BEING MOST WIRED IN A DOWN ECONOMY

The 100 outstanding IT hospitals of 2009 balance recession realities with the need to keep moving forward.
BEING
MOST WIRED
IN A DOWN
ECONOMY

TEAM COVERAGE BY
ALDEN SOLovy, BIANCA
HOPPSSZALLERN
AND SARAH B. BROWN

These are strange times for clinical information technology. On one hand, providers are being urged to stop the gas with the federal government poised to distribute $2 billion in stimulus funds to wise doctors, hospitals and patients. On the other hand, the economic crisis is forcing many hospitals to hit the brakes on capital investments. Even this year's 100 Most Wired Hospitals and Health Systems are torn between building on their IT successes and keeping a close eye on budgets.

"We have reduced the amount of capital we are spending on IT projects, which in turn is causing us to delay the implementation or launch of new initiatives," says Bob Frieden, vice president and chief information officer, Genesis Health System, Davenport, Iowa, which appears on the 100 Most Wired list for the sixth time in 2009. "We are staying focused on projects with a higher rate of return." Jamie Mooney, vice president and chief information officer of Norfolk (Conn.) Hospital, says "the economic slowdown has forced us to look very critically at our IT spending. We have delayed discretionary projects, focusing on fixing what is "busiest right now." Norfolk appears on this year's Most Improved list.

And at Battle Creek (Mich.) Health System, "we have changed our focus from implementing new systems, to really driving the full value out of the systems we have," says Jim Keller, information services director. "We still have some implementation and integration projects under way, but even those projects have a more increased focus on driving value. His system appears on the 100 Most Wired list for the second time in 2009.

To complicate matters, the great unknown of health care reform looms in the near future, and that doesn't include a number of regulatory changes already heading down the pipe.

"I'm a bit concerned over the number of legislative undertakings that will be required over the next three years, such as the [coding] system change to ICD-10 and the $600 transaction standard, work to ensure recovery audit contractor rules and regulations are met, and now the American Recovery and Reinvestment Act, or ARRA, security regulations and the year-to-year determined meaningful use definition and certification process," says Gregory Velth, chief information officer at Denver Health, which makes its second appearance on the 100 Most Wired list in 2009. "Many of these will require a large level of funding in the 2010-2012 timeframe. I believe we will have to stop some projects and slow down others in order to fund projects that ensure adherence to the new regulations, security and direction put forth by these changes."

Nevertheless, Most Wired hospitals are doing their best to stay the course. "As leaders, we realize that IT initiatives can help reduce the bottom line or generate revenue," says Edward Marx, CIO of Texas Health Resources in Arlington. "We continue to work closely to maximize the impact of technology to transform, run and grow the business." His organization appears on the Most Wired list for the 10th time in 2009.

Even as hospitals appear to be cutting the total dollars they spend on information technology, IT spending as a percent of total capital and operating budgets is actually increasing, says Sanjay Sarwal, president of McKesson Provider Technologies. McKesson Corp. is a major sponsor of the Most Wired survey, hospital executives "clearly recognize that in spite of lower budgets they still need to invest in IT," he says.

However, Sarwal says, "we're seeing hospitals reprioritizing." Information technologies with more immediate return on investment, such as revenue cycle projects, are gaining momentum. "They are trying to affect the top line."

Norwalk Hospital's Mooney even sees an "upside to all of this. It is giving our team a chance to spend time optimizing current systems, making sure that we are getting the most out of each IT dollar spent."

A Stimulating Wait
While the economy slows IT spending, ARRA is intended to stimulate it, with the goal of creating a nationwide electronic medical record system. "The promise of extensive stimulus funding beginning in 2013 is allowing us to move forward on an EMR project," says Linda Shanks, chief information officer, Stony Brook (N.Y.) University Medical Center, which appears on the 100 Most Improved list in 2009. However, she adds, "when and if this happens, we will need to prioritize our IT projects based on our strategic initiatives and where our resources can be used wisely," which may include a delay in upgrading or replacing other systems.

Hospitals' access to stimulus funding hinges on the definition of "meaningful use." The Department of Health & Human Services is expected to propose a definition of the term in late 2009.

