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**GUIDANCE DOCUMENT ON PREPARING A
SOLICITATION FOR SECTION 4108 OF THE
PATIENT PROTECTION AND
AFFORDABILITY ACT:
INCENTIVES FOR PREVENTION OF
CHRONIC DISEASES IN MEDICAID**

Final Report

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Table of Contents

I. Introduction	1
II. Literature Review.....	1
III. Technical Expert Panels (TEPs)	2
IV. Conclusion/Summary	3
A. Program Design.....	3
B. Program Implementation.....	5
C. Program Evaluation.....	8
Appendix A: Reference List & Abstracts.....	10



I. Introduction

Section 4108 (Incentives for Prevention of Chronic Diseases in Medicaid) of the 2010 Patient Protection and Affordable Care Act (PPACA) requires that the Secretary of the Department of Health and Human Services (DHHS) provide grants to States in order to implement initiatives that involve providing incentives to Medicaid beneficiaries for participating in health improvement programs and demonstrating health improvements through participation in such programs.

In order to obtain information to be used to guide States that may apply to CMS for these grants, CMS contracted with Thomson Reuters to perform a literature review and convene thought leadership roundtable discussions (i.e., Technical Expert Panels (TEPs)) for the purpose of providing expert input regarding CMS's Section 4108 solicitation.

This document represents Thomson Reuters Final Report for this planning project.

II. Literature Review

Thomson Reuters performed a scan of the literature to identify relevant articles and best practices pertaining to health improvement incentive programs. The literature review was used to help identify experts for the TEP meetings and as a reference to inform discussion during the TEP meetings. The identified literature may also be useful to CMS as it designs the parameters of solicitation, and may be posted by CMS to help inform States in their solicitation response.

We identified articles for the literature review through contact with experts in the area of prevention and health promotion including those with specific experience in incentive-based programs. Staff from the CDC Community Guide to Preventive Services was especially helpful in uncovering key articles relevant to this project. We identified additional articles from references found in reviewed studies as well as through internet searches.

Our search focused on three major types of literature pertinent to CMS's proposed Section 4108 Demonstration:

- 1) Medicaid Incentive Programs and Reviews (14 articles)
- 2) Thought Papers and Reviews (30 articles)
- 3) Individual Studies (6 articles)

Appendix A contains a list of 50 relevant articles that were identified. This list includes the complete reference for each article, the Web link to obtain the article, and a brief summary or abstract of the article.



III. Technical Expert Panels (TEPs)

Thomson Reuters planned and convened a series of technical expert panel (TEP) meetings to obtain expert input regarding the design, implementation, and evaluation of Section 4108.

We started by developing a list of individuals with expertise in areas pertinent to Section 4108. In particular, we identified experts in three areas:

- 1) Representatives from State Medicaid programs that have implemented or attempted to implement incentive-based programs with Medicaid recipients,
- 2) Academic and industry representatives with specific expertise with incentive-based health improvement programs and the use of incentives to motivate behavior change in individuals, and
- 3) Representatives from offices within DHHS who have specialized interest and experience that could inform the Medicaid incentives program.

Thomson Reuters identified the potential TEP members from a variety of sources, in particular:

- 1) The network of health promotion experts known by the Thomson Reuters Principal Investigator, Ron Goetzel, a leading expert in the area of health improvement and wellness programs,
- 2) Attendees at the AARP Innovation Roundtable, Using Financial Incentives to Promote Healthy Behaviors, held on April 29, 2010,
- 3) Authors of key articles identified while conducting the literature review for this project, and
- 4) CMS technical staff familiar with health promotion activities already underway at some State Medicaid agencies.

The final list of proposed experts was reviewed with the CMS Task Leader (Ed Hutton). Thomson Reuters contacted all experts via e-mail (separate e-mails were sent to State Medicaid Directors, academic/consultant representatives, and DHHS staff) to explain the purpose of the TEP meetings and request their participation. Potential TEP participants were informed that this was a voluntary effort and no compensation was available for their participation. Experts interested in participating were asked to provide their availability for a teleconference from among nine possible 2-hour time slots during the week of November 29.

A total of eight separate TEP meetings (teleconferences) were held, two meetings with DHHS staff only during the week of November 15 and six meetings with mixed representatives during the week of November 29. Each TEP meeting was facilitated by the Thomson Reuters Principal Investigator, Ron Goetzel. The following questions were provided to TEP participants and used as the focus of discussion during each meeting:



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- Overall, what is your reaction to this legislation and how would you approach this Demonstration?
 - What is known about successful incentive programs?
 - What is known about unsuccessful incentive programs?
 - What are the unique challenges/opportunities relevant to a Medicaid population?
 - How would you approach measurement/evaluation/documentation of behavior change/risk reduction/cost savings?
 - Returning to the first question, what advice would you give CMS on how to best structure this Demonstration?

IV. Conclusion/Summary

Below, we offer guidance to CMS on the preparation of a solicitation relevant to Section 4108. We organize our summary conclusions into three main issue categories: program design, implementation, and evaluation.

A. Program Design

- CMS needs to be clear about what is, or is not, included in the definition of an incentive. A broad definition of incentive is preferred. Incentives should not just mean giving money to Medicaid beneficiaries for certain behaviors or accomplishments. Instead, incentives may include:
 - Waiving premiums, deductibles, coinsurance payments (where applicable, appropriate, and legal under Federal and State statutes) for participation in health improvement programs/activities or achieving certain positive health outcomes;
 - Providing “points” that can be used as currency for products such as over the counter medications sold at pharmacies, as is the case in the Florida model (e.g., a “frequent flyer” system that rewards beneficiaries by translating their actions into something of value to them);
 - Reimbursement for community based programs focused on the behaviors of interest, (e.g., full or partial payment for physical activity classes offered at the local YMCA, payment for completing a certified smoking cessation program, financial support for joining Weight Watchers);
 - Transportation to and from medical appointments; or
 - Gasoline debit cards or phone cards
- Incentives should be offered to beneficiaries rather than providers, although it is critical to include providers in program implementation (see below).
- Although incentives for outcomes likely yield the best results, these are difficult to administer and introduce several legal, ethical, and practical issues. For example, it is difficult and expensive to document behavior change and risk reduction. Also, some people may have more difficulty achieving health goals (e.g., healthy weight) because of limited access to healthy foods, residence in unsafe neighborhood, life issues that



take priority over behavior change, and mental health and substance abuse problems that limit adoption of positive health habits.

