

Statewide study confirms 'paperless' hospitals are better for patients

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Results from a large-scale Johns Hopkins study of more than 40 hospitals and 160,000 patients show that when health information technologies replace paper forms and handwritten notes, both hospitals and patients benefit strongly.

"Patients appear safer and hospital bottom lines may improve when health care information is gathered and stored on computers rather than on paper," says senior author Neil R. Powe, M.D., M.P.H. M.B.A, of the Department of Medicine at Johns Hopkins University School of Medicine and director of the Welch Center for Prevention, Epidemiology and Clinical Research.

In the study, published Jan. 26 in the *Archives of Internal Medicine*. Powe, lead author Ruben Amarasingham, M.D., M.B.A. and colleagues rated clinical information technologies at 41 hospitals in Texas and compared those results with discharge information for 167,233 patients. Amarasingham was a Robert Wood Johnson Clinical Scholar in the Department of Medicine at Johns Hopkins the time the study began.

"Previous studies only told us how well one particular electronic system used by one particular hospital worked," says Amarasingham. "This study gives us a better sense about the general success of paperless systems in a diverse set of community, academic and safety-net hospitals. We were also able to examine the many components contained in a hospital information system."

Results showed that with computerized automation of notes and records, hospitals whose technologies ranked in the top third were associated with a 15 percent decrease in the odds that a patient would die while hospitalized.

"If these results were to hold for all hospitals in the United States, computerizing notes and records might have the potential to save 100,000 lives annually," says Powe.

Similarly, the highest scores for electronic "order entry" systems were linked to a 9 percent and 55 percent decrease in the odds of death from heart attacks and coronary artery bypass procedures respectively.

The highest scores in so-called decision-support systems — computerized clinical information that guides a physician's treatment choices — were associated with a 21 percent decrease in the odds that a patient would develop complications.

The researchers also found that hospitals with the highest technology scores in the rating system showed significantly lower patient costs.

The paperless systems ranked by the Hopkins team included electronic notes, previous treatment records, test results, orders for drugs, procedures and blood tests, and decision-support systems that offer up-to-date information on treatment options and drug interactions. To rate the effectiveness of the clinical information technologies, the Hopkins researchers developed a questionnaire for physicians that asked whether an electronic system was in place in their hospitals, whether they knew how to use it and whether they used it consistently. The questionnaire produced numbered scores that allowed the researchers to place hospitals in three groups, highest third, middle third and lowest third.

"Most prior studies did not focus on the success of the interface between

technology and health care professionals," says Powe. "Our assessment tool examines that important interface." Prior to its use in Texas, the tool was successfully tested in several pilot studies among hospitals around the country.

Powe says he hopes the results will not only encourage more hospitals to go paperless, but also encourage broad use of this assessment tool to guide hospitals in building better information systems that improve health outcomes.

Source: Johns Hopkins Medical Institutions

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