

THE FOLLOWING IS A VDC RESEARCH REPORT ON:

WIRELESS HOME CARE SOLUTIONS:

Addressing the Quality of Service and Performance Gap

Prepared by:

David Krebs

Director Mobile and Wireless Practice

AUGUST 2007

All Rights Reserved



VENTURE DEVELOPMENT CORPORATION

TECHNOLOGY MARKET RESEARCHERS AND STRATEGISTS SINCE 1971

One Apple Hill Drive | Suite 206, Box 8190 | Natick, MA 01760 | USA

Tel: 508.653.9000 | Web: www.vdc-corp.com | Email: info@vdc-corp.com

RESEARCH REPORT



August 16, 2007

WIRELESS HOME CARE SOLUTIONS: Addressing the Quality of Service and Performance Gap

Prepared by: David Krebs, *Director Mobile and Wireless Practice*

EXECUTIVE SUMMARY

If executed well, wireless home care solutions can significantly enhance an organization's quality of service and profitability, not to mention providing a defensible source of competitive differentiation. So why aren't more organizations investing in these solutions? Why does there continue to be a general reluctance or hesitancy in automating home care service processes?

At issue are the role of home care service providers within the health care sector and the approaches taken to automate service processes. Yet the evidence of the benefits of home care service automation, including improved quality, efficiency and safety, continues to mount. VDC conducted in-depth interviews with a broad cross-section of home care service providers and wireless solution providers, many with several generations of home care service automation experience. According to our research, home care service organizations can achieve an average net benefit of up to \$15,000 per full-time equivalent (FTE) per year by deploying wireless home care solutions.

It is, however, important to note that these represent optimal benefits, which can vary based on factors such as service provider acceptance, level of solution functionality, reimbursement models (capitated vs. fee for service) and the quality of implementation. Furthermore, the value proposition of wireless in home care is multi-faceted and revolves as much around the improved quality of life of individual service providers as it does around potential productivity enhancement. In this paper VDC will examine the opportunity for wireless solutions in the home care sector in North America and provide recommendations on best practices to follow to maximize ROI and reduce the risks that home care service providers face when making wireless investments.

TABLE OF CONTENTS

HOME CARE SERVICE MARKET POISED FOR PARADIGM SHIFT.....	2
MAKING A CASE FOR WIRELESS IN HOME CARE	3
THE HOME CARE PROCESS: ACCURACY OF DATA IS CRITICAL.....	4
WIRELESS ADOPTION BARRIERS – TECHNOLOGY ACCEPTANCE AND FUNDING REMAIN MAJOR HURDLES.....	7
WIRELESS HOME CARE BENEFITS: MORE THAN JUST PROCESS AND PRODUCTIVITY IMPROVEMENTS.....	9
WIRELESS HOMECARE ROI MODELS	10
RECOMMENDATIONS: BEST PRACTICES.....	11
ABOUT VDC	12

RESEARCH METHODOLOGY

Venture Development Corporation interviewed over 20 home care service organizations, wireless home care systems providers and payor organizations in support of this research report. These organizations have extensive experience evaluating, supporting or deploying wireless home care solutions. The interviews were conducted by VDC analysts with key decision makers (CXO; VP) between March and June, 2007.

HOME CARE SERVICE MARKET POISED FOR PARADIGM SHIFT

The challenges facing the health care services market are both manifold and paramount. From rapidly rising health care costs – expected to reach 20% of the US GDP by 2015 – a nursing shortage that continues to intensify and recurring quality of service issues, a perfect storm is brewing. Some of the major constraints being placed on the health care system is an aging population – according to a recent US Census Survey commissioned by the National Institute on Aging, the ‘over 65’ population is expected to double over the 25 years – and a substantial increase in people with chronic health conditions. Consequently, home care and long-term care (LTC) services are being positioned as viable services to both efficiently and effectively address some of these issues.

The home care and long-term care service environment is highly complex, and users represent a heterogeneous group of patients including those recovering from acute events and those with chronic conditions. These services are typically provided by home care organizations, hospices, area agencies on aging, homemaker agencies and private duty nursing associations.

