Another is finding an IT solution that optimizes our investment, minimizes complications and fits into our overall strategic vision. Yet another is managing expectations across many stakeholders.

There is a fourth challenge, too, understanding that even as you're implementing the latest technology, new breakthroughs are on the horizon. "Technology will continue to evolve," says John Proot, president and CEO of TriHealth Inc., Cincinnati. "One example: RFID, or radio frequency identification. "The key will be to implement bar coding technology in the short term while planning a gradual migration to RFID over the long term. The clinical computing device will continue to evolve as well. The devices we use this year will be surpassed by technology in the years to come."

Expectations for IT are high, balanced by the fear of the unknown and concerns over just how dramatically technology will change the day in the life of doctors and nurses. The 2004 Most Wired clearly excelled at doing the nitty-gritty work of health care IT.

WANT MORE?

Further results of the 2004 Most Wired Survey and Benchmarking Study may be found in H&H's Most Wired Magazine. Our sister publication provides a quarterly in-depth analysis of the study's results beginning with the Summer 2004 issue. You can also check out our Web sites at www.hhmag.com and www.hhmostwired.com.

THE MOST WIRED TEAM

THE PROJECT TEAM

This project was made possible through the support of IDX Systems Corp. and CHIME. The companies lent staff members to survey development, data analysis and help in publicizing the effort. Members of the Most Wired Magazine Editorial Advisory Board reviewed the survey and served as judges for the Innovator Awards. Hospitals & Health Networks appreciates their efforts and support.

Hospitals & Health Networks: Kyle Anderson, Kendra A. Hopkins, Suzanna Hoppziauli, Cindy Jackson, Peter Kralovec, Chuck Lazar, Dorrie Ray, Steve Reckvoir, Addie Solovy, Jennifer Towner, Marty Weitzel

IDX Systems Corp.: Jamie Gier, Larry Paulson, Mark Wheeler

MOST WIRED SURVEY REVIEWERS


INNOVATOR AWARD JUDGES


DEFINITIONS BOARD

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Even as they speed ahead of the pack, top tech hospitals are shifting gears.

THE 100 MOST WIRED

2004

VROOM!

As a result of a tie, 101 hospitals are being recognized as the nations Most Wired.

The list is based on the Most Wired Survey and Benchmarking Study, which is a joint project of HealthIT, IDX Systems Corp, and the College of Healthcare Information Management Executives. HealthIT has also recognized six organizations with Innovator Awards, which are a joint project of HealthIT, IDX, Cisco Systems and HIMSS. Other awards include: Most Improved, Most Wireless, Most Wired Small and Rural (see sidebar, "About the survey"). This year HealthIT received 482 surveys representing 1,298 hospitals, an increase out of 1,004.

Note: The data for the Most Wired List is based on a survey conducted by HealthIT in 2004. The list includes hospitals that have implemented technology to improve patient care, increase efficiency, and reduce costs. The survey was conducted in collaboration with IDX Systems Corp and the College of Healthcare Information Management Executives. The list is updated annually, and the criteria for inclusion vary each year. The data includes information such as the number of hospitals, the number of employees, and the amount of capital spent on IT projects. The list also highlights the top-performing hospitals in various categories.
of 19.3 percent in the response rate over the 2003 survey. In the past year, the nations top tech hospitals widened their technology advantage over other organizations. For example:
• More than 90 percent of the Most Wired conduct either pre- or post-implementation return-on-investment analyses to justify expenditures, compared with only 39 percent of the least wired.
• The least wired are the top respondents who scored the lowest on the survey.
• The Most Wired have a wide variety of offerings available over the Internet for patient service and customer support, ranging from online patient registration to disease specific self-triage.
• IT education is a priority among the Most Wired hospitals and health systems. The Most Wired have doctors and nurses dedicated to IT training and support. The Most Wired are also beginning to offer continuing medical education credit to participate in technology training.
• The Most Wired have significantly higher adoption rates among doctors and nurses across a broad set of clinical activities, such as clinical order entry and results review, compared with the least wired hospitals.

Of the 100 organizations named as one of the nations Most Wired, 11 have been on the list all six years that the survey has been conducted and 19 winners have been on the list each of the past five years.

“If you look over the last year, we have seen consistent gains,” says Larry Paulson, interim vice president, research and development for IDXX, noting that there are 22 hospitals new to the list in 2004. He says clinical quality efforts remain among the top IT priorities. Hospitals are focused on improving safety at the point of care. “Any time you do knowledge-based work, you want to provide information to the decision-maker as soon as possible,” he says.

