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Small, Stand-Alone, and Struggling: The Adoption of Health Information Technology by Rural Hospitals

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Recent years have witnessed a rapid growth in interest in applying information technology (IT) to the health care industry in order to improve the quality and efficiency of care. Evidence to date suggests that rural providers of all types lag behind their urban counterparts in the adoption of health IT. There is less information, however, regarding variations *among* rural providers.

In this brief, we report findings from a national survey of rural hospitals designed to investigate how differences among these hospitals affect their implementation of health IT. Of particular interest, we explore differences by hospital size, stand-alone vs. system affiliation status, and critical access hospital (CAH) status.

Key findings indicate that smaller hospitals and those that are not part of a multi-hospital system face greater implementation challenges and have made less headway in adopting new technologies. Many of these same disadvantages are observed for CAHs, which are by definition small, and often are stand-alone facilities.

Study Methods

- National sample of 800 rural hospitals, stratified by CAH/non-CAH status and proximity to a metropolitan statistical area.
- 200 hospitals from each of 4 cells.
- Data collected by mail in the Spring of 2006.
- 238 respondents (30 percent response rate).
- Multivariate analysis to control for the simultaneous impact of CAH status, hospital size, stand-alone status, and type of ownership.

Readiness to Adopt Health IT

Analysis of several different measures of IT readiness shows that smaller rural hospitals and those that are not part of a hospital system are not as well positioned for health IT implementation as their larger, system-affiliated counterparts. While system hospitals reported annual IT budgets of around $1.3 million, stand-alone facilities spent less than half that amount, and CAHs spent about $300,000 on average. IT budgets decreased with hospital size, regardless of the hospital's type of ownership, system affiliation, or CAH status. Smaller and stand-alone facilities also were less likely to have an IT strategic plan or a full-time CIO. And while approximately two-thirds of all respondents said they are very confident that their IT staff can handle various aspects of selecting, implementing and maintaining new health information technologies, smaller and stand-alone hospitals were significantly less likely to express this level of confidence.

Contrary to what has been the conventional wisdom regarding rural difficulties in adopting health IT, it appears that Internet connectivity is no longer posing a significant problem. Almost all respondents reported being in a geographic area served by at least one broadband

Internet service provider, and more than four in five hospitals reported using T-1 or T-3 lines.

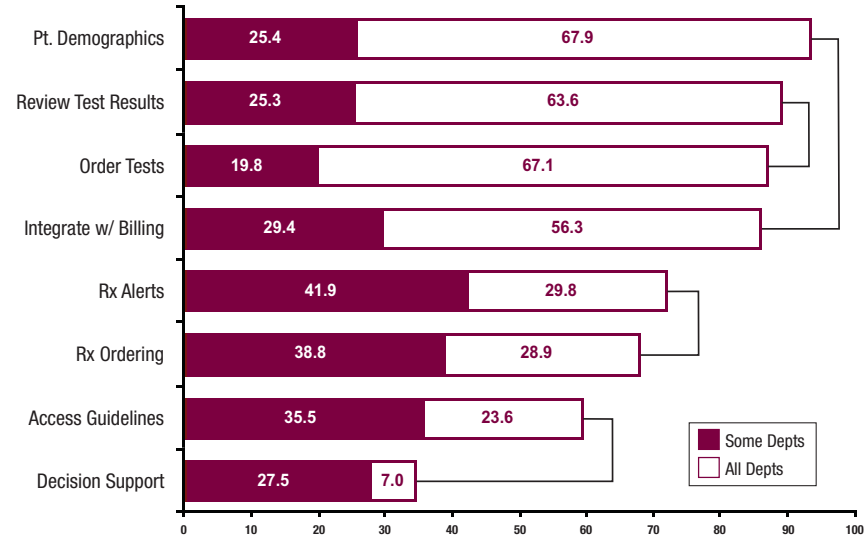
Current Use of Health IT

Electronic Medical Record Systems

Just over one-half of all rural hospitals said they have begun implementing some type of electronic medical record (EMR)[1] in at least some departments. Not surprisingly, among the most widely implemented EMR functionalities were components of basic patient management systems – access to patient demographics (used by 93 percent of hospitals with an EMR) and integration with hospital billing systems (86 percent). EMRs also appear to be commonly used for order entry of radiology exams and lab tests (87 percent) as well as for electronic review of results from these tests (89 percent). Computerized order entry for prescription drugs and drug interaction alerts were somewhat less common, with 68 and 72 percent of hospitals with EMRs reporting these capabilities, respectively. Rural hospitals were least likely to be using EMRs to support clinical decision making through access to clinical guidelines (59 percent) or through direct clinical decision support software (35 percent).

