

HTP

SPONSORED BY 

HEALTHCARE TRANSFORMATION PROJECT

CONVENE. CONNECT. CHANGE YOUR WORLD.

HOSPITAL DECISION MAKING AND INFORMATION TECHNOLOGY

DECEMBER 2012

Table of Contents

<i>Introduction</i>	3
<i>HIMSS Research on IT and Healthcare Leadership</i>	3
<i>Decision Making at Healthcare Organizations</i>	4
<i>Top CEO Concerns</i>	4
<i>Financial Challenges</i>	4
<i>Implementing Healthcare Reform</i>	5
<i>Patient Safety/Quality of Care</i>	5
<i>Technological Innovation</i>	6
<i>Technological Innovation and Healthcare</i>	6
<i>Aligning Care Providers Across the Continuum of Care</i>	7
<i>Evidence Based Practices</i>	8
<i>Improving Efficiency</i>	9
<i>Developing Integrated Information Systems</i>	10
<i>Conclusion</i>	11
<i>References</i>	12

Introduction

The U.S. hospital industry has undergone numerous significant changes in recent years. From the way in which hospital providers are reimbursed for the care they deliver, to the technological advances managing patient information, hospital leaders have had to navigate a highly turbulent environment in order to survive, let alone thrive. Fortunately, today's hospital leaders have a host of information management tools to support them in their efforts.

As the global non-profit organization leading the transformation of healthcare through the best use of information technology (IT), HIMSS ensures hospital leaders fully benefit from their organization's IT systems, and actively monitors how these technologies are deployed and utilized. HIMSS's Annual Leadership Study, for instance, measures the alignment between organizations' overall strategic plan and their IT strategic plan. With seven percent of organizational leaders still reporting a misalignment between their IT strategic plan and their overall strategic plan¹, HIMSS' work to positively leverage IT in healthcare settings continues.

This paper explores a few of the most pressing issues healthcare executives face in today's healthcare marketplace. We pay particular attention to the information technologies that can support executives in their decision making process.

HIMSS Research on IT and Healthcare Leadership

Equipping executives for optimal IT decision-making has been a HIMSS theme for many years now. A 2005 article published in JHIM suggests that the more complex healthcare environment in which hospitals are presently operating requires healthcare executives to formulate strategic plans that are not only detailed and current, but also adequately take into consideration how external events can impact organizational strategy in the future².

HIMSS's website, which offers resources to healthcare professionals engaged in their strategic planning process, suggests that "Health IT strategy must align with the organizational strategy which gives it context, and is central to realizing the organization's larger mission and strategic plan"³.

Decision Making at Healthcare Organizations

Top CEO Concerns

Recent research released by the American College of Healthcare Executives (ACHE) suggests that the top three issues CEOs are grappling with include⁴:

1. financial challenges;
2. implementing healthcare reform; and
3. addressing patient safety/quality.

Financial Challenges

Financial challenges have long been a top issue for hospital CEOs. Dating back to 2003 when the ACHE first released survey data indicating the top issues of greatest concern to hospital CEOs, reimbursement issues⁵ (including Medicaid reimbursement and government funding cuts) have consistently ranked as a top issue. The most current release of ACHE survey data is no exception⁶.

That financial challenges continually surface to the top for hospital CEOs should come as no surprise. Such challenges are enormous and complex. Federal healthcare mandates cutting reimbursement rates for healthcare procedures, coupled with added federal regulatory mandates that will impose additional administrative and paperwork burdens have placed healthcare organizations in a financial “squeeze”, requiring them to provide high quality patient care for less. For instance, the Balanced Budget Act of 1997 called for a \$115 billion cut over five years from Medicare and a \$13 billion cut in Medicaid over the same five year period⁷. At the same time, compliance with HIPAA’s privacy regulations is projected to cost upwards of \$4 billion⁸.

In order to remain financially viable, the leadership at healthcare organizations must not only think about ways in which they can expand revenue, but also ways in which they can cut costs. Top hospitals have already taken a variety of steps to cut costs from supply and labor costs, as well gaining efficiencies from Lean practices⁹.

Implementing Healthcare Reform

In 2011, healthcare executives participating in the ACHE survey identified healthcare reform implementation as their second greatest concern¹⁰. The topic of healthcare reform is a fairly broad one and includes concerns in a variety of areas including how healthcare reform will reduce operating costs, impact the alignment of provider and payer incentives, and impact physician alignment¹¹.