Medication Safety

Many of the Most Wired begin with the goal of improving the safety of the medication administration process, both by automating the ordering process and by matching medications electronically to patients at the time of administration. The idea is to get the order correct on the front end and administer correctly on the back end.

Physicians at the Most Wired hospitals and health systems are 10 times more likely to enter medication orders electronically than their counterparts at the least wired organizations. On average, nearly 27 percent of medication orders are electronically entered by physicians at the Most Wired organizations, compared with 2.7 percent at the least wired institutions.

The least wired are also more likely to have medications that are ordered manually, meaning that the medication never appears as an electronic order. A whopping 20 percent of medications at the least wired organizations are ordered manually. This compares with an average of 3.1 percent of medications ordered manually at the Most Wired.

Once the order is in the system, the correct drug must be dispensed. Nearly 35 percent of the Most Wired say that the lions share of their medications—81 to 100 percent—are electronically matched to the patient and ordered at the time of administration. This compares with only 5 percent of the least wired. And 94 percent of least wired organizations do not electronically match any medications to the patient at the time of administration. (See figure 1.)

The medication administration system is wireless at Carilion Health System, Roanoke, Va. This year will mark the fourth appearance of Carilion on the Most Wired list. It has also been named one of the 2004 Most Wired hospitals and health systems.

“Our medication administration system stops 500 mistakes per month,” says Greg Walton, senior vice president and CIO, information services. “We are ready to pilot a system of smart IV pumps connected to our wireless network. These pumps will interface with our pharmacy system, our bar-coded patient arm bands, IV bags and employee ID bracelets.”

Nurses at Regional West Medical Center, Scottsbluff, Neb., use a unit dose bar code scanner to identify the patient. Nurses then verify the five rights of medication administration—right patient, medication, dose, route and time. If something cannot be verified, the nurses must respond to queries on a warning screen before giving the medication to the patient.

“Most nurses have a 90 or 95 percent scan rate,” says Susan Heider, vice president support services and CIO at Regional West, one of the 2004 Most Wired—Small and Rural. She says that PRN medications (medications given to a patient whenever necessary) and initial doses of new orders not yet entered into the computer are the most common exceptions to the medication matching system.

At NovantHealth, Charlotte, N.C., “each drug is bar coded at the dose level,” says Toni Krouny, senior vice president and CIO. NovantHealth was named one of the 25 Most Improved organizations. “Nurses scan the drug and the patient bar-coded arm bracelet. The mobile cart with a laptop using the medication administration checker validates the five rights of administration and gives the nurses both visual and audio alerts.”

Nursing confidence is key to nursing compliance, says Joe Butler, vice president and CIO of Hamot Medical Center, Erie, Pa., where wireless PCs with wireless bar code scanners are used to verify medications at the bedside. Hamot has been one on the 100 Most Wired list three times.

“The key challenge was the complete evaluation and re-engineering of the medication administration process,” Butler says. Nurses are responsible for daily review of data on scanning, charting and alert overrides. “Nurse manager accountability was critical to our success. The verification process now has integrity. Nursing has confidence in their practice of medication administration.”

Pharmacists play a central role at Crozer-Keystone Health System, which has been named to the Most Wired list four times over the past six years and has also earned a 2003 Innovator Award. “We are implementing hard-stop procedures rules to prevent the pharmacist from entering medication orders if critical patient information is not available,” says Robert Wilson, vice president and CIO of the Springfield, Pa., system. Missing information might include patient weight and allergies.

Matching Meds

Bar coding is one of the two key strategies currently used by hospitals to match medications to patients. Approximately half of the hospitals that have implemented electronic medication matching are using this technique, according to a follow-up question of Most Wired survey participants.

The Most Wired are planning projects that build on the success of their patient safety efforts. At Crozer-Keystone Health System, the IT staff is working with pharmacists to create a set of electronic rules to provide medication alerts for high-risk medications such as insulin, heparin, infusion therapies and anti-coagulants. Carlisle is exploring the use of a second bar code on the patient that can contain surgical information, such as type of procedure and site of surgery.