Importantly, the likelihood of having implemented an EMR was lower for smaller hospitals, stand-alone facilities, and CAHs. And – among EMR users – CAHs were less likely to have EMRs that incorporate order entry for prescription drugs, drug interaction alerts, access to guidelines, clinical decision support software, or access to patient flow sheets.

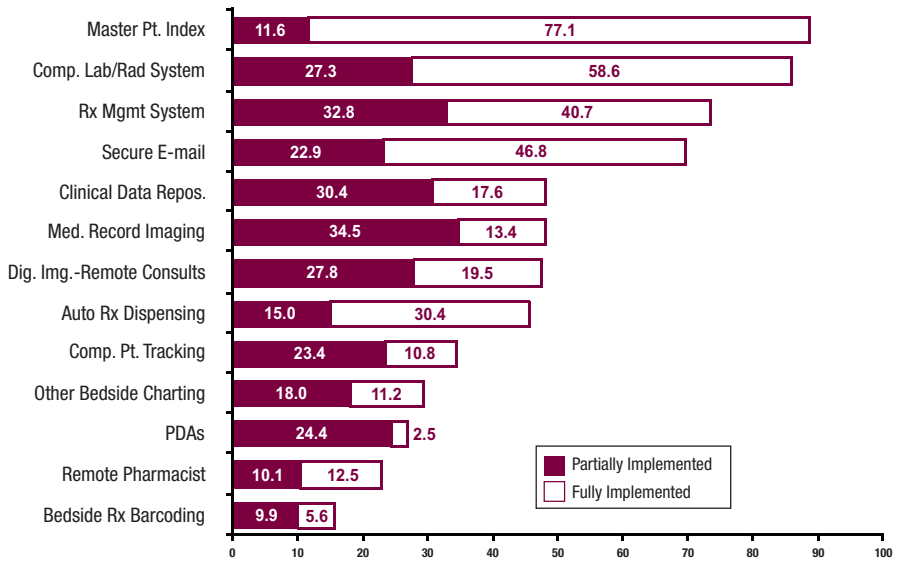
Figure 1. Use of Selected EMR Functionalities



Other Types of Health IT

Respondents also were queried about their use of a range of other health information technologies in addition to EMRs. As shown in Figure 2, the most commonly implemented application was a Master Patient Index. By providing a unique identifier and basic demographic data for each patient in the facility, a Master Patient Index is the underpinning of many other health IT applications. Use of computerized laboratory and/or radiology information systems is almost as

Figure 2. Use of Other Health IT Applications



[1] The term "electronic medical record" can mean many things to many people. For our survey, we defined an EMR as "a comprehensive computer-based/digital record that includes all documentation of care given to a specific patient within the hospital." EMRs may vary in the specific functionalities included in each individual system.

wide-spread as the use of a Master Patient Index, with more than one-quarter of all rural hospitals reporting partial implementation and nearly three in five facilities reporting full implementation.

Pharmacy management systems – such as drug labeling software, inventory control, and medication administration records – are used by some 70 percent of rural hospitals overall. While 45 percent of hospitals indicate that they have automated dispensing of their prescription drugs, only 23 percent report having access to off-site pharmacists for review of medication orders.

Slightly less than one-half of hospitals report having a real-time clinical data repository that consolidates data from multiple clinical sources to present a unified view of a given patient. Medical record imaging and digital image capture and transmission of patient information for remote patient consultations are also used by slightly under one-half of rural hospitals.

Use of information technology at the patient's bedside was the least common form of health IT. Just over one-quarter of hospitals report using personal data assistants (PDAs) or other hand-held technologies for patient care, about 15 percent are using bedside bar coding for administration of prescription drugs, and only three in ten are using other bedside charting systems or point-of-care monitoring software.

As was the case with EMRs, use of these other types of technologies was often significantly less widespread in CAHs, in stand-alone hospitals, and in smaller hospitals.

Who Benefits and Who Pays?

BENEFITS

- The most frequently cited benefits to IT adoption relate to improved quality of care.
- Benefits affecting the hospital's profitability – higher productivity and revenue and lower costs – were cited much less frequently as a significant benefit.

Biggest perceived benefits accrue directly to patients and insurers – and only indirectly to hospitals…

BARRIERS

- The most frequently cited barrier to IT adoption is a lack of financial resources.
- Other potential barriers – such as a lack of support from hospital leadership or end users and concerns about legal/privacy issues – were cited much less frequently as a significant barrier.