"We are going with the assumption that "meaningful use" includes CPOE, bar-coded medication administration and documentation as foundational," says Norwalk's Mooney. "In the next phase, we are focusing on completing our clinical documentation project."

The economic slowdown has caused Citizens Memorial Healthcare in Bolivar, Mo., to limit all expenditures, including IT, to the "minimal essential level," says Dennis McCall, chief information officer. "Included in essential will be whatever is necessary for us to take advantage of the stimulus funding."

For some organizations, the timing of the stimulus funding coincides with the scheduled completion of major projects. "We will complete our EMR implementation at all hospitals and physician practices about four months before stimulus funding becomes available," says Daniel Archi, senior vice president and CIO, Carilion Clinic, Roanoke, Va. "When we began our EMR project in 2006, our goal was to implement the system for all inpatient, physician practice and billing applications as soon as possible. We could not have foreseen the need for the stimulus package, but the timing of the program with our project completion is fortunate." This is the seventh year that Carillon has appeared on the Most Wired list.

Guarded Enthusiasm
Despite the many challenges, senior leaders at Most Wired organizations remain enthusiastic about IT.

"Perception of IT has not really changed in the past year," says Arlo Jennings, vice president and CIO of Mission Health System in Asheville, N.C. "Our senior leadership, including our board, recognizes the importance and the need to support information technology. Since most of what we do with clinical services involves IT in today's environment, our executive suite is intimately involved in making appropriate decisions to support on-going technology." Mission makes its second appearance on the 100 Most Wired list in 2009.

Daniel Morrall, CIO of AtlanticCare in New Jersey, has seen "a dramatic change in the way information technology is perceived. The management team understands that clinical transformation is about changing the business practice and so in doing have become vested and participatory in the process." In 2009, AtlanticCare makes its first appearance on the 100 Most Wired list. Executive leadership at the University of Arkansas for Medical Sciences Medical Center has also begun to understand that business units must take responsibility for the use of IT and for the return on investment for those systems, says Kurt Cassel, CIO. This led to an increase in adoption, a better partnership with the IT staff in project implementations, and increased satisfaction with their systems. UAMS makes its seventh appearance on the 100 Most Wired list in 2009.

"There has been an increasing understanding of the importance of IT systems to the delivery of health care and increasing IT involvement in all aspects of the business, including the design of new buildings," Cassel says. Balancing the high cost of IT with the increasing demand for IT services will continue to be a difficult exercise. ●

About the Survey
This edition of Hospitals & Health Networks marks the 11th release of the list of 100 Most Wired Hospitals and Health Systems, which is based on the annual Most Wired Survey and Benchmarking Study. Hospitals are named to the list based on a detailed scoring process. This year's survey was made possible through a partnership among Hospitals & Health Networks, the American Hospital Association and the College of Healthcare Information Management Executives. The survey asks hospitals to report on how they use information technology to address five key areas: safety and quality, customer service, business processes, workforce, and public health and safety. This year, 593 hospitals and health systems completed the survey, representing 3,174 hospitals. Along with the 100 Most Wired, HIPRA used the scores to name the 25 Most Improved, the 25 Most Wireless and the 25 Most Wired-Small and Rural.
American Recovery and Reinvestment Act, or ARRA), security regulations and the year-to-year determination of meaningful use definition and certification process, says Gregory Veltil, chief information officer at Denver Health, which makes its second appearance on the 100 Most Wired list in 2009. "Many of these items will require a large level of funding in the 2010-2012 timeframe. I believe we will have to stop some projects and slow down others in order to fund projects that ensure adherence to the new regulations, security and direction put forth by these changes."

Nevertheless, Most Wired hospitals are doing their best to stay the course. "As leaders, we realize that it solutions can help reduce the bottom line or generate revenue," says Edward Marx, CIO of Texas Health Resources of Arlington. "We continue to work closely to maximize the impact of technology to transform, run and grow the business."

His organization appears on the Most Wired list for the 19th time in 2009.

Even as hospitals appear to be cutting the total dollars they spend on information technology, IT spending as a percent of total capital and operating budgets is actually increasing, says Sanjay Saral, president of McKesson Provider Technologies. McKesson Corp, is a major sponsor of the Most Wired survey. Hospital executives "clearly recognize that in spite of lower budgets they still need to invest in IT," he says.

