Nurses and Clinical Technology: Sources of Resistance And Strategies for Acceptance

To explore the specific reasons behind this resistance, an electronic roundtable was conducted followed by phone interviews with nurse leaders at four health care organizations: three in the United States and one in the United Kingdom. The goal was to elicit candid opinions and anecdotes from nurse executives on the front lines of technology initiatives. These individuals are nurse leaders in organizations that have successfully made the leap to automated systems, and their experiences provide insight into identifying and circumventing the obstacles that can arise during technology rollouts.

The respondents focused on three fundamental questions:
• Why are some nurses reluctant to adopt CIS?
• Can you identify the types of nurses who are more or less likely to embrace CIS?
• What are successful methods to overcome this resistance?

Within the framework of these questions, several consistent themes emerged from the discussions, most relating to the idea that resistance has less to do with specific functionality of the technology — screen design or the mouse, for example — than with cultural factors such as lack of time and loyalty to the historic model of paper documentation. The following is a discussion of those themes, which highlights direct feedback from respondents with the hopes of suggesting opportunities for further inquiry.

Why Are Nurses Reluctant to Adopt Clinical Information Systems?

According to a 2004 Nielsen/Net Ratings study, nearly 75% of Americans — more than 200 million people — have access to the Internet from home, using the Internet to shop, conduct research, and communicate via e-mail, among other activities. As personal computers, the Internet, and ATMs become more ubiquitous, roundtable respondents said that nurses also are increasingly familiar with fundamental activities such as typing on a keyboard, using a mouse, or navigating multiple screens.

“In the past 5 years, comfort or experience with computers has become much less of an issue. Now that nurses have more experience with computer technology in varied aspects of life, we’re not seeing the computer phobia we saw 10 years ago,” said Demi Rewick of PeaceHealth, an integrated delivery network in the Pacific Northwest.
So why does a nurse, who may enjoy browsing for the latest New York Times best seller on Amazon.com, recoil at the announcement that she soon will be charting online?

Respondents and researchers attribute initial resistance to a wide array of factors, often from speculative fears or perceptions of the system prior to actually using it. Because these points of resistance are cultural in nature, it takes a global change management program to overcome them. While it’s impractical to tackle each single reason independently, many organizations have successfully developed strategic internal communication programs that address points of resistance as a whole.

Nurses do not resist technology itself. What they resist is the addition of one more item to their workload. A significant point of resistance may come down to the nurses’ fear that online charting will take more time than paper charting. According to Timmons (2003), the most common criticism from nurses about CIS was that the systems were time consuming.

Last year, the Institute of Medicine (IOM, 2003) published Keeping Patients Safe: Transforming the Work Environments of Nurses, calling for substantial improvements to nurses’ work environments to increase patient safety. A cornerstone of the report is the idea that currently most nurses’ schedules are overloaded, and they must care for an inordinate number of patients on any given shift. In addition to a hefty patient load, nurses must deal with increasingly acute populations, as well as more complex documentation requirements. The thought of adding one more task to an already frantic day can justifiably seem daunting.

According to Mary Ann Anderson of Wake Forest University Baptist Medical Center (the Medical Center), when the organization first undertook its major implementation effort 9 years ago, some nurses were wary of using the new technology.

“In the beginning, nurses can see a computer as getting in the way because they have so many competing initiatives,” she said. “They think, ‘I’ve got a patient who needs medication. I have to get them on a bed pan, and answer a doctor’s questions — and now I have to log in and input information, too?’”

This is even more apparent on busy critical care units, said Kimberly Evans at the Medical Center. “Nurses in ICU settings have an even higher frequency of activities; they’re taking vital signs every 15 minutes instead of every 4 hours,” she said. “Nurses in those settings feel they don’t have time to deal with the computer because their patients are more critical.”

Sharon Pickup of Chelsea and Westminster Hospital (London, UK) agreed. “Nurses, as you know, are often under pressure to perform daily tasks; often within impossible time frames,” she said. “Added pressure to use clinical technology, which is not always ‘user friendly,’ can become time consuming. Practitioners feel that they are somewhat taken away from the important roles as a nurse for yet again more administration.”