Education Drives Adoption

Education plays an integral part in the continuing efforts of the Most Wired to drive adoption—routine, active use of IT as part of the care process—by clinicians. They have a broader array of educational resources for employees. According to survey results, more than 95 percent of the Most Wired have a nurse dedicated to IT training, compared with 41 percent of the least wired. More than 60 percent of the Most Wired have a physician dedicated to IT training, compared with 3 percent of the least wired. Eighty percent of the least wired—roughly one in 12—do not provide any educational resources on IT whatsoever.

To promote use of the technology, Evans- ton (Ill.) Northwestern Healthcare is one of a small but growing set of hospitals offering continuing medical education as part of the training process. "Pursuading the professional staff to make major changes in their behavior was the toughest sell," says Tom Smith, CIO of Evanston Northwestern Healthcare, which was named to one of the 100 Most Wired for the first time this year. "To help in the transition, each professional received an average of 16 hours of training that also accrued as 16 hours of continuing medical education credits."

ENH worked to make sure that the education made a difference. The professionals needed to pass a proficiency test with a score of 85 percent or better before obtaining a password to the...
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system, ENFit education initiative has been so successful that independent physicians who have privileges at the organizations hospitals also use the IT system.

Roughly 60 percent of the Most Wired offer continuing education credits to pharmacists and IT professionals who participate in technology training. This compares with 6 percent or less among the least wired. For the most part, the Most Wired provide education credits to doctors and nurses, but only 31 percent of the least wired provide credits for physicians and 15 percent provide them for nurses.

"A key challenge is accommodating the diverse group of individuals that use these applications," says Tim Strand, director of information services, Watertown (Wisc.) Memorial Hospital, which was named one of the Most Wired Small & Rural. "Physicians, as well as other caregivers, have different aptitudes when it comes to accessing and using electronic applications.

Marvin Meier, CEO of Allina Health System, Grand Forks, N.D., a Most Wired winner, agrees. "Process changes are the most difficult to implement. For many, using a computer in the care of patients is not as natural as using a pencil and paper. It takes a lot of time to learn to use this technology."

The robust set of IT educational tools employed by the Most Wired is one key to why they are motivating doctors and nurses to use clinical information technology. The Most Wired boast double, sometimes triple the adoption rates of the least wired. For example, regarding routine access to patient medical histories, 72 percent of Most Wired organizations say that their physicians have achieved the highest adoption rate measured on the survey; that 81 to 100 percent of their physicians routinely use IT to access medical histories. This compares with 29 percent of the least wired organizations reporting that their physicians have achieved the highest adoption rate.

"The primary goal is always to ensure the highest possible use and acceptance of any technology by clinical caregivers," says Walter Fisher, chief technology officer and interim CIO, Maimonides Medical Center, Brooklyn, N.Y., a Most Wired and Most Wired winner. "Technology implemented without the highest degree of clinician acceptance and support does not return adequate value."

The differences between the Most Wired and the least wired are even more dramatic when looking at tools they provide for improving clinical quality. More than half of the Most Wired or 54 percent, report that they have achieved the highest level of adoption for physician use of drug interaction alerts—an 81 to 100 percent use rate—compared with 16 percent of the least wired. More than half of the Most Wired, 56 percent, report that they have achieved the highest level of adoption for nurse use of drug interaction alerts, compared with 17 percent of the least wired. The Most Wired and least wired provide these products in different ways.

Location, Location, Location

Drug interaction alerts also illustrate another key to higher adoption rates among the Most Wired hospitals: simply providing these services to clinicians. The Most Wired provide a broader set of clinical tools to caregivers than the least wired. And the Most Wired provide these tools from more locations.

More than 80 percent of the Most Wired provide bedside access to drug interaction alerts, compared with only 15 percent of the least wired. This huge difference between the Most Wired and least wired is consistent for all bedside clinical information functions throughout the survey.

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**Clinical Services & Point of Access**

<table>
<thead>
<tr>
<th>Percent of organizations providing the service</th>
<th>Most Wired</th>
<th>Least Wired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of organizations providing bedside drug alerts</td>
<td>93.1%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Percent of organizations providing access to patient demographics</td>
<td>81.8%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Percent of organizations providing the most wired</td>
<td>45.7%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Percent of organizations providing bedside access to clinical information</td>
<td>72.8%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Percent of organizations providing bedside access to drug interaction alerts</td>
<td>81.9%</td>
<td>19.9%</td>
</tr>
<tr>
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The number of services provided to doctors and nurses by the least wired improve when measuring access from both a nonbasicide point of care (which includes exam rooms and affiliated physicians’ offices) and remote location (anywhere outside the hospital, such as an affiliated doctors’ offices and physicians’ homes). For nonbasicide point of care pharmacy order entry, 94 percent of the Most Wired provide this service, compared with 51 percent of the least wired. More than double the Most Wired provide nonbasicide point of care access to drug interaction alerts; 97 percent of the Most Wired provide this service, compared with 42 percent of the least wired.