However, Saral says, "we are seeing hospitals retrenching." Information technologies with more immediate return on investment, such as revenue cycle projects, are gaining momentum. "They are trying to affect the top line."

Norwalk Hospital’s Mooney even sees an "upgrade to all of this. It is giving our team a chance to spend time optimizing current systems, making sure that we are getting the most out of each IT dollar spent."

**A Stimulating Wait**

While the economy slows IT spending, ARRA is intended to stimulate it, with the goal of creating a nationwide electronic medical record system.

"The promise of electronic stimulus funding beginning in 2011 is allowing us to move forward on an EMR project," says Linda Skelton, chief information officer, Stony Brook (N.Y.) University Medical Center, which appears on the Most Improved list in 2009. However, she adds, "when and if this happens, we will need to prioritize our IT projects based on our strategic initiatives and where our measures can be used wisely, which may include a delay in upgrading or replacing other systems."

Hospital access to stimulus funding hangs on the definition of "meaningful use. The Department of Health & Human Services is expected to propose a definition of the term in late 2009.

"We are going with the assumption that "meaningful use" includes CPOE, bar-coded medication administration and documentation as foundational," says Norwalk’s Mooney. "In the next year, we are focusing on completing our clinical documentation project."

The economic slowdown has caused Citizens Memorial Healthcare in Belvedere, Ill., to limit all expenditures, including IT, to the "minimal essential level," says Dennis McColm, chief information officer. "In essence, we will be whatever is necessary for us to take advantage of the stimulus funding."

For some organizations, the timing of the stimulus funding coincides with the scheduled completion of major projects.

"We will complete our EMR implementation at all hospitals and physician practices about four months before stimulus funding becomes available," says Daniel Ianchi, senior vice president and CIO, Carolinas HealthCare System in Charlotte, N.C. "When we begin our EMR project in 2006, our goal was to implement the system for all inpatient, physician practice and billing applications as soon as possible. We could not then have foreseen the need for the stimulus package, but the timing of the program with our project completion is fortunate."

It is the seventh year that Carolinas has appeared on the Most Wired list.

**Guarded Enthusiasm**

Despite the many challenges, senior leaders at Most Wired organizations remain enthusiastic about IT.

"Perception of IT has not really changed in the past year," says Arlo Jennings, vice president and CIO of Mission Health System in Asheville, N.C. "Our senior leadership, including our board, recognizes the importance and the need to support information technology. Since most of what we do with clinical services involves IT in today's environment, our executive suite is intimately involved in making appropriate decisions to support on-going technology." Mission makes its second appearance on the 100 Most Wired list in 2009.

Daniel Morrelle, CIO of AtlantiCare in New Jersey, has seen a "dramatic change in the way information technology is perceived. The management team understands that clinical transformation is about changing the business practice and in so doing have become vested and participatory in the process."

In 2009, AtlantiCare makes its first appearance on the 100 Most Wired list. Executive leadership at the University of Arkansas for Medical Sciences Medical Center has also begun to understand that business units must take responsibility for the use of IT and for the return on investment for those systems, says Kent Casell, senior vice president and CIO. This led to an increase in adoption, a better partnership with the IT staff in project implementations, and increased satisfaction with their systems. UAAMS makes its seventh appearance on the 100 Most Wired list in 2009.

"There has been an increasing understanding of the importance of IT systems to the delivery of health care and increasing IT involvement in all aspects of the business, including the design of new buildings," Casell says. "Balancing the high cost of IT with the increasing demand for IT services will continue to be a difficult exercise."

---

**About the Survey**

This edition of Hospitals & Health Networks ranks the 11th release of the list of 100 Most Wired Hospitals and Health Systems, which is based on the annual Most Wired Survey and Benchmarking Study. Hospitals are named to the list based on a detailed scoring process. This year’s survey was made possible through a partnership among HON, McKesson Corporation, American Hospital Association, and the College of Healthcare Information Management Executives. The survey asks hospitals to report on how they use information technology to address five key areas: safety and quality, customer service, business processes, workforce, and public health and safety. This year, 959 hospitals and health systems completed the survey, representing 3,342 hospitals. Along with the 100 Most Wired, Hospitals & Health Networks bases its results to name the 25 Most Improved, the 25 Most Wireless and the 25 Most Wired-Small and Rural.
Progress on Managing Meds

Hospitals are making slow, steady progress in adopting clinical information technology to improve the safety of medication ordering and administration. Results from the 2009 Most Wired Survey and Benchmarking Study show an overall increase in both provider order entry of medications and electronic bedside medication administration in the past year. Electronic medication management is considered one of the fundamentals of using IT to improve care.