- It is advised that States consider rewarding beneficiaries on a tiered basis for participation in programs (e.g., engaging in counseling aimed at teaching individuals how to quit smoking), attempts at behavior change (e.g., completing a smoking cessation program), actual behavior change (e.g., not smoking one week after completing the program), and finally achievement of health goals (e.g., remaining “quit” after six months). Other examples of a tiered incentive structure include rewarding appointments with providers to discuss health improvement goals, making attempts to improve behavior (e.g., becoming more physically active, eating a more nutritious diet), and finally attaining a behavior change goal (e.g., losing weight, lowering cholesterol levels). A tiered incentive approach to participation is important to sustaining behavior change over the long-term, especially in the areas of physical activity, nutrition, and smoking cessation.
- All plan designs need to consider the ethical, legal, and practical constraints associated with providing financial incentives for behavior change and outcomes since these are difficult to attain even in non-Medicaid populations. Establishing an independent oversight committee (similar to the one Florida has in place called the Enhanced Benefits Panel) that functions as an independent reviewer and auditor of the program is recommended. That committee can act as a final arbiter of the incentive program design and propose ways to fine-tune the program over time.
- A penalty or stick approach to incentives is counterproductive. Penalizing beneficiaries for not participating in health improvement programs or achieving certain health outcomes will instill resentment and likely negatively impact the most vulnerable beneficiary populations. Thus, States should avoid incentive programs where beneficiaries lose certain benefits, are charged more if they do not participate in a program, or are unsuccessful in achieving behavior/biometric changes. The West Virginia program was criticized by many because it reduced benefits for beneficiaries not participating in the program. In general, individuals respond better to a “rewards” program than one perceived to be punitive.
- Avoid situations where someone at high risk earns a reward for moving into a lower risk category but then loses the reward once he or she becomes lower risk. For example, someone who is considered obese may earn a reward for engaging in physical activity and nutrition programs to lose weight, but once the individual is no longer in the obese category, he or she may no longer be eligible for the reward. Individuals should be rewarded for being at low risk as well as making behavior changes and participating in activities that will move them into lower risk.
- An effective Demonstration needs to address the environment in which the beneficiary is located. Thus, a responsive proposal will discuss the socio-ecological “surround” for the Demonstration, including community support structures, policies,



and programs encouraging healthy lifestyles embedded in the community where the Demonstration is implemented.

- States should consider leveraging existing efforts underway to coordinate care and improve outcomes for this Demonstration. This may involve coordinating activities with Patient Centered Medical Homes, Accountable Care Organizations, Community Health Worker initiatives, Federally Qualified Health Centers, or other similar programs. However, it is important to separate out the effects of the incentive program independent of other quality or care improvement initiatives. Thus, when designing the Demonstration, States need to explain how they would parse out the effects of the incentive program from other interventions already in place. Best of all, the program would establish the incremental benefits of combining an incentive program with other existing care and health management interventions aimed at improving care quality and efficiency.
- It is important to emphasize the scalability and sustainability of the program after the Demonstration is completed. States describing how their programs will be scaled and sustained following the Demonstration should receive higher scores.
- When designing health improvement programs that are embedded within the incentive framework, States need to use evidence based programs with proven results. For example, there is ample evidence that self-management programs, such as those developed by Kate Lorig at Stanford University, and made available through the National Council on Aging, are effective at improving health behaviors and reducing health risks. Similarly, motivational interviewing has been shown to be far more effective at eliciting behavior change than traditional counseling. These techniques need to be integrated into any behavior change program being offered to beneficiaries. Other examples of evidence-based programs are Enhanced Fitness, Fit and Strong, Matter of Balance, and Walk with Ease.
- States should consider targeting the incentive program at relatively healthy (well) populations as well as those with multiple chronic conditions. The rationale for targeting well populations is that they may have more resources available to maintain their health and the intent is to keep them from becoming more ill – i.e., keep the healthy, healthy. Beneficiaries with many health problems, on the other hand, may have many co-morbidities that confound their treatment and ability to engage in health improvement programs outside of regular medical care.
- States need to consider focusing the incentive program toward populations not being targeted by other Demonstration projects, e.g., children, high-risk pregnant women.

B. Program Implementation

- Healthcare providers (physicians and allied health professionals) should be actively engaged in the Demonstration to encourage participation in the program, offer



counseling and support to those wishing to adopt healthy lifestyles, and connect individuals to agencies and services in the community with experience and expertise in behavior change and risk reduction. Further, providers should ultimately be accountable for certifying participation in the program and documenting behavior/biometric change, which are critical elements of the program. Using established Medicaid providers to monitor/certify participation/outcomes avoids fraud and abuse for this program.

- It is not advisable to give providers additional financial incentives for their involvement in this Demonstration since the amounts would likely be too small to engage them meaningfully. However, to involve providers, alternative incentive mechanisms might be considered. These may include reimbursement for wellness and health coaching visits provided by physicians or other professional staff such as health educators, social workers, nutritionists, etc.; providing feedback reports on their patients' participation in programs and health improvement progress (comparing the provider's practice to norms or best practices, and showing progress over time); or exempting participating providers from certain low value but burdensome reporting or administrative requirements.
- To monitor program participation and health measures, it is important to leverage existing reporting systems (e.g., HEDIS measures, CPT codes relevant to health promotion, Medicaid State Core Quality Measures, or other critical measures indicators) already in place. This is preferred to imposing new or additional reporting requirements for medical practitioners.
- On the other hand, States may consider offering incentives to providers who administer health risk assessments (HRAs) to their Medicaid beneficiaries for the purpose of uncovering behavioral health risks, triaging individuals into risk reduction programs, and monitoring improvements in health habits. As part of the incentive program, beneficiaries would be offered rewards and/or credits for completing the HRA, and then following through on the report's recommendations. For example, a beneficiary might earn points for completing the form, engaging in coaching/counseling sessions, and achieving certain health goals, which are self-reported and then certified by the provider.
- Incentives offered to beneficiaries should be "reasonable" – not too high to invite fraud and abuse and not too low to be irrelevant or unnoticed by beneficiaries. The Florida model which offers up to \$125 a year in pharmacy store credits appears to be a reasonable ceiling amount for an incentive program.
- Lotteries may be a way of increasing participation and engagement. Low wage earners respond positively to lottery systems because of the high potential reward that lotteries promise. To maximize participation, holding frequent lotteries (e.g., every week) may be a way of keeping the program relevant and "top of mind" for beneficiaries.



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- To further the above point, immediacy of reward is important. If participants realize quick returns from their actions, they are more likely to continue those behaviors. Thus, weekly or monthly rewards work better than annual ones. In Idaho, monthly premiums were waived for Medicaid beneficiaries who participated in an incentive program that rewarded bringing children for wellness visits and immunizations. The approach of offering medical benefits for “free” or at a reduced monthly premium is highly regarded by beneficiaries and easy to understand.
 - Simplicity of an incentive program is critical. It needs to be simple in every respect – enrollment, participation, and “cashing in” the rewards. As simple as the program may appear, it still requires excellent communication and support (high touch) to engage beneficiaries. This can take several forms including training providers on the basic structure of the program and their role in it, providing on-site staff (such as community health workers) to help beneficiaries enroll in the program, offering toll-free support lines, making information available on the web, and preparing straightforward and literacy appropriate program brochures. In short, education, messaging, simplicity, and branding are key to program success.
 - Incentives need to be coupled with effective engagement strategies. For example, providing a financial incentive to quit smoking or lose weight needs to be supported by an effective, evidence-based smoking cessation or weight loss programs. As such, incentives by themselves do not constitute an intervention program. Rather, they need to be part of a larger program that contains these four key components: 1) increased awareness about health issues, 2) motivation to change (including effective use of incentive structures), 3) skill building and support tools, and 4) providing opportunities for healthy lifestyles, which include providing a supportive community environment and available resources to support risk reduction.
 - States need to devote considerable time and effort needed to set up this Demonstration so that it is carefully planned, tailored to the specific needs of beneficiaries and their community, achieve buy-in from key stakeholders, and vetted by program planners as sound and workable. A year for setup and formative research is recommended in order to win support from community organizations, providers, and other key stakeholders.



