HAP

THE HOSPITAL & HEALTHSYSTEM ASSOCIATION OF PENNSYLVANIA

Improving Patient Care:
Pennsylvania Hospitals' Use of Information Technology

Summary of Findings

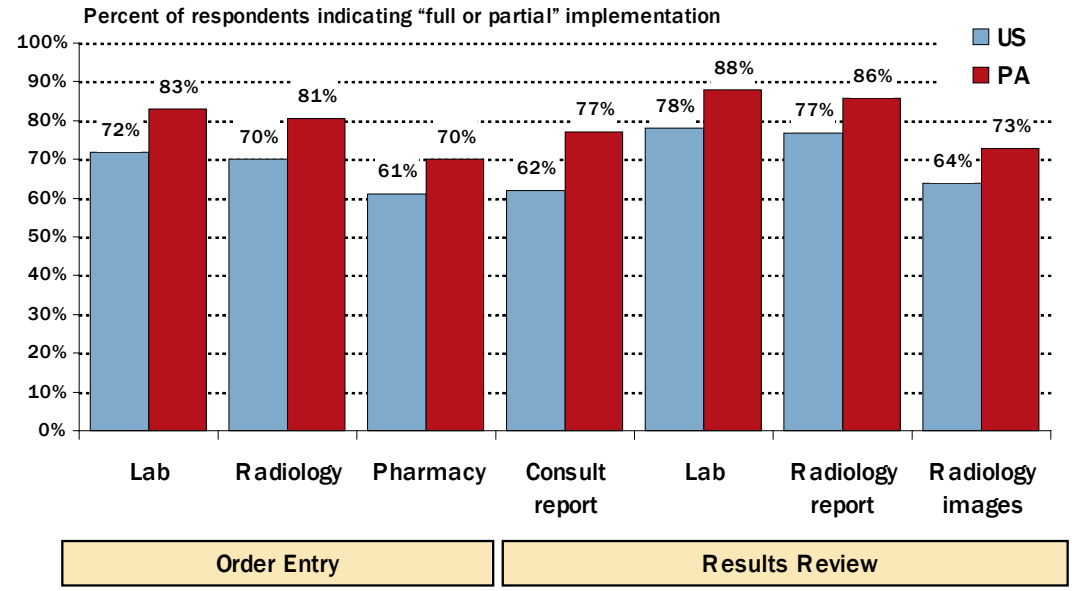
Hospitals are committed to the adoption of health information technology (IT) to improve the quality of patient care and advance efficiencies in the delivery of care. And despite the financial and implementation challenges of health IT adoption, hospitals continue to expand their use of health IT based on their patients' needs and the availability of funding. These include implementation of computer physician order entry; incorporating electronic surveillance in infection prevention and control; use of electronic medical records; and other technology that improves care delivery and continuity of care.

The American Hospital Association (AHA) conducted a national survey in the fall of 2006 to gauge the extent of health IT use by hospitals and better understand the barriers to further adoption. The results provide the most comprehensive picture of hospital IT use currently available.

Pennsylvania hospitals have carved out a leadership position in the adoption of health IT as compared to their peers nationally. Key Pennsylvania hospital and health system survey findings reveal that:

- Pennsylvania hospitals are using more health IT functions at a moderate or high level than hospitals nationwide. Health IT use was determined by the number of clinical IT functions—such as medication order-entry, test results review, or clinical alerts—that a hospital had fully implemented.

Pennsylvania Hospitals Using Many Electronic Order Entry and Results Review Functions

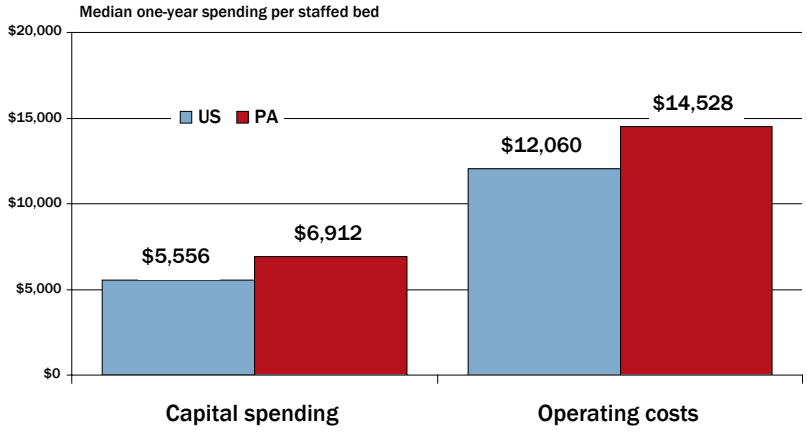


Source: AHA member survey, December 2006

- Pennsylvania hospitals spend more (per bed) on IT than other hospitals nationwide.
- About one half of Pennsylvania hospitals are participating in a local/ regional arrangement to share electronic patient-specific health care information, on par with the percentage nationwide.
- Use of computerized order entry (CPOE) is growing, and Pennsylvania is again ahead of the national average in the percentage of physicians who routinely ordered medications electronically.
- Certain kinds of hospitals are further ahead in adoption of health IT. Larger hospitals, those in urban areas, teaching hospitals, and hospitals with positive financial margins used more health IT.
- Initial costs and ongoing operating costs continue to be the greatest barriers to IT adoption.

