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Improving Medicaid Health Incentives Programs: Lessons from Substance Abuse Treatment Research

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Abstract

This commentary addresses the efforts of Medicaid programs in several US states to employ financial incentives to increase healthy behavior among their beneficiaries. While these Medicaid incentives programs have been successful at boosting rates of less effortful behaviors, like semiannual dental visits, they have fallen short in promoting more complex behaviors, like smoking cessation, drug abstinence, and weight management. Incentives have been extensively studied as a treatment for substance use disorders for over 20 years, with good success. We identify two variables shown by meta-analysis to moderate the efficacy of incentives interventions in substance abuse treatment, the immediacy of incentive delivery and size (or magnitude) of the incentive, that are lacking in current Medicaid incentives program. We also offer some guidance on how these moderating variables could be addressed within Medicaid programs. This is a critical time for such analysis, as more than 10 states are employing incentives in their Medicaid programs, and some are currently reevaluating their incentives strategies.

1. Introduction

Interest in using financial incentives to promote healthy behavior change is increasing as the role of personal behavior is recognized as a major factor in chronic disease and escalating health care costs (Higgins et al., 2012). Incentive-based interventions systematically apply the behavioral science principle of reinforcement to promote health behavior change (Higgins et al., 2004). Spurred by the success of incentive interventions to treat cocaine dependence, incentives to treat substance use disorders (SUDs) and related health problems have garnered substantial scientific attention in the last 25 years. Reviews by our group have identified 135 controlled studies published in peer-reviewed journals where incentives were used to treat SUDs and related health problems (e.g., counseling attendance, medication

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compliance) and collectively provide unequivocal empirical evidence supporting the efficacy of incentives in the treatment of these complex behavioral disorders (Lussier et al., 2006; Higgins, Sigmon, & Heil, 2011).

Medicaid has been at the forefront of recent large-scale efforts to use incentives to promote a variety of important health behaviors, from adherence with wellness visits to smoking cessation (Centers for Medicare & Medicaid Services, 2011; Koh & Sebelius, 2010). One recent evaluation of several Medicaid incentive programs concluded that they are producing mixed results, especially with more challenging behaviors such as smoking cessation (Blumenthal et al., 2013). This is surprising given the extensive scientific literature supporting the efficacy of incentives to treat complex behavioral disorders such as SUDs and suggests that efforts to apply the lessons learned in scientific evaluations of incentives could improve the implementation and effectiveness of Medicaid incentive programs. Indeed, it would be unfortunate if the potential for wide-scale dissemination of incentive interventions for healthy behavior change is handicapped by preventable errors in design and implementation.

In addition to establishing the overall efficacy, a significant potential contribution of the large extant literature on incentives for the treatment of SUDs is the ability to identify key variables that moderate outcomes, providing a evidence-based primer on the individual parameters most important to outcomes. For example, data from both controlled laboratory studies and clinical trials illustrate that the immediacy of incentive delivery and the monetary amount or magnitude of the incentive are two robust moderators of the efficacy of incentive interventions (Lussier et al., 2006). In this commentary, we briefly discuss why these two parameters are critical to the success of incentive interventions, generally assess how they have manifest in existing Medicaid incentive programs, and make recommendations for enhancing the effectiveness of current and future Medicaid incentive programs.

2. Immediacy

Human decision-making is biased toward the present, such that immediate rewards tend to be preferred over delayed rewards (Loewenstein et al., 2007). Using cigarette smoking as an exemplar, the rewards of smoking (e.g., relief of withdrawal and reductions in anxiety, irritability, and difficulty concentrating) occur within seconds of taking a puff. Quitting smoking also has rewards, such as words of encouragement from loved ones, saving money, reductions in heart rate and blood pressure, improved lung function, and decreased risks of cardiovascular disease and cancer. While some of these rewards are immediate, the rewards of quitting smoking that impact long-term health the most, improved lung function and reduced risks of cardiovascular disease and cancer, are far delayed from the behavior of quitting smoking and thus may not effectively compete with the immediate rewards of smoking. Incentives can address such bias for the present by providing an immediate reward that can help bridge the delay until the individual receives the delayed but more significant health benefits of the behavior change.