C. Program Evaluation

- To test whether an incentive program applied to a Medicaid population succeeds in achieving its stated outcomes, a sound evaluation design, using experimental or quasi-experimental methods, is advocated. It is unlikely that any State can institute a true randomized controlled trial (RCT); however, alternative models that would apply rigorous evaluation methods may be workable. For example, within a State, some practitioners in a healthcare system, who may be co-located with Medicaid staff (as is the case in Florida) might be randomly assigned to treatment and control conditions. Alternatively, populations from different counties within a State may introduce the program on a pilot basis, whereas other counties would not and act as controls. Using statistical methods such as propensity score matching/weighting or coarsened exact matching to control for selection bias, Medicaid beneficiaries at pilot counties would be matched to comparison group beneficiaries at control counties at baseline and the two matched cohorts would be followed over the course of the demonstration. Other methods developed to control for selection bias should also be considered in developing a robust evaluation design.
- The success of these programs should involve measuring key structure, process, and individual-level outcome measures. Structural measures would include such items as how many people participate, how many earn credits, and how many spend their credits. Process measures may involve overall satisfaction with the program on the part of practitioners and beneficiaries. Outcomes may include tracking the number of wellness or preventive care visits to providers, improvements in biometric measures as measured by laboratory results, and reductions in health care utilization and costs. It is important to track individual-level data related to program participation, health improvement, and utilization/cost of healthcare services.
- Proposals submitted in response to the solicitation should be scored based upon the adequacy of the State's evaluation design, with higher scores given to experimental or quasi-experimental designs that are large enough to detect differences between treatment and control groups on structure, process, and outcome measures.
- It would be very useful to identify standard measures across Demonstrations, and operational definitions for these measures. Standardized metrics (measurement definitions, tools, and data collection systems) should be decided upon by participating States early on in the Demonstration.
- States need to address the fluidity of the Medicaid population and the difficulty of tracking cohorts of patients over a multi-year time frame.
- Ultimately, these Demonstrations need to demonstrate:
 - High levels of engagement – beneficiaries are aware of the program, find it easy to enroll, participate actively, see it as fair, are motivated to improve their lifestyle, and appreciate the connection between their efforts at improving health and a “reward” – financial or otherwise;



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- Behavior change and risk reduction – measured in terms of increased physical activity, a healthier diet, quitting smoking, and lowering biometric values including weight, blood pressure, cholesterol, and glucose levels – or, at least taking steps to improve their health and lower risks;
 - A decrease in certain categories of healthcare utilization and costs – inpatient hospitalizations (especially, hospitalizations for ambulatory sensitive conditions) and emergency department visits, concurrent with increases in certain types of healthcare utilization and cost categories such as preventive care visits and increased compliance with prescribed medications; and
 - Budget neutrality – this would be the ideal outcome – a demonstration that incentives are effective in promoting behavior change, risk reduction, and a reduction in healthcare costs that offset the cost of providing the program.



Appendix A: Reference List & Abstracts

REFERENCE

Medicaid Incentive Programs and Reviews

1. Alker, J., & Hoadley, J. (2008). *Comparing Medicaid reform pilot benefits from Year 1 to Year 2: Confusion, clarification, and a correction* (Briefing No. 4 Addendum). Washington, DC: Georgetown University, Health Policy Institute.

<http://www.dupontfund.org/learning/medicaid-reform-florida.asp>

In December 2005, the State of Florida initiated a pilot program in Medicaid reform in two large urban counties – Broward (Fort Lauderdale) and Duval (Jacksonville). Shortly thereafter, the Jessie Ball duPont Fund commissioned researchers from Georgetown University’s Health Policy Institute to examine the impact of these changes on consumers and providers. This article is one of seven briefings on the pilot program.

2. Alker, J., & Hoadley, J. (2008). *The enhanced benefits rewards program: Is it changing the way Medicaid beneficiaries approach their health?* (Briefing No. 6). Washington, DC: Georgetown University, Health Policy Institute.

See reference #1 for link and description.

3. Alker, J., & Hoadley, J. (2008). *Medicaid pilots at one year: How is the new Medicaid marketplace fairing?* (Briefing No. 4). Washington, DC: Georgetown University, Health Policy Institute.

See reference #1 for link and description.

4. Alker, J., & Hoadley, J. (2007). *Waving cautionary flags: Initial reactions from doctors and patients to Florida’s Medicaid changes* (Briefing No. 2). Washington, DC: Georgetown University, Health Policy Institute.

See reference #1 for link and description.

5. Alker, J., Hoadley, J., & Thompson, J. (2008). *Florida’s experience with Medicaid reform: What has been learned in the first two years?* (Final Report). Washington, DC: Georgetown University, Health Policy Institute.

See reference #1 for link and description.



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6. Bishop, G., & Brodkey, A. C. (2006). Personal responsibility and physician responsibility – West Virginia’s Medicaid plan. *New England Journal of Medicine*, 355(8), 756-758.

<http://www.nejm.org/doi/full/10.1056/NEJMp068170>

In the face of both increasing health care costs and numbers of uninsured persons, states will continue to seek ways to control Medicaid costs. Clinicians often abstain from policy discussions until it is too late for them to have an impact. But who is better able to provide evidence of the misguided nature of such plans? What physician would recommend that a person with diabetes who misses appointments lose the ability to attend diabetes education classes? What physician wants to be faced with a child with asthma whose benefits have been reduced to four prescriptions per month when she gets pneumonia and an antibiotic makes five? In an era of “personal responsibility,” physicians must assume the responsibility of speaking out about how such policies affect their practices and their patients' health.

7. Center on Budget and Policy Priorities. (2007, June). *Can incentives for healthy behavior improve health and hold down Medicaid costs?* Washington, DC: Redmond, P., Solomon, J., & Lin, M.

<http://www.cbpp.org/files/6-1-07health.pdf>

Key findings: (1) A growing number of states are providing financial incentives to encourage Medicaid beneficiaries to obtain preventive services and combat problems like smoking and obesity. Few rigorous studies have been conducted, however, to see whether incentives achieve these goals. (2) Economic rewards, when combined with other interventions, may be effective in increasing preventive care. No studies indicate that incentives are effective against smoking or obesity, however, both of which are complex problems requiring more substantial assistance. (3) West Virginia’s penalty-based incentive approach, which restricts health benefits for beneficiaries who do not follow a particular behavior plan, is unlikely to produce health improvements. In fact, it risks harming people who do not comply with the plan because of mental health or other problems, by denying them

8. Center for Health Care Strategies, Inc. (2007, July). *Encouraging healthy behaviors in Medicaid: Early lessons from Florida and Idaho* (Issue Brief). Hamilton, NJ: Barth, J., & Greene, J.

http://www.chcs.org/usr_doc/Encouraging_Healthy_Behaviors_in_Medicaid.pdf

This issue brief briefly describes Florida and Idaho’s incentive account programs and summarizes early lessons from these two states in encouraging consumers to adopt healthier behaviors.