Healthcare reform is something that plays out at both the state and federal level. According to the National Conference of State Legislatures, the debate has been going on for decades at the state level, with legislators regularly debating and enacting "mandates" or requiring health coverage for specific treatments, benefits, providers and categories of dependents¹².

Over the past five years, a number of federal initiatives were passed that will change the ways in which healthcare organizations do business. Most recently, the Patient Protection and Affordable Care Act (PPACA)¹³ was passed in 2010. This Act strives to decrease the number of uninsured Americans and reduce the overall costs of healthcare, as well as striving to improve healthcare outcomes and streamline the delivery of healthcare. In attempting to do so, the PPACA will impact nearly every aspect of healthcare delivery, requiring healthcare executives to be fully engaged in every aspect of their organization.

Patient Safety/Quality of Care

Rounding out the top three in ACHE's 2011 report, Top Issues Confronting Hospitals, was the area of patient safety/quality¹⁴. More specifically, CEOs identified concerns in the areas of engaging physicians in improving a culture of quality, redesigning care processes and pay-for-performance.

Since the IOM report *To Err is Human: Building a Safer Health System*¹⁵, was released in 1999, suggesting that preventable medical errors killed between 48,000 and 99,000 people on an annual basis, the healthcare sector has been on a mission to improve the quality of care. This report suggests that while no single activity can totally eliminate medical errors, leveraging a variety of solutions can result in improvements. One of the solutions identified for improving care was the use of

information technology. In fact, IT executives surveyed by HIMSS have suggested that achieving meaningful use – which in and of itself includes a number of quality metrics – and improving patient care are the two top business objectives at their organization¹⁶.

Indeed, numerous healthcare organizations have indicated that they have achieved patient care benefits as a result of their IT implementations. Benefits have been realized in the areas of a decreased length of time it takes to see a patient in the emergency department, elimination of duplicate tests, and a reduction of medication errors facilitated by linking bar code scanning to CPOE and electronic medication administration record systems (eMAR)¹⁷.

Technological Innovation

Advances in science and technology have changed the way we communicate, relate to one another and think about what it means to be a human being.

For years, technological advances have occurred that have enhanced various walks of life. The introduction of ATMs in 1969, for instance, changed the face of banking, making it possible for consumers to access their accounts 24 hours a day, seven days a week. Or the advent of bar code technology (and more recently QR codes) has changed the pricing process and inventory control in retail. Cell phones have introduced the concept of mobility to long distance communications¹⁸ while email and text messaging has changed the format of our communications with friends, family and business associates.

Technological Innovation and Healthcare

From the invention of the first vaccination in the late 1700s to the invention of the iron lung in the 1920s, healthcare has benefited from innovation across a wide variety of areas¹⁹. While development continued into the 20th and 21st centuries, healthcare has tended to lag behind other sectors in adopting technology. Medical imaging devices, such as PET scanners, MRIs and ultrasound machines, help healthcare professionals reach effective diagnoses. Cardiopulmonary Bypass Machines maintain circulation for patients while the heart is being repaired via surgery, and pacemakers ensure that patients' hearts maintain a normal rhythm²⁰.

Similar to these technological innovations, IT also plays an increasing role in the provision of healthcare in the U.S. While the use of IT for “back office” functions has been commonplace for some time, the use of this technology to support patient care has evolved more slowly. For instance, in 1986, 99 percent of U.S. hospitals with 100 beds or more had installed a patient accounting system, while only 43 percent had an installed laboratory information system (LIS)²¹. By 2012, 99 percent of all U.S. hospitals used a laboratory information system to streamline the process management of basic clinical services in the laboratory²². Use of IT solutions is also becoming more widespread for analytical purposes – more than 40 percent of U.S. hospitals presently have a clinical data warehousing/mining solution. This represents an increase from the 19 percent of hospitals that used this type of solution just five years ago in 2007²³.