For some nurses, time pressure may contribute to incomplete documentation on paper. If nurses in an organization have routinely “saved time” by submitting incomplete paper documentation, then the “completeness” of documentation ensured by a good technology implementation may actually take more time. Studies support the idea that a CIS may not reduce the time a nurse spends on documentation, but also suggest that technology use helps to increase the quality of the data and charting compliance (Fraenkel, Cowie, & Daley, 2003). The payoff is a complete medical record; an outcome essential to patient safety.

There are steps that organizations can take to help nurses make up the additional time spent on the more comprehensive documentation. Building in timesavers by eliminating redundancy, replacing human activities (for example, phone calls, referrals) with electronic alternatives, and ensuring compliance with documentation standards by using system capabilities such as required fields that must be filled in by the user all are effective methods.

Jan Wilson of Lehigh Valley Hospital and Health Network (LVHHN) also argues that some disdain for online clinical documentation comes not from documenting on the computer, but from the act of documenting itself.

“Nurses don’t see a benefit in general for documentation; they see it as a legal necessity,” Wilson said. “Do nurses like documenting on paper? No. Do nurses like doing it online any better? No.”

Clinicians’ reluctance to document is often thought of as a new problem, but that is hardly the case. While paper-based records are today considered the gold standard in documentation, patient-centered hospital care records did not even exist in the early 1900s. At the turn of the century, the only records of care maintained were the occasional entries made in a physician’s private notebook, kept in his office to aid his research.

It was not until 1919, when the American College of Surgeons decided “they could only guarantee high quality surgical care by setting minimal standards for the hospitals in which their surgeons worked” that a new standard was born (Timmermans & Berg, 2003, p. 42). One of their “core criteria was the presence of a complete, accessible and accurate record for all patients, which had to be kept by the hospital, rather than the individual physician” (pp. 36-37). Physicians adamantly resisted this standard, as they could not see value in changing their recordkeeping routines. “Doctors complained about the proliferation of pre-formatted forms, in which they only had to fill in a few words or even just select a term from a...
This echoes the complaints about online documentation we hear today, suggesting that it may not be the forms, systems, or tools clinicians are rejecting. Rather it may be the legacy of a historical cultural resistance to the imposition of change, particularly severe when clinicians fail to see the payoff for compliance.

A CIS does not always yield an instant payoff. Starting with the oft-cited IOM study, To Err is Human (2000), numerous industry reports herald the use of automated clinical technology as a necessity to improve patient safety and reduce medical errors. This year, the California HealthCare Foundation released a report that estimates the state could save more than $3.2 billion annually and would reduce the yearly number of medication-related injuries by nearly 250,000 statewide if California health care clinics adopt clinical information systems to handle medication ordering and diagnostic tests (Johnson, Pan, Walker, Bates, & Middleton, 2004).

Nurse executives and managers often espouse patient safety and reductions in health care delivery costs as major reasons to implement electronic medical records, online clinical documentation, and other CIS functions. However, staff nurses still making their way up the learning curve of these systems — and dealing with associated delays to their workflow — often find it more difficult to see these high-level incentives immediately.

“Recognition of a payoff can be slow in coming,” Rewick said. “We need to avoid portraying clinical IT as instantly improving speed and efficiency for nurses. Although that becomes true down the road, you just can’t talk about it right out of the box.”

That can begin to change, however, as nurses become more familiar with the system. According to a study conducted at one of PeaceHealth’s facilities, St. Joseph Hospital in Bellingham, WA, nurses using online clinical documentation reduced time spent on charting functions by 50%, freeing up an additional 1.5 hours per 12-hour shift that could be spent on patient care (IDX Systems Corp., 2002).

In addition, a study specifically focused on the quality benefits and staff perceptions of a CIS in a 12-bed intensive care unit found significant improvements in key quality indicators, positive nursing staff perceptions, and positive resource implications 7 months post-implementation of the system (Fraenkel et al., 2003). Thus, quality and satisfaction indicators may improve over time, a reflection, perhaps, of growing comfort with the system.

Drama Choplin of the Medical Center said that over time, nurses might begin to find that the quality of the data is better and more legible with an electronic system, and that they no longer need to waste time chasing down lost or misplaced charts. “With paper charts, a nurse may send information along with the patient to radiology, but when the patient returns, the chart is gone,” she said. “Now, nurses no longer panic because they think a critical flowsheet or care plan is lost.”

Immediate access to centralized information, especially that submitted by other clinicians, has made a significant impact on streamlining nurses’ workflow at the Medical Center and encouraging enthusiasm for the system, Anderson said. Clinical documentation and other nursing functionality aside, the organization’s adoption of computerized physician order entry (CPOE) has been critical.