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9. Center for Health Care Strategies, Inc. (2007, July). *Medicaid efforts to incentivize healthy behaviors* (Resource Paper Pub. 299). Hamilton, NJ: Greene, J.

http://www.chcs.org/usr_doc/Medicaid_Efforts_to_Incentivize_Healthy_Behaviors.pdf

This resource paper examines two Medicaid program's efforts to reward healthy behaviors. The first is Florida's Enhanced Benefits Accounts (EBA) program, which began implementation in Duval and Broward counties in September 2006. The second program is Idaho's Preventive Health Assistance (PHA) benefit that started statewide in January 2007. Both states implemented their financial incentive programs as part of larger Medicaid reform efforts.

10. Crowley, J. S., Hoadley, J., & Alker, J. (2008). *Florida's Medicaid reform pilot programs: Challenges with mental health services* (Briefing No. 5). Washington, DC: Georgetown University, Health Policy Institute.

See reference #1 for link and description.

11. Hoadley, J., & Alker, J. (2007). *Uncertain access to needed drugs: Florida's Medicaid reform creates challenges for patients* (Briefing No. 3). Washington, DC: Georgetown University, Health Policy Institute.

See reference #1 for link and description.

12. Silow-Carrol, S., & Alteras, T. (2007). Public programs are using incentives to promote healthy behavior. *States in Action: A Bimonthly Look at Innovations in Healthy Policy, September/October 2007, 11, 2-5.*

<http://www.commonwealthfund.org/Content/Innovations/State-Profiles/2007/Oct/Public-Programs-Are-Using-Incentives-to-Promote-Healthy-Behavior.aspx>

This report provides an overview of state incentive program, with particular attention to Wisconsin's BadgerCare Plus program.

13. Trapp, D. (2008). When incentives lack appeal: Medicaid reform meets confusion, skepticism. *American Medical News, 51*(41). Retrieved on November 19, 2010, from <http://www.ama-assn.org/amednews/2008/11/03/gvsa1103.htm>.

This news article provides details on West Virginia's Medicaid incentive program. The headline reads as follows: "West Virginia is one of the first states to offer inducements for patients who pledge to follow physicians' orders, but most of those eligible aren't taking the bait."



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14. The Urban Institute. (2010, June). *Medicaid policy changes in Idaho under the Deficit Reduction Act of 2005: Implementation issues and remaining challenges* (State Health Access Reform Evaluation). Washington, DC: Kenney, G. M., & Pelletier, J. E.

<http://www.shadac.org/files/shadac/publications/IdahoMedicaidDRACaseStudy.pdf>

Idaho implemented numerous Medicaid policy changes under authority granted by the Deficit Reduction Act of 2005, which allowed greater flexibility in benefit design and cost-sharing. This case study describes these changes and explores their impacts, along with the political, regulatory, and institutional environments that shaped these impacts. While Idaho succeeded in meeting some of the original goals of the policy changes, further Medicaid changes would be needed to have major impacts on costs and beneficiary behaviors; however, such changes will likely be heavily dependent on how Idaho weathers the current economic downturn and on the policy changes the state makes associated with federal health reform efforts.

Thought Papers and Reviews

1. Bailit Purchasing, LLC. (2010, April). *Value-based purchasing and consumer engagement strategies in state employee health plans: A purchaser guide*. Needham, MA: Slen, J., Bailit, M., & Houy, M.

<http://www.statecoverage.org/node/2335>

Value-Based Purchasing and Consumer Engagement Strategies in State Employee Health Plans, a new SCI report written by Bailit Purchasing, LLC, is a purchaser guide that lays out concise descriptions of two principal means for improving the value that states can gain through administering State Employee Health Plans (SEHPs): value-based purchasing and consumer engagement. It highlights innovative strategies and examines successful programs operated today by SEHP purchasers that focus on changing contractor behavior and/or changing employee, retiree, and dependent behavior. Despite their size and potential impacts, these large state-administered programs have drawn less attention than might be expected with respect to efforts to identify and implement successful strategies. Such strategies could not only benefit their purchasing activities, but also improve the performance of the broader health care system.

2. Cookson, R. (2008). Should disadvantaged people be paid to take care of their health? Yes. *British Medical Journal*, 337:a589.

<http://www.bmj.com/content/337/bmj.a589>

Many countries are turning to cash incentives to encourage people to look after their health. Richard Cookson argues that such schemes can save money in the long run, but Jennie Popay (reference #23, Thought Papers and Reviews) believes the problems need a deeper solution.



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3. Diamond Management & Technology Consultants, Inc. (2010). *Can behavioral economics alter the healthcare cost curve?* Chicago, IL: Schroeder, B., Sviokla, J., & Weakland, T.

http://www.diamondconsultants.com/PublicSite/ideas/perspectives/downloads/Healthcare%20Behavioral%20Economics_Diamond.pdf

Article introduction: The healthcare industry appears on the brink of a major breakthrough in altering the healthcare cost curve and improving the quality of care and medical outcomes. But not because of legislation, technological innovation, new therapies, or care delivery models. Behavioral economics is already showing tremendous potential as a force of good in the healthcare system. Based on the evidence that when confronted with limited ability, time, information, and other resources, human beings make irrational decisions, behavioral economics is a relatively new discipline, and not always fully understood. But with promising early results and the potential impact so huge, healthcare industry leaders are compelled to examine the possibilities of applying behavioral economics principles.

4. Foust, R. F. (2007). Keys to achieving optimal desired and sustained behavior change for disease management and wellness programs. *Managed Care Outlook*, 20, 1-12.

http://www.zoeconsulting.com/images/MCO_12_15_07.pdf

Article introduction: What is it that drives behavior change? Is there a proven formula that works for all organizations, or is it a trial and error process that varies from employer to employer? The answer, perhaps, is both. While each organization is different and unique and requires its own distinct approach to behavior change, there are proven steps that can be taken to improve the likelihood of behavioral change.

5. Goetzel, R. Z., & Ozminkowski, R. J. (2008). The health and cost benefits of work site health-promotion programs. *Annual Review of Public Health*, 29, 303-323.

<http://www.annualreviews.org/doi/abs/10.1146/annurev.publhealth.29.020907.090930?journalCode=publhealth>

We review the state of the art in work site health promotion (WHP), focusing on factors that influence the health and productivity of workers. We begin by defining WHP, then review the literature that addresses the business rationale for it, as well as the objections and barriers that may prevent sufficient investment in WHP. Despite methodological limitations in many available studies, the results in the literature suggest that, when properly designed, WHP can increase employees' health and productivity. We describe the characteristics of effective programs including their ability to assess the need for services, attract participants, use behavioral theory as a foundation, incorporate multiple ways to reach people, and make efforts to measure program impact.



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6. Goetzel, R. Z., & Pronk, N. P. (2010). Worksite health promotion: How much do we really know about what works? *American Journal of Preventive Medicine*, 38(2S), S223-S225.

[http://www.ajpm-online.net/article/S0749-3797\(09\)00754-5/abstract](http://www.ajpm-online.net/article/S0749-3797(09)00754-5/abstract)

An important milestone has been achieved through the publication of the Task Force review of workplace health promotion programs in this issue. The thoughtful and rigorous analysis of the literature determined that well designed, evidence-based, and theory-grounded programs can bring about health improvement, risk reduction, lower levels of healthcare use, and improved worker productivity. The challenge faced by most employers who have not yet implemented best practice programs is to apply effective practices developed by health promotion program pioneers so that any employer, of any size, can duplicate or tailor those programs to achieve similar positive results.

