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# Caritas improves healthcare and cuts costs with Intermec mobile computers

Anytime, anywhere information access and improved reliability save 98 hours per user, per year

Caritas Home Care has found the formula for improving healthcare quality and cutting costs. By porting its legacy mobile medical software to new handheld computers with enhanced communication and data collection capabilities, the Boston-area home healthcare agency saved its care providers an average of more than a half hour per day, lowered its operating expenses, and positioned itself to deliver more services and improved care.

Caritas Home Care has 150 mobile clinicians who provide a variety of medical and social services in the patient's home, including nursing, post-hospitalization follow ups, physical therapy, counseling, geriatric services, respiratory therapy and more. The agency was one of the first to use mobile medical software to record the care given and take notes during patient visits. As an early adopter, Caritas Home Care learned several hard lessons about the most efficient ways to use mobile computers in healthcare settings, and about the best devices for the job. When the time came for Caritas to refresh its mobile computers, it sought to leverage its investment in legacy software and improve its operations by taking advantage of technology advances that occurred since it first deployed consumer-style PDAs a few years earlier.

## Finding the Right Fit

"Laptops are always the first choice among healthcare clinicians because they are familiar with them. But one of the problems with laptops is that their battery life is too short for a full day's work," said Mark Jozwicki, IT manager at Caritas Home Care. "We also found that laptops are near-care devices, not point-of-care devices. They aren't convenient to use at the patient bedside, so clinicians are likely to leave them in their vehicles and fill in the details of the patient visit when they leave. Recording the information when and where care is given is the superior approach."

PDAs are convenient enough for use at the point of care, but often aren't rugged enough. Independent research found average annual failure rates for non-ruggedized handheld computers is 38 percent, compared to just 11 percent for ruggedized models.<sup>1</sup> Caritas'

own experiences confirm these results. "The consumer devices we had just couldn't handle the movement and pounding they take in the work environment. If you set a PDA down on the patient's bed and it fell to the floor, it would break," said Jozwicki. "The amount of breakdowns we experienced was substantial. That impacted our morale, besides our productivity. If your computer keeps breaking down, you're not going to be happy."

Clinicians get their patient assignments by computer download or by phone from a scheduler, and do not need to come into a Caritas office each day. Clinicians send their records and daily activity reports to Caritas by connecting the PDA to a telephone modem. However, PDA failures require a trip to the office. When a PDA fails, the clinician keeps records manually for the rest of the day, then drives to a Caritas office to get a replacement device. Manual record keeping enables clinicians to keep to their schedules and avoid having to skip patient visits while getting replacement devices, but often resulted in extra work time for the trip at the end of the day. The trips also cost Caritas additional mileage reimbursement.

Caritas kept a spare pool of about 15 percent of its deployed PDAs to ensure it had enough on hand to issue replacements while repairs were being made. Each PDA with accessories costs approximately \$570, and the database and software support cost more than the devices themselves, so Caritas had a significant sum of capital tied up in its spare pool.

Hull summarizes. "What we are doing is moving from the art of home health to the science of home health. Our nurses tell me they are excited about the enhanced communications and improved data they are getting. They say it gives them the ability to improve patient care." What more can one ask?

"Home HealthCare has always been more of an art. "What we are doing is moving from the art of Home Health to the science of Home Health."

<sup>1</sup> "Total Cost of Ownership (TCO) Models for Mobile Computing and Communications Platforms," VDC Research. July, 2007.

More Reliability Required

Caritas sought a new mobile computer that would improve reliability. What it found was a device that didn't break down when used in home healthcare processes and enabled beneficial new ones.

Caritas contacted its mobile clinical software provider, HealthWyse, to ask about alternative devices the software maker supported. The HealthWyse software runs on the Microsoft Windows and Windows Mobile operating systems, which creates a wide range of device options. HealthWyse supports a variety of laptop, tablet and handheld computers. HealthWyse referred Caritas to Data Capture Solutions, one of its partners and a specialist in integrating mobile solutions for healthcare and other operations. Data Capture Solutions, which has provided mobile and data collection systems for more than 1,500 customers, helped Caritas quickly narrow the field of hundreds of PDAs, smart phones and laptops, and educated Caritas about a new option: ruggedized handheld computers. Jozwicki's project team identified five products to evaluate for the next-generation mobile device, including a laptop, tablet computer and various handhelds. The laptop and tablet were field-tested and ruled out first because the clinicians found that they were not true point-of-care devices. Two finalists were selected for a major four week field trial: a business-grade PDA with a plug-in telephone modem, and Intermec's CN3 ruggedized handheld computer with wide-area wireless communication.