It is at this intersection where IT can prove to be a valuable resource to healthcare executives as they make critical decisions that will impact the future viability of their healthcare organizations. The AHA report *Hospitals and Care Systems of the Future* identified 10 “must-do” strategies that healthcare organizations should implement in order to be able to successfully meet the needs of patients in the future²⁴. Four of these were considered major priorities:

- Aligning hospitals, physicians and other providers across the continuum of care
- Utilizing evidence-based practices to improve quality and patient safety
- Improving efficiency through productivity and financial management
- Developing integrated information systems

Aligning Care Providers Across the Continuum of Care

Hospitals are more frequently merging, acquiring or partnering with other hospitals and medical practices to form tightly integrated delivery networks that will enable them to provide high quality care at a reasonable price²⁵. In order to gain efficiencies in this area, healthcare organizations should focus on creating alignments with physicians and other care providers by creating Accountable Care Organizations (ACOs) and/or Patient Centered Medical Homes, distributing shared savings to physicians and incentivizing care providers with quality and efficiency incentives²⁶.

While there is confusion about the form ACOs will eventually take, there is little confusion around the importance of having to develop strong alignment with physicians. In order to create a more cohesive alignment to the corporate healthcare organization, many organizations are evaluating the impact of employing physicians, rather than providing physicians privileges to provide medical care at their institution. Many top-performing organizations are already establishing stronger relationships with physicians, believing that it is critical to their future success to have positive working relationships with physicians in their community²⁷.

To successfully navigate the new relationship that healthcare organizations will have in the future with physicians, it is critical that executives begin to consider the role that IT will play in establishing a more seamless connection between the myriad of care settings at which their patient population sees care providers. Key to creating this relationship is the implementation of technology that will enable clinicians to access patient data not only from the hospital or their office, but also from a mobile device that allows anytime/anywhere access. Advanced use of effective IT solutions can be used as a marketing tool to retain and attract qualified staff.

Evidence Based Practices

Evidence based practices to support improved quality and patient safety can take many forms, including the ability to manage utilization variation, effectively measuring and managing care transitions²⁸ and establishing best practices for disease management.

Research outlining the role that IT can play in the improvement of patient safety is plentiful. Benefits have been demonstrated in a number of areas, including reduction of medication errors, elimination of duplicate testing, and more timely provision of healthcare. For instance, The Children's Hospital of Pittsburgh at UPMC has decreased the time from ordering an antibiotic to the administration of a drug from more than an hour to 10 to 15 minutes²⁹. NorthShore University Health System reported that reports of medication errors have dropped by 80 percent³⁰ and Sentara Healthcare has reported a five percent reduction in inpatient lab tests, as a result of the elimination of duplicate orders³¹.

The types of technologies available that can improve technology are equally widespread. Implementation of computerized provider order entry (CPOE) and bar coding systems can result in the reduction of medication errors. E-prescribing solutions can reduce medication errors by eliminating challenges in reading illegible prescriptions. Data warehouses and business and clinical intelligence solutions can provide healthcare organizations the tools needed to evaluate care across their patient populations, identifying areas in which changes in care to reflect best practices can be made across the organization.

Improving Efficiency

There are numerous ways in which healthcare organizations can improve efficiency through enhanced productivity and financial management at their organizations, including identifying the expense per episode of care, sharing savings/financial gains from performance-based contracts and targeting cost reduction goals³².

Technology solutions providing healthcare organizations the ability to manage data will help identify areas in which improvements can be made in the areas identified above. Approximately half of U.S. hospitals are presently reporting use of business intelligence technology for financial purposes. This technology enables healthcare organizations to measure operational key performance indicators that enable them to cut costs and make decisions in real-time. Advanced skills in this area will be a baseline requirement for IDNs to survive as an ACO or in a bundled payment reimbursement scheme. Fewer hospitals use business intelligence software for clinical purposes. This type of technology can provide information in multiple areas, including the management of regulatory requirements such as value-based purchasing³³.

Indeed organizations are already beginning to see benefits from the use of such computer systems. Sentara Healthcare, for instance, has been able to demonstrate that their readmission ratio at the first four of their hospitals at which they implemented Epic's EMR, saw a reduction of more than 18 percent³⁴. They also documented \$2.7 M in benefits in 2009 due to a reduction in severity-adjusted length of stay for patients at their first four go-live hospitals.

Developing Integrated Information Systems

As already stated, the use of integrated information systems has wide applicability within healthcare organizations. The strategic implementation and optimization of IT solutions can promote the use of health information across the continuum of care and community as a whole, promote an understanding of population disease patterns and reduce the lag time between analysis and the availability of results³⁵. Healthcare organizations are becoming more sophisticated in their use of IT solutions, as evidenced in the HIMSS Analytics EMRAMSM Model³⁶. In the past five years, adoption of technology among U.S. hospitals has accelerated substantially. At the end of 2007, 71 percent of U.S. hospitals were in either Stages 0, 1 or 2, meaning that they had not yet begun to implement key technologies that physicians and nurses could use at the point of care to enhance patient care. Current data suggests that only 23 percent of U.S. hospitals remain at these stages. At the other end of the spectrum, the number of hospitals that have achieved Stage 6 or 7, which classifies the most technologically-sophisticated hospitals in the U.S., has increased significantly over the past five years, from less than one percent in 2007 to nine percent today.