…yet hospitals are the ones that must make the financial commitment to health IT.

Telemedicine Applications

Due to their ability to overcome problems related to distance and geographic isolation, telemedicine applications have long had a place in rural health settings. Our survey found similar patterns of telemedicine use across all rural hospitals, regardless of their size or system affiliation status. By far the most common telemedicine application was for teleradiology (Picture Archiving Communication Systems, or PACS) services, with fully two-thirds of respondents indicating that they currently use this technology. One-quarter of respondents reported current use of video teleconferencing for patient consultations and electronic transmission of cardiac data. Tele-emergency applications were less common (11 percent of hospitals) as was remote monitoring of patients.

Significant Benefits and Barriers to Health IT Adoption

Hospital responses to questions asking about the perceived benefits and barriers associated with health IT adoption clearly reveal the oft-noted disconnect facing hospitals when they consider investing in health IT. Strikingly, hospitals perceive the most significant benefits of health IT to be improved quality of care and reductions in unnecessary tests (benefits that accrue to patients and payers), and are much less likely to mention improvements to factors that can improve the hospital's bottom line as being significant benefits. At the same time, hospitals overwhelmingly cited a lack of financial resources as the largest obstacle to health IT implementation – with financial constraints more likely to be cited as an obstacle by CAHs, stand-alone hospitals, and smaller facilities. While hospitals can also benefit by providing better patient care and may be placing great intrinsic value on this outcome, until gains from health IT translate into financial rewards for the investors it may be difficult to make a compelling business argument for many large IT investments, especially in the face of financial constraints.

Future Plans for Adoption of Health IT

Looking to the future, beyond hardware upgrades, rural hospitals are most interested in implementing or expanding EMR systems (82 percent) and in developing connected information systems that will permit them to exchange health data electronically with other providers (64 percent). Smaller hospitals and those that are not part of a hospital system – and, by implication, many CAHs – are less likely to anticipate quick adoption of their priority projects and less confident that implementation will be achieved on schedule, even with their longer anticipated timeframe.

Interest in Possible Policy Options to Spur Health IT Adoption

Numerous policy options have been discussed in recent years as a way to foster adoption of these new technologies. Respondents were given a list of specific policy options and asked to rate their level of interest in each.

In light of the importance of financial constraints as a barrier to health IT adoption, it is not surprising that respondents expressed the highest level of interest in Federal policies that would provide financial support for hospitals striving to implement new systems – such as low-interest loans, loan guarantees, grants, or direct subsidies. The second most popular policy option was the development of interoperability standards for communicating and interpreting health care data, with 45 percent of all rural hospitals saying this was of high interest. Slightly more than one-quarter of respondents favored support for research to improve clinical IT applications and to demonstrate the value of these technologies, education targeted to providers and consumers about the benefits of health IT, implementation of technical assistance, vendor/product certification, and pay-for-performance (P4P) programs that would tie payment to quality of care. There was only modest interest in help to convene groups of providers so that they could collaborate more easily on joint implementation projects or partake in joint purchasing arrangements.

Given the Federal emphasis on the adoption of health IT and the electronic exchange of health information, combined with the contribution these technologies can make to improving patient care, it seems certain that the U.S. health care system will continue to evolve toward increasingly widespread use of health IT. The pace of adoption is uneven across different types of hospitals, however, with the average rural hospital lagging behind its urban counterpart, and smaller, stand-alone rural facilities lagging behind larger and system-affiliated rural hospitals.

Hospital Size and System Affiliation Matter

- Smaller hospitals, and those without a system affiliation, have lower health IT budgets, are less confident their IT staff can implement and maintain new technologies, and are less likely to have a full-time CIO or written IT strategic plan.
- CAHs are less likely to have implemented the more advanced functions of electronic medical records.
- Stand-alone facilities, smaller hospitals, and CAHs are less likely to have implemented many other types of health IT.
- Smaller and stand-alone hospitals project longer timeframes for implementing their future IT projects, and are less confident that they will be able to meet even these longer timeframes.
- CAHs and smaller, stand-alone hospitals were more likely to cite a lack of financial resources as a significant barrier to health IT adoption.

Many CAHs are also lagging behind non-CAHs in their readiness for and actual use of health IT. These struggling facilities will likely benefit from additional assistance in the form of improved access to capital and from technical assistance with health IT planning and implementation. Current national efforts to establish data standards, certify products and vendors, and link payment to quality of care are also steps that are expected to help all providers to adopt health IT more efficiently and effectively.

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