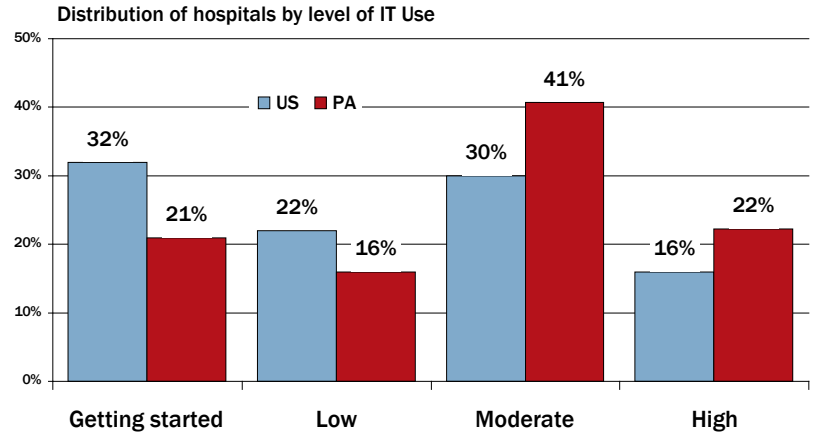
Pennsylvania hospitals have made great strides in implementing health IT, but the use of such tools are far from universal due to financial, technical, implementation, and policy barriers.

Pennsylvania Hospitals Spend More (Per Bed) on Health IT Than Other Hospitals Nationwide.



Source: AHA member survey, December 2006

Pennsylvania Hospitals Use More Health IT Functions Than Other Hospitals Nationwide.



Source: AHA member survey, December 2006

Technologies

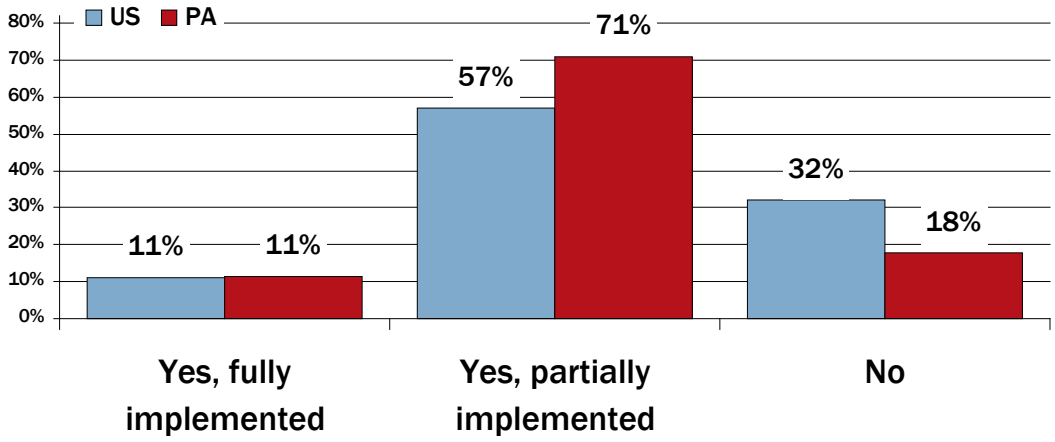
Electronic Health Records (EHRs)

EHRs are a real-time patient health record with decision support capabilities that can be used to aid clinical decision-making. The EHR can also support the collection of data for uses other than clinical care, to include billing, quality management, outcome reporting, and public health surveillance and reporting.

About 82 percent of Pennsylvania hospitals reported having either fully (11%) or partially (71%) implemented an EHR. Larger hospitals, those in urban areas, and teaching hospitals were more likely to be among the percentage with fully implemented EHRs. Most hospitals use EHRs in the inpatient setting, followed by the emergency department, onsite clinics, onsite physician offices, and offsite physician offices.

Does the Hospital Have an Electronic Health Record (EHR)?

An EHR integrates electronically-originated and maintained patient-level clinical health information, derived from multiple sources, into one point of access. An EHR replaces the paper medical record as the primary source of patient information.



Source: AHA member survey, December 2006

Computerized Physician Order-Entry (CPOE)

CPOE systems allow physicians to electronically order medications, tests, and consultations. They also provide advice on best practices and alerts to possible adverse consequences of a therapy, such as an allergy or a harmful combination of drugs. CPOE can enhance patient safety efforts in regard to adverse drug events and other quality improvements. In Pennsylvania, use of CPOE was more common in hospitals with fully implemented EHRs, and physician order-entry was slightly more common for laboratory and other tests than for medications. There are challenges to implementation, including significant work process changes and the active support of busy physicians. Hospitals often phase in CPOE systems, beginning with physician-technology supporters in one or two departments.