For many of the Most Wired—and all of the 25 organizations named to this year’s Most Wired list—point of access is becoming moot. They are providing ubiquitous access throughout their organizations using wireless systems. Many organizations are beginning their initiatives by providing wire-

less access in clinical areas of their institutions.

“We are expanding our wireless infrastructure to include the whole campus,” says Dennis Arndt, technical services coordinator for Southwestern Vermont Health Care, Benning

ton. This marks Southwestern Vermont’s first appearance on the Most Wired—Small and Rural list. “Our goal is to provide access from anywhere.”

Once again, there is a stark contrast between the accomplishments of the Most Wired and the least wired. More than 75 percent of the Most Wired provide wireless access to clinical information functions such as drug interaction alerts, pharmacy order entry and lab results review. The numbers flip-flop for the least wired. Only 13 percent of the least wired provide wireless access to drug alerts, 14 percent provide wireless pharmacy order entry and 24 percent provide wireless lab results review. Adoption rates among the least wired for wireless access to clinical information are minimal.

Measuring Success

Another key distinction between the Most Wired and the least wired counterparts is a focus on assessing and documenting the value of technology. More than 90 percent of Most Wired hospitals and health systems conduct traditional returns on investment analyses to justify IT expenditures. This compares with less than 60 percent of the least wired.

“Certainly the initial capital cost and ongoing operating expenses to absorb and still maintain a positive balance sheet is a key challenge,” says Craig Hewitt, CIO, MeritCare Health Sys-
tem, Fargo, N.D., a six-time Most Wired winner. An increasing number of executives also measure and doc-
ument the effect of IT on their institutions. More than 90 percent of the Most Wired assess the impact of IT on quality, 89 percent assess the impact on safety and 95 percent conduct process improvement studies. This compares with 45 percent of the least wired that assess the impact of IT on quality, 40 percent that assess the impact on safety and 57 percent that conduct process improvement studies.

“There’s no question that it takes the doctors longer to order

ters now, although that will improve as they become more used to working with the system,” says ENIS’s Smith. “Some nurses, who used to wait to the end of each shift to do all patient charting, must do it as it happens at the point of care. Yet the benefits of complete, current patient records, available at the touch of a few keystrokes, make overall care easier, faster and better for both patients and providers.”

In other words, the total benefit—to the organization, to the clinical staff and to the patients—comes back to the abili-
ty to train staff and drive use. “The effect on the workforce [who are dealing with the pace of technological change] has a tremendous impact on how well the true benefits are real-
ized and how they improve the overall quality of patient care,” Hewitt says.

Challenges Ahead

Patients, clinicians and hospital executives have grand plans and high hopes for information technology. The challenge, say CIOs from the nations Most Wired, is managing change.

“The pace of change and the extent of change are enorm-
ous challenges,” says Cynthia Davis, vice president of infor-
mation technology and CIO at DeKalb Regional Healthcare System, Decatur, Ga. “We are completely changing the way we do business, standardizing our care process, embarking on extensive training, engaging the medical staff and other clini-
cal disciplines and moving on an aggressive timeline.”

CIOs say preparing the institution for change is at the core of success.

“There are three key challenges,” says Dennis L’Heureux, vice president and CIO, Rockford (III) Health System, which has been named to the 100 Most Wired for all six years of the survey. “The first is preparing the organization for change.

Systems and CHIME. Hospitals submit descriptions of innovative projects that are then evaluated by an expert panel. This year HeHN received 46 Innovator Award applications from which HeHN has named three Innovator award winners and three finalist.

The 101 Most Wired and the Innovator Award winners will be recognized for their accomplishments at the 2004 Health Forum Summit July 25-27 in San Diego.

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Figure 3

2004 Most Wired Survey Results by U.S. Hospitals (1288 hospitals are represented in 402 surveys submitted for the 2004 Most Wired Survey and Benchmarking Study. They represent roughly 30 percent of U.S. hospitals and make up a diverse sample.)