“The units up on CPOE — that’s sent shock waves through the nursing community,” she said. “The physician puts the order in, and it gets to the nurse immediately. This also has placed more accountability on the nurse to be responsible for orders; in the past, the unit secretary was the intermediary and gave reminders.”

According to Wilson of LVHHN, one technology initiative more conducive to instant gratification is the medication administration record and wireless medication barcode charting. Despite the fact that scanning the patient’s wristband and medication barcode actually adds extra steps to the administration process, the turnaround in attitude comes very quickly. This is due in part to the immediate alerts that nurses receive prior to a potential error; they can see right away that the system is working.

“Nurses love electronic medication administration; it helps them organize their work better and take care of their patients, so they see that as a benefit,” she said. “Nurses who have been alerted prior to a potential error swear by it. Before we rolled out wireless medication barcode charting to all units, the nurses did not want to float to those that weren’t yet live on the technology.”

Nurses are used to paper: It’s convenient, discreet, and tangible. While computers themselves may not be a significant deterrent, some resistance does originate from the fundamental difference between recording information on a piece of paper and inputting it electronically.

Most seasoned nurses were educated to document on paper charts, and portability itself can be a significant issue. Nurses recognize that paper is more convenient to carry around with them, and they are accustomed to folding up and tucking the piece of paper in their pocket, or carrying it on a clipboard from room to room. Conversely, computers — even when available on a rolling cart — are simply not as small or portable. In addition, the prominence of a computer screen visible to the patient can pose a problem, especially for a nurse still transitioning to full competence on use of the system.

“Paper is discreet. The computer makes the nurse documenting more visible. When the nurse has a big screen and keyboard, and the physician and patient...
are watching her enter information, it can make her feel uncomfortable. People are staring at her while she’s trying to navigate this new workflow,” Anderson said. “And the last thing a nurse wants is for the patient to question her competency.”

Finally, nurses reported to the roundtable respondents that they appreciated the ability to hold a completed chart in their hands, which provides tangible evidence of patient care documentation, a tactile element felt to be missing when patient information is captured and viewed electronically.

“Nurses are trained to be able to flip through a chart, and doing that electronically is not as intuitive,” Rewick said. “They’ll say, ‘I need my paper,’ and raise their hands in a holding gesture.”

Still, most nurses overcome this initial uncertainty, Evans said. “For all nurses, the initial change in the workflow is most stressful and they’re most resistant then,” she said. “Once they get up to speed on a new activity, they become more comfortable. Three months later the reaction is, ‘Oh, I love this!’”

Anderson described nurses’ wariness of the new technology when they implemented the system 9 years ago. But today, having overcome their initial skepticism, nurses at her institution have come to depend on using online clinical documentation, the medication administration record, and other nursing functionality. “A majority of our nurses would become upset if we took the computer away from them now. We’ve evolved into a different culture,” she said.

Who Is Most Likely to Embrace the CIS?

At first blush, the older set is often assumed most resistant; but beware of generalizing. While some respondents attest that if there were a trend for those who were most likely to reject the system, it may tend toward older nurses, many caveats were found in those statements.

“On the whole, there may be a trend toward someone older,” Anderson said. “Of course, you can’t generalize, but if we were to trend it out, characteristically, the older generation has the most resistant users.” However, the message from most of these nurse executives, including Anderson, is that there is no typical demographic (no certain age or background) that defines which nurses are most likely to latch onto a clinical information system.

“I have not found a certain demographic. I haven’t found that older nurses find it more difficult. Sometimes their learning curve may be a bit longer, but I don’t know that I see a specific age group,” Anderson said. “I’ve had young staff nurses that have almost gone into anxiety attacks in class.”

Being computer-savvy can help. Many factors can play into a nurse’s willingness to use the system, including an affinity for computers.

“Superusers are usually people who enjoy IT and use this to obtain information (often for audit) to assist their practice,” Pickup said, referring to those nurses who serve as champions of the system, usually by playing the role of an early adopter and helping other nurses develop their skills.

Anderson agreed. “It depends on interests. Some people are just techno-geeks. They just have that computer mind, but don’t necessarily have to have an IS background,” she said.