Health IT is Expensive

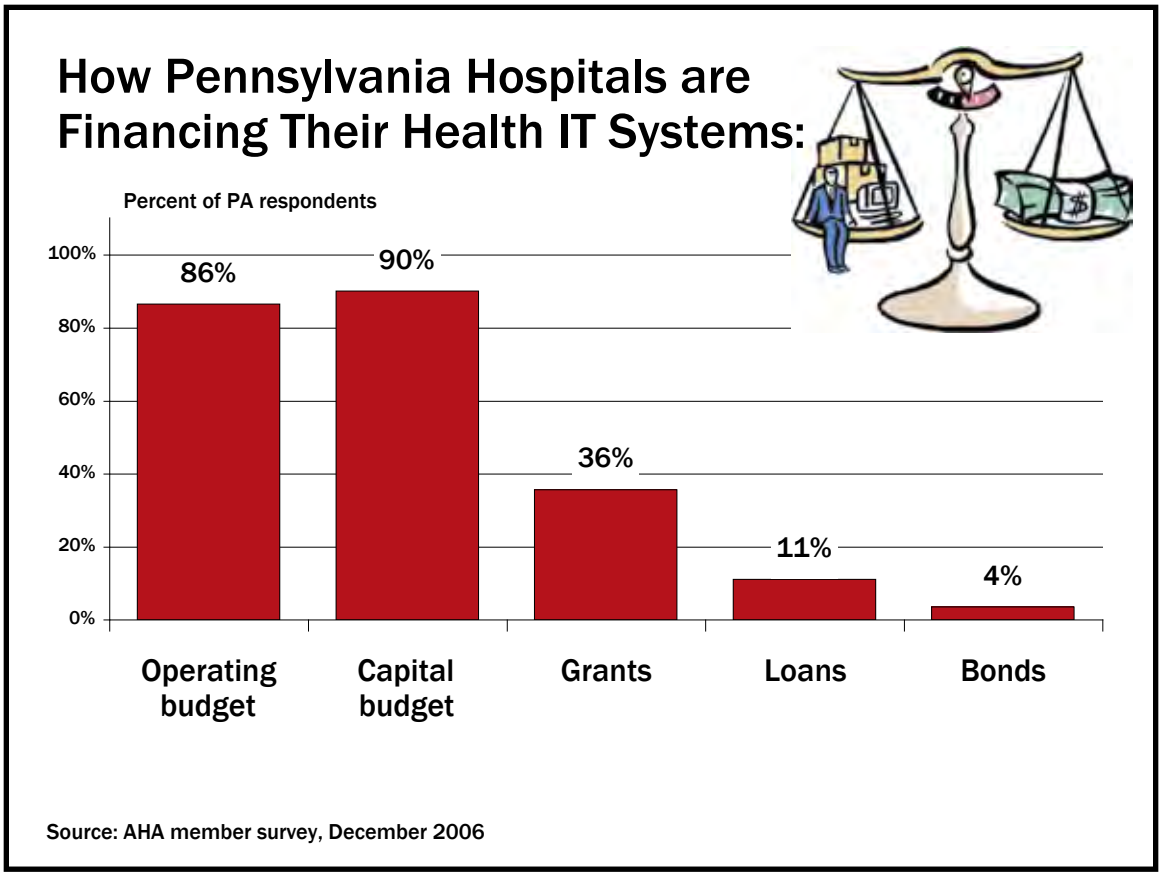
The Pennsylvania data show continuing progress in health IT adoption in hospitals, but the responses follow a national pattern in which hospitals with greater financial resources are more able to adopt health IT technologies than are others. Accelerating the adoption of health IT among all types of hospitals will require shared investment between providers, payers, and purchasers.

The investment in health IT is significant, with the level of spending dependent upon hospital size and the technologies deployed. Hospitals currently bear almost all the costs of IT investment, with no increase in insurer or government payment for the use of these new technologies. Nationally, a health information technology research firm estimated that annual spending for health information technology for hospitals and doctors would reach $34.7 billion per year by 2011.

Pennsylvania hospitals predominantly turn to their capital budget to finance their HIT systems, followed by operating budgets. Capital budgets cover investments in buildings and medical equipment, as well as health IT systems, while operating budgets cover staff, supplies, and other daily expenses of running a hospital.

Pennsylvania hospitals spend more (per bed) on IT than other hospitals nationwide. The median capital spending per bed for health IT in 2006 was $5,556 (a one-year snapshot), while in Pennsylvania it was $6,912. For operating costs, the median amount per bed was $12,060, while in Pennsylvania it was $14,528. Thus, a 200-bed hospital in Pennsylvania invested about $1.4 million in capital spending and spent about $2.9 million on related operating costs in 2006.

Insurers and policymakers need to provide financial assistance for health IT to hospitals struggling financially, smaller hospitals, and rural hospitals. They must also address other barriers to IT use, such as systems that do not share data easily, challenges in managing work process changes, and lack of trained IT staff.