The meta-analysis by Lussier et al. (2006) provides a clear illustration of this, reporting that delays of more than one day between the target change in behavior (i.e., biochemically-verified abstinence from drug use) and incentive delivery was associated with a reduction in incentive effectiveness by as much as 50%. In many Medicaid incentive programs, incentives take up to four months to be delivered due to what is typically a multi-step verification process. For example, Florida uses a 3-step process whereby (1) evidence that a beneficiary engaged in a healthy behavior is submitted to Medicaid by the beneficiary or their health care provider, (2) Medicaid approves this documentation, and (3) Medicaid transfers the incentive to the beneficiary. While verification is essential to sustaining the incentive system's integrity, delays between healthy behaviors and incentive delivery must be minimized to ensure the incentive system's effectiveness. Consistent with this, Wisconsin's recent analysis of six pilot Medicaid incentive projects found that the most successful projects delivered the incentives onsite (Wisconsin Department of Health Services, 2013).

Outside of Medicaid, researchers have developed web-based platforms to facilitate more expedient verification of healthy behaviors to minimize delays to reward delivery. These platforms, such as Way to Health (Asch & Volpp, 2012) and Motiv8 (Dallery & Raiff, 2011), receive electronically transmitted data regarding engagement in health behaviors such as blood glucose measurements for diabetes management and expired carbon monoxide to verify smoking cessation. Upon receiving verification that the health behavior was performed, incentives are transferred electronically without delay. An added benefit of these web-based platforms is objective verification of engagement in healthy behaviors by assessing biomarkers for health improvement. To our knowledge, these web-based platforms are currently being used solely in research settings, but they demonstrate the feasibility and potential utility of a relatively cost-efficient electronic infrastructure that could be adapted to help Medicaid improve immediacy and thus enhance efficacy of their incentive programs.

3. Magnitude

Human decision-making also has a natural bias toward preferring larger over smaller rewards, given equal immediacy (Ainslie, 1975; Loewenstein & Prelec, 1992). Returning to the smoking exemplar, a smoker faced with the choice to smoke or to quit on a given day is weighing the rewards of smoking that day (immediate positive and negative reinforcing effects of nicotine) to the immediate rewards of quitting smoking that day (e.g., lower heart rate and blood pressure, some words of encouragement from loved ones, saving money). Incentives can directly mitigate this bias towards unhealthy but larger rewards by increasing the size of the reward associated with choosing the healthier option.

Drawing again from the meta-analysis by Lussier et al. (2006), while incentives for achieving drug abstinence averaging less than \$5 per day were efficacious, there was a linear increase in efficacy as incentive magnitude increased, with the best results obtained with incentives that averaged more than a \$16/day. By contrast, Medicaid beneficiaries in Florida earn \$15 for quitting smoking for 6 months, which is \$0.08 per day and orders of magnitude below the amounts shown to be efficacious in the meta-analysis. Florida assigned a \$15 magnitude to 6 months of smoking cessation because their overall incentive framework

called for annual behaviors to earn \$25, semiannual behaviors \$15, and more frequent behaviors \$7.50 (Greene, 2007). While logical in some respects, in actuality this formula means that getting your teeth cleaned once every 6 months and quitting smoking for 6 months both earn \$15, ignoring the very different effort involved in achieving the two. Data on the number of credits earned by Florida Medicaid beneficiaries appear to support this mismatch. From 2006 to 2012, beneficiaries earned 242,587 credits (totaling over \$6 million) for attending routine dental appointments compared to two credits (totaling \$30) for smoking cessation success (Florida Agency for Health Care Administration, 2012). Increasing incentive magnitude for more effortful behaviors like smoking cessation would likely help ameliorate some of this substantial disparity.

While the costs associated with incentive interventions for SUDs may appear large, every cost-effectiveness analysis that we are aware of has found them to be cost-effective (National Collaborating Centre for Mental Health [NCCMH], 2007; Olmstead & Petry, 2009; Sindelar et al., 2007). The largest was an independent cost-effectiveness analysis of incentives to promote cocaine abstinence commissioned by the National Institute for Health and Clinical Excellence (NICE) in the UK (NCCMH, 2007). NICE has since recommended incentives be used to treat stimulant dependence and to reduce illicit drug use and promote engagement with services for people in opioid agonist maintenance treatment nationwide in the UK (NCCMH, 2007). Considering that Medicaid's smoking-attributable expenditures were recently conservatively estimated at \$22 billion nationwide (Armour et al, 2009), testing larger magnitude incentives seems more than justified.

