model. There is a need for further studies.

The current work on economic incentives is scattered across topics and approaches. Other work suggests that simple preventive approaches are more cost-effective than complex ones, and economic incentives seem to work best in simple cases. On the other hand, such incentives have not been compared with other strategies, especially in terms of cost-effectiveness. For providers, these alternative approaches usually involve some sort of infrastructure change, such as creating registries or other information systems. Because the goal of such interventions is to create

sustained, rather than simply transient, change, perhaps the most desirable research should employ economic incentives to encourage providers to adopt these new systems; but the research should be continued (if the initial results are promising) long enough to assess whether the innovations persist after the incentives are removed.

Future researchers need to be clear about the causal chain of prevention or health promotion being investigated and the purpose of the incentive intervention being considered. More careful definitions of the process of care for a given preventive concern, careful matching of the nature of the economic incentive in terms of type, size, duration, frequency, and the use of other components such as education, social support or competition, are all needed. The black box approach, which leaves the economic and behavioral assumptions underlying the research project unexamined, should be replaced with more well-developed conceptual models.

The large literatures in the social and behavioral sciences on incentives should be brought to bear. Most of the studies reviewed here have not evidenced use of this literature. The research reviewed here generally takes an atheoretical approach to studying incentives. However without a theoretical underpinning it is difficult to understand exactly why the incentive worked or didn't work. Perhaps, more importantly, without a theoretical underpinning the right questions do not get asked.

The first question a study should ask is "What problem is the incentive trying to solve and how is the incentive going to solve this problem?" It is not inherently interesting to ask: "Can I change behavior using incentives?" The answer is certainly "yes" if the incentive is great enough. Rather, a better question is, "Given that a preventive service is underprovided, what is the best incentive mechanism to bring the provision of that service up to its optimal level?" A second important question is then "Given this new incentive is in place, are there other, unintended consequences of this incentive?" Of course, anticipating unintended consequences requires a theoretical framework.

On the surface, it would seem wise to approach economic incentive intervention as mimicking a dose-response curve. That is, start with a dose that should be "therapeutic" and test for the possibility of lower doses. However, as the review highlights with the differential effects of modest incentives for providers and consumers, different levels of economic incentives may trigger different modes of decision-making processes. What are the trigger points which determine whether psychological models or economic models of decision-making are used? When does a person view an economic incentive as input into a cost/benefit equation, a reward as goal object, a removal of a barrier? While not mutually exclusive, each model suggests different sets of hypotheses.

Another important question is how economic incentives compare to and complement other strategies to improve preventive care, particularly with regard to long-term effects. There may be joint effects of intervention components, including incentives, within multi-component research. Do explicit incentives improve, impede, or are they unnecessary when a larger ecological effort is made, especially for consumers?

Attention should be given to measuring the direct impact of the incentive itself. Health outcomes may be too high of a measurement standard for incentives that are designed to address only one behavior pattern within a continuum of preventive care. Many other factors, both controllable and uncontrollable, may come to bear on the achievement of a health outcome even when the consumer or provider adjusted behavior in the manner exactly desired for the incentive.

Natural settings for social science research are important. Randomized controlled trials lose the primacy of gold standard with behavioral change research because many factors remain

uncontrollable in the normal busyness of every day life. Adaptation to the environment by the provider or consumer may be either good or bad, but once a person is adapted, it is difficult to get him/her to move. Randomized controlled trials should come only after we can answer why the intervention is needed from this perspective. The difference between controlled trials and "real world" efficacy was demonstrated in the series of studies on the effectiveness of incentives and intensive followup for women with abnormal pap smears. Even though both controlled trials showed positive effects of the economic incentives,[60, 61] a planned evaluation of the same interventions using a quasi-experimental design[100] was unable to replicate the positive effect. The potential cost-effectiveness of incentives would be erased if positive results of an incentive are fragile enough they only survive in controlled settings.

Mixed-method research projects would also seem an appropriate approach for understanding the effects of incentives within a health or health care setting. Qualitative components, particularly conducted retrospectively with a purposive sampling of participants that captures the range of outcome responses, would do much to advance our understanding and improve future research design. We know very little of the meaning and value of the incentives to the populations they are intended for or the attitudes and beliefs they hold. For example, Moran provided anecdotal evidence that some patients found a lottery inappropriate within health care.[63] The bias this belief may create on the findings could be mixed; a feeling of indignation could as easily prompt a person to not receive a flu shot from the clinic in protest as receive the shot while not participating in the lottery.

Personality research and other ways to understand who the people are may provide a step toward understanding what the "problem" is and how to address it. A phenomenological orientation, that it is the world of the perceiver that determines what he will do and not the physical environment, except as the physical environment comes to be represented in the mind of the behaving individual, also requires an understanding of how people differ from one another in how the events come to be represented in the mind. Certainly Prochaska & DiClementi's stages of change meta-theory provides one ready-made conceptual framework with potential usefulness that has not been fully explored.[140]

Another question that remains unresolved is "What is the right metric for determining if preventive care is truly under-provided?" Possible perspectives are cost-effectiveness, effectiveness, consumer welfare, HMO welfare, or the opportunity cost of other types of care.