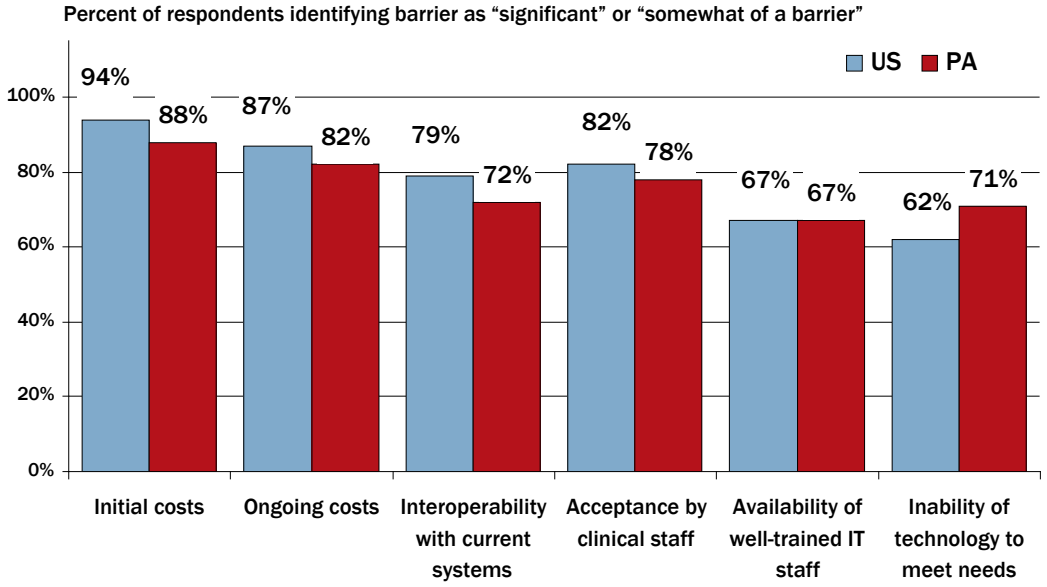


Cost is the Greatest Barrier to Accelerated Adoption

Pennsylvania hospital leaders, along with their national colleagues, identified the initial and ongoing costs of deploying and maintaining IT systems as the greatest barriers to IT use. In general, smaller and rural hospitals were more likely to see ongoing costs as a significant barrier to IT implementation. Hospitals also face challenges in the availability of well-trained clinical and technical staff to implement technology, acceptance by staff to make the cultural changes, as well as dealing with the interoperability among systems and finding technology that really meets their needs.

The annual contract costs for electronic systems to conduct surveillance for health care-associated infections are estimated to range between $30 and $60 million per year. The annual funding needed each year to achieve electronic prescribing and medical records is likely to approach $400 million for capital and technology system investments.

Pennsylvania Hospitals Continue to Report Cost as Greatest Barrier to Health IT Adoption.



Source: AHA member survey, December 2006

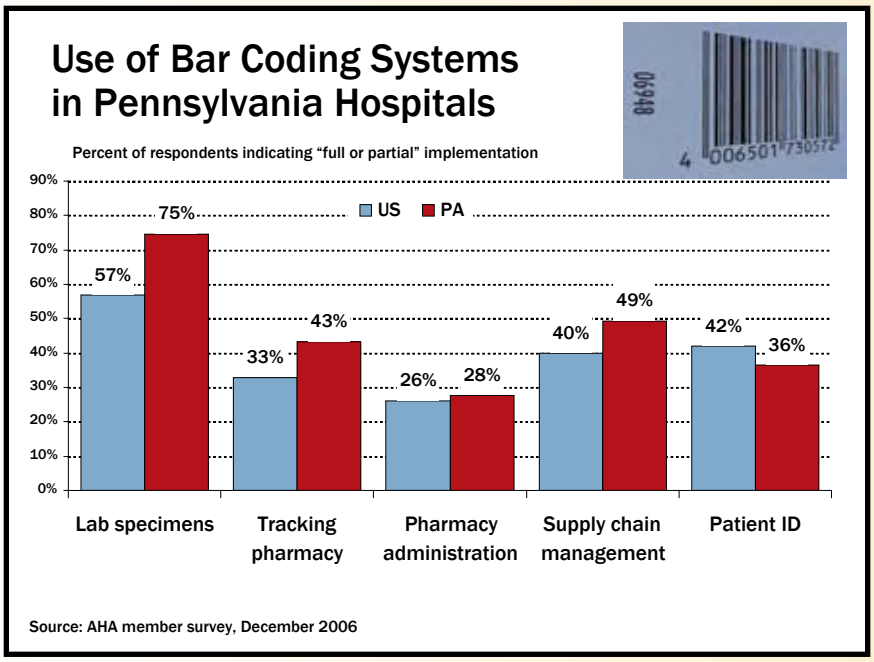
The Use of Health IT is Incremental

Implementing EHRs , CPOE systems, and electronic surveillance requires major changes to hospital workflow. Physicians, nurses, and other hospital staff must incorporate new ways of processing, storing, and retrieving information they use all day. Given the magnitude of the changes and costs of these kinds of systems, many hospitals take an incremental approach. They may implement IT systems in individual departments, working over time to connect them all. They frequently prioritize implementation of health IT systems according to their quality improvement goals.