Of the organizations completing the survey this year, 38 hospitals and health systems—6.8 percent of the sample—have effectively deployed information technology at both ends of the medication administration process (see figure 3). This compares with 21 hospitals and health systems in 2009, or 4.1 percent of the sample (see figure 2). At the typical hospital responding to the survey, 26 percent of medications are entered electronically by physicians, compared with 19 percent in 2008. The typical respondent has 49 percent of medications doses matched to the order, the drug and the patient at the bedside, compared with 30 percent in 2008.

Military hospitals—Veterans Affairs, Army and Navy—appear to be the most advanced with 77 percent of medications entered electronically by physicians. Military hospitals have 78 percent of medications matched at the bedside.

Children's hospitals and academic medical centers are ahead of the typical respondent in implementing physician order entry, but are behind the curve in implementing bedside medication matching. Both children's hospitals and academic medical centers made significant advances in physician order entry between 2008 and 2009, while critical access and rural hospitals appear to have been focusing on increasing the use of bedside medication matching during that period.

Survey respondents were asked to estimate the percentage of total medication doses administered that are electronically matched to the order, the drug and the patient at the bedside using bar coding or RFID. With this definition, 201 hospitals and health systems achieved full adoption of electronic bedside medication matching.

The typical hospital respondent had 26 percent of medication orders entered electronically by physicians in 2009, compared with 12 percent in 2008 (see figure 3). The least wired still lag significantly behind with only 4 percent of orders entered electronically by physicians. Bedside medication matching has increased nearly three times among the typical respondent since 2005, representing 40 percent of the doses administered in 2009 (see figure 4).

Pharmacists remain the primary clinical team member entering medication orders among most survey respondents, accounting for 58 percent of medication orders in 2009. That's down from 66 percent in 2004. Nurses still account for roughly 10 percent of medications ordered electronically for all three key benchmark groups. Among the 2009 least wired, 9 percent of medication orders never make it into the electronic system.

Results at the other end of the spectrum have also improved. Slightly more than one-quarter of the survey participants—150 respondents—report that they have no activity on either front: no physician order entry and no bedside medication management. That is an improvement from 2008 when 212 hospitals, or more than one-third of participants, had none of these activities automated.

Medication Safety

The following charts show the use of physician order entry of medications and medication matching at the bedside based on the 2009 and 2008 Most Wired Survey and Benchmarking Studies, with 80 percent usage defined as full adoption. Both charts show the number of survey respondents falling into each of the resulting four quadrants. The averages for eight benchmark groups are also plotted on the charts.

Figure 1

2009 Medication Safety

Full adoption of IT tools for medication safety. Full adoption is defined as 80% usage.

Figure 2

2008 Medication Safety

Full adoption of IT tools for medication safety. Full adoption is defined as 80% usage.


Table 1

Medication Orders Matched Electronically, 2005 vs. 2009

The average percentage of medication orders matched electronically by each method for each benchmark group:

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Most Wired</td>
<td>Least Wired</td>
<td>All</td>
</tr>
<tr>
<td>Medication orders matched electronically</td>
<td>3%</td>
<td>5%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Bar coding or RFID of drug to patient and order at bedside</td>
<td>13%</td>
<td>6%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Patient and user ID keyed into automated dispensing device at bedside</td>
<td>43%</td>
<td>6%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Medication not electronically matched</td>
<td>42%</td>
<td>19%</td>
<td>1%</td>
<td>12%</td>
</tr>
</tbody>
</table>


Figure 3

Medications Ordered Electronically, 2004 vs. 2009

The average percentage of medication orders entered electronically by each group of clinicians in each benchmark group:

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Most Wired</td>
<td>Least Wired</td>
<td>All</td>
<td>Most Wired</td>
</tr>
<tr>
<td>Physicians</td>
<td>12%</td>
<td>7%</td>
<td>3%</td>
<td>26%</td>
<td>19%</td>
</tr>
<tr>
<td>Nurses</td>
<td>8%</td>
<td>12%</td>
<td>6%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>66%</td>
<td>50%</td>
<td>64%</td>
<td>58%</td>
<td>41%</td>
</tr>
<tr>
<td>Nondesigners</td>
<td>6%</td>
<td>8%</td>
<td>7%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Not entered electronically</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>


Figure 4

Medication Orders Matched Electronically, 2005 vs. 2009

The average percentage of medication orders matched electronically by each method for each benchmark group:

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Most Wired</td>
<td>Least Wired</td>
<td>All</td>
</tr>
<tr>
<td>Medication orders matched electronically</td>
<td>3%</td>
<td>5%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Bar coding or RFID of drug to patient and order at bedside</td>
<td>13%</td>
<td>6%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Bar coding or RFID of drug, patient, order and nurse at bedside</td>
<td>11%</td>
<td>8%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Patient and user ID keyed into automated dispensing device at bedside</td>
<td>43%</td>
<td>6%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Medication not electronically matched</td>
<td>42%</td>
<td>19%</td>
<td>1%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Progress on Managing Meds

Hospitals are making slow, steady progress in adopting clinical information technology to improve the safety of medication ordering and administration. Results from the 2009 Most Wired Survey and Benchmarking Study show an overall increase in both provider order entry of medications and electronic bedside matching at the time medications are administered. Electronic medication management is considered one of the fundamentals of using IT to improve care.

Of the organizations completing the survey this year, 96 hospitals and health systems—6.8 percent of the sample—have effectively deployed information technology at both ends of the medication administration process (see figure 1). This compares with 23 hospitals and health systems in 2008, or 4.1 percent of the sample (see figure 2).

At the typical hospital responding to the survey, 26 percent of medications are entered electronically by physicians, compared with 19 percent in 2008. The typical hospital respondent has 40 percent of medications doses matched to the order, the drug and the patient at the bedside, compared with 30 percent in 2008.

Military hospitals—Veterans Affairs, Army and Navy—appear to be the most advanced with 77 percent of medications entered electronically by physicians. Military hospitals have 78 percent of medications matched at the bedside.

Children’s hospitals and academic medical centers are ahead of the typical respondent in implementing physician order entry, but are behind the curve in implementing bedside medication matching. Children’s hospitals and academic medical centers made significant advances in physician order entry between 2008 and 2009, while critical access and rural hospitals appear to have been focusing on increasing the use of bedside medication matching during that period.

Survey respondents were asked to estimate the percentage of medications electronically ordered by physicians, nurses, pharmacists and nonphysicians and the percentage that never became electronic orders. For this analysis, full adoption of electronic order entry is defined as at least 80 percent of orders entered electronically by physicians. Using this definition, 99 hospitals and health systems achieved full adoption of physician order entry compared with 68 hospitals in 2008, an increase of more than 45 percent.

In another question, respondents were asked to estimate the percentage of total medication doses administered that are electronically matched to the order, patient and drug. Full adoption of medication matching is defined as at least 80 percent of administered doses matched to the order, the drug and the patient at the bedside using bar coding or RFID. With this definition, 201 hospitals and health systems achieved full adoption of electronic bedside medication matching.

The typical hospital respondent had 26 percent of medication orders entered electronically by physicians in 2009, compared with 12 percent in 2004 (see figure 3). The least wired still lag significantly behind, with only 4 percent of orders entered electronically by physicians. Bedside medication matching has increased nearly three times among the typical respondent since 2005, representing 40 percent of the doses administered in 2009 (see figure 4).

Pharmacists remain the primary clinical team member entering medication orders among most survey respondents, accounting for 58 percent of medication orders in 2009. That’s down from 66 percent in 2004. Nurses still account for roughly 10 percent of medications ordered electronically for all three key benchmark groups. Among the 2009 least wired, 9 percent of medication orders never make it into the electronic system.

Results at the other end of the spectrum have also improved. Slightly more than one-quarter of the survey participants—150 respondents—report that they have no activity on other fronts: no physician order entry and no bedside medication management. That is an improvement from 2008 when 212 hospitals, or more than one-third of participants, had none of these activities automated.
Quality, Satisfaction Rise

The nation’s top technology hospitals continue to lead in patient satisfaction and patient outcomes.

