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## P4P4P: An Agenda for Research on Pay for Performance for Patients

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### Abstract

Unhealthy behaviors are a major cause of poor health outcomes and high health care costs. In this Commentary, we describe an agenda for research to guide broader use of patient-targeted financial incentives either in conjunction with provider-targeted financial incentives (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 underutilization of these approaches, and options for operationalizing 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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“Pay for performance” (P4P) in the United States has become synonymous with incentives for providers of medical services, aiming to improve the quality of care delivered by clinicians, hospitals, and health care systems. A wide range of P4P schemes are current across the United States, though evidence to date has not shown that they greatly improved outcomes.<sup>1</sup>

Although P4P continues to receive most of the attention paid to incentive schemes associated with health care, there is growing interest in an alternative, potentially complementary approach applying incentives to patients rather than providers.<sup>2</sup> Patients' behavior before or after getting medical services can significantly affect health outcomes. Designing better incentives for patients is a promising development, because the potential benefits in improving population health are arguably greater for patient-targeted than provider-targeted interventions. We discuss the potential for targeted patient incentives, “Pay for Performance for Patients” (P4P4P), as a potentially cost-effective means of improving health and highlight research needed for P4P4P to be used more effectively.

## P4P4P: The potential

The potential benefit of interventions to improve patient behaviors exceeds that of interventions aimed at health care providers in part because unhealthy behaviors may contribute more than inadequate health care to poor health and premature mortality. Unhealthy behaviors such as smoking, poor diet and sedentary lifestyles account for as much as 40% of premature mortality in the United States, whereas deficiencies in health care delivery account for only 10%.<sup>3</sup> Smoking, the leading cause of preventable mortality, accounts for approximately 435,000 deaths each year, but only 2–3% of smokers quit each year.<sup>4</sup> Obesity is the second leading cause of preventable mortality, and obesity rates have increased dramatically in the United States in the past two decades.<sup>5</sup> The social and structural environment, public policies, genetics, and provider access and quality affect the rate of such behaviors, but individuals' behavioral choices – potentially more amenable to incentives – are clearly a central driver.

Incentive-based approaches can be highly effective in two areas: (1) increasing use of preventive services that involve a limited number of visits and (2) reducing the use of addictive substances. Examples of effective incentives in increasing use of preventive services include studies showing increases in rates of follow-up of abnormal pap smears, postpartum visits by adolescents, PPD test reading, and the rate at which IV drug users received all 3 doses of hepatitis B vaccine compared to outreach alone.<sup>6</sup> The evidence that such approaches reduce the use of addictive substances such as cocaine and nicotine in the short term as well as for short-term weight loss, suggests that financial rewards to promote long-term changes in behavior could affect a wide range of health behaviors requiring frequent reinforcement and longitudinal follow-up.<sup>7</sup>

Another reason to consider further testing of incentive-based approaches is that many highly efficacious medical tests, treatments and medications have limited effectiveness due to patient behaviors. For example, one year after a myocardial infarction, nearly half of patients prescribed cholesterol medications have stopped taking them.<sup>8</sup> Much variability in outcomes following admissions for medical treatments or procedures in which public reporting and P4P incentives generally focus on physician or hospital performance actually depends on patient adherence to provider advice to not smoke and to take their medications.<sup>9</sup>

## P4P4P: The current situation

Wider use of P4P4P makes sense in part because of 'imperfections' in the insurance market. In contrast to automobile insurance where policies are individually purchased and premiums are based on each person's driving behavior and prior accident record, most American health insurance premium structures contain no deterrent to unhealthy behaviors. 85% of the US population has employer-sponsored or federal or state health insurance providing no relation between individual behaviors and the premiums individuals pay. Individuals may engage in risk-increasing behavior at higher rates than if their premiums were related to the medical cost consequences of that behavior. Providing either rewards for higher levels of healthy behaviors or penalties for lower levels could lead individuals to internalize the costs and benefits their behaviors impose on their health insurance pool and on the health care system.<sup>10</sup>

P4P4P is most widely used currently in large corporations, where it is increasingly common to provide employees incentives to engage in health-promoting behaviors.<sup>11</sup> However, only a few behaviors are targeted and few large firms are doing this, a number that could increase if there were better evidence about the effectiveness and cost-effectiveness of this approach. Employers may realize significant benefits in decreased absenteeism and increased productivity from higher rates of healthy behavior. For example, each adult smoker costs

\$1,760 annually in lost productivity and \$1,623 in excess medical expenditures.<sup>12</sup> Simulations suggest that the savings from decreased absenteeism and increased productivity outweigh future savings in health care costs.<sup>13</sup>