Across the Continuum

Laboratory, Radiology and Pharmacy

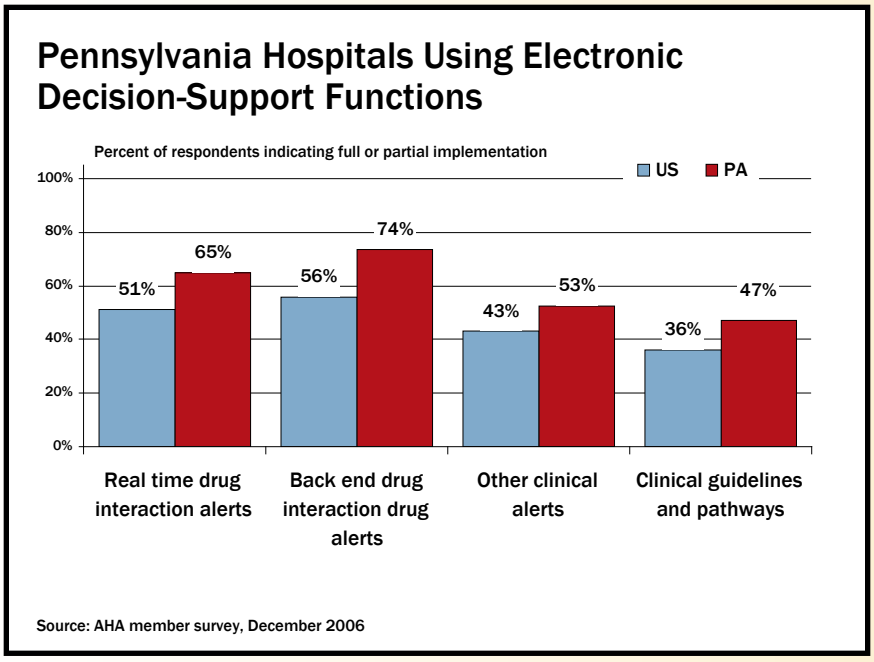
Much of the care provided in hospitals involves ordering and receiving tests and medications from ancillary departments such as the laboratory, radiology, and pharmacy. Physicians usually generate orders, which are communicated to the appropriate department on paper or electronically. These test results are communicated back to the treating physicians, and medications are delivered to the patient. The Centers for Disease Control and Prevention estimate that laboratory results produce 70 percent of a patient's medical record.



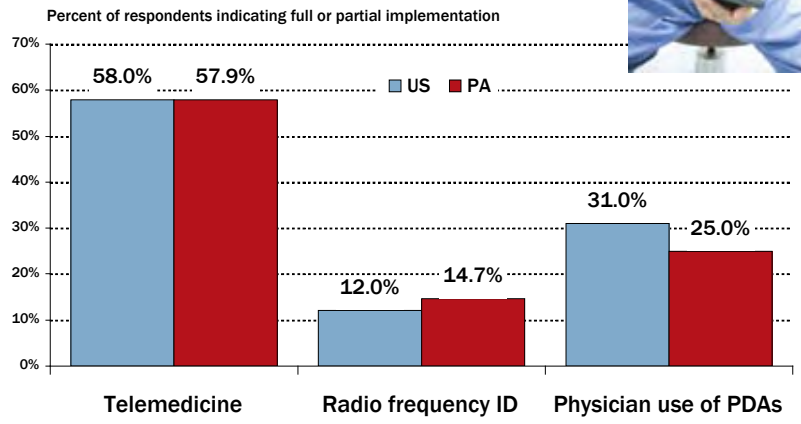
Laboratory information systems are widely used, and in Pennsylvania, 75 percent of hospitals indicated implementation of bar coding systems for laboratory specimens.

Decision-Support Systems

Nationally, there has been a significant increase in the use of drug interaction alerts. Both real-time and back-end drug interaction alerts are key to improving medication safety. In addition, 47 percent of hospitals have fully or partially implemented electronic clinical guidelines and pathways that help physicians in making clinical decisions, including whether diagnostic tests or medications may be appropriate for a certain condition.

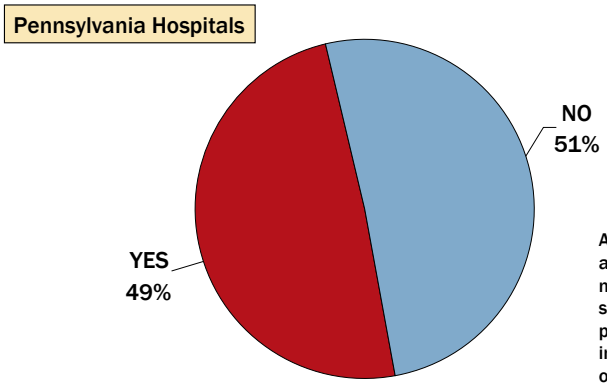


Pennsylvania Hospitals Adopting Telemedicine and Other Technologies.



Source: AHA member survey, December 2006

Does Your Hospital Participate in Any Local/Regional Arrangements to Share Electronic Patient-Specific Health Care Information?



According to the AHA, about ½ of hospitals nationwide reported sharing electronic patient-specific health information with local or regional partners.

Source: AHA member survey, December 2006

Other Supportive IT Applications

There are certain health IT applications that support the care process, such as bar coding, telemedicine, and administrative systems. Pennsylvania hospitals led the country averages in almost every area of bar coding application use. There are safety benefits of matching patients and their medications before they are administered to ensure the right medication is given to the right patient, in the right dose, at the right time.

Due to the extensive rural geography of the commonwealth, telemedicine technology is a growing application, which allows facilities to consult with physicians and medical personnel at other hospitals or central facilities, through the use of high-resolution cameras, digital imaging equipment, and high-speed connectivity.