Dillon, Lending, Crews, and Blankenship (2003) found that self-efficacy — a user’s confidence that she has the ability to successfully navigate an information system — influences adoption of the system. They surveyed 139 nurses and found that the use of technology in a variety of forms, including average levels of expertise in general computer use and software applications (word processing, e-mail, and Internet searches) was associated with higher levels of self-efficacy.

On the flip side, some older nurses, even those without computer backgrounds, are better able to visualize how incremental changes in workflow contribute to the big picture of patient safety.

“Being a superuser has almost nothing to do with knowledge of computers or automation,” Rewick said. “They see the big picture, understand the workflow, and are respected by their peers. There’s no specific demographic. Some of the best superusers are people in their 50s.”

Overall, determination and a willingness to embrace change are key. Rewick believes that those who latch onto the CIS do so because they embrace change, and in general support methods to improve care delivery.

“They are the folks who are always looking for innovative ways to improve care processes, and to streamline documentation processes,” she said. “They understand the principles of clinical quality improvement and how to apply them. They don’t shrink from change.”

“We had some older people that struggled, but really became committed to learning about the computer system and now have excelled,” Anderson said. “You’re talking about someone that naturally gravitates toward the equipment, and wants to make it better.”

According to Anderson, it is helpful to recognize that nurses may self-select toward active participation in a technology project, and empowering them to do so can improve an organization’s successful adoption. “We tried identifying superusers by screening individuals from a unit that we thought would do well in that role,” she said. “Those who were really committed did work well, but those who were simply chosen by a manager did not. When things got busy, their leadership and support waned.”

As a result, the institution organized a documentation committee consisting of volunteers from the
nursing staff. These individuals bridge any communication gaps between caregivers using the system and the IT staff to ensure the system meets clinicians’ needs for workflow and design.

**What Can We Do to Overcome Resistance and Encourage Success?**

Many individual obstacles to immediate acceptance are beyond the control of nurse leaders. We cannot erase the history of educating nurses to document care on paper, nor is it possible to circumvent the inevitable learning curve associated with a new system.

However, implementing key steps as part of a large-scale change management program can ease the process for nurses, help make the CIS more desirable, and encourage nurses to recognize the value proposition that the system offers.

*Enlist nurses in every step of the process.* “One of the most important things is to involve the nursing staff in decisions about workflow in creating the program,” said Evans of the Medical Center.

The organization did just that, creating a staff devoted to bridging the gap between nurses and IT. In addition to documentation committee volunteers, the Medical Center created the nursing clinical information systems (NCIS) team to manage front-line contact with all clinical staff throughout the system design, training, implementation, and IT support processes. All NCIS members are registered nurses, and although some came directly from the clinical staff, all now focus solely on supporting information system (IS) functions, education, and development.

Throughout the project, the organization’s IS analysts have met weekly with NCIS members to discuss everything from workflow issues to screen changes to nurse reporting needs. Today, the NCIS has trained more than 3,000 staff nurses on core nursing functionality, including online results reporting and clinical documentation, medication charting and initial patient assessments, and other applications.

*Communicate the big picture, and provide incentives for a job well done.* According to the panel, when organizations talk about efficiency gains from the get-go, they may be setting themselves up for failure; nurses simply do not see an increase in efficiency at first.

“You need to be upfront and honest about the ultimate goal of implementing a CIS: increasing access to information for all caregivers. This can require an additional time investment in some areas, but faster access to information saves time for the entire team,” Rewick said.

At LVHHN, where nurse managers are selected (rather than volunteer) to serve in the superuser role, providing ample resources to explain the benefits of the system and answer questions one-on-one help get these nurses engaged.

“We rely on our management structure to be our superusers; usually it’s the educator or patient care coordinator on the unit who promotes the CIS. The system is a goal of the institution, so this is part of their job,” Wilson said. “To the staff, we may say, ‘We have to do this.’ But we provide them the reasoning behind it, and reinforce that message during training, and they accept it.”

Incentives and compensation also are a part of the solution, Wilson said. When the organization brings a new unit online, nurses already familiar with the system help serve as resources, and are compensated accordingly.

Solid training and support are a significant part of Chelsea and Westminster’s strategy as well, according to Pickup. “The fact is, we have to use (the CIS), as it incorporates electronic patient records; so basically it is a necessity to use it and not a choice,” she said. “We have training courses for new staff and a support team available.”