4. Conclusions

State Medicaid programs are to be applauded for their forward-looking and science-based efforts to improve the health of their beneficiaries and curtail spiraling health care costs through incentives. However, recent evaluations suggest these programs may not be as successful as they could be, especially when targeting complex behaviors (Blumenthal et al., 2013). Based on over 20 years of research into incentives as treatments for complex SUDs, much of which was conducted with Medicaid-eligible populations, we strongly believe that increasing the immediacy of incentive delivery and the monetary value of incentives, particularly for challenging health behaviors that require more effort to change, will lead to better outcomes in Medicaid incentive programs. Connecting the development of these programs to the extensive and still-expanding SUD knowledge base is likely to benefit state Medicaid programs as they work to design better, empirically-based incentive interventions to promote healthy behavior change among their beneficiaries. It is also worth noting that we are not the only group to make recommendations about immediacy and magnitude. The fact that Blumenthal and colleagues, another group with significant expertise with incentive interventions, made similar recommendations should further underscore the fundamental role of these variables in the efficacy of incentive interventions.

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References

- Ainslie G. Specious reward: A behavioral theory of impulsiveness and impulse control. *Psychol Bull.* 1975; 82:463–496. [PubMed: 1099599]
- Armour BS, Finkelstein EA, Fiebelkorn IC. State-level Medicaid expenditures attributable to smoking. *Prev Chronic Dis.* 2009; 6:A84. [PubMed: 19527585]
- Asch DA, Volpp KG. On the Way to Health. *LDI Issue Br.* 2012; 17(9):1–4.
- Blumenthal KJ, Saulsgiver KA, Norton L, Troxel AB, Anarella JP, Gesten FC, Volpp KG. Medicaid incentive programs to encourage healthy behavior show mixed results to date and should be studied and improved. *Health Aff.* 2013; 32:497–507.
- Centers for Medicare & Medicaid Services. Patient protection and Affordable Care Act section 4108, Medicaid incentives for prevention of chronic diseases (MIPCD), initial announcement. 2011. (CMS Publication No. CMS-1B1-11-001). Retrieved from <http://innovation.cms.gov/Files/fact-sheet/MIPCD-Funding-Opportunity-Announcement.pdf>
- Dallery J, Raiff BR. Contingency management in the 21st century: Technological innovations to promote smoking cessation. *Subst Use & Misuse.* 2011; 46:10–22.
- Florida Agency for Health Care Administration. Florida Medicaid reform, Year 6 annual report. 2012. Retrieved from: http://www.ahca.myflorida.com/Medicaid/medicaid_reform/pdf/FL_1115_YR_6_Final_Annual_Report_07-01-11_06-30-12.pdf
- Greene, J. Medicaid efforts to incentivize healthy behaviors. Center for Health Care Strategies; Hamilton, NJ: 2007. Retrieved from http://www.chcs.org/usr_doc/Medicaid_Efforts_to_Incentivize_Healthy_Behaviors.pdf
- Higgins ST, Heil SH, Lussier JP. Clinical implications of reinforcement as a determinant of substance use disorders. *Annu Rev of Psycho.* 2004; 55:431–461.
- Higgins, ST.; Sigmon, SC.; Heil, SH. Lowinson and Ruiz's Substance Abuse: A Comprehensive Textbook. 5th edn. Lippincott, Williams & Wilkins; Philadelphia, PA: 2011. Contingency management in the treatment of substance use disorders: trends in the literature; p. 603-21.
- Higgins ST, Silverman K, Sigmon SC, Naito NA. Incentives and health: An introduction. *Prev Med.* 2012; 55:S2–S6. [PubMed: 22554884]
- Koh HK, Sebelius KG. Promoting prevention through the Affordable Care Act. *N. Engl. J. Med.* 2010; 363:1296–1299. [PubMed: 20879876]
- Loewenstein G, Brennan T, Volpp KG. Asymmetric paternalism to improve health behaviors. *JAMA.* 2007; 298:2415–2417. [PubMed: 18042920]
- Loewenstein G, Prelec D. Anomalies in intertemporal choice: Evidence and an interpretation. *The Q J of Econ.* 1992; 107:573–597.
- Lussier JP, Heil SH, Mongeon JA, Badger GJ, Higgins ST. A meta-analysis of voucher-based reinforcement therapy for substance use disorders. *Addict.* 2006; 101:192–203.
- National Collaborating Centre for Mental Health (UK). Drug Misuse: Psychosocial Interventions. British Psychological Society; Leicester (UK): 2007.
- Olmstead TA, Petry NM. The cost-effectiveness of prize-based and voucher-based contingency management in a population of cocaine- or opioid-dependent outpatients. *Drug and Alcohol Depend.* 2009; 102:108–115.
- Sindelar J, Elbel B, Petry NM. What do we get for our money? Cost-effectiveness of adding contingency management. *Addict.* 2007; 102:309–316.
- Wisconsin Department of Health Services. Do incentives work for Medicaid members? A study of six projects. 2013. (P-00499). Retrieved from <http://www.dhs.wisconsin.gov/publications/p0/p00499.pdf>