About 15 percent of Pennsylvania hospitals are using radio frequency identification (RFID), a new technology used to identify and track items.

In addition, more physicians are using hand-held electronic devices such as personal digital assistants (PDAs) to access patient information and medical references, and enter orders.

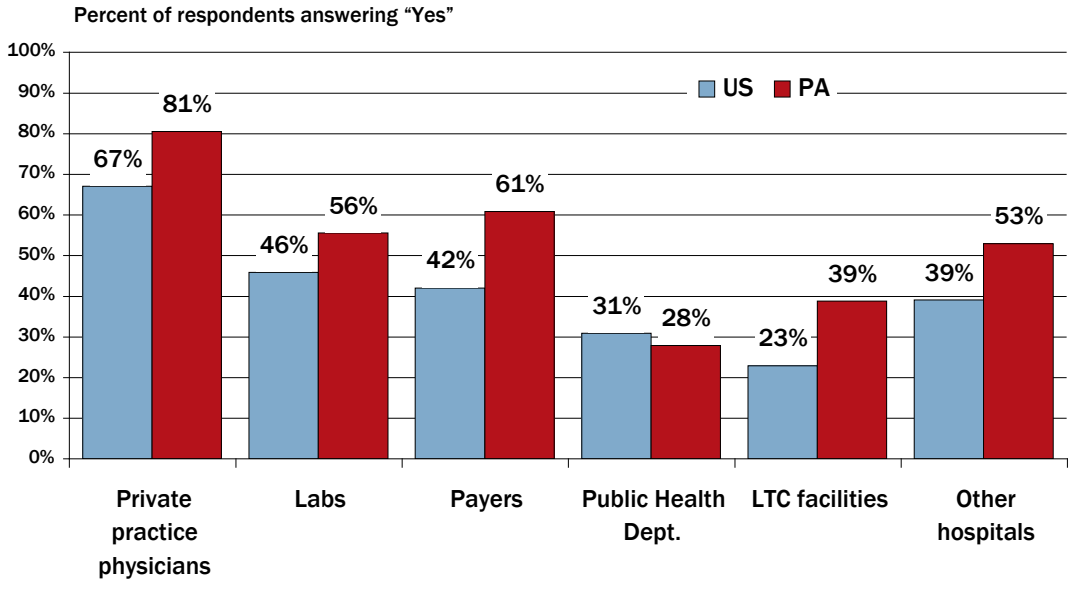
Sharing Clinical Data

Almost half of Pennsylvania hospitals reported participating in local/regional arrangements to share electronic patient-specific health information with partners. These information exchanges can take place in many forms, such as:

- Web portals that give physicians access to hospital information systems.
- The sharing of electronic data with other hospitals or facilities within a system.
- The sharing of data with a laboratory.
- Planned or nascent projects to share information through a regional health information network.
- Hospitals most commonly share electronic patient information with physician offices (81% of respondents).

Nationally, there are no standards as of yet regarding interoperability, which is the ability of a system or a product to work with other systems or products without special effort on the part of the customer. Therefore, hospitals investing in information technology systems are often going at risk as they invest in improving patient care. The lack of uniform standards across information technology systems creates hurdles and makes it far more difficult for vendors or facilities to make investments in these technologies at this time.

Hospitals Most Commonly Shared Electronic Patient Information with Physician Offices.

