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## ***Paying People to Lose Weight and Stop Smoking***

Editor's note: 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.

### ***Smoking cessation and weight loss are personal and public health priorities, but difficult to achieve***

National objectives stated in Healthy People 2010 call for reducing the prevalence of adult smoking to 12%, and rates of obesity to 15%, by 2010. These goals will not be met, despite indisputable evidence of the health risks involved, and a multitude of interventions designed to help people quit smoking and lose weight.

- Significant progress has been made in reducing the number of smokers over the past 40 years. However, nearly 20% of Americans still smoke, and tobacco kills roughly 438,000 Americans each year.
- Obesity is the second-leading cause of preventable death, and is linked to diabetes, heart disease, and certain types of cancer. Obesity rates in the U.S. increased from 13% in 1960 to 34% in 2005. Overall, 71% of Americans are either overweight or obese.
- The social and structural environment, public policies, genetics, and access to and quality of health care affect the rates of smoking and obesity, but people's behavioral choices remain a central driver.
- Long-term success with behavior changes such as quitting smoking or losing weight has proven difficult. More than 40% of smokers try to quit each year, but only about 3% stay quit for an entire year. Smoking cessation programs and pharmacologic therapies can double quit rates, but participation rates in these programs are low. Similarly, behavioral interventions and pharmacotherapy for weight loss have generally produced only small losses over the long term.
- Previous studies have shown that financial incentives can increase enrollment in smoking cessation programs and short-term quit rates, but have not shown

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significant increases in long-term quit rates. However, these studies are limited by small sample sizes and weak financial incentives.

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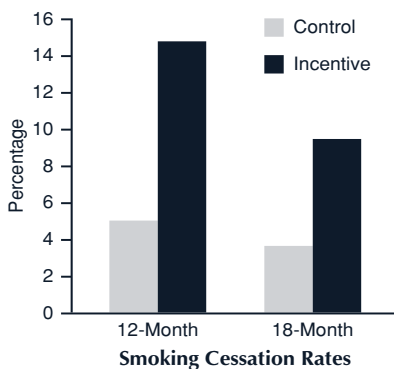
### **Study tests the use of financial incentives to promote smoking cessation**

Volpp and colleagues studied the effect of financial incentives on smoking cessation. They recruited smoking employees of a multinational company based in the U.S. and randomized them to either receive information about smoking cessation programs in their local area or online (control group) or to receive the same information plus incentives totaling \$750 over the course of a year, if they met certain goals.

- Eligible employees were current cigarette smokers over 18 years of age who reported smoking more than 5 cigarettes per day. A total of 878 smokers were randomized, 442 to the control group and 436 to the incentive group.
- Financial incentives included \$100 for completing a cessation program, \$250 for biochemically confirmed cessation within 6 months of enrollment, and \$400 for biochemically confirmed cessation for an additional 6 months.
- Participants were contacted 3 months after enrollment and asked whether they had quit smoking for at least the past seven days. If they had, an initial follow-up interview and confirmatory biochemical test were scheduled. If not, participants received an initial follow-up interview 6 months post-enrollment. All participants were subsequently re-contacted six months after the initial follow up interview (at 9 or 12 months). If participants reported not having smoked at all between the initial and 9/12 month interview, this was considered long-term cessation if biochemically confirmed. Participants who were long-term quitters were interviewed again 12 months after completion of the initial interview (15 or 18 months after enrollment).

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### **Financial incentives are associated with tripling of quit rates lasting 15-18 months**



The results show that the incentive group achieved significantly higher quit rates than the control group in both the short-term and long-term.

- At 6 months after enrollment, the incentive group had significantly higher rates of participation in a smoking cessation program (15.4% vs. 5.4%), completion of a smoking cessation program (10.8% vs. 2.5%), and biochemically-confirmed quit rates (20.9% vs. 11.8%).
- Confirmed quit rates at the 9/12 month point were 14.7% in the incentive group vs. 5.0% in the control group. After adjusting for other factors that might affect smoking cessation (such as demographics, number of cigarettes, previous quit attempts, readiness to quit, and self-reported health status) the incentive group had an odds of tobacco cessation three times as high as the control group at 9/12 months after enrollment.
- At 15/18 months, 9.4% of the incentive group remained smoke free, compared to 3.6% in the control group.

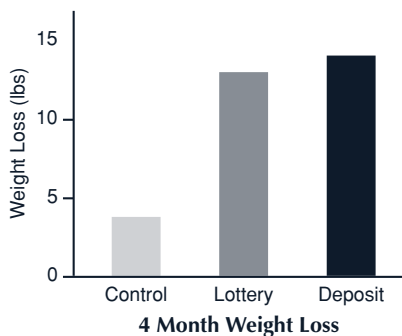
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### **Study tests two different financial incentives for weight loss**

In another study, Volpp and colleagues randomized 57 patients at a VA Medical Center to one of three weight loss plans: monthly weigh-ins, a lottery incentive program, or a deposit contract program. The weight loss goal for each group was one pound a week for 16 weeks. Follow up weigh-ins were also conducted 7 months from the start of the study (3 months after the incentives ended).