US EMR Adoption Model™			
Stage	Cumulative Capabilities	2007 Final	2012 Q3
Stage 7	Complete EMR, CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP	0.0%	1.8%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	0.8%	7.3%
Stage 5	Closed loop medication administration	1.4%	12.0%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	2.2%	14.2%
Stage 3	Nursing/Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	25.1%	41.3%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable	37.2%	11.2%
Stage 1	Ancillaries - Lab, Rad, Pharmacy - All installed	14.0%	4.8%
Stage 0	All Three Ancillaries Not installed	19.3%	7.4%

Data from HIMSS Analytics® Database © 2012 HIMSS Analytics

N = 5073 N = 5319

Conclusion

Healthcare executives are highly concerned about financial resources available to provide patient care, the ability to provide high quality care and the federal regulations and mandates that impact both funding sources and means by which quality of care needs to be measured. Having real-time access to the right information is critical to help executive teams make informed decisions about the provision of healthcare at their organizations.

IT solutions, used correctly, have the ability to put that information into the hands of the executive team. In order to ensure that the right IT solutions are in place to support the collection and analysis of the information required to make those decisions, executive teams first need to fully lay out and identify their long-term strategic objectives and ensure that the IT tools that can support those objectives are strategically aligned with those plans.

For IT to be successfully implemented, the executive team needs to champion the acquisition and the roll-out of the solutions purchased. This will ensure not only that the appropriate levels of investment are made in purchasing the technology, but also that there will be buy-in from the organization's employees.

The strategic challenge facing executive teams, and their Boards of Trustees, is to realize these changing realities, and position their healthcare organization for future financial viability. IT is a key component of that strategic conversation; executives must first understand how IT can be harnessed to jointly improve outcomes, reduce costs, and generate new revenue. Then, executives must articulate the plan and keep staff relentlessly focused.