*Give nurses a clear view of the continuum of care and how they fit in.* “Demonstrate how information flows across the continuum of care, so that nurses understand how their contribution to the electronic record adds to the larger picture of the patient’s care. This is invaluable in bringing nurses onboard with the CIS,” Rewick said.

The ability to see the patient’s medical history across the entire continuum of care is a significant payoff, and enabling nurses to see they have that power at their fingertips will help to increase their enthusiasm for the system. Rewick contends that a nurse’s ability to see the complete picture is directly proportional to the amount of information that an organization puts online.

“If an organization only puts clinical documentation online, nurses won’t feel the advantages of seeing the comprehensive patient record as acutely as if they can review radiology results, for example, or any other care that is being provided by others,” she said. “If they can see from the inpatient setting what has happened in an outpatient clinic, they’ll be able to get a holistic view of the patient. In turn, this also helps raise awareness and perceptions among other clinical disciplines of nurses’ responsibilities and contributions.”

*Provide the right functionality and hardware at the right place at the right time.* “We need to devote time to developing tools that truly add value for nurses,” Rewick says.

Across the board, nurse leaders cite creating functionality that realistically supports and enhances a nurse’s workflow, opens channels of communication, and unlocks doors to useful information as a top priority.

A well-designed, intuitive interface that “thinks like a nurse thinks” is key. Again, this provides ample reason to involve nurses in the design and
development process, garnering their feedback on how to ensure the interface will support workflow.

“You have to cut down on the number of screens that nurses have to go through to accomplish something. Keep the screens simple, but not so simple that the nurse needs to go through 20 (screens),” Wilson said. “Also, make it easy for them to jump between screens that show related clinical information.”

Make a variety of devices available in convenient places. “Location, location, location. Convenient access to devices is at least as important as well-designed clinical systems,” Rewick said. “Also, provide a variety of device options that work well. Some people want to sit down, others want to roll a laptop around, others want to hold a notebook. The more options you can provide, the more people will latch on to what feels comfortable.”

Wilson agreed that ease of access is key to acceptance. LVHHN gives all of its nurses their own laptops. “We realized this was not going to work if nurses had to log in and out all the time, or if they had to share and then wait for a device to become available,” she said. “All the nurses’ laptops are labeled. The nurses position the laptops on one side of the hallway, and have thoroughly trained the doctors not to run off with them.”

Position the CIS as an information center. According to Rewick, it is critical that the clinical system serve as a gateway to information: not only to the patient’s electronic medical record, but to other clinical resources, including policy and procedure manuals, medication information resources, patient teaching materials, and journals and texts.

Before PeaceHealth went live with its CIS, nurses there worked online with e-mail and viewed meeting notes in the organization’s Intranet. When it came time for implementation, they already felt comfortable using the computer.

“People were drawn to the computer,” Rewick said. “They need to view it as an information center; the more they can successfully do with the system initially, the less scary it is to use the computer for clinical information.”

Looking ahead, Rewick comments on the importance of expert rules capabilities, which enable clinical information systems to interact with clinicians during patient care, providing alerts regarding patient safety and quality of care, updates on best nursing practices, and other information that supports nursing workflow without being overly obtrusive.

She said that with the growth and development of expert rules, clinical systems have the power to exponentially improve the capabilities available to nurses via paper records. “Think about the way that an online bookstore works. Once you order books, based on what you’ve ordered, it suggests other titles
for you to consider,” she said. “We don’t yet have an equivalent in the CIS. It should say, ‘Based on the things you’ve used before with this patient, try this. Do you think the patient might have this problem, based on the symptoms you’ve listed here?’ It’s coming gradually, but it’s moving slowly.”

Industry organizations are pursuing projects to create libraries of expert rules to be shared among health care organizations, and develop functionality that gives clinicians access to online clinical resources via the CIS, based on the patient and condition they are treating. According to the respondents, these types of initiatives will resonate with nurses seeking more information in the context of care delivery.

In addition to developing expert rules that accurately suggest appropriate nursing interventions, Rewick suggests using them to focus on eliminating the need to perform routine care tasks that may not contribute to an individual patient’s health. “For example, we need to develop algorithms that would define intervals for taking vital signs or other interventions, based on that specific patient’s condition, nursing and medical diagnoses,” she said. “Often, we do things because we have always done them, not because there is research-based evidence that they should be done for that individual.”