- Eligible participants were between the ages of 30 and 70 and had a body mass index (BMI) of 30 to 40. A BMI of 30 or over is considered “obese.” At initial enrollment, all participants had a one hour individual consultation with a dietitian about diet and exercise strategies for weight loss, and everyone was given a free scale. In the incentive groups, participants received a chart showing the daily weight goals they needed to attain in order to qualify for the incentives.
- Participants in the lottery incentive group were eligible for a daily lottery prize if they reported a weight at or below their goal before that day’s drawing. The lottery provided infrequent large payoffs (a 1 in 100 chance at a \$100 reward) and frequent small payoffs (a 1 in 5 chance at a \$10 reward). Participants received daily feedback via text message about each day’s payoff, but awards were distributed only if they were at or below the goal weight at the monthly weigh-in. In that way, participants were informed when they would have won had they met their weight goals.
- Participants in the deposit contract incentive group were given the opportunity to deposit between \$0.01 and \$3.00 for each day of the upcoming month. These personal deposits would be refunded only if participants met their monthly weight loss goal. Participants’ deposits were matched 1:1, and were further supplemented by a fixed payment of \$3 per day if participants met their daily weight loss goals. Rewards were accumulated each day that participants called in and reported a weight at or below the weight loss goal, but rewards were distributed only if the monthly goal was met at the monthly weigh-in.

**Financial incentives produced significant weight loss over four months, which was not fully sustained after discontinuation of the incentives**



At 16 weeks, participants in the two incentive groups lost significantly more weight than those in the control group. However, those differences narrowed when incentives were removed after the 16 weeks such that there were no longer any significant differences in weight loss between the incentive and control groups at the 7 month check up.

- Mean weight loss was more than three times greater for the incentive groups than for the control group over the 16 week period. The lottery group lost an average of 13.1 lb, the deposit contract group lost an average of 14.0 lb, and the control group lost an average of 3.9 lb. In addition, while only 10.5% of the control group achieved the 16 lb weight loss goal, 52.6% of the lottery group and 47.4% of the deposit contract group were able to lose 16 lbs or more.
- Over the course of 16 weeks, the deposit contract group earned an average of \$378.49 and the lottery group earned an average of \$272.80.
- Participants in the incentive groups gained significant weight after the incentives ended. At the end of 7 months, net weight loss remained larger in the incentive groups (9.2 lb in the lottery group and 6.2 lb in the deposit contract group) compared to the control group (4.4 lb) but these differences were no longer statistically significant.

**POLICY IMPLICATIONS**

These studies show considerable promise that financial incentives can promote otherwise challenging behavior change toward health improvement. The optimal design, amount, and duration of incentives need further research.

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## POLICY IMPLICATIONS

- Incentives produced smoking cessation rates that were three times greater than the control group by 9/12 months. Although quit rates dropped at 15/18 months, they remained much higher than in the control group. It is likely that the majority of smokers who quit for one year will remain tobacco free for the longer term.
- Weight loss of the magnitude achieved by the incentive groups within 4 months has been shown to improve immediate outcomes like blood pressure, glycemic control, and serum lipid levels. A key challenge in weight loss interventions is to both attain initial weight loss and to maintain that weight loss over 12 months or more. Future research should analyze the effect of maintaining incentives over longer time periods to determine whether incentives produce prolonged weight loss.
- These results can help make the “business case” to employers and insurers of the cost-effectiveness of financial incentives to improve health. Neither study relied on expensive, resource intensive behavioral interventions; rather, incentives that are paid only if people are successful in changing their behavior were the only significant cost. In the case of the smoking cessation study, participants were referred to existing cessation programs and resources; in the weight loss study, participants had a single one hour consultation with a dietitian. Employers and insurers may be able to replace expensive health promotion programs with lower-cost incentives that will motivate employees. Incentive schemes must be designed to reward long-term success.

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*This Issue Brief is based on the following articles: K.G. Volpp, A.B. Troxel, M. V. Pauly, H. A. Glick, A. Puig, D.A. Asch, et al. A randomized controlled trial of financial incentives for smoking cessation. *New England Journal of Medicine*, Feb. 12, 2009, vol. 360, pp. 699-708; K.G. Volpp, M.V. Pauly, G. Loewenstein, D. Bangsberg. P4P4P: an agenda for research on pay-for-performance for patients. *Health Affairs*, January/February 2009, vol. 28, pp. 206-214; K.G. Volpp, L.K. John, A.B. Troxel, L. Norton, J. Fassbinder, G. Loewenstein. Financial incentive-based approaches for weight loss. *JAMA*, Dec. 10, 2008, vol. 300, pp. 2631-2637; G. Loewenstein, T.A. Brennan, K.G. Volpp. Asymmetric paternalism and health behaviors. *JAMA*, November 28, 2007, vol. 298, pp. 2415-2417.*

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