<table>
<thead>
<tr>
<th>By region</th>
<th>By number of beds*</th>
<th>By number of beds*</th>
<th>By number of beds*</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td>414</td>
<td>6-24</td>
<td>5.2</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>81</td>
<td>10-13</td>
<td>25-49</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>14.6</td>
<td>19.6</td>
<td>50-99</td>
</tr>
<tr>
<td>East North Central</td>
<td>20.3</td>
<td>14.2</td>
<td>100-199</td>
</tr>
<tr>
<td>East South Central</td>
<td>8.8</td>
<td>6.3</td>
<td>200-399</td>
</tr>
<tr>
<td>West North Central</td>
<td>17.1</td>
<td>12.9</td>
<td>400-599</td>
</tr>
<tr>
<td>West South Central</td>
<td>11.0</td>
<td>15.6</td>
<td>600-799</td>
</tr>
<tr>
<td>Mountain</td>
<td>5.2</td>
<td>7.3</td>
<td>800-1199</td>
</tr>
<tr>
<td>Pacfic</td>
<td>9.3</td>
<td>11.3</td>
<td>1200-1999</td>
</tr>
</tbody>
</table>

*Figures do not add up to 100 due to rounding.

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Figure 4

2004 Most Wired Survey Distribution

The scoring for the Most Wired emphasized the use of information systems to improve patient safety and quality, with applications used by care-
givers receiving the largest percentage of points.
order entry; 79 percent of the Most Wired provide this service, compared with 19 percent of the least wired.

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"The pace of change and the extent of change are enormous challenges," says Cynthia Davis, vice president of information technology and CIO at DeKalb Regional Healthcare System, Decatur, Ga. "We are completely changing the way we do business, standardizing our care process, embarking on extensive training, engaging the medical staff and other clinical disciplines and moving on an aggressive timeline."

CIOs say preparing the institution for change is at the core of success.

"There are three key challenges," says Dennis L'Heureux, vice president and CIO, Rockford (Ill.) Health System, which has been named to the 100 Most Wired for all six years of the survey. "The first is preparing the organization for change.

**About the Survey**

For the sixth year, Hospitals & Health Networks has named the Most Wired Hospitals and Health Systems. The list is based on the Most Wired Survey and Benchmarking Study, which is a joint project of H&HN, IDX Systems Corp. and the College of Healthcare Information Management Executives. The eight-page survey asks hospitals to report on their use of information technology to address five key goals: safety and quality, customer service, business processes, workforce, and public health and safety. This year, as a result of a tie, 101 organizations were named to the Most Wired list. Survey responses were scored using a methodology that emphasizes the use of IT to address safety and quality issues, as well as customer service. (See pie chart, figure 4.) Responses from 40 organizations were verified with a follow-up survey and additional research into responses was conducted via e-mail. The results are the basis of several awards:

- **100 Most Wired**—The 101 organizations that scored highest on the survey.
- **The Most Wired**—The 25 organizations that scored highest on the survey questions focused on wireless applications.
- **The Most Improved**—The 25 organizations not appearing on the Most Wired list whose score improved the most from 2003 to 2004.
- **The Most Wired—Small and Rural**—The 25 small and rural organizations not appearing on the Most Wired list that scored highest on the survey.

This year, 482 hospitals and health systems completed the survey, representing 1,298 hospitals. The hospitals represented in the survey tend to be larger and more urban than the national average, but the results make up a diverse sample. (See figure 3.) Each organization completing the survey receives a customized report comparing its responses with the Most Wired. For the 2004 survey, the editors of H&HN created a Most Wired Survey definitions board to assist in developing standard definitions for use by survey respondents. As the result of the inherent value judgment in any scoring system, H&HN does not publish the rankings as part of the Most Wired lists.

H&HN has also recognized six organizations with Innovator Awards, which are a joint project of H&HN, IDX, Cisco Systems and CHIME. Hospitals submit descriptions of innovative projects that are then evaluated by an expert panel. This year H&HN received 46 Innovator Award applications from which H&HN has named three Innovator award winners and three finalists. The 101 Most Wired and the Innovator Award winners will be recognized for their accomplishments at the 2004 Health Forum Summit July 25-27 in San Diego.

