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Effect of a Price Transparency Intervention in the Electronic Health Record on Clinician Ordering of Inpatient Laboratory Tests

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Research BRIEF

Research to Improve the Nation's Health System

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EFFECT OF A PRICE TRANSPARENCY INTERVENTION IN THE ELECTRONIC HEALTH RECORD ON CLINICIAN ORDERING OF INPATIENT LABORATORY TESTS

Mina S. Sedrak, Jennifer S. Myers, Dylan S. Small, Irving Nachamkin, Justin B. Ziemba, Dana Murray, Gregory W. Kurtzman, Jingsan Zhu, Wenli Wang, Deborah Mincarelli, Daniel Danoski, Brian P. Wells, Jeffrey S. Berns, Patrick J. Brennan, C. William Hanson, Jessica Dine, Mitesh S. Patel

JAMA Internal Medicine, April 2017

KEY FINDINGS

Despite the promise of price transparency, clinicians did not change their ordering of inpatient lab tests when Medicare allowable fees were displayed in the electronic health record at the time of order entry.

THE QUESTION

With estimates that nearly 30% of laboratory testing in the United States is wasteful, health systems are considering making clinicians more aware of the costs of the tests they order. Price transparency, at the time of ordering, may encourage clinicians to consider the cost of their decisions.

This study sought to answer the question: if clinicians knew the cost of the tests they order in the hospital, would they change their ordering behavior?

THE STUDY

This year-long randomized clinical trial was conducted at three hospitals within the University of Pennsylvania Health System in Philadelphia. It analyzed the ordering practices of physicians, nurse practitioners, and physician assistants, but did not differentiate between these clinicians.

The analysis included a one-year pre-intervention period and a one-year intervention period. The authors randomized 60 lab tests to two groups: one that displayed Medicare allowable fees at the time of order and the other that did not.

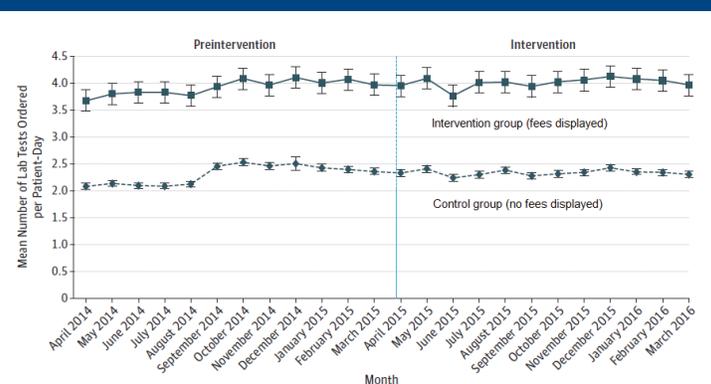
The primary outcome was the number of tests ordered per patient-day, after adjusting for patient characteristics and other variables. The authors also looked at the associated fees per patient-day.

The research team conducted subgroup comparisons of differences in ordering behavior for patients with varying comorbidities, for those who had an intensive care unit (ICU) stay, and for tests from the highest and lowest cost brackets.

THE FINDINGS

The mean number of tests per patient day did not change significantly in the intervention group compared to the control group over time. As shown, the mean number of tests ordered per patient-day remained virtually unchanged in both the intervention and control group. Even after

UNADJUSTED NUMBER OF INPATIENT LABORATORY TESTS ORDERED PER PATIENT-DAY BY GROUP AND MONTH



Source: Sedrak et al., *JAMA Internal Medicine*.

adjusting for other factors, there was no significant change in the mean number of tests ordered or mean fees attributable to the intervention.

In subanalyses, the authors found a relative decrease in test ordering for patients with an ICU stay and a relative increase for patients without an ICU stay, and relative decrease in test ordering of tests in the top-quartile of fees and a relative increase of tests in the bottom-quartile of fees.

THE IMPLICATIONS

Prior evidence has been inconsistent on the effectiveness of price transparency as a way to influence medical decision-making. This study provides further evidence that price transparency, by itself, is not likely to reduce ordering of wasteful tests in the hospital.

A number of explanations may account for these findings and point the way toward more effective interventions. First, the allowable fees in the intervention were displayed regardless of the clinical scenario. The presence of this information for appropriate tests may have diminished its impact when tests were inappropriate. Future efforts might target price transparency more selectively.

Second, the intervention might have had reduced salience because it did not consider clinician practice habits. In a [qualitative analysis](#) at one of the hospital sites, 91% of resident physicians reported that unnecessary lab testing was due to the habit of entering repeating daily lab test orders on the patient's first day of admission. If repeating orders were entered at admission, the clinician would not need to place another order and thus would not be presented with price transparency information when it would be most salient. This might explain the effects of the intervention when patients had an ICU stay. Because health care decisions are changing more rapidly in this setting, clinicians may be less likely to rely on repeating orders and therefore may have been exposed to the intervention more often. Pairing price transparency information with interventions reducing the use of repeating test orders could address this problem.

Third, clinicians' prior beliefs about costs of each test might influence the effectiveness of the intervention. Clinicians may have previously believed that the cost of some tests was higher or lower than the displayed price.

This could explain the small but significant decrease in ordering for the most expensive tests and the small but significant increase in ordering for the least expensive tests. Other ways to frame price transparency, such as comparisons of differences in price between options, using other forms of price, such as charges, or targeting only more expensive tests, may be needed.

Sedrak, M.S., Myers, J.S., Small, D.S., Nachamkin, I., Ziemba, J.B., Murray, D., Kurtzman, G.W., Zhu, J., Wang, W., Mincarelli, D., Danoski, D., Wells, B.P., Berns, J.S., Brennan, P.J., Hanson, C.W., Dine, J., Patel, M.S. (2017). Effect of a Price Transparency Intervention in the Electronic Health Record on Clinician Ordering of Inpatient Laboratory Tests. *JAMA Intern Med.* doi:[10.1001/jamainternmed.2017.1144](https://doi.org/10.1001/jamainternmed.2017.1144)

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