7. Goetzel, R. Z., Schecter, D., Ozminkowski, R. J., Marmet, P. F., Tabrizi, M. J., & Roemer, E. C. (2007). Promising practices in employer health and productivity management efforts: Findings from a benchmarking study. *Journal of Occupational and Environmental Medicine*, 49(2), 111-130.

http://journals.lww.com/joem/Fulltext/2007/02000/The_Impact_of_the_Citibank_NA_Health_Management.3.aspx

Objective: To identify key success factors related to employer-based health and productivity management (HPM) programs. Methods: Data regarding promising practices in HPM were gathered via literature review, discussions with subject matter experts, online inventory, and site visits. Results: Promising practices in HPM include 1) integrating HPM programs into the organization's operations; 2) simultaneously addressing individual, environmental, policy, and cultural factors affecting health and productivity; 3) targeting several health issues; 4) tailoring programs to address specific needs; 5) attaining high participation; 6) rigorously evaluating programs; and 7) communicating successful outcomes to key stakeholders. Conclusion: Increased efforts should be directed at disseminating the experiences of promising practices. However, more research is needed in this area, so that additional public and private funding is made available for applied research in "real-life" business settings. Finally, employers should be provided effective tools and resources.



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8. Halpern, S. D., Madison, K. M., & Volpp, K. G. (2009). Patients as mercenaries? The ethics of using financial incentives in the war on unhealthy behaviors. *Circulation: Cardiovascular Quality and Outcomes*, 2, 514-516.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2798138>

Early evidence suggests that financial incentives can effectively promote the cardioprotective behaviors of smoking cessation, weight loss, and cholesterol reduction. Incentives are also currently being studied as a means of promoting warfarin adherence. Although the results of these early studies are promising, further research is needed to determine which incentive structures and amounts are optimal, assess the ability of incentives to produce sustained behavior changes, and evaluate the cost-effectiveness of implementing incentive programs.

9. Hewitt Associates LLC. (2010). *The road ahead: Under construction with increasing tolls 2010* (Survey Findings). Lincolnshire, IL: Armatys, M. A.

<http://www.hewittassociates.com/ MetaBasicCMAssetCache /Assets/Articles/2010/Hewitt Survey Findings TheRoadAhead 2010.pdf>

The report highlights employer-sponsored health care programs and other benefits including short- and long- term costs trends, strategy, and design features drawing from the *The Road Ahead – Emerging Health Trends 2010 Survey*. The 2010 database represents nearly 600 individual employer-provided health benefit programs with approximately 350 being among the nation’s largest employers.

10. Jesson, L. (2008). Design and Implementation of Incentive Based Wellness Programs. *Health Lawyers News*, 12, 20-26.

<http://www.healthlawyers.org/News/Connections/Documents/2008/HLN0807.pdf>

The ethical dilemmas that arise when our health insurers (including our employers) second guess our lifestyle choices in the name of improved health are reflected in the legal dilemmas that face wellness program advocates. This article addresses the legal parameters for designing such plans. Next, it describes the legal hurdles for those employers and insurers that seek to individually monitor employee adherence to a wellness program—to find out whether the employee truly met the conditions that entitle the employee to the program reward. Finally, it concludes with some suggestions for plan design and implementation. Also included with this article, is a chart depicting the spectrum of wellness programs.



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11. Jesson, L. (2008). Weighing the wellness programs: The legal implications of imposing personal responsibility obligations. *Virginia Journal of Social Policy and the Law*, 15.

<https://litigation-essentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&srctype=smi&srcid=3B15&doctype=cite&docid=15+Va.+J.+Soc.+Pol'y+%26+L.+217&key=e4dbafead8decea6b85066f52fa55094>

This article examines predominant individual behaviors that drive health care costs including tobacco use, alcohol use, and overeating. Next, it reviews the spectrum of private and public insurance programs that seek to curb unhealthy activities as insurers move toward stricter regulation of personal responsibility choices. It then describes the overarching set of sometimes conflicting laws that govern wellness program design, and considers the legal and policy implications of how wellness programs monitor enrollee compliance with wellness goals. Did the enrollee take the medication? Lose those ten pounds? The article concludes with suggestions for parameters and adequate consent procedures for monitoring employee health behaviors. It closes with the observation that turning our physicians into monitors has wellness costs of its own, and urges study of outcomes before wholesale adoption of wellness plans that target individual enrollees.

12. Kane, R. L., Johnson, P. E., Town, R. J., & Butler, M. (2004). *Economic incentives for preventive care*. Evidence Report/Technology Assessment No. 101 (Prepared by the University of Minnesota Evidence-based Practice Center under Contract No. 290-02-0009). AHRQ Publication No. 04-E024-2. Rockville, MD: Agency for Healthcare Research and Quality.

<http://www.ncbi.nlm.nih.gov/books/NBK37345/>

Context: In recent years “pay for prevention” initiatives have been devised to address gaps between the high cost of preventable disease and deaths and the actual prevention 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. The question is whether such economic incentives are a useful approach. In this report, we evaluate evidence from the literature on the impact of economic incentives targeted at providers and consumers on 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).



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13. Kane, R. L., Johnson, P. E., Town, R. J., & Butler, M. (2004). A structured review of the effect of incentives on consumers' preventive behavior. *American Journal of Preventative Medicine*, 27(4), 327-352.

[http://www.ajpm-online.net/article/S0749-3797\(04\)00178-3/abstract](http://www.ajpm-online.net/article/S0749-3797(04)00178-3/abstract)

Improving participation in preventive activities will require finding methods to encourage consumers to engage in and remain in such efforts. This review assesses the effects of economic incentives on consumers' preventive health behaviors. A study was classified as complex preventive health if a sustained behavior change was required of the consumer; if it could be accomplished directly (e.g., immunizations), it was considered simple. A systematic literature review identified 111 randomized controlled trials of which 47 (published between 1966 and 2002) met the criteria for review. The economic incentives worked 73% of the time (74% for simple, and 72% for complex). Rates varied by the goal of the incentive. Incentives that increased ability to purchase the preventive service worked better than more diffuse incentives, but the type matters less than the nature of the incentive. Economic incentives are effective in the short run for simple preventive care, and distinct, well-defined behavioral goals. Small incentives can produce finite changes, but it is not clear what size of incentive is needed to yield a major sustained effect.

14. Kavanagh, J., Oakley, A., Harden, A., Trouten, A., & Powell, C. (in press). Are incentive schemes effective in changing young people's behaviour? A systematic review. *Health Education Journal*.

<http://hej.sagepub.com/content/early/2010/08/09/0017896910375878.full.pdf+html>



15. King's Fund. (2007, December). *Paying the patient: Improving health using financial incentives* (Kicking Bad Habits). London, UK: Jochelson, K.

http://keewu.com/IMG/pdf/19_Paying_the_Patient1_1_.pdf

The paper identifies programmes based on positive incentives that reward individuals directly for a desired behaviour or outcome and those based on negative incentives that discipline an individual by withdrawing a reward. It finds that financial incentives are effective in encouraging people to perform clearly defined, time-limited, simple behavioural tasks, such as keeping appointments, and also in encouraging participation in lifestyle programmes, but that the healthier behaviour is not maintained. Financial incentives are not effective when the behaviour change required is complex, for example, giving up smoking.