References

- ¹ 23rd Annual HIMSS Leadership Survey.
<http://www.himss.org/content/files/2012FINAL%20Leadership%20Survey%20with%20Cover.pdf>
- ² Adams, J. Successful Strategic Planning: Creating Clarity. Journal of Healthcare Information Management. Volume 19, Number 3.
http://www.himss.org/content/files/Code%2037_Successful%20Strategic%20Planning-Creating%20Clarity%20JHIM.pdf
- ³ HIMSS Website – Strategy and Planning. http://www.himss.org/asp/topics_focusdynamic.asp?faid=520
- ⁴ ACHE Top Issues Confronting Hospitals. <http://www.ache.org/Pubs/Releases/2012/top-issues-2011.cfm>
- ⁵ ACHE Top Issues Confronting Hospitals. http://www.ache.org/PUBS/Releases/112603_ceo_survey.cfm
- ⁶ ACHE Top Issues Confronting Hospitals. <http://www.ache.org/Pubs/Releases/2012/top-issues-2011.cfm>
- ⁷ Balanced Budget Act of 1997: Public Law 105-33. Significant Changes made in Children’s Health, Welfare, Medicaid and Medicare. August 1997. <http://www.naswdc.org/archives/advocacy/updates/1997/grbudget.htm>
- ⁸ AHA: The State of Hospitals Financial Health. <http://www.aha.org/content/00-10/Wp2002HospFinances.pdf>
- ⁹ Thomson Reuters Research Paper: 100 Top Hospitals CEO Insights: Keys to Success and Future Challenges. August 2011.
<http://100tophospitals.com/assets/CEOInsightsResearchPaper.pdf>
- ¹⁰ ACHE Top Issues Confronting Hospitals. <http://www.ache.org/Pubs/Releases/2012/top-issues-2011.cfm>
- ¹¹ ACHE Top Issues Confronting Hospitals. <http://www.ache.org/Pubs/Releases/2012/top-issues-2011.cfm>
- ¹² National Conference of State Legislatures <http://www.ncsl.org/issues-research/health/mandated-health-insurance-benefits-and-state-laws.aspx>
- ¹³ The Patient Protection and Affordable Care Act <http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/html/PLAW-111publ148.htm>
- ¹⁴ ACHE Top Issues Confronting Hospitals. <http://www.ache.org/Pubs/Releases/2012/top-issues-2011.cfm>
- ¹⁵ IOM Report. To Err is Human: Building a Safer Health System. <http://www.iom.edu/~media/Files/Report%20Files/1999/To-Err-is-Human/To%20Err%20is%20Human%201999%20report%20brief.pdf>
- ¹⁶ 23rd Annual HIMSS Leadership Survey.
<http://www.himss.org/content/files/2012FINAL%20Leadership%20Survey%20with%20Cover.pdf>
- ¹⁷ HIMSS Leaders and Innovators Report, November 2011. ROI Research in Healthcare: The Value Factor in Returns on Health IT Investments
- ¹⁸ Popular Mechanics. The Top 50 Inventions of the Past 50 Years. December 1, 2005
<http://www.popularmechanics.com/technology/gadgets/news/2078467>
- ¹⁹ About.com Inventors. 19th Century Timeline. <http://inventors.about.com/od/timelines/a/Nineteenth.htm>
- ²⁰ Gallagher, J. Five Amazing Technological Advances in the Health Care Field. August 2010. <http://voices.yahoo.com/five-amazing-technological-advances-health-6663670.html>
- ²¹ 1998 Selected Industry Findings from the Dorenfest Databases. Sheldon I. Dorenfest & Associates, Ltd.
- ²² HIMSS Analytics® Database, 2012. www.himssanalytics.org
- ²³ HIMSS Analytics® Database, 2012. www.himssanalytics.org
- ²⁴ American Hospital Association Report. September 2011 Committee on Performance Improvement, Jeanette Clough, Chairperson. *Hospitals and Care systems of the Future* <http://www.aha.org/about/org/hospitals-care-systems-future.shtml>
- ²⁵ Adams, J. Successful Strategic Planning: Creating Clarity. Journal of Healthcare Information Management. Volume 19, Number 3.
http://www.himss.org/content/files/Code%2037_Successful%20Strategic%20Planning-Creating%20Clarity%20JHIM.pdf
- ²⁶ American Hospital Association Report. September 2011 Committee on Performance Improvement, Jeanette Clough, Chairperson. *Hospitals and Care systems of the Future* <http://www.aha.org/about/org/hospitals-care-systems-future.shtml>
- ²⁷ Thomson Reuters Research Paper: 100 Top Hospitals CEO Insights: Keys to Success and Future Challenges. August 2011.
<http://100tophospitals.com/assets/CEOInsightsResearchPaper.pdf>
- ²⁸ American Hospital Association Report. September 2011 Committee on Performance Improvement, Jeanette Clough, Chairperson. *Hospitals and Care systems of the Future* <http://www.aha.org/about/org/hospitals-care-systems-future.shtml>
- ²⁹ HIMSS Analytics Stage 7 Award Case Study – Children’s Hospital of Pittsburgh at UPMC.
<http://www.himssanalytics.org/emram/stage7caseStudyUPMC.aspx>
- ³⁰ HIMSS Analytics Stage 7 Award Case Study – NorthShore University Health System
<http://www.himssanalytics.org/emram/stage7caseStudyNUH.aspx>
- ³¹ HIMSS Analytics Stage 7 Award Case Study – Sentara Healthcare
<http://www.himssanalytics.org/emram/stage7caseStudySentara.aspx>
- ³² American Hospital Association Report. September 2011 Committee on Performance Improvement, Jeanette Clough, Chairperson. *Hospitals and Care systems of the Future* <http://www.aha.org/about/org/hospitals-care-systems-future.shtml>
- ³³ HIMSS Analytics® Database <http://www.himssanalytics.org/data/HADB.aspx>
- ³⁴ HIMSS Analytics Stage 7 Award Case Study – Sentara Healthcare
<http://www.himssanalytics.org/emram/stage7caseStudySentara.aspx>
- ³⁵ American Hospital Association Report. September 2011 Committee on Performance Improvement, Jeanette Clough, Chairperson. *Hospitals and Care systems of the Future* <http://www.aha.org/about/org/hospitals-care-systems-future.shtml>
- ³⁶ HIMSS Analytics EMRAM Model. <http://www.himssanalytics.org/emram/index.aspx>