Introduce information systems in nursing school. “Being exposed to technology in the educational setting makes a huge impact,” Wilson said. “We have several bachelor’s of science of nursing programs and associate degree programs that [send students] to the hospital, and they give medications and do the same charting as staff nurses. If they use the system, and see their instructors doing the same thing, I think it makes a big difference for the students’ decision in selecting the hospital they’ll work for. I love it when they have that experience, because it makes my training easier.”

This idea is well supported by Staggers, Thompson, and Snyder-Halpern (2001) who argue that clinicians need to move beyond basic computer literacy skills and focus on information synthesis and analysis. They argue that, “Formal programs of study should be shifted from teaching basic computer skills to focusing on high level cognitive functions to manage clinical information with technology” (p. 79).

The American Nurses Association (2001) recognizes that “informatics competencies are needed by all nurses, whether or not they specialize in nursing informatics. As nursing environments become ubiquitous computing environments, all nurses must be both information and computer literate.”

Similarly, the IOM in its 2003 report, Health Professions Education: A Bridge to Quality, states, “All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics” (Greiner & Knebel, p. 45). The informatics competency is further defined as the ability to use information technology in providing patient care to communicate, manage knowledge, mitigate error, and support decision making.

Rewick argued that an increase in hands-on training with the CIS in school is critical to support efforts to adopt these systems industry-wide. “We have yet to see nurses coming out of nursing school where a clinical system has been part of the process of learning how to document care. When this does happen, it’s in the context of their clinical time on nursing units,” she said. “I believe that more time should be spent in nursing schools helping students understand the power of automated systems; not only to document care, but how data can be used to improve care for patients.”

Conclusion

As we’ve seen in these discussions with nurse leaders, cultural and societal factors may play a larger role in nurses’ willingness to embrace the CIS than attitudes toward computers themselves. As with any major change, one can assume that in 1919 the first paper charts were far from perfect, but they served their core purpose of giving institutions data that could be retrieved and analyzed. Over the course of history, the health care system made paper records more complete and easier to use. So it will be with technology.

To garner nurses’ acceptance of technology, it is important to recognize and address the barriers they face, to help them see the benefits of undertaking such a massive change, and engage them in the idea that in the long run, automated clinical systems will enable them to improve the quality of care delivery. With ongoing research in this area, nurse leaders will continue to enhance the collective understanding of contributing factors, and develop even more successful strategies to earn nurses’ support for new technology.

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impartial way to justify changes in current nursing assignments as well as predict staffing needs for future shifts. The tool enhances nurses’ critical thinking skills with regard to patient assignments, time management, organization, and prioritization. These functions are often difficult to define and deal with due to the varying perceptions among individual nurses. The AIS assists nurses in managing patient loads by allowing them to prepare for the anticipated intensity of care. Nurses can put processes in place to foster a smooth transition. The tool also allows nurses to delineate patient care issues from system issues. Many times, patient care is delayed due to other ancillary services. The AIS helps nurses determine why patient treatments may be delayed. Performance improvement audits allow management to identify and correct staff learning deficits in critical thinking skills.

**Incorporating AIS in Other Settings**

The AIS has now been piloted in all outpatient day hospitals and most clinics throughout the clinical center. The tool has been adapted to many ambulatory settings in the clinical center, and can serve as a model for future research in staffing methodologies in ambulatory care. Over time the initial data produced by the AIS has lead to refinement of the tool, helped identify stakeholders to champion the project, and spurred changes to foster smooth clinic flow. One such change involved moving many treatments/procedures from the outpatient clinic setting to the day-hospital setting, and reserving clinic visits for patient screening/consultations, assessment, and treatment decision making. In this regard the AIS tool has proved best for those areas that provide numerous treatments because it is in those settings that patient intensity is continually changing. We continue to monitor these findings closely and remain alert for new settings where the AIS will prove useful.

**Conclusion**

Because there are a limited number of tools to quantify nursing workload in ambulatory care, an AIS was developed to measure direct and indirect nursing care requirements. The easy-to-use tool reflects severity of illness and complexity of care. Ambulatory care nurses use the tool to articulate patient needs, assist with resource allocation, and use critical thinking skills to distinguish between system and staffing issues. Ambulatory care nurse managers can use the tool to evaluate the need for additional FTEs and to improve performance. The tool can also be used to qualitatively identify other activities that promote smooth unit functioning. The AIS provides nursing leaders and direct care providers with another avenue to ensure adequate staffing and positive patient outcomes.

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