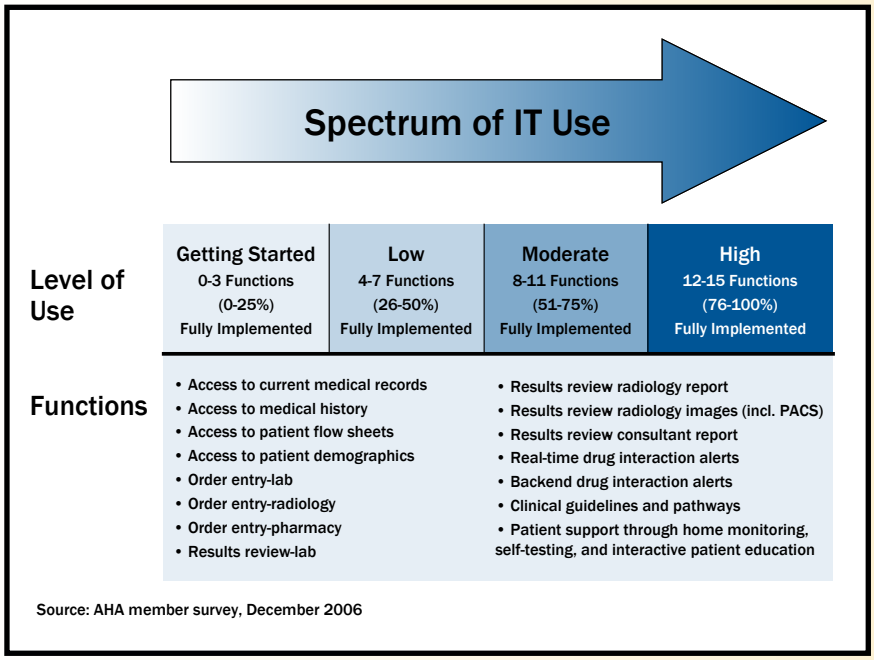


Source: AHA member survey, December 2006

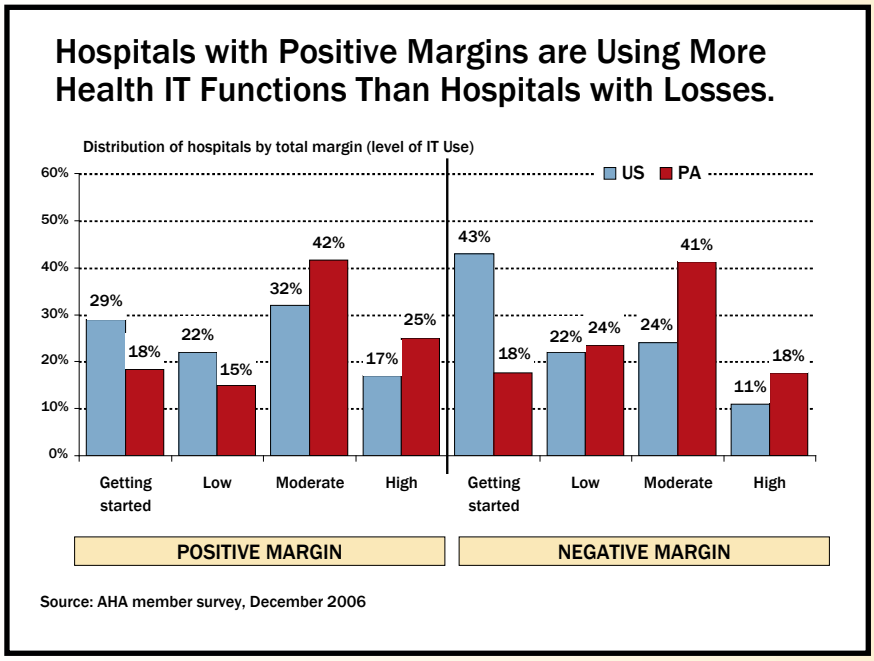
Hospitals Fall Along a Spectrum of Health IT Use

Hospitals fall at different places along the adoption curve.

- The extent to which health IT use varies depends upon number of beds, location, teaching mission, and membership in a hospital system.
- Of all the characteristics, the size of the hospital had the strongest relationship to health IT use.
- Larger hospitals, in general, have greater access to revenues.
- Teaching hospitals use more health IT than non-teaching hospitals.
- Being part of a hospital or health system can mean that there is more access to greater financial and technical resources for health IT adoption.
- Since IT systems require major financial resources, financial status also helps determine a hospital's health IT use. Having positive margins gives hospitals the funds needed to make large capital investments necessary to implement health IT and covers the increased operating costs that come with investment in health IT systems.



Source: AHA member survey, December 2006



Source: AHA member survey, December 2006

A Case Study:

Fetal surgeons at Children's Hospital of Philadelphia had to take time out of their tight schedules to walk ten minutes from their facility to the University of Pennsylvania Medical Center to review ultrasounds.

The medical center performs all the ultrasounds for Children's Hospital. Because of the tight security around Children's Hospital's IT network, the files could not be easily transmitted to its internal systems, so surgeons were asked to take the time to walk to the medical center. But with the creation of the Philadelphia Health Information Exchange, a regional health information organization (RHIO) focused on exchanging radiology images, the fetal surgeons now can access radiology images without stepping outside their offices at Children's Hospital. Doctors now receive radiology reports in three to four business days, whereas before it took five to seven days.

The RHIO was initially created to connect picture archiving and communication systems and other radiology applications to exchange images and aid in the treatment of children admitted to Children's Hospital. The RHIO's mission since has been expanded to include all types of radiology images. A number of other facilities are connected to the network, including 11 local imaging centers, a second Healthcare Network, the Philadelphia Department of Public Health, and over 20 local practices.

Policy Implications

Hospitals are clearly committed to moving ahead with the implementation of health IT, but adoption is evolutionary as health IT use is based on patients' needs and the availability of funding.

As policymakers debate a multitude of health care reform proposals, including requirements around information technology, there are several critical points that must be considered:

- **Hospitals are not interchangeable.** They are configured to meet community needs—which include urban, smaller cities, suburban, and rural communities. In addition, there are academic medical centers and teaching hospitals, as well as specialty hospitals—including hospitals that serve children, rehabilitation hospitals, and psychiatric hospitals—all of which have unique missions in serving patients. Policymakers need to consider the diversity of our state and communities, the types of care provided, the relationships of various providers, and the fiscal parameters of each organization as they address how we should approach Pennsylvanians' needs for health information technology. One size does not fit all, particularly in using health IT.
- **The speed of clinical innovation and technology is expected to provide more improvements in the next 25 years than occurred during the past 100 years.** Codifying current clinical science and technology through legislation could limit innovation and improvement. Ultimately what is needed are standards that are evidence-based, allow for flexibility in responding to a dynamic and rapidly changing health care environment, and enable facilities to provide quality and safe care in a cost-effective and efficient manner.
- **The costs to implement health care IT are significant.** Lawmakers should work to advance financial support and incentives through grant and loan programs to help hospitals acquire the technology. In addition, they must recognize the need for incentives to encourage greater collaboration and integration across the delivery system.
- **We should not mandate a single health IT system as it will not enable the innovation and improvement in care that is already occurring.** For hospitals struggling financially, any mandate to meet health IT requirements by a set date would be a daunting challenge, forcing them to make difficult choices around continuing needed patient care services.