As a result of their conditions, patients receiving LTC or home care services will require a broad range of medical and nursing services for extended periods of time. In addition, given the array of needs, patients will likely receive care in numerous settings with a high frequency of transition between settings. This rate of movement can significantly expose areas of vulnerability where critical clinical information may not be transmitted or transmitted incorrectly, resulting in a higher error incidence. Additional challenges faced by the home care and long-term care sectors include:

- Shortage in service providers and nurses. Rapid increases in home care spending and the number of home care beneficiaries prompted a shift from a fee for service payment system to a more restrictive prospective payment system (PPS). This resulted in a significant decrease in the number of beneficiaries receiving services and a one-third reduction in total number of service providers. While the shift to a PPS is clearly a US trend, Canada is experiencing similar human resource shortages.
- Current payment systems do not reward quality and efficiency. The structure of many current systems provide few disincentives for overuse or misuse, does not reward efficiency and does little to encourage coordination among multiple parties providing services.
- Patient safety and service quality are of critical concern. Following the Institute of Medicine’s 1999 report “To Err is Human,” which stated that over 75,000 deaths occurred annually from medical errors, patient safety is a recurring theme. Although not as pervasive for home care and long-term care beneficiaries, addressing this will be critical.

Ultimately all these issues have several items in common: they all point to a growing need for improvements in quality of service, reimbursement accuracy and expedience, and staff and service efficiency. To meet these increasing demands, home care and long-term care agencies must invest in the latest technological advances to streamline operations and incorporate best practice techniques.

MAKING A CASE FOR WIRELESS IN HOME CARE

According to research conducted by VDC, the greatest challenges facing home care organizations today center on improving quality of care, increasing the accuracy of clinical and billing information and maximizing worker productivity. Although there are almost one million home care workers in North America, they are increasingly challenged to support the escalating demand for services. In the wake of these challenging conditions, the opportunity for wireless solutions is increasingly evident.

Home Care Challenges ¹	
Increase quality of care/service	68.7%
Improve clinical data accuracy	55.5%
Improve billing information	43.8%
Increase worker productivity	41.2%
Improve scheduling and dispatching	35.5%

¹ Source: VDC 2006 Enterprise Mobility Service: Survey of 120 Health Care Professionals

While the use of wireless solutions in the home care sector can best be described as nascent – VDC estimates mobile device penetration supporting data applications among health care workers at approximately 25% - among home care workers the penetration is substantially lower. The home care workforce – over 3 million

in the US and Canada – is highly mobile and works in a data-intensive industry that is fraught with inefficient paper-based processes. Mobile technology and wireless applications have the potential to completely overhaul current workflow processes and propel quality and efficiency of care to a new level.

From automating inefficient processes, enabling interdisciplinary communication and pushing critical information to the point of care, leading wireless applications that home care organizations are evaluating are diverse. However, one recurring theme among home care service organizations is that the primary investment driver for next-generation field tools such as mobile computers and smartphones is around quality of service. Improving worker productivity/cost reductions are generally perceived as secondary benefits. Key solution investment drivers include:

- Adoption of EHR (Electronic Health Records). Driven by requirements for improved workflow, clinical documentation to support billing and patient safety, EHR implementations are beginning to accelerate after several years of false starts. EHR implementation has provided a strong enabler for broader wireless systems adoption in the health care and home care sectors. Patients receiving LTC or home care services typically experience higher rates of transfer among facilities, presenting significant care challenges. Based on these high rates of transfer, the need for transparent EHR solutions is only more acute.
- Improving quality of care. A major challenge for home care organizations is ensuring that services required are actually being delivered. According to VDC's research, up to 50% of services ordered are not being delivered by HCAs - home care aides (referred to as Personal Support Workers – PSWs in Canada). This not only severely impacts service quality but also creates billing and reimbursement challenges.
- Accelerated and complete reimbursement. A critical challenge for home care agencies is receiving reimbursement for their services delivered. Following the shift from a 'fee-for-service' model to a more restrictive 'prospective payment system' (PPS) has placed a greater burden on care workers to provide more detailed documentation. Automating and providing consistency to various required forms – such as OASIS (Outcomes and Assessment Information Set) – through a wireless client can substantially improve and expedite reimbursement.

“Our frontline home care service staff work in extremely unstructured data-driven settings that are mired by error-prone and inefficient paper based processes. Wireless solutions will play a key role in satiating their persistent need for timely access to critical information at the point of care.”