Blue Shield of California, IBM, Wells Fargo & Company are using positive incentives as ‘carrots’, giving employees monetary rewards for activities like filling out health risk assessment forms and exercising. UnitedHealth Group Inc. deposits money into medical savings accounts for selected patients with chronic conditions who adhere to prescribed regimens.<sup>14</sup> Scotts Miracle-Gro Company uses both “carrots” and “sticks” to motivate behavior change in their workforce. Employees are ‘strongly encouraged’ to take health-risk assessments and are charged higher premiums for refusing or not following the recommendations.<sup>15</sup> Other ‘stick-based’ approaches include rejecting job applicants who do not have a “healthy lifestyles,” firing employees who smoke, and reducing insurance coverage when Medicaid recipients fail to follow clinical recommendations.<sup>16</sup> Evaluations of these programs rarely appear in peer-reviewed journals and we only know of one intervention run as a randomized controlled trial,<sup>17</sup> making inferences about effectiveness difficult. More rigorous analysis would greatly help us learn about the effectiveness and relative cost effectiveness of different approaches.

A major limitation to wider use of such approaches is the lack of data to guide their development. We know little about the relative costs and benefits of different incentive designs, the magnitude and frequency of the incentives, the optimal program duration, the relative effectiveness of cash and non-cash equivalents, positive versus negative rewards, targeting of different populations, and the value of pairing incentive-based approaches with communication, education, and tailoring. These areas all need careful study to help us understand how to use incentive-based approaches most effectively. Another significant research need is for examination of longer-term impacts on behavior.<sup>18</sup>

Extensive evidence shows that *increases* in copayments for prescription drugs decrease rates of refills of prescriptions and adherence rates. In higher risk populations, the savings insurers realize from increased cost sharing by patients may largely be offset by increases in the utilization of hospitalizations and emergency room visits.<sup>19</sup> This possibility has motivated many current value-based insurance initiatives. However, we know little about the cost effectiveness of *reductions* in copayments. It is often implied that reductions will improve health to the same extent as the adverse impact on health observed with increases, though this may not occur if people respond differently to equally valued incentives framed as gains (reductions) or losses (increases). Some evidence suggests that cost savings would result from providing ACE inhibitors to diabetics without copayments.<sup>20</sup>

## The resistance to P4P4P

Given the potential benefits of improving health behaviors and the success of incentive-based interventions in some contexts, why have incentive programs not become more prevalent?

One reason is that many insurers and employers are skeptical about effectiveness. The evidence base is largely limited to short-term follow-up studies of preventive services, though this evidence is arguably stronger than the evidence for P4P for providers. Another reason is that some published studies have found no effect of incentives. For example, a recent Cochrane review of financial incentives for smoking cessation in workplaces concluded that financial incentives do not increase smoking cessation rates in employer settings.<sup>21</sup> This is not the same as evidence of no effect; none of the studies reviewed had the power to detect an 80% increase in long-term quit rates and the magnitude of the

incentives was generally too small to constitute an adequate test. Some of the studies had payments with expected values as low as \$10.

Another reason insurers or employers may be reluctant to invest in these approaches are high rates of turnover in private insurance markets and among employees, meaning that savings in future medical expenditures are likely to accrue to others. This is less of an issue for firms or entities such as Medicare or the VA with very low turnover rates. In addition, the costs of incentive programs are immediate and tangible, whereas savings from reduced medical costs or increased productivity are delayed and may accrue to different people than those who would pay for the incentive programs.

There are perverse supply-side incentives that may contribute to the lack of enthusiasm toward P4P4P. Hospitals and physician practices generally make money by treating sick patients, particularly through procedural interventions, not from keeping people healthy. Health systems are unlikely to use limited resources to incent patients to improve health behaviors unless they expect those programs to attract a larger share of profitable patients from a given community.

Another issue is the need for precise targeting so that incentive programs do not largely reward people for doing 'what they would have done anyway.' This can be avoided if a program selectively uses penalties or if it reduces general rewards like annual raises. This must be balanced against considerations of fairness, but could mean that such programs should be offered to all employees or policy holders who meet certain categorical criteria, such as a weight loss incentive program for diabetics with BMIs greater than 30. The legal parameters of what employers and insurers can do in this regard are still being delineated, though employers may have more latitude than community insurers.<sup>22</sup> Consideration also needs to be given to how to best 'hold harmless' patients, who on the basis of medical advice are not utilizing generally recommended therapies; for example, a patient who has been told to avoid beta blockers after a heart attack because of severe asthma.