16. Leonard Davis Institute of Health Economics. (2009, February). *Paying people to lose weight and stop smoking* (Issue Brief No. 3). Philadelphia, PA: Volpp, K. G.

<http://www.ncbi.nlm.nih.gov/pubmed/19288619>

Unhealthy behaviors, such as smoking, poor diet, and sedentary lifestyles, account for as much as 40% of premature deaths in the U.S. Although behavioral interventions have the potential to improve health, behavior change is difficult, especially over the long term. Many people have difficulty changing health behaviors because it requires trade-offs between immediate consumption and delayed and often intangible health benefits. Incentives can provide people with immediate and tangible feedback that helps make it easier for them to do in the short term what is in their long-term best interest. This Issue Brief explores the use of financial incentives to motivate and sustain smoking cessation and weight loss.



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17. Loewenstein, G., Brennan, T., & Volpp, K. G. (2007). Asymmetric paternalism to improve health behaviors. *Journal of the American Medical Association*, 298(20), 2,415-2,417.

<http://jama.ama-assn.org/cgi/content/full/298/20/2415>

Individual behavior plays a central role in the disease burden faced by society. Many major health problems in the United States and other developed nations, such as lung cancer, hypertension, and diabetes, are exacerbated by unhealthy behaviors. Modifiable behaviors such as tobacco use, overeating, and alcohol abuse account for nearly one-third of all deaths in the United States.¹⁻² Moreover, realizing the potential benefit of some of the most promising advances in medicine, such as medications to control blood pressure, lower cholesterol levels, and prevent stroke, has been stymied by poor adherence rates among patients.³ For example, by 1 year after having a myocardial infarction, nearly half of patients prescribed cholesterol-lowering medications have stopped taking them.⁴ Reducing morbidity and mortality may depend as much on motivating changes in behavior as on developing new treatments.

18. Marteau, T., Ashcroft, R., & Oliver, A. (2009). Using financial incentives to achieve healthy behaviour. *British Medical Journal*, 338, 983-985.

<http://www.bmj.com/content/338/bmj.b1415.full?view=long&pmid=19359291>

Personal financial incentives are increasingly being used to motivate patients and general populations to change their behaviour, most often as part of schemes aimed at reducing rates of obesity, smoking, and other addictive behaviours. Opinion on their use varies, with incentives being described both as “key to reducing smoking, alcohol and obesity rates” and as “a form of bribery” and “rewarding people for unhealthy behaviour.” We review evidence on the effectiveness of financial incentives in achieving health related behaviour change and examine the basis for moral and other concerns about their use.

19. Mathematica Policy Research, Inc. (2010, May). *Financial incentives for health care providers and consumers* (Issue Brief No. 5). Princeton, NJ: Bernstein, J., Chollet, D., & Peterson, S.

http://www.mathematica-mpr.com/publications/PDFs/Health/reformhealthcare_IB5.pdf

This brief is the fifth in a series highlighting issues related to health care reform that policymakers may want to consider as they implement the federal health reform law.



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20. Mello, M. M., & Rosenthal, M. B. (2008). Wellness programs and lifestyle discrimination – The legal limits. *New England Journal of Medicine*, 359(2), 192-199.

<http://www.nejm.org/doi/full/10.1056/NEJMhle0801929>

Article introduction: “Personal responsibility” has become a recurrent theme in debates about health care financing. In addition to asking consumers to make better-informed choices in seeking care, many payers are focusing on individual health behaviors as drivers of health spending. In a recent national poll, 91% of employers believed that they could reduce their health care costs by influencing employees to adopt healthier lifestyles. Many health plans and employers now not only provide access to wellness programs but also offer incentives for participation. Incentives can be framed as rewards or penalties and may take the form of prizes, cash, or the waiver...

21. Nasjonalt kunnskapssenter for helsetjenesten (Norwegian Knowledge Centre for the Health Services). (2008, June). *An overview of research on the effect of results-based financing* (Report Nr. 16-2008). Oslo: Oxman, A.D., & Fretheim, A.

http://hera.helsebiblioteket.no/hera/bitstream/10143/33892/1/NOKCrapport16_2008.pdf

Background: Norway is the lead promoter of results-based financing (RBF) as one of five actions being taken as part of the Global Campaign for the Health Millennium Development Goals and plans to support the use of RBF through the World Bank and in bilateral agreements with selected countries focusing on achieving the Millennium Development Goals (MDGs) of reducing child and maternal mortality (MDG 4 and 5). RBF-schemes can be targeted at different levels: recipients of healthcare, individual providers of healthcare, healthcare facilities, private sector organisations, public sector organisations, sub-national governments, and national governments. Method: This report consists of an overview of systematic reviews and a critical appraisal of four evaluations of RBF schemes in the health sector in low and middle-income countries (LMIC). Results: Ten systematic reviews that met the inclusion criteria for this report were summarised. In addition, four evaluations of RBF schemes in LMIC were critically appraised, including financial incentives targeted at patients, individual providers, organisations, and governments.



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22. Pearson, S. D., & Lieber, S. R. (2009). Financial penalties for the unhealthy? Ethical guidelines for holding employees responsible for their health. *Health Affairs*, 28(3), 845-852.

<http://content.healthaffairs.org/cgi/content/abstract/28/3/845>

As health care costs continue to rise, an increasing number of self-insured employers are using financial rewards or penalties to promote healthy behavior and control costs. These incentive programs have triggered a backlash from those concerned that holding employees responsible for their health, particularly through the use of penalties, violates individual liberties and discriminates against the unhealthy. This paper offers an ethical analysis of employee health incentive programs and presents an argument for a set of conditions under which penalties can be used in an ethical and responsible way to contain health care costs and encourage healthy behavior among employees.

23. Popay, J. (2008). Should disadvantaged people be paid to take care of their health? No. *British Medical Journal*, 337:a594.

<http://www.bmj.com/content/337/bmj.a594.full>

Many countries are turning to cash incentives to encourage people to look after their health. Richard Cookson (reference #2, Thought Papers and Reviews) argues that such schemes can save money in the long run, but Jennie Popay believes the problems need a deeper solution.

24. Schmidt, H., Voigt, K., & Wikler, D. (2010). Carrots, sticks, and health care reform – Problems with wellness incentives. *New England Journal of Medicine*, 362(2), e3.

<http://healthpolicyandreform.nejm.org/?p=2630>

Chronic conditions, especially those associated with overweight, are on the rise in the United States (as elsewhere). Employers have used both carrots and sticks to encourage healthier behavior. Incentives for healthy behavior may be part of an effective national response to risk factors for chronic disease. Wrongly implemented, however, they can introduce substantial inequity into the health insurance system. Moreover, it is crucial that the evaluation of pilots include an assessment of the socioeconomic and ethnic backgrounds of both users and nonusers to ascertain the equitability of programs.



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25. United States Government Accountability Office. (2008). *Food stamp program: Options for delivering financial incentives to participants for purchasing targeted foods* (Report No. GAO-08-415). Washington, DC: USGAO.