CIO
Northeast Home Care Service Provider

- Schedule efficiency improvements. Home care workers will visit between 3 to 6 patients per day. Providing automated schedule management solutions that send schedules wirelessly to mobile computers will not only eliminate the need and cost of telephone scheduling, but also improve route management by providing directions. Automation of additional administrative tasks such as payroll and expense reimbursement can also create significant process efficiencies.
- Shifting business models. The bidding process for home care services is becoming increasingly competitive especially as the size of each contract continues to increase. An increasingly important component for home care service providers looking to secure contracts is their ability to demonstrate innovation and leadership. The use of wireless solutions to enable a more effective service staff and provide better quality care creates an opportunity for differentiation among service providers.
- Improvements in communication among interdisciplinary teams. A significant portion of hospital patients use home care services following their discharge. One of the greatest challenges for health care services is to achieve collaboration and coordinate care for patients transitioning between settings of care and also among team-members providing care for the same individual.

THE HOME CARE PROCESS: ACCURACY OF DATA IS CRITICAL

The foundation of effective wireless home care solutions is no different than other service-oriented businesses: efficient access, entry and distribution of critical client and process information. A significant administrative overhead burden exists in the home care sector to support this activity and the vast amount of data collected, retrieved and analyzed in support of home care patients. In fact, VDC estimates that 20-25% of service providers' time is spent on administration, placing a significant financial burden on home care service providers. While the use of paper forms continues to be the primary approach to manage these data collection and case management requirements, the increase in demand for home care services and looming quality and capacity constraints are driving agencies to more aggressively evaluate and invest in mobile and wireless solutions. Some of the leading and emerging wireless applications and benefits are illustrated in the following table.

POTENTIAL WIRELESS HOME CARE APPLICATION AND BENEFITS			
Patient Safety/ Care Quality	Labor Savings/ Reduction	Revenue Enhancement	Malpractice Insurance/ Litigation Avoidance
<ul style="list-style-type: none"> • Reduce number of avoidable hospitalizations • Reduced length of stay • Ensure medication and procedure compliance/accuracy 	<ul style="list-style-type: none"> • Time to admit • Time to create care plan • Time to enter clinical documentation • Medication administration time • Number of FTE overtime hours • Staff recruitment • Staff satisfaction/retention • Administrative staff size • Service provider transportation efficiencies • Task audits 	<ul style="list-style-type: none"> • Revenue per patient • Increase in patient volume • Collections efficiency 	<ul style="list-style-type: none"> • Reduction in number of claims • Reduction in value of settlement/compensation • Reduction in premiums

The opportunity for wireless solutions varies widely by target user and application. Among home care professionals, the initial opportunity and payback of wireless solutions is greatest for registered professionals – nurses, social workers, therapists, case managers, etc. However, the challenge will be in identifying viable solutions for health care aides / personal support workers. HCAs/PSWs represent the single largest worker segment in the home care service market – accounting for 60% of workers – yet, based on their lower average annual salary, high turnover and limited computer literacy represent challenging candidates for most existing wireless solutions.

Some of the most significant issues to address with this population is more compliance driven. In other words, home care service organizations are looking for solutions that track completion of mandated services whose compliance rates can be as low as 50%. In addition, the ability to provide accurate audit trails of travel distance for mileage reimbursement could result in significant cost savings. According to VDC research, the ideal wireless solution price point and total cost of ownership would need to be approximately one fourth that of solutions adopted by nurses, therapists and other home care service workers to achieve a similar ROI.

Home Care Service Worker Segment	Target Mobile Device Platform	Target Applications
Case Managers	<i>Tablet Computer</i> <ul style="list-style-type: none"> • Bluetooth for I/O support • Integrated WWAN desired but not critical <i>Wireless Handheld / BlackBerry® Smartphone and Digital Writing¹ solution combination</i>	<ul style="list-style-type: none"> • Intensive data collection application • Case assessment form compilation • OASIS forms compilation
Registered Nurses	<i>Wireless Handheld / BlackBerry Smartphone</i> <ul style="list-style-type: none"> • Integrated GPS • Bluetooth® for enhanced I/O support • Memory capacity to support “store and forward” for more sophisticated applications • Touch screen interface for forms-based data entry is desired but not critical 	<ul style="list-style-type: none"> • Automated schedule management and real-time dispatching (of the 8-10 visits nurses perform per day, 2-3 are rescheduled or scheduled during the day) • Reference/ data access • GPS – turn by turn directions and route tracking to process and validate mileage claims • Light data entry and retrieval • Bluetooth-enabled data collection (bar code scanning; temperature monitoring; image capture) • E-mail and voice communications
Health Care Aides/ Personal Support Workers	<ul style="list-style-type: none"> • Low-End Electronic Time/Job Stamping solution • Digital Writing solution • <i>Limited functionality Wireless Handheld/PDA or BlackBerry with GPS capabilities</i> 	<ul style="list-style-type: none"> • Electronic time stamping to register visit entry and departure • Electronic job task stamping to register tasks performed • Tracking and accounting of routes traveled between service calls

