

Study asks: To improve patients' health, should you pay physicians, patients, or both?

November 8 2015



Credit: Petr Kratochvil/public domain

Providing financial incentives to both primary care physicians and patients leads to a greater reduction in low-density lipoprotein (LDL) cholesterol in patients than paying only the physician or only the patient, according to a new study led by researchers at the Perelman School of Medicine at the University of Pennsylvania. The study, which is the first

to test physician-only and patient-only incentives compared to incentives shared by patients and physicians, is published in the November 10 issue of *JAMA*.

"High levels of LDL, or 'bad' cholesterol are a substantial risk factor for [heart disease](#)," said the study's lead author David A. Asch, MD, a professor of Medicine and Medical Ethics and Health Policy, and executive director of the Center for Health Care Innovation at Penn Medicine. "There are medications called statins that can easily lower LDL. They are once a day, relatively cheap, and have few side effects. Yet, many people who are at risk of heart disease or who already have it are not on statins, and many patients who are prescribed statins stop taking them after a few months," Asch continues. "If we could help these individuals get their LDL cholesterol down, we could save a lot of lives."

"Reducing LDL requires two basic actions," said the study's senior author Kevin G.M. Volpp, MD, PhD, a professor of Medicine and Health Care Management, vice chair of Health Policy, and director of the Center for Health Incentives and Behavioral Economics at Penn Medicine. "First, physicians have to prescribe the appropriate medication. Second, patients have to consistently take the medication. Previous studies focused on incentivizing one group or the other have produced only moderate improvements for patients, but when we look at it as a two-way street where patients and physicians each bear responsibility, the findings then become consistent with what we might intuitively expect."

The study enrolled 340 [primary care physicians](#)—and over 1500 of their patients—from three leading medical institutions. Researchers divided physicians and patients into four groups: physician-only incentives, patient-only incentives, both patient and physician incentives, and a control group that received no incentives. Physicians in the physician-

only incentive group were eligible to receive financial rewards up to \$1,024 per patient, while physicians in the shared-incentive group would split the pay-out with their patients, receiving a maximum of \$512 each. Adherence was verified by electronic pill bottles that recorded when patients took their medication. After taking the medication, patients in the patient-only incentive group were then enrolled in a daily lottery for a financial pay-out.

Despite having to share the incentive, the study found that 49 percent of patients in the shared group reached their previously determined LDL goal (average LDL reduction of 33.6 mg/dl), compared to 36-40 percent in the other three groups where either no incentives were received (average reduction of 25.1 mg/dl), or where incentives were only given to either physicians or patients (average reductions of 27.9 mg/dl and 25.1 mg/dl, respectively).

"Patients receiving financial incentives increased their adherence, but not enough to change their LDL compared with the control group," said Andrea B. Troxel, ScD, a professor of Biostatistics and lead statistician for the study. "Patients whose physicians received [financial incentives](#) tended to have their cholesterol medication prescribed more intensively, but that also wasn't enough to change their LDL. Only when both physicians and patients received incentives together did we see a significant reduction in LDL."

In contrast to previous studies examining the effectiveness of financial lotteries for promoting healthy behavior, the current study showed only a modest effect across all groups, which the authors suggest could be caused by the lack of urgency and symptoms experienced in people with high cholesterol.

"Although medication adherence was higher in the shared incentives group, it was low in all groups," Volpp said. "This is not surprising, since

previous studies have documented poor medication adherence in patients with chronic diseases, especially where the conditions do not typically produce immediate symptoms that might motivate adherence. In addition, to be eligible for this study, patients had to be at high cardiovascular risk and yet not have their LDL at goal. That means the patients enrolled were those who were having the hardest time getting their heart disease risk down." Asch says that makes sense, noting, "These are the patients most in need of our help."

Most previous evaluations of incentive-based health programs involved observational studies, some of which lacked control groups or had other significant methodological limitations. These studies typically showed modest effects but were limited by either small incentive amounts per patient (for example \$1 for each percentage point increase in the rate of patients referred for mammography) or "all or nothing" threshold goals. "Our study, however, shows that incentives can work, but you have to think carefully about how you design them. In this case, it turns out you have to work with both [patients](#) and [physicians](#) together to get the outcomes you want. And," Asch concludes, "given the importance of the teamwork in [health care](#), perhaps that really shouldn't be a surprise."

Provided by University of Pennsylvania School of Medicine

Citation: Study asks: To improve patients' health, should you pay physicians, patients, or both? (2015, November 8) retrieved 8 May 2024 from <https://medicalxpress.com/news/2015-11-patients-health-physicians.html>

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