

## CPH News and Views

*A semi-monthly column on emerging topics related to healthy workplaces*

### **Issue # 39: Use of financial incentives in workplace weight-loss program**

***Contributed by Pouran Faghri, MD, MS, FACSM, Professor, University of Connecticut, Storrs, CT.***

According to the 2007-2008 National Health and Nutrition Examination Survey, 11% of US adults 20 years or older have diabetes and 35% have pre-diabetes.<sup>1</sup> Obesity is associated with 30 million lost workdays, 239 million restricted activity days, 90 million bed days, and 63 million physician visits per year. The total cost of obesity to U.S. companies is estimated at \$13 billion per year. Without effective prevention programs, this cost will increase.<sup>2,3</sup>

Weight loss, improved diet, and increased physical activity can reduce obesity and prevent or delay the onset of type 2 diabetes. Accordingly, there is a strong motivation to implement workplace weight loss programs in an effort to potentially decrease absenteeism and “presenteeism” (being present at work but not fully productive) as well as health care costs.

Nonetheless, individual adherence to weight-loss programs has been a challenge.<sup>4,5</sup> One recommendation to increase adherence is the use of incentives in the workplace. Financial incentives have been used as tangible reinforcers for behavior change that may benefit prevention or treatment of chronic diseases with underlying behavioral components.<sup>6,7</sup> For example, incentives in weight-loss programs might counter some of the problems related to self-control. Although some weight-loss programs using financial incentives have been successful, there are still unanswered questions, such as how much to offer and whether a simple reward per pound of weight lost is better than a more complex arrangement.

In 2011 we implemented a weight loss program for a group of overweight and obese employees who were at high risk for type 2 diabetes.<sup>8,9</sup> The purpose was to compare two levels of financial incentives against a control group with the same educational supports but no financial incentive. We wanted to see which one would lead to higher adherence, more weight loss, and greater reduction in chronic disease risk. All participating employees had a personalized one-hour consultation with a health expert and were prescribed a weight loss goal (1 to 1.5 pound weight loss per week). They then followed a 16-week weight loss program, including being weighed each week during the first four weeks and then biweekly. There was also a follow-up weigh-in three months later (28 weeks after the program began).

Participants were placed in either an *incentivized* (experimental) or a *non-incentivized* (control) group. Further, the incentivized participants could choose a “standard” incentive (simple reward) to receive cash when achieving their weight loss goals (maximum of \$260), or they could choose a “standard plus deposit” incentive in which they could deposit money to “bet” on their weight loss. With the second arrangement, they would receive their money back plus have their deposit matched by the research team (maximum of \$320) if they met their goal, but if not they would lose their deposit. In both groups, people with weight loss received their incentive in two parts, some at the completion of the 16-week program and some at the 3-month follow-up.

At the completion of the program, individuals in the monetary incentive group had more weight loss, reduced diabetes risk score, better eating habits, and more physical activity than the non-incentivized individuals. Those in the incentivized group lost an average of 5 pounds more than the control group over 16 weeks. Three months later, when compared to the non-incentivized participants, those in the “standard” incentive group had three times the odds of meeting their weight loss goals, while those in the “standard plus deposit” incentive group who “bet” on their weight loss were twice as likely to meet their goals.

For each participant, we also computed a *diabetes risk score*, or DRS, based on behaviors such as participation in regular physical activity and healthy eating, as well as a history of having chronic conditions such as high blood pressure, high blood cholesterol or high body weight for

height. People in both of the incentivized groups had a lower DRS ( $p < 0.05$ ) at 16 weeks. After 28 weeks the DRS dropped significantly ( $p = 0.045$ ) for the “standard plus” incentive group only. Thus it appears that even though the “standard plus” incentive did not produce as much weight loss as the “standard plus” incentive (see above), it had a larger impact on total risk of type 2 diabetes, which is a more comprehensive indicator.

Overall, these findings offer encouragement for both the potential effectiveness of a weight loss intervention and for the possible prevention or delay of development of type 2 diabetes. In our present study, the program goal was weight loss and we linked the amount of weight loss or gained to the amount of the money that participants would be rewarded (due to weight loss) or would lose (due to weight gain). Importantly, eligible participants did not receive their incentives immediately, so there was no immediate reward but rather encouragement for long-term goal setting to lose weight and maintain the weight loss.

Contingency management (CM) or behavioral economics, utilizing monetary incentives, has been receiving increasing attention as a way to address risky behaviors such as smoking or drug addiction. The theory holds that an individual does an implicit cost/benefit analysis before engaging in the behavior; for example, for over-eating, the cost could be gaining weight or being unhealthy while the benefit is the instant gratification of enjoying the meal. Incentives or rewards act as reinforcers of the person’s engagement in or abstinence from the undesirable behavior. In our study, both versions of monetary incentive appeared more effective than no incentive at all. However, more study is needed to identify the key elements of an effective incentivized weight loss program, how incentives should best be used and how they affect the outcome.

***Dr. Faghri is a professor in the UConn Department of Allied Health Sciences, the Biomedical Engineering Program, and the Department of Community Medicine and Health Care, School of Medicine. She also directs the UConn Center for Environmental Health and Health Promotion.***

## References

1. Centers for Disease Control and Prevention (CDC). National diabetes fact sheet: National estimates and general information on diabetes and prediabetes in the United States. 2011.
2. Trogon JG, Finkelstein EA, Hylands T, Dellea PS, and Kamal-Bahl SJ. Indirect costs of obesity: A review of the current literature. *Obesity Rev* 2008; 9 (5): 489–500.
3. American Diabetes Association. Economic costs of diabetes in the U.S. in 2007. *Diabetes Care*. 2013; 36(4):1033-1046.
4. Benedict MA, Arterburn D. Worksite-based weight loss programs: A systematic review of recent literature. *Am J Health Promot*. 2008; 22(6):408-416.
5. Atlantis E, Chow CM, Kirby A, Fiatarone Singh MA. Worksite intervention effects on physical health: A randomized controlled trial. *Health Promot Int*. 2006; 21(3):191-200.
6. Kane RL, Johnson PE, Town RJ, Butler M. Economic incentives for preventive care. *Evid Rep Technol Assess (Summ)*. 2004; 101:1-7.
7. Volpp KG, John LK, Troxel EB, Norton L, Fassbender J, Loewenstein G. Financial incentive-based approaches for weight loss: A randomized trial. *J Amer Med Assoc*. 2008; 300(22):2631-37.
8. Faghri, PD, Rui Li. Effect of financial incentive in a workplace diabetes prevention program. *The Obesity Journal*. 2014; 6: 1-12.
9. Lahiri S, Faghri PD. Cost-effectiveness of a workplace based incentivized weight loss program. *J Occ Envir Med*. 2012; 54(3): 731-737.



*CPH-NEW, a Center for Excellence to Promote a Healthier Workforce of the U.S. National Institute for Occupational Safety and Health, is a joint initiative by the University of Massachusetts Lowell and the University of Connecticut. CPH-News & Views is a semi-monthly column written by Center researchers on emerging topics related to healthy workplaces. These comments reflect the thoughts of individual researchers and do not represent conclusive research summaries, nor do they necessarily reflect a*

*consensus among all Center personnel. We welcome your responses and discussion. Please send all questions and comments to [CPHNEW@uml.edu](mailto:CPHNEW@uml.edu).*