**Figure 3**

2004 Most Wired Survey Respondents vs. U.S. Hospitals

<table>
<thead>
<tr>
<th></th>
<th>By number of beds</th>
<th>By number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Respondents</td>
<td>Hospitals</td>
</tr>
<tr>
<td>New England</td>
<td>41%</td>
<td>24-26</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>81%</td>
<td>25-49</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>16.8%</td>
<td>50-99</td>
</tr>
<tr>
<td>East North Central</td>
<td>20%</td>
<td>100-199</td>
</tr>
<tr>
<td>East South Central</td>
<td>8.6%</td>
<td>200-299</td>
</tr>
<tr>
<td>West North Central</td>
<td>11.0%</td>
<td>300-399</td>
</tr>
<tr>
<td>West South Central</td>
<td>11.0%</td>
<td>400-499</td>
</tr>
<tr>
<td>Mountain</td>
<td>5.2%</td>
<td>500 or more</td>
</tr>
<tr>
<td>Pacific</td>
<td>9.3%</td>
<td>500 or more</td>
</tr>
</tbody>
</table>

**Figure 4**

2004 Most Wired Survey Respondents vs. U.S. Hospitals

<table>
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<tr>
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</tr>
</tbody>
</table>

*Figures do not add up to 100 due to rounding.

Another is finding an IT solution that optimizes our investment, minimizes complications and fits into our overall strategic vision. Yet another is managing expectations across many stakeholders."

There is a fourth challenge, too-understanding that even as you're implementing the latest technology, new breakthroughs are on the horizon."

"Technology will continue to evolve," says John Proost, president and CEO of Tri-Health Inc., Cincinnati. One example: RFID, or radio frequency identification. "The key will be to implement but coding technology in the short term while planning a gradual migration to RFID over the long term. The clinical computing device will continue to evolve as well. The devices we use this year will be surpassed by technology in the years to come."

Expectations for IT are high, balanced by the fear of the unknown and concerns over just how dramatically technology will change the day in the life of doctors and nurses. The 2004 Most Wired clearly excels at doing the gritty work of health care IT."

WANT MORE?

Further results of the 2004 Most Wired Survey and Benchmarking Study may be found in HfMA’s Most Wired Magazine. Our sister publication provides quarterly in-depth analysis of the study’s results beginning with the Summer 2004 issue. You can also check out our Web sites at: www.hhmag.com and www.mostwired.com.
## Clinical Services & Point of Access

Percent of organizations providing this service:

### Most Wired

<table>
<thead>
<tr>
<th>CLINICAL SERVICE</th>
<th>Percent of Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBIRT</td>
<td>75.0%</td>
</tr>
<tr>
<td>Mental Health</td>
<td>75.0%</td>
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<tr>
<td>Suicide Prevention</td>
<td>75.0%</td>
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<tr>
<td>Tobacco Use Prevention</td>
<td>75.0%</td>
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<tr>
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<tr>
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<tr>
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<td>Weight Management</td>
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<tr>
<td>Physical Activity</td>
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</tbody>
</table>

### Least Wired

<table>
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</thead>
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<td>Physical Activity</td>
<td>25.0%</td>
</tr>
</tbody>
</table>

Open the double foldout to see the Most Wired list.

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**Figure 2**

**Percentage of the Most Wired that have a physician dedicated to IT training.**

Marvin Meier, CIA, Altra Health System, Grand Forks, N.D., a Most Wired winner, agrees, "Process changes are the most difficult to implement. For many, using a computer in the care of patients is not as natural as using a pencil and paper. It takes a lot of time to learn to use this technology."

The robust set of IT educational tools employed by the Most Wired is one key to why they are motivating doctors and nurses to use clinical information technology. The Most Wired boast double, sometimes triple the adoption rates of the least wired. For example, regarding routine access to patient medical histories, 72 percent of Most Wired organizations say that their physicians have achieved the highest adoption rate measured on the survey; that 81 to 100 percent of their physicians routinely use IT to access medical histories. This compares with 29 percent of the least wired organizations responding that their physicians have achieved the highest adoption rate.

"The primary goal is always to ensure the highest possible use and acceptance of any technology by clinical care givers," says Walter Fahey, chief technical officer and interim CIA, Maimonides Medical Center, Brooklyn, N.Y., a Most Wired and Most Wireless winner. "Technology implemented without the highest degree of clinician acceptance and support does not return adequate value."

The differences between the Most Wired and the least wired are even more dramatic when looking at tools they provide for improving clinical quality. More than half of the Most Wired, or 54 percent, report that they have achieved the highest level of adoption for physician use of drug interaction alerts—an 81 to 100 percent use rate—compared with 16 percent of the least wired. More than half of the Most Wired, 56 percent, report that they have achieved the highest level of adoption for nurse use of drug interaction alerts, compared with 17 percent of the least wired.

