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EDITORIAL COMMENT

Paying Smokers to Quit

Does It Work? Should We Do It?*



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An addictive, legal product, tobacco is challenging to quit. Although cessation medications and behavioral therapies improve success rates, recent research in behavioral economics suggests an interesting, simple approach: pay smokers to quit. This idea has been tested in a few studies. Volpp et al. (1) found that a cash reward of \$750 U.S. dollars (USD) increased abstinence 3-fold, from 5% to 15%. A meta-analysis of 9 trials of financial incentives showed increased abstinence during the payment period, but effects were lost once the rewards ended (2).

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In this issue of the *Journal*, Etter and Schmid (3) focused on low-income smokers in Geneva, Switzerland, who were motivated to quit. The study was conducted outside of the workplace, and 42% of participants were students and another 19% were unemployed, with a median income of just USD \$20,000. As tobacco use has become increasingly concentrated among those of lower education and income, the unemployed, and young adults,

treatments that work outside of the clinic or worksite are needed (4). All participants were provided a cessation booklet, and encouraged to obtain information about quitting from the study's website and engage a friend or family member to support their quit attempt. The intervention group received an escalating financial incentive of up to USD \$1,650 in supermarket vouchers for biochemically confirmed abstinence at 6 time points over the 6-month follow-up.

The intervention group was significantly more likely than the control group to read the cessation booklet (64% vs. 55%), access online cessation help (20% vs. 14%), and register a supporter (8% vs. 3%). Furthermore, the intervention group was more likely to provide biochemical verification of their self-reported abstinence out to the 6-month follow-up (83% vs. 68%), and with lower attrition out to 18 months (7% vs. 13%).

With regard to abstinence, the incentives intervention was associated with a significantly greater likelihood of a serious quit attempt (82% vs. 63%) and higher 7-day point-prevalence abstinence, although relapse was comparable by condition. Abstinence declined when incentives were still being provided, and declined further when the incentives had ceased. Similarly, a previous research study found that nicotine replacement therapy significantly increased initial quitting, rather than preventing relapse (5). Importantly, the net result is a gain in abstinence and, in the current study, continuous abstinence at 18 months was 9.5% (intervention) versus 3.7% (control), with an odds ratio of 2.72 ($p = 0.001$).

Some in the tobacco control field are concerned that standard cessation interventions may increase health disparities (6) because more educated or privileged communities may have greater access to cessation medications or counseling services.

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Financial incentives, however, may be more effective among low-income smokers, as the same level of payment may be more influential. Thus, financial incentives may be unique in reducing disparities in tobacco use among those in poverty and with lower educational attainment.

But how much will it cost and who will pay? Etter and Schmid (3) paid USD \$1,650 to participants who quit at all time points over 6 months. With an estimated number needed to treat of 17, the cost would be USD \$28,050 to yield 1 additional long-term quitter. One has to wonder who will be willing to pay for this initiative. Even in the worksite setting, where the return on investment may be realized, adoption of financial incentives has been limited. The trial by Volpp et al. (1) proved incentives to be effective, yet the workplace where it was tested did not adopt it—the company opted for insurance premium penalties for smokers, rather than payment incentives for quitting (7), in part because many nonsmoking employees viewed financial incentives to smokers as unacceptable. In translating the intervention to policy, how do we make incentives viable? One option, for perceived fairness, may be offering everyone some type of incentive program matched to his or her health risks (8). Many pressing, unanswered questions exist concerning the effectiveness and cost-effectiveness of financial incentives for behavior change.

Another question is how big the incentives need to be. Etter and Schmid (3) argued that small rewards might be ineffective, so they decided to use relatively large incentives. Yet they found comparable odds of quitting to those in the Volpp et al. (1) trial, which employed smaller and less frequent incentives. Collaboration is needed to pool patient-level data across multiple studies and identify how the effectiveness of a financial incentive varies with factors such as patients' household income, education, financial distress, motivation to quit, and level of nicotine dependence. Adequately powered individual studies that randomize smokers to incentives of variable sizes also are needed.

Furthermore, what should ideally be incentivized: goal-directed behaviors or outcomes? Might incentives directed at achieving evidence-based, but often underutilized steps, toward smoking cessation (e.g., using nicotine replacement therapy, participating in cessation counseling) be as effective as incentives solely for successful abstinence? The answer has great scientific importance because it would inform whether incentives are freestanding treatments, or are facilitators of treatment, steering

patients toward use of evidence-based therapies, or both. Moreover, if incentives can be effectively used to steer patients toward engagement in treatment approaches that bolster intrinsic motivation (e.g., motivational interviewing), concerns that incentives exploit extrinsic at the expense of intrinsic motivation may be ameliorated. A robust head-to-head comparison of goal-directed versus outcome-based incentives has yet to be published, although 2 relevant trials are underway (NCT01826331, NCT02506829).

A third critical question is how to most effectively incorporate lessons from behavioral economics and psychology into the design of financial incentive interventions. Provocative insights from these fields include the power inherent in more frequent and immediate payments (9), the impact of regret aversion (10), and the effects of peer comparisons on behavior and choice (11). For example, prior incentive studies of smoking cessation have incorporated regret aversion by providing participants with feedback about the incentives they would have received had they successfully quit smoking (12). Other studies suggest that psychological motivation can be amplified by providing individuals with smaller and more frequent incentive payments, rather than larger, infrequent payments (9). Social networks and peer comparisons also hold promise for amplifying the effects of financial incentives.

Finally, we have much to learn about the financial viability and sustainability of incentives for smoking cessation. Some studies suggest that smoking cessation interventions have good value from a payor perspective and may be cost saving from a societal perspective (13,14). However, most incentive studies have not incorporated formal cost-effectiveness analysis. A related issue is the comparative effectiveness of vouchers, cash, and other forms of financial incentives. Economic theory suggests that cash is the most effective incentive, because people may value vouchers or gifts at a level less than their purchase price. In the study by Etter and Schmid (3), it would be important to understand how participants valued the supermarket vouchers received. Last, in addition to the financial benefits of forgoing the purchase of cigarettes, individuals who quit smoking may be more successful in the workforce (15). These effects should be measured.

Research into use of financial incentives for smoking cessation is at an exciting stage, and Etter and Schmid (3) provide important information about incentive effectiveness, generalizability, and durability. Although participants in their study were largely ready to quit, incentives may prove useful

for engaging unmotivated smokers in quitting. Future work should aim to bridge critical knowledge gaps concerning incentive design and delivery, and ultimately, inform the comparative effectiveness of financial incentives relative to other clinical and behavioral approaches to treating nicotine addiction.

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