For the second year in a row, an analysis of satisfaction results conducted by Press Ganey Associates Inc. shows that patients at the Most Wired hospitals and health systems say they are more satisfied than those at other organizations. And for the sixth year in a row, the 100 Most Wired have better outcomes measures than other hospitals, based on a separate analysis conducted by Thomson Reuters.

These results add to the body of evidence suggesting that information technology is a key component of successful quality, safety and satisfaction; however, these analyses do not show that technology alone leads to improved performance. "We can’t say anything about causality," says David Foste, chief scientist at Thomson Reuters’ Center for Healthcare Improvement. "What we can say is that we consistently see associations between the measures and information technology. What we’ve shown is that IT is associated with better performance."

Thomson Reuters’ analysis of the effect of IT on outcomes among the 2009 Most Wired includes four quality measures and two cost measures. The quality variables are: risk-adjusted mortality rate; risk-adjusted complication rate; and two composite indexes, one created from the Agency for Healthcare Research and Quality’s patient safety measures and one created from a subset of the Joint Commission’s Core Measures based on data reported on the Hospital Caregiver Web site. The cost variables are: severity-adjusted average length of stay and casemix-weighted adjusted expenses per adjusted discharge.

The Thomson Reuters analysis was conducted twice, once comparing Most Wired hospitals with all other hospitals nationally and once comparing the Most Wired with all survey respondents. The results were consistent between both analyses. Statistically, the in-sample results—the comparison of the Most Wired to all survey respondents—are considered more conclusive (see figure 5). This is the third consecutive year for this in-sample result and the sixth consecutive year in which better results on outcomes measures were determined with an out-of-sample methodology. "We continue to use the same methodologies, although the data are different, and we continue to get results that are consistent," Foste says.

Press Ganey evaluated patient satisfaction results from its client database. In the methodology, satisfaction is measured in a variety of categories, such as with multiple questions. The 2009 results, however, appear less conclusive. The statistical significance increased for three of the measures, but decreased for one (figure 6).

Dennis Kaldenberg, Press Ganey’s senior vice president, says that the changes in the significance levels in individual areas do not change the overall conclusion. "The significance level provides insight into how confident you can be that a relationship exists. When the relationship continues to be present in repeated measures one year to the next, that should provide some confidence as well," he says. "But the fact that the significance level decreased doesn’t seem newsworthy to me."

Similar to the quality analyses, the patient satisfaction results show associations, but not causality. "Hospitals that are forward-thinking in technology are likely to be more advanced in other areas," Kaldenberg says. "It’s part of the culture of innovation that must be coming forward in these dimensions."

As part of the study, Press Ganey conducted separate analyses to control for other factors that might influence the results, such as bed size and status as a critical access hospital or members of the Council of Teaching Hospitals or a Magnet hospital as designated by the American Nurses Credentialing Center. Although specific results for a few patient satisfaction variables changed, the overall conclusion—that hospitals with greater investments in information technology have higher patient satisfaction—remained intact.

In the push to improve outcomes, the 2009 Most Wired hospitals are developing IT that supports quality and safety initiatives. The implementation of electronic surveillance systems, for instance, has grown to 75 percent of the Most Wired employing at least one such system in 2009 from about two-thirds in 2008 (see figure 7).
Quality, Satisfaction Rise

The nation's top technology hospitals continue to lead the way in patient satisfaction and patient outcomes.

For the second year in a row, an analysis of satisfaction results conducted by Press Ganey Associates Inc. shows that patients at the Most Wired hospitals and health systems say they are more satisfied than those at other organizations. And for the sixth year in a row, the 200 Most Wired have better outcomes measures than other hospitals, based on a separate analysis conducted by Thomson Reuters.

The results add to the body of evidence suggesting that information technology is a key component of successful quality, safety and satisfaction; however, these analyses do not show that technology alone leads to improved performance.

"We can't say anything about causality," says David Foster, chief scientist at Thomson Reuters' Center for Healthcare Improvement. "What we can say is that we consistently see associations between these measures and information technology. What we're shown is that IT is associated with better performance."