The Pennsylvania eHealth Initiative

The Pennsylvania eHealth Initiative (PAeHI) was created to encourage the development and use of electronic medical records (EMRs) in Pennsylvania along with health information exchanges (HIEs), which will ultimately tie into a national system allowing patients and health care providers to securely access medical records regionally and throughout the country. Stakeholders adopted bylaws and became incorporated as a non-profit organization in Pennsylvania in September 2005. The initiative works with providers, health insurers, businesses, and government to inform health care stakeholders and all Pennsylvanians of the benefits of utilizing electronic health records; interconnecting all health care providers to make health information available; addressing legal and policy issues that could impede the development of HIEs; enabling secure, confidential access to health information; and ensuring patients' access and control of their health information.

PAeHI has been the neutral forum for the many diverse interests in the health IT community to rally around a common mission, which is "to improve patient care through the effective use of health information technology." PAeHI has grown from 40 founding stakeholders to more than 230 participants representing more than 160 different health care organizations—including government, insurers, hospitals, physician practices, Medicare Quality Improvement Organizations, health care trade associations, and vendors.

Glossary of Health Care Information Technology Terms

Adapted from the Arizona Health-e Connection Roadmap, April 4, 2006 and Health Information Technology Glossary
www.wcit2006.org/Healthcare/glossary.html

Broadband – The ability of a user to view content across the Internet to include large files, such as video, audio, and three-dimensional. A user's broadband capability is typically governed by the connection between the Internet service provider (ISP) and the user.

Computerized Provider Order Entry (CPOE) – A computer application that allows a physician's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the physician about potential problems.

Decision-Support System (DSS) – Computer tools or applications to assist physicians in clinical decisions by providing evidence-based knowledge in the context of patient-specific data. Examples include drug interaction alerts at the time medication is prescribed and reminders for specific guideline-based interventions during the care of patients with chronic disease. Information should be presented in a patient-centric view of individual care and also in a population or aggregate view to support population management and quality improvement.

eHealth Initiative (eHI) – The eHealth Initiative and the Foundation for eHealth Initiative are independent, non-profit affiliated organizations whose missions are the same: to drive improvement in the quality, safety, and efficiency of health care through information and information technology.

Electronic Health Record (EHR) – A real-time patient health record with decision support capabilities that can be used to aid clinical decision-making. The EHR can also support the collection of data for uses other than clinical care, to include billing, quality management, outcome reporting, and public health surveillance and reporting.

Electronic Medical Record (EMR) – An EMR is an electronic record containing information about a patient with the ability to communicate with other applications within a health enterprise (hospital, clinic, physician practice). An EMR belongs to and is owned by the hospital/ practice/clinic that provides the patient with medical care.

e-Prescribing – Computer technology in which physicians use handheld or personal computer devices to review drug and formulary coverage and transmit prescriptions to a printer, EMR or pharmacy. e-Prescribing software can be integrated with existing clinical information systems to allow access to patient-specific information to screen for drug interactions and allergies.

Health Information Exchange (HIE) – The movement of health care information electronically across organizations within a region or community. HIE provides the capability to electronically move clinical information between disparate health care information systems while maintaining the meaning of the information being exchanged. The goal of HIE is to facilitate access to and retrieval of clinical data to provide safe, timely, efficient, effective, equitable, patient-centered care.

Health Information Technology (HIT) – The use of computer software and hardware to process health care information electronically, thereby allowing for the storage, retrieval, sharing, and use of the information, data, and knowledge for communication and decision-making related to patient care delivery.

Interoperability – The ability of a system or a product to work with other systems or products without special effort on the part of the customer.

Patient Record Locator – The electronic means by which patient files are located to assist patients and clinicians find test results, medical history, prescription data, and other health information. A record locator would act as a secure health information search tool.

Personal Health Record (PHR) – A software application which individuals can use to maintain and manage their health information (and that of others if authorized) in a private, secure, and confidential environment.

Practice Management System (PMR) – That portion of the medical office record which contains financial, demographic, and non-medical information about patients.

Radio Frequency Identification (RFID) – RFID consists of a tag, which is made up of a microchip with a coiled antenna, and an interrogator or reader with an antenna. The reader sends out electromagnetic waves that form a magnetic field when they "couple" with the antenna on the RFID tag. A passive RFID tag draws power from this magnetic field and uses it to power the microchip's circuits. The chip then modulates the waves that the tag sends back to the reader, and the reader converts the new waves into digital data.

Regional Health Information Organization (RHIO) – A multi-stakeholder organization responsible for motivating and causing integration and information exchange. Overall, RHIOs intend to improve the safety, quality, and efficiency of health care as well as access to health care as a result of health information technology.

THE HOSPITAL & HEALTHSYSTEM
ASSOCIATION OF PENNSYLVANIA

4750 Lindle Road
P.O. Box 8600
Harrisburg, PA 17105-8600
717.564.9200 Phone
717.561.5334 Fax
haponline.org