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The policy report “The Role of Health Information Technology in Health Care Delivery Systems with High Quality-to-Cost Ratios” by Elena M. Marks, J.D., M.S.; and Noel Pugh, M.S., was published by the James A. Baker III Institute for Public Policy on April 30, 2011. Marks is a Baker Institute scholar in health policy and served as the director of Health Environmental Policy for the city of Houston from 2004 through 2009. Pugh is a doctoral student at The University of Texas School of Public Health. The report was supported by the MD Anderson Foundation Visiting Scholar program at the Baker Institute and produced on behalf of the institute’s Health Economics Program.



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HEALTH POLICY research

James A. Baker III Institute for Public Policy-Baylor College of Medicine
Joint Program in Health Policy Research

Can a multibillion dollar investment in information technology improve the quality of health care or drive down its escalating costs?

Yes, if used properly, according to research by Elena Marks, Baker Institute Scholar in Health Policy. Government and health care providers will spend billions of dollars in the next decade to purchase and deploy health information technology (HIT). To discern whether and how such investments may pay off, Marks recently examined HIT at health systems widely recognized for providing high-quality care relative to its cost. After conducting in-depth interviews, document reviews and site visits at Intermountain Healthcare, Geisinger Health System and the Mayo Clinic, Marks found several instances of HIT that improve quality of care, reduce costs or both.

For example, Intermountain uses HIT to guide physicians ordering antibiotics. Computer algorithms analyze multiple data points and recommend options (drugs, dosage or interval) for the particular patient and circumstance. Physicians are free to ignore the computer’s advice. HIT significantly reduced the number of drugs administered (25%), duration of administration (49%), quantity administered (50%), cost of drugs (70%) and cost of hospitalization (25%). In cases where the computer advice was overridden, the outcomes were uniformly worse than the pre-program outcomes.

Geisinger tracked cost savings after converting to electronic health records at a 500-bed hospital with 1.6 million outpatient visits per year. HIT reduced chart pulls from 1.02 million in 2001 to 250,000 in 2005, saving \$2.25 million per year. The printing of lab and radiology reports dropped by 76% and 70%, respectively, in 2001. E-prescriptions at 55 sites saved \$1 million per year.

Mayo uses HIT to optimize operating room (OR) utilization. After deploying the application, Mayo identified 215 unutilized OR days in one year due to surgeon absence and began to reassign rooms. A department with a backlog of cases that nevertheless underutilized OR space used the data to change its workflow and increased utilization from 12% to 82%.

Despite its foundation in science, the health care industry has been behind the curve in using information technology to drive medical, financial and operational decision-making. As the industry steps up its IT investments, physicians and managers should think carefully about their expectations so that money and time are well spent.

Marks offers some advice to the industry:

Information, not technology, is the key. Merely replacing paper or people with technology will not produce the kind of sustained, systemic change that will transform an institution into a high value provider. The cost savings Geisinger documented alone are insufficient to justify the HIT investment. The real value to Geisinger was derived from its ability to aggregate and analyze data over hundreds of thousands of patients and derive information about their medical and business practices that could not have been discerned absent the robust database.

Computers and people make good partners. Computers excel at remembering and analyzing voluminous data and can follow instructions and patterns consistently. People are good at complex judgments that rely on nuanced facts and intuition. Health care providers should use computers to manage data and standardize operations where consistency is paramount, and they should rely on professionals to use data for complex decision-making.

HEALTH POLICY research presents a summary of findings on current health policy issues. It is provided by **Vivian Ho, Ph.D.**, James A. Baker III Institute Chair in Health Economics at the James A. Baker III Institute for Public Policy, in collaboration with **Laura Petersen, M.D., M.P.H.**, chief of the Section of Health Services Research in the Department of Medicine at Baylor College of Medicine.

This publication aims to make research results accessible to regional and national health policymakers. The views expressed herein are those of the study authors and do not necessarily represent those of the Baker Institute or of Baylor College of Medicine.

The Baker Institute and Baylor College of Medicine's Section of Health Services Research work with scholars from across Rice University and Baylor College of Medicine to address issues of health care — access, financing, organization, delivery and outcomes. Special emphasis is given to issues of health care quality and cost.

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