Thomson Reuters' analysis of the effect of IT on outcomes among the 200 Most Wired includes four quality measures and two cost measures. The quality variables are risk-adjusted mortality rates, risk-adjusted complication rates, and two composite indexes, one created from the Agency for Healthcare Research and Quality's patient safety measures and one created from a subset of the Joint Commission's Core Measures based on data reported on the Hospital Caregiver Web site. The cost variables are severity-adjusted average length of stay and case mix weight-adjusted expenses per adjusted discharge.

The Thomson Reuters analysis was conducted twice, once comparing Most Wired hospitals with all other hospitals nationally and once comparing the Most Wired with all survey respondents. The results were consistent between both analyses. Statistically, the in-sample results—the comparison of the Most Wired to all survey respondents—are considered more conclusive (see figure 5). This is the third consecutive year for this in-sample result and the sixth consecutive year in which better results on outcomes measures were determined with an out-of-sample methodology.

"We continue to use the same methodologies, although the data are different, and we continue to get results that are consistent," Foster says.

Press Ganey evaluated patient satisfaction results from its client database. In the methodology, satisfaction is measured in a variety of categories, such as with multiple questions. The 2009 results, however, appear less conclusive. The statistical significance increased for three of the measures, but decreased for one (see figure 6).

Dennis Kaldenberg, Press Ganey's senior vice president, says that the changes in the significance levels in individual areas do not change the overall conclusion: "The significance level provides insight into how confident you can be that a relationship exists. When the relationship continues to be present in repeated measures one year to the next, that should provide some confidence as well," he says. "The fact that the significance levels decreased doesn't seem newsworthy to me."

Similar to the quality analyses, the patient satisfaction results show associations, but not causality. "Hospitals that are forward-thinking in technology are likely to be more advanced in other areas," Kaldenberg says. "It's part of the culture of innovation that must be coming forward in these differences."

As part of the study, Press Ganey conducted separate analyses to control for other factors that might influence the results, such as bed size and status as a critical access hospital or members of the Council of Teaching Hospitals or a Magnet hospital as designated by the American Nurses Credentialing Center. Although specific results for a few patient satisfaction variables changed, the overall conclusion—that hospitals with greater investments in information technology have higher patient satisfaction—remained intact.

In the push to improve outcomes, the 200 Most Wired hospitals are deploying IT that supports quality and safety initiatives. The implementation of electronic surveillance systems, for instance, has grown to 75 percent of the Most Wired employing at least one such system in 2009 from about two-thirds in 2008 (see figure 7).

The Most Wired Team

AMR appreciates the efforts and support of many individuals who contributed to the success of the Most Wired Survey and Benchmarking Study and the research and analysis that goes into the results article. Leaders from hospitals who care assisted in providing insight and direction. Employees of the American Hospital Association provided insight and perspective. The following is a partial list of the many individuals who contributed to the 2009 Most Wired Survey and Benchmarking Study.


Thomson Reuters: Diane Dukes, Michael Bruno, Mary Beth Navarro-Six, R.N., Leslie White

2009 Most Wired Survey Reviewers and Editors: George Argus, senior director, Health Data Management Group, American Hospital Association; Chicago; Edward Bahamamian, CIO, University of California San Diego Medical Center; Judy Camener, CIO, University of Pittsburgh Medical Center; Atiana Cummings, CIO, Children's Hospital, Omaha, Neb.; Rose Ann Lavers, CIO, University of Illinois Medical Center at Chicago; Red Piekarczak, senior associate director, policy, American Hospital Association; Washington, D.C.; Catherine Sannic, senior vice president; and CIO, MedStar Health, Columbia, Md.; Tom Smith, CIO, Northern University Health System, Evanston, Ill.; Jim Velino, senior vice president and CIO, Avera Health, Sioux Falls, S.D.

Ongoing Coverage

For additional Most Wired coverage, don't miss the following:

- Analysis of wireless data, Hospitals & Health Networks, August
- Supply chain strategies, Materials Management in Health Care, August
- It for MHH, Hospitals & Health Networks, September
- It for Hospital Boards, Trustee, September
- Podcast series, featuring DJs at Most Wired hospitals, available at www.themostwired.com, click the podcast button
- Most Wired data overview Web seminar: www.themostwired.com, click the Web seminar button

www.THEmag.com | JULY 09 | 37