**Location, Location, Location**

Drug interaction alerts also illustrate another key to higher adoption rates among the Most Wired hospitals: simply providing these services to clinicians. The Most Wired provide a broader set of clinical tools to caregivers than the least wired. And the Most Wired provide these tools from more locations.

More than 80 percent of the Most Wired provide bedside access to drug interaction alerts, compared with only 15 percent of the least wired. This huge difference between the Most Wired and least wired is consistent for all bedside clinical information functions throughout the survey. (See Figure 3.) Another example, bedside pharmacy...
The Most Improved

Albemarle Hospital, Elizabeth City, N.C. (www.albemarlehospital.org)
Alcoa-Hyde Medical Center, Maltby, N.Y. (www.alcoa-hyde.com)
Beaufort Memorial Hospital, Beaufort, S.C. (www.bmhc.org)
Catholic Healthcare Partners, Cincinnati, Ohio (www.health-partners.org)
Children’s Healthcare of Atlanta, Atlanta (www.choa.org)
Columbus Regional Hospital, Columbus, Ind. (www.crh.org)
Community Medical Center Healthcare System, Scranton, Pa. (www.cmchhs.org)
DeKalb Regional Healthcare System, Decatur, Ga. (www.cdmhs.org)
Duncan Regional Hospital, Duncan, Okla. (www.duncancomm.org)
George Washington University Hospital, Washington, D.C. (www.gwuhealth.com)
Good Shepherd Health System, Longview, Texas (www.goodshepherdhealth.org)
Kane Community Hospital, Kane, Pa. (www.kanehospital.com)
Lawrence & Memorial Hospital, New London, Conn. (www.lmhs.org)
Navoxhealth, Charlotte, N.C. (www.navoxhealth.com)
Pinnacle Health System, Harrisburg, Pa. (www.pinnacledhc.org)
Riverside Health System, Newport News, Va. (www.riversidedh.org)
Saint Francis Medical Center, Grand Island, Neb. (www.saintfrancis.org)
Valley Medical Center, Renton, Wash. (www.valleymed.org)
Vanderbilt University Hospital, Nashville, Tenn. (www.mc.vanderbilt.edu)
Veterans Affairs Medical Center, Houston (www.houstonmed.va.gov)
Wadsworth-Ritman Hospital, Wadsworth, Ohio (www.wrhospital.com)
Wellmont Health System, Kingsport, Tenn. (www.wellmont.org)
West Tennessee Healthcare, Jackson, Tenn. (www.mywtht.com)
Yuma District Hospital, Yuma, Colo. (www.yumahospital.com)

The Most Wired Small and Rural

Albemarle Hospital, Elizabeth City, N.C. (www.albemarlehospital.org)
Alcoa-Hyde Medical Center, Maltby, N.Y. (www.alcoa-hyde.com)
Beaufort Memorial Hospital, Beaufort, S.C. (www.bmhc.org)
Columbus Regional Hospital, Columbus, Ind. (www.crh.org)
Community Medical Center Healthcare System, Scranton, Pa. (www.cmchhs.org)
Duncan Regional Hospital, Duncan, Okla. (www.duncancomm.org)
Faquier Memorial Hospital, Warrenton, Va. (www.fauquierhospital.org)
Fort Madison Community Hospital, Fort Madison, Iowa (www.fmhc.org)
Georgetowntown Hospital, Georgetown, S.C. (www.gtmhc.org)
Good Samaritan Hospital, Vincennes, Ind. (www.gshealth.org)
Kane Community Hospital, Kane, Pa. (www.kanehospital.com)
La Rabida Children’s Hospital, Chicago (www.larabida.org)
Laughrin Memorial Hospital, Greeneville, Tenn. (www.laughrinmemorial.org)
Nasal Hospital Bremerton, Bremerton, Wash. (www.nashospital.org)
Nasal Hospital Camp Pendleton, Pendleton, Calif. (www.cnpph.org)
Peninsula Regional Medical Center, Salisbury, Md. (www.prmch.org)
Regional West Medical Center, Scottsbluff, Neb. (www.rwmc.net)
Relief Hospital and Health Care Services, Richmond, Ind. (www.relief.com)
Rochelle Community Hospital, Rochelle, Ill. (www.rochellehospital.org)
Saline Regional Medical Center, Waycross, Ga. (www.salinehospital.org)
Sauk Prairie Memorial Hospital and Clinics, Saukville, Wis. (www.spmh.org)
Skaggs Community Health Center, Branson, Mo. (www.skaggs-net.com)
Southwestern Vermont Health Care, Bennington, Vt. (www.vxhealthcare.org)
Waterman Memorial Hospital, Waterton, Wisc. (www.wmwh.com)