<http://www.gao.gov/new.items/d08415.pdf>

In fiscal year 2007, the Food Stamp Program provided about \$30.4 billion in nutrition assistance benefits to 26.5 million individuals. Benefits are issued through Electronic Benefit Transfer (EBT) cards, similar to debit cards, to purchase eligible foods at authorized retail stores. The diets of many low-income individuals, like the U.S. population overall, do not meet federal dietary guidelines. One potential strategy for increasing the purchases of targeted foods that contribute to a healthy diet is to incorporate into the program financial incentives for purchasing these foods. GAO was asked to identify (1) what is known about the effectiveness of financial incentives and other approaches intended to increase the purchase of targeted foods, (2) the key factors to consider in designing a financial incentive program, and (3) options available to the U.S. Department of Agriculture's Food and Nutrition Service (FNS) for implementing financial incentives. GAO interviewed agency and state officials, retailers and associations, private EBT contractors, and other stakeholders; convened a panel of 17 experts; and conducted a literature review. In commenting on this report, FNS generally agreed with GAO's findings and concluding observations.

26. Volpp, K. G., & Das, A. (2009). Comparative effectiveness – Thinking beyond medication A versus medication B. *New England Journal of Medicine*, 361(4), 331-333.

<http://www.nejm.org/doi/full/10.1056/NEJMp0903496>

This is a *New England Journal of Medicine* Perspectives publication. It includes Volpp's thoughts on the comparative effectiveness portion of the stimulus package signed into law by President Barack Obama on February 17, 2009, American Recovery and Reinvestment Act of 2009 (ARRA).



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27. Volpp, K. G., Pauly, M. V., Loewenstein, G., & Bangsberg, D. (2009). P4P4P: An agenda for research on pay-for-performance for patients. *Health Affairs*, 28(1), 206-214.

<http://content.healthaffairs.org/cgi/content/abstract/28/1/206>

Unhealthy behavior is a major cause of poor health outcomes and high health care costs. In this paper we describe an agenda for research to guide broader use of patient-targeted financial incentives, either in conjunction with provider-targeted financial incentives (pay-for-performance, or P4P) or in clinical contexts where provider-targeted approaches are unlikely to be effective. We discuss evidence of proven effectiveness and limitations of the existing evidence, reasons for underuse of these approaches, and options for achieving wider use. Patient-targeted incentives have great potential, and systematic testing will help determine how they can best be used to improve population health.

28. Weintraub, A. (2009). Tough love, lower health costs: A UnitedHealthcare plan offers incentives to employees who strictly control their diabetes. *BusinessWeek*. Retrieved on November 24, 2010, from

http://www.businessweek.com/magazine/content/09_44/b4153056904077.htm.

Provides information on UnitedHealthcare's Diabetes Health Plan, the first-of-its-kind benefit now in pilot testing at GE and two other companies. Fifteen more workplaces plan to roll it out in 2010. Article introduction: This is far more than a "disease management" program where patients sign up to receive, say, discounts on medications but are left to fill the prescriptions themselves. The diabetes plan requires patients to adhere to treatment and drug guidelines and to agree to be tracked by the company to ensure they are compliant. Those who stick with it receive significant discounts on out-of-pocket expenses such as co-pays for diabetes-specific treatments. Those who don't are kicked out of the program and put back into their company's standard plan.

29. Xerox Corporation. (2010). *Changing human behavior: The next wave in transformative HR management* (HR Outsourcing – White Paper). Wilsonville, OR: Baily, R., & Khan, R. A.

http://www.xerox.com/downloads/usa/en/gdo/whitepapers/GDO_whitepaper_HR_Outsourcing_Rich_Baily.pdf

This report provides details on employer-based incentive programs, including Safeway's "Healthy Measures" program, which offered employees financial incentives—essentially rebates on health insurance premiums—to encourage healthy behavior.



30. Yoder, S. D. (2002). Individual responsibility for health: Decision, not discovery. *The Hastings Center Report*, 32(2), 22-31.

http://findarticles.com/p/articles/mi_go2103/is_2_32/ai_n6803297/?tag=content:coll

Yoder tells a story about how information about health and illness permeates our lives. He says that we are preoccupied with understanding the determinants of health and illness, particularly those over which we have some control

Individual Studies

1. Brown, D. S., Finkelstein, E. A., Brown, D. R., Buchner, D. M., & Johnson, F. R. (2009). Estimating older adults' preferences for walking programs via conjoint analysis. *American Journal of Preventive Medicine*, 36(3), 201-207.

[http://www.ajpm-online.net/article/S0749-3797\(08\)00952-5/fulltext](http://www.ajpm-online.net/article/S0749-3797(08)00952-5/fulltext)

Background: Physical inactivity is a major driver of costly health problems, especially in older adults. Structured walking programs are one approach for increasing physical activity, although there is little information about how the characteristics of these programs influence their effectiveness. It was hypothesized that cash incentives would increase acceptability and effectiveness while a group participation requirement would place a net burden on participants. Methods: To measure preferences for specific characteristics of walking programs (i.e., minutes per day, days per week, organized or individual/informal group, cash incentive) and the likelihood of participation, a conjoint-analysis survey of 501 inactive adults aged ≥ 50 years was conducted in October 2006. Data were analyzed in 2007–2008. Results: The most-preferred program was three 20-minute walks per week. Respondents had a strong preference for programs conducted outside of a formal group setting. Offering an incentive of \$9 in cash per week (\$468 per year) increased predicted participation by 31%.

Conclusions: The results suggest that the characteristics of walking programs, such as whether they involve participation in a formal group, substantially influence their perceived acceptability and the likelihood of participation. The results also suggest that, independent of other program attributes, modest financial incentives increase the likelihood of program participation by sedentary older adults, and thus are a potential means to increase the effectiveness of walking programs.



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2. Finkelstein, E. A., Brown, D. S., Brown, D. R. & Buchner, D. M. (2008). A randomized study of financial incentives to increase physical activity among sedentary older adults. *Preventive Medicine*, 47, 182-187.

<http://www.ncbi.nlm.nih.gov/pubmed/18571226>

OBJECTIVE: Less than half of all U.S. adults meet public health recommendations for physical activity, and even fewer older adults (aged 50 years and over) are sufficiently active. Because inactivity increases the risk of costly medical complications, successful efforts to increase physical activity among older adults may potentially be cost-effective. We sought to test if financial incentives for walking could increase physical activity among sedentary older adults. **METHODS:** We conducted a 4-week randomized controlled study using pedometers. A total of 51 adults age 50+ from the Raleigh-Durham area of North Carolina participated in the study in April-May 2007. Individuals were randomized into one of two arms. The control group received a fixed payment of \$75; the intervention group received a fixed payment of \$50 plus up to \$25 more per week depending on the number of weekly aerobic minutes, defined as 10+ minutes of continuous walking or jogging. **RESULTS:** The control group logged 2.3 h per week, on average. The intervention group logged 4.1 h per week and received an additional weekly payment of \$17.50, on average. **CONCLUSION:** Modest financial incentives tied to aerobic minutes are an effective, and potentially cost-effective, approach for increasing physical activity among sedentary older adults.

3. Long, J. A., Helweg-Larson, M., & Volpp, K. G. (2008). Patient options regarding 'Pay for Performance for Patients'. *Journal of General Internal Medicine*, 23(10), 1647-1652.