Finally, some people have perhaps somewhat amorphous moral or ethical reservations about paying people to take actions that, it is felt, they should take on their own. The resistance to incentive plans may be particularly strong among patients such as lifelong non-smokers, who may complain that rewarding smokers for not smoking is unfair, though the framing of such programs significantly affects patients' perceptions.<sup>23</sup> Paying smokers to stop smoking, for example, may benefit non-smokers within an insurance pool because their health insurance premiums may decrease.

## Options for operationalizing P4P4P

### Performance-based incentives for healthy behaviors

In our opinion, the greatest potential gains from P4P4P come from providing rewards for good health behaviors. Many patients have strong health incentives to quit smoking, lose weight, or take beneficial medications, but fail to do so, in part because the benefits tend to be delayed and intangible if not entirely invisible. Patients thus face what have been labeled "internalities", in which they do not recognize that they are imposing costs on themselves, much as "externalities" entail a failure to internalize costs imposed on others.<sup>24</sup> Rewards can provide immediate and tangible benefits for reducing such costs by improving health behaviors, leading patients to internalize future costs they impose on themselves. Rewards can encourage behaviors that are beyond the reach of insurance cost sharing because they don't involve utilization of health services directly, such as smoking cessation or weight loss.

There are important logistical considerations. Given concerns about high rates of turnover, incentive programs are more likely to be cost effective in cases with high short-run payoffs such as asthma management or smoking, given the losses in productivity associated with frequent smoking breaks. In cases with a compelling public health rationale such as non-adherence to medication among patients with multi-drug resistant TB, government intervention may be appropriate. For payers such as the Veterans Administration or Medicare, which serve as long-term insurance providers, it may be cost effective to provide incentives for changes in health behaviors with longer-term payoffs, for instance improved blood pressure control.

Other incentive interventions could involve selectively lowering copayments for obtaining certain medications, tests or treatments. High copayments are commonly used to reduce demand for insured services, relative to full coverage. Insurers tend to target a few highly effective but underused services for low copayments, rather than selectively raising copayments for things that are overused. More discriminating use of cost sharing to encourage utilization of underutilized high-benefit services and discourage utilization of over-utilized low-benefit services might be appropriate.<sup>25</sup> Variation in patient cost-sharing could include reduction of copayments below zero for high-benefit services, such as the use of cholesterol-lowering medications after acute myocardial infarction. Although the changes in patient prices from such interventions might be small relative to the total price covered by the insurer, such changes likely receive substantial weight in patient decision making because such copayments are immediate and tangible, in contrast to the medical benefits, which tend to be delayed and intangible.

### **Supercharging incentives: insights from behavioral economics**

Many of the patient-targeted incentive programs introduced to date have not utilized insights gained from behavioral economics on the psychology of human motivation. This makes their success all the more impressive, but suggests that more carefully crafted incentive interventions could provide 'more bang' for the same buck.

One important lesson from the psychology literature is that very small incentives can have a large impact if delivered with great frequency, ideally soon after behaviors that are being incentivized take place. In one set of landmark studies, Higgins and coauthors induced long-term abstinence from heroin and cocaine addicts using very small reward vouchers redeemable for consumer goods delivered daily on proof of abstinence,<sup>26</sup> even though the manifestly larger rewards incumbent on kicking their addiction had failed. These programs are highly cost effective, even in comparison with the cost of the drug alone – i.e., ignoring costs such as crime and unemployment.<sup>27</sup> Moreover, a meta-analysis of such programs found that the immediacy of reward delivery was a key predictor of program efficacy.<sup>28</sup> Likewise, a daily lottery-based incentive for warfarin adherence showed significant improvements in both inappropriate medication dosing and time out of INR range.<sup>29</sup> Providing small but tangible rewards may be even more effective in clinical contexts such as high blood pressure or hypercholesterolemia in which patients are asymptomatic but need to take medication regularly.

Another important lesson is that the same gain or loss can have very different impacts depending on how it is 'framed'. Most importantly, when it comes to incentives for health promoting behavior, small gains and losses segregated from larger payments are more likely to influence behavior than those integrated into larger payments.<sup>30</sup> Thus, getting a discount of \$25 off a \$1,000 insurance premium is likely to be much less motivating than receiving a separate payment of \$25. For this reason, a reward-based program may be more effective than a program based on insurance premium adjustment. People may prefer insurances

which charge higher upfront premiums but provide frequent and explicit rewards for good behavior.