Providers. Physicians work in organizations and organizations matter. The dynamics of the organization affect the rules under which physicians work and they affect their financial incentives. Economic incentives do not live in a vacuum. They are often coupled with other incentives. Physicians can be paid a salary, which is viewed as a low-powered incentive, but face the prospect of being fired if they under perform. Physicians face many competing demands on their time and are under the influence of many different incentives (economic and otherwise). It may be difficult for outside actors (government, health plans) to affect the direct incentives of the physician.

Measurement also matters. You can base incentives only on things that you can measure. That means if incentives are paid on the basis of measurable performance there is the potential for slackening of effort in other unmeasurable but potentially important domains of care. The unintended consequences of an economic incentive may wipe out what appeared to be a cost-effective practice.

Paying incentives on health outcome measures for providers becomes a default choice when we cannot measure the process. We are often not able to determine with any sense of confidence

what a unit of preventive care services is, such as providing health promotion counseling during both routine checks and provider visits for acute care. Furthermore, success in prevention is generally a non-event. It is much easier to count something that does occur than estimate the number of events that might have occurred but did not.

We need to tease out the differential effects of two major components of economic incentives for physicians: motivation and information content. Physicians often claim they are in a permanent state of stress. Given this stress, they can become resistant to change and incentives can shake up the patterns. When something changes, an incentive can redirect the physician's attention to the new "agenda concern," often switching one behavior for another in the process. Using an incentive as an "attentional" device is most helpful when we understand what the initial barrier to change is: no desire to change; not enough knowledge; not enough time; overcoming heuristics that are a hindrance.

Future researchers should keep in mind scaleability matters. For an incentive system to be put to use widely, it has to be scaleable. There has to be a clean relationship between the size of the incentives and the behavior that is being encouraged. It must be large enough to make the task seem worthwhile. We know little about how large such incentives need to be.

Consumers. Questions such as who the people are and what motivates their actions are of great importance when designing an economic incentive. Personality research, with its focus on individual differences, offers a potentially useful approach to these questions. For example, some participants in a team competition for cash prizes reported disliking the inherent peer pressure.[68] Lotteries engendered feelings of unfairness and created tension among participants in another study.[91] Competition and the openness to experiencing gambling uncertainty have differential effects for different personality types.[116]

Cultural difference is another potential subgroup categorization scheme. Smith et al. found African Americans and Hispanics responded differently to the different economic incentives of infant formula versus a gift of jewelry. They suggested there may be cultural differences in the meaning of gifts.[55]

A major concern with economic incentives is the potential for the coercive effect of incentives on patient autonomy. No study has actually investigated this concern. As we saw, several studies cited interview or anecdotal evidence that the incentives themselves were not a factor in their decision to seek care. This may point to less concern regarding coercive effects for the likely value level of consumer incentives. On the other hand, the finding of positive effects for an incentive intervention, even when the incentive was not redeemed in several studies, could be interpreted as a psychological vulnerability to manipulation of social obligation through the social desirability response. In addition, Malotte et al. suggested paying people for preventive care behaviors may create an expectation for future payments that may result in even lower participation rates should the expectation be thwarted.[54] Smith suggested many of the WIC population may be becoming desensitized to "gifts" from public programs competing for the attention of the beneficiary.[55]

The benefits from competitions, or tournaments, as an aspect of worksite economic incentive programs may be open to debate as well. Deci and Ryan state there are gender differences in responses to competition, and that competition against another person is less effective for women.[116] Of the studies that included tournament-style competitions, 53 percent to 85 percent of the participants were male.

A potentially fruitful area is the possibility for cross-fertilization between health promotion activities and the extensive research conducted around disease management programs. Patient self-care for disease management requires sustained behaviors, also often without apparent immediate "gain" or improvement, and the similarities and differences in patient motivation and patient-provider relationships may be very informative.[141]

Doctor/Patient Interactions. The patient-provider relationship itself is also important. There is extensive literature in this area that would inform future research on the effects on incentives and how they might impact preventive services and the consumer's acceptance of the provider as a collaborator in health promotion activities. In turn, there may be the potential for differences in the provider's behavior when the provider is aware of lower costs to the patients. Future research should also investigate possible joint effects of coordinated incentives simultaneously applied to both providers and consumers for a particular preventive concern.

Conclusion

If we accept the value of preventive efforts, we must recognize the inadequacies of existing systems to encourage such practices. The literature reviewed here suggests that financial incentives have been used, in an uncoordinated fashion, at three levels in an attempt to increase prevention behaviors: 1) as motivators in the larger economic context at the health plan level, where savings associated with prevention is believed to be efficient, or where market interventions have instituted preventive care performance measures as quality indicators; 2) as provider incentives to induce discrete behavioral changes; and 3) as consumer incentives to remove barriers, improve health education, and reward healthy behavior. System-level economic incentives can help to change the larger health care environment, in turn prompting the individual providers and consumers to adapt to a new environment. Financial incentives, if they are big enough, can influence discrete behavior at the individual level in the short run. The benefits of such incentives may be magnified if they are coordinated with each other and with system level incentives, although this potential synergy remains untested. Whereas provider incentives do work, they may not provide a sustained behavior change. There is always a danger that they will be displaced by a new set targeted at a new topic. So questions remain regarding whether investing in office system changes, including information technology, which support long-term changes in practice, is a better choice than relying on incentives. More importantly, since various observers have noted that the business case for quality improvement is still weak, we must ask who is prepared to bear the cost of either strategy.