<http://www.springer.com/about+springer/media/springer+select?SGWID=0-11001-2-804971-0>

Unhealthy behavior is a major cause of poor health outcomes and high health care costs. In this paper we describe an agenda for research to guide broader use of patient-targeted financial incentives, either in conjunction with provider-targeted financial incentives (pay-for-performance, or P4P) or in clinical contexts where provider-targeted approaches are unlikely to be effective. We discuss evidence of proven effectiveness and limitations of the existing evidence, reasons for underuse of these approaches, and options for achieving wider use. Patient-targeted incentives have great potential, and systematic testing will help determine how they can best be used to improve population health.



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4. Volpp, K. G., John, L. K., Troxel, A. B., Norton, L., Fassbender, J., & Loewenstein, G. (2008). Financial incentive-based approaches for weight loss: A randomized trial. *Journal of the American Medical Association*, 300(22), 2631-2637.

<http://jama.ama-assn.org/cgi/content/short/300/22/2631>

Context: Identifying effective obesity treatment is both a clinical challenge and a public health priority due to the health consequences of obesity. Objective: To determine whether common decision errors identified by behavioral economists such as prospect theory, loss aversion, and regret could be used to design an effective weight loss intervention. Design, Setting, and Participants Fifty-seven healthy participants aged 30-70 years with a body mass index of 30-40 were randomized to 3 weight loss plans: monthly weigh-ins, a lottery incentive program, or a deposit contract that allowed for participant matching, with a weight loss goal of 1 lb (0.45 kg) a week for 16 weeks. Participants were recruited May-August 2007 at the Philadelphia VA Medical Center in Pennsylvania and were followed up through June 2008. Main Outcome Measures: Weight loss after 16 weeks. Results: The incentive groups lost significantly more weight than the control group (mean, 3.9 lb). Compared with the control group, the lottery group lost a mean of 13.1 lb (95% confidence interval [CI] of the difference in means, 1.95-16.40; $P=.02$) and the deposit contract group lost a mean of 14.0 lb (95% CI of the difference in means, 3.69-16.43; $P=.006$). About half of those in both incentive groups met the 16-lb target weight loss: 47.4% (95% CI, 24.5%-71.1%) in the deposit contract group and 52.6% (95% CI, 28.9%-75.6%) in the lottery group, whereas 10.5% (95% CI, 1.3%- 33.1%; $P=.01$) in the control group met the 16-lb target. Although the net weight loss between enrollment in the study and at the end of 7 months was larger in the incentive groups (9.2 lb; $t = 1.21$; 95% CI, -3.20 to 12.66; $P = .23$, in the lottery group and 6.2 lb; $t = 0.52$; 95% CI, -5.17 to 8.75; $P = .61$ in the deposit contract group) than in the control group (4.4 lb), these differences were not statistically significant. However, incentive participants weighed significantly less at 7 months than at the study start ($P = .01$ for the lottery group; $P = .03$ for the deposit contract group) whereas controls did not. Conclusions: The use of economic incentives produced significant weight loss during the 16 weeks of intervention that was not fully sustained. The longer-term use of incentives should be evaluated.



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5. Volpp, K. G., Lowenstein, G., Troxel, A. B., Doshi, J., Price, M., Laskin, M. et al. (2008). A test of financial incentives to improve warfarin adherence. *BMC Health Services Research*, 8, 1-16.

<http://www.biomedcentral.com/1472-6963/8/272>

Background: Sub-optimal adherence to warfarin places millions of patients at risk for stroke and bleeding complications each year. Novel methods are needed to improve adherence for warfarin. We conducted two pilot studies to determine whether a lottery-based daily financial incentive is feasible and improves warfarin adherence and anticoagulation control. **Methods:** Volunteers from the University of Pennsylvania Anticoagulation Management Center who had taken warfarin for at least 3 months participated in either a pilot study with a lottery with a daily expected value of \$5 (N = 10) or a daily expected value of \$3 (N = 10). All subjects received use of an Informedix Med-eMonitor™ System with a daily reminder feature. If subjects opened up their pill compartments appropriately, they were entered into a daily lottery with a 1 in 5 chance of winning \$10 and a 1 in 100 chance of winning \$100 (pilot 1) or a 1 in 10 chance of winning \$10 and a 1 in 100 chance of winning \$100 (pilot 2). The primary study outcome was proportion of incorrect warfarin doses. The secondary outcome was proportion of INR measurements not within therapeutic range. Within-subject pre-post comparisons were done of INR measurements with comparisons with either historic means or within-subject comparisons of incorrect warfarin doses. **Results:** In the first pilot, the percent of out-of-range INRs decreased from 35.0% to 12.2% during the intervention, before increasing to 42% post-intervention. The mean proportion of incorrect pills taken during the intervention was 2.3% incorrect pills, compared with a historic mean of 22% incorrect pill taking in this clinic population. Among the five subjects who also had MEMS cap adherence data from warfarin use in our prior study, mean incorrect pill taking decreased from 26% pre-pilot to 2.8% in the pilot. In the second pilot, the time out of INR range decreased from 65.0% to 40.4%, with the proportion of mean incorrect pill taking dropping to 1.6%. **Conclusion:** A daily lottery-based financial incentive demonstrated the potential for significant improvements in missed doses of warfarin and time out of INR range. Further testing should be done of this approach to determine its effectiveness and potential application to both warfarin and other chronic medications



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6. Volpp, K. G., Troxel, A. B., Pauly, M. V., Glick, H. A., Puig, A., Asch, D. A. et al. (2009). A randomized, controlled trial of financial incentives for smoking cessation. *New England Journal of Medicine*, 360(7), 699-709.

<http://www.nejm.org/doi/full/10.1056/NEJMsa0806819>

Background: Smoking is the leading preventable cause of premature death in the United States. Previous studies of financial incentives for smoking cessation in work settings have not shown that such incentives have significant effects on cessation rates, but these studies have had limited power, and the incentives used may have been insufficient. Methods: We randomly assigned 878 employees of a multinational company based in the United States to receive information about smoking-cessation programs (442 employees) or to receive information about programs plus financial incentives (436 employees). The financial incentives were \$100 for completion of a smoking-cessation program, \$250 for cessation of smoking within 6 months after study enrollment, as confirmed by a biochemical test, and \$400 for abstinence for an additional 6 months after the initial cessation, as confirmed by a biochemical test. Individual participants were stratified according to work site, heavy or nonheavy smoking, and income. The primary end point was smoking cessation 9 or 12 months after enrollment, depending on whether initial cessation was reported at 3 or 6 months. Secondary end points were smoking cessation within the first 6 months after enrollment and rates of participation in and completion of smoking-cessation programs. Results: The incentive group had significantly higher rates of smoking cessation than did the information-only group 9 or 12 months after enrollment (14.7% vs. 5.0%, $P < 0.001$) and 15 or 18 months after enrollment (9.4% vs. 3.6%, $P < 0.001$). Incentive-group participants also had significantly higher rates of enrollment in a smoking-cessation program (15.4% vs. 5.4%, $P < 0.001$), completion of a smoking-cessation program (10.8% vs. 2.5%, $P < 0.001$), and smoking cessation within the first 6 months after enrollment (20.9% vs. 11.8%, $P < 0.001$). Conclusions: In this study of employees of one large company, financial incentives for smoking cessation significantly increased the rates of smoking cessation.