We believe that positive incentives generally work better than negative incentives. In some cases, such as quitting smoking or dieting, healthy behaviors remove a major source of pleasure and are likely to cause stress. Introducing the threat of sanctions does nothing to offset the loss of pleasurable activities and is likely to exacerbate the stress, which has been shown to cause relapse to addiction as well as violation of diets.<sup>31</sup> Patients are also less likely to voluntarily accept incentive schemes that involve punishment rather than reward and are likely to be resentful if such programs are introduced without their consent. However, 'stick-based' approaches are used fairly widely and direct comparisons of positive and negative incentives should be more systematically tested.

Lotteries are likely to be more effective than direct monetary payments if the expected value of rewards is small. People tend to discount very small costs and benefits, a phenomenon known as the 'peanuts effect' which helps to explain the popularity of lotteries.<sup>32</sup> People also tend to over-weight small probabilities, which also helps to account for the popularity of lotteries.<sup>33</sup> Both of these factors suggest that lottery payments will provide greater motivation than small certain payments of equal expected value; if the direct payment is large this is probably not the case. Deposit contracts, in which individuals voluntarily enter into agreements in which they lose money if they fail to meet certain health goals, can be used to take advantage of loss aversion, a well-documented phenomenon in which people feel the pain of losses much more strongly than the joy of a gain of equal magnitude.<sup>33</sup>

A final idea that we believe has great potential but, to the best of our knowledge has yet to be tried, would involve providing patient and physician with a joint incentive bonus contingent on achievement of a specific goal, such as smoking cessation or weight loss. The prospect of such a joint payment could create the feeling of patients and physicians being on the same 'team' working together toward a mutually desirable goal. Such approaches could also be used in creating incentives for groups of patients that would be realized if your 'buddy' or other members of the team realize their goals.

## Open issues

Although the potential for improvements in population health may be greater by incenting patients rather than providers, there are a number of other unresolved questions that must be addressed by future research.

One question is whether it is better to make incentives contingent on outcomes, such as weight loss, or on behaviors, such as increasing exercise or improving diet. The advantage of incentivizing outcomes is that outcomes are typically easier to verify, and patients can choose their own means of achieving them. Incentive programs that target outcomes are likely more cost effective because they pay only if the desired outcomes are achieved. However, patients may feel cheated if they change behaviors but fail to achieve goals sufficient to receive payment. Some patients may have a genetic propensity to be, for example, overweight, making it more difficult to succeed. This suggests that outcomes should perhaps be risk adjusted here as in other types of P4P programs, but better understanding of the relative degree of difficulty for patients with different types of characteristics is needed in order for that to be feasible. More research is needed to determine which types of incentive approaches are best for different types of goals and which are allowable under HIPPA and ERISA for different corporate entities.<sup>22</sup>

Another uncertainty concerns the long-term effects of providing incentives for healthy behaviors. To the extent that incentives change behavior, it is possible that short-term

changes in behavior will be solidified in the form of good habits which remain entrenched even if incentives are removed.<sup>34</sup> On the other hand, it is possible that the introduction of incentives could reduce intrinsic motivation for engaging in healthy behaviors, in which case healthy behaviors could drop to or below their no-incentive baseline once incentives are removed.<sup>35</sup> Again, research is needed to understand the behavioral impact of both introducing and removing incentives.

## Conclusion

Wider use of monetary incentives targeted at patients has the potential to address many important public health problems for which there are no effective solutions. Incentive programs could have cost effectiveness ratios more favorable than many direct intervention programs or commonly covered services, but whether they do must be determined by systematic research. Incentives are most easily justified in encouraging full compliance with treatment of time-limited, highly contagious diseases that are either curable, such as tuberculosis; preventable, such as influenza; or impose substantial costs on others, such as smoking. Efforts by employers or payors to provide performance-based incentives should be carefully analyzed to increase the likelihood that we will learn the relative cost effectiveness of different approaches.

Incentives are commonly used in many aspects of American life. The current norm within group-based insurance plans of charging people who engage in high risk behavior the same premiums as those who engage in unhealthy behaviors implicitly encourages unhealthy behaviors. There have been few systematic attempts to use price reductions or rewards to encourage healthier behaviors. Given that a substantial portion of all health care costs are due to behavior choices, thoughtful testing of incentive programs that share potential savings from healthier behaviors with patients would greatly enhance our ability to determine whether these approaches result in cost-effective improvements in health. This could nicely complement existing provider-targeted P4P efforts and be part of broader efforts to offset common decision errors using insights from economics and psychology.<sup>36</sup> The extent and continuing cost of the disease burden from preventable diseases such as smoking suggest that we can't afford not to systematically investigate this largely overlooked approach to improving health.

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