The Most Wireless

Avery Health, Sioux Falls, S.D. (www.avery.org)
CareGroup Healthcare System, Boston (www.caregroup.org)
Carilion Health System, Roanoke, Va. (www.carilion.com)
Cooper University Hospital, Newark, N.J. (www.cooperhospital.org)
Dartmouth-Hitchcock Medical Center, Lebanon, N.H. (www.dhmc.org)
Disconess Medical Center, Spokane, Wash. (www.disconessspokane.org)
Greenville Health System, Greenville, S.C. (www.ghs.org)
Holy Family Hospital, Spokane, Wash. (www.holyfamily.org)
Kootenai Medical Center, Coeur d’Alene, Idaho (www.kmc.org)
Lehigh Valley Hospital & Health Network, Allentown, Pa. (www.cvth.org)
Lifespan, Providence, R.I. (www.lifespan.org)
Maimonides Medical Center, Brooklyn, N.Y. (www.maimonides.org)
Memorial Health, Savannah, Ga. (www.memorialhealth.com)
North Mississippi Healthcare Systems, Tupelo, Miss. (www.nmhs.net)
Ochsner Clinic Foundation, New Orleans (www.ochsner.org)
Pinnacle Health System, Harrisburg, Pa. (www.pinnacledhc.org)
Pouyer Valley Health System, Fort Collins, Colo. (www.pouyer.org)
Pulaski Valley Medical Center, Aurora, Ill. (www.pvmedical.com)
Sacred Heart Medical Center, Spokane, Wash. (www.sacredheartspokane.org)
St. Agnes HealthCare, Baltimore (www.stagnes.com)
St. Luke’s Rehabilitation Institute, Spokane, Wash. (www.stlukesri.org)
VA Illinois Healthcare System, Danville, Ill. (www.va.gov)
Valleymedical Center and Medical Center, Spokane, Wash. (www.valleymem.org)
Wake Forest Baptist Medical Center, Winston-Salem, N.C. (www.wfbc.edu)
Wentworth-Douglass Hospital, Dover, N.H. (www.wdh.org)

In the past year, the nation’s top tech hospitals widened their technology advantage over other organizations.

KEY
ALL RESPONDENTS: Aggregate data for the 482 hospital and health system respondents, MOST WIDEST: Aggregate data for the 100 highest scoring respondents.
OWNERSHIP: NFIP—not-for-profit; ID-investor-owned; GF-government; federal; GH-government, non-federal; IT OPERATING BUDGET: IT operating expenses as percent of operating expenses. IT CAPITAL BUDGET: IT capital expenditures as percent of capital expenditures.

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2004 INNOVATOR AWARDS

Abington (Pa.) Memorial Hospital

A Web-based virtual Artificial Intelligence was created to improve and measure patient safety and efficacy of patient’s therapy. It is able to track disease in in-patients, standards work in education for clinicians and educates patients.

Central DuPage Health, Winfield, Ill.

Central DuPage Health expanded its portal and Web enabled applications to security-driven clinician notification wirelessly to privately owned PDAs and laptop. Patient data had to be replicated to fit PDA-enabled screens and data was encrypted so it could be broadcast over a wireless or cellular network.

Texas Health Resources, Arlington

This health system developed a Web-enabled HIPAA training system accessible from the desktop. More than 16,000 employees and clinicians have participated in 112,000 classes and 200,000 online assessments.


The system collaborated with local businesses, government and others to create Berkeley Connect, a telecommunication package that provides long-distance, local inter and data connections at a fixed price comparable with major metropolitan centers.

Intrins Health, Cheshire City

The EHR hospital network created Project Phoenix to detect potential adverse drug effects by comparing alerts. A Web report monitor displays the status of occupied beds and utilizes red, yellow and green drills to display the status of patient alerts. The business screen integrates and selects data from multiple systems throughout the network.

Saint Luke’s Health System, Kansas City, Mo.

A computer based multi-application computer interface easier to understand and use. The project processed the number of effective computers, increased dock space, increased the monitor viewing area and allowed for implementation of ongoing physician order sets and clinical pathways.