The clinicians used either the PDA or CN3 for two weeks, then switched to the other device for two weeks. They were interviewed each day about their likes and dislikes and were asked at the end of the trial to rate each device on a variety of criteria. Clinicians showed a preference for the PDAs, in large part because of their familiarity with the units (the PDAs in the pilot were newer versions of the legacy models clinicians already used), but the longer the pilot went on, the more the CN3's value became apparent.

"Phase II testing uncovered the PDA's glaring weakness: it breaks down a lot. Almost all clinicians reported breaking down with the PDA, and two even had to have their databases recovered," Jozwicki wrote in his official project report to management. "These breakdowns all occurred over a short four weeks of normal use. We found this breakage (really, work stoppages) to be highly significant." "On the other hand, the clinicians reported that the Intermec CN3 never broke down over the four

Annual Time Savings Attributed to Ruggedized Devices and Real-Time Communication

Activity	Total hours (150 clinicians)	Hours per clinician
Clinician time savings from reduced breakdowns	9,000	60
Time savings from real-time access to patient information	1,200	8
Time savings from reduced scheduling calls – clinicians	4,500	30
Time savings from reduced scheduling calls – scheduling department	4,500	–
<b>Total annual time savings</b>	<b>19,200</b>	<b>98</b>

weeks of testing. Additionally, its ability to connect with HealthWyse anytime, anywhere was a favorite feature both for the clinicians and schedulers."

When Caritas figured the time lost to device breakdowns into its extensive ROI analysis, the ruggedized Intermec CN3 was clearly the superior tool for the job. The CN3s cost more than the PDAs, and the built-in wireless access over the AT&T network adds additional cost, but the time saved by being able to communicate without finding a modem connection and the productivity loss prevented by reducing device failures more than offset these expenses, as the table highlights.

The positive impact on job satisfaction that would result from improved equipment reliability (which is especially important considering the challenges of hiring and retaining skilled healthcare workers), and the many productive ways the clinician time savings could be put to use convinced Caritas to convert from PDAs to the ruggedized wireless CN3 for all 150 of its clinicians.

"The ROI impact of the CN3 is dramatic. Its capabilities give the agency the opportunity to improve business operations and improve patient care," Jozwicki said. "When fully adopted the CN3 can significantly save clinicians and schedulers a huge amount of time that will more than offset its higher cost."

## Impact on Clinicians and Patient Care

The CN3 will positively impact care in more ways than giving clinicians more time to spend with patients. Clinicians can get accurate patient records instantly through the HealthWise software and wireless access to other information held in central offices. Record keeping about patient visits can also improve because the device is small enough to be used right at the point of care, so procedure codes, notes and other activity can be recorded as they happen. Real-time connectivity also creates more scheduling flexibility and helps clinicians be more responsive.

"When there is a sudden addition to their daily schedule, the clinician will no longer have to go into a patient's house with little or no information and have to do a paper note. This translates to a time savings of about 1,200 hours per year," said Jozwicki.

Caritas plans to use the camera integrated in the CN3 to capture images and transmit them to remote wound care specialists, who can advise clinicians at the patient site about the course of treatment. Caritas is also considering taking advantage of the CN3's video capture capabilities to stream video so office-based physical therapists and other specialists can observe the patient and make recommendations to the on-site clinician in real time.

"The CN3 can be a transformational device for Caritas," Jozwicki said. "We could have simply replaced our PDAs and continued business as usual. The CN3 will help us improve the care we deliver to patients and make life easier for our clinicians." While the future is exciting, current results are excellent. Caritas experienced its expected benefits even before the rollout was complete.

"The ROI is there," said Jozwicki. "We're already realizing less breakdowns, less frustration from the clinicians, less travel time, less mileage reimbursement, and overall less cost."

Caritas has identified many areas where the CN3 is providing cost advantages over PDAs and contributing to positive ROI. These include:

- Activity immediately via the integrated wireless connection, eliminating time spent seeking telephone access for modem communication;
- The office seeking patient information. "Plus, the clinician can see much more information with the mobile computer and wireless connection than they could get by phone," said Jozwicki;
- Assignments automatically without having to call the scheduling department;
- On device repairs;
- Calling clinicians;
- Reduce its spare pool from 10-15 units per location to 1-2, with corresponding reduction in software support costs.

Caritas was able to attain these and other benefits while leveraging its legacy software investment. Porting the HealthWise application to the CN3s was a straightforward process, because both support Windows Mobile and are built on common and standardized platforms. "Data Capture Solutions gave us great support and was available to help with anything we needed, but it was no challenge at all to make the transition," said Jozwicki. "We in IT don't mind supporting this new kind of device, because they break down so infrequently."

Caritas projects combination of clinician time savings and improved productivity plus reduced maintenance, support and spare costs will produce complete return on investment for the full deployment in less than one year.

"Before, we were challenged by communication limitations," said Jozwicki. "Now we can communicate anytime, anywhere, and that is a big difference maker for us."

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