¹ This technology, comprised of a digital pen (with built in camera), special watermarked paper and interpretation services. Digital writing gives organizations the ability to capture information as it is handwritten at the point of care. The information is then transferred via Bluetooth to a smartphone and then uploaded to the interpretation service provider. An advanced interpretation engines that converts the writing into useable data for import into mobile and back-office applications.

In addition to evaluating the opportunity by user type, understanding the application and data entry/access requirements will drive selection of target mobile device platforms. Rigorous data entry for case assessments and regulatory forms such as OASIS are best supported by larger form factor mobile computers such as tablets or possibly emerging UMPCs, whereas wireless devices such as BlackBerry smartphones are better equipped for data access and lower volume incident reporting unless combined with Digital Pen solutions. Key forms used as part of standard home care services are described below.

Chart/Forms Type	Current Solution – Paper Based	Challenges	Wireless Approach/ Benefits
Case Assessment	<ul style="list-style-type: none"> Case managers enter information on patient status – frequently over 100 fields taking over 90 minutes to complete. Forms faxed/hand delivered to central office 	<ul style="list-style-type: none"> Inconsistencies in data recording results in duplication in collection process. Limited data sharing capabilities across interdisciplinary teams. 	<ul style="list-style-type: none"> Enable more seamless workflow. Elimination of redundancies of reentering and validating data. Target platform is tablet/notebook computer. Potential for digital pen/ smartphone or PDA combination.
OASIS (Outcomes and Assessment Information Set)	<ul style="list-style-type: none"> Systematic data collection on admission, discharge, transfer and death. 	<ul style="list-style-type: none"> Significant variance in recording of OASIS data. Limited involvement by physicians, referral sources and agencies providing community-based long-term care. Lack of communication among interdisciplinary teams. 	<ul style="list-style-type: none"> Increased accuracy in data collection and more consistent OASIS scoring. Target platform: tablet computer
Nursing Notes	<ul style="list-style-type: none"> Notation of services provided such as wound care, infusions administered, etc. 	<ul style="list-style-type: none"> 20-25% of nurse's time spent on administrative tasks that cannot be reimbursed. 	<ul style="list-style-type: none"> Data collected by RN is updated in real time. Residents' care plans, physicians' orders, vital signs, etc. are available in real time. Target platform: smartphone/ PDA.
Health Care Aide/Personal Support Worker Notes	<ul style="list-style-type: none"> HCAs/PSWs complete form to document specific services provided. 	<ul style="list-style-type: none"> Current process lacks checks and balances. HCAs/PSWs frequently do not provide up to 50% of mandated services. Care plans and notes are frequently lost or misplaced. Time lost re-entering data at end of the day. Source of employee frustration and transcription errors. 	<ul style="list-style-type: none"> Limited viability of wireless solutions from a cost-benefit perspective. Need for low-cost time and task stamping solution that verifies HCAs/PSWs on premise and delivered services at mandated time. Potential for low-cost/low-tech solutions such as digital pens and bar code scanning.
Home Chart	<ul style="list-style-type: none"> Multi-part form that tracks daily services rendered and patient status. 	<ul style="list-style-type: none"> Charts are frequently misplaced or thrown out (in palliative care situations). 	<ul style="list-style-type: none"> Use of online/Web-based patient portal.

WIRELESS ADOPTION BARRIERS – TECHNOLOGY ACCEPTANCE AND FUNDING REMAIN MAJOR HURDLES

While lack of funding presents one of the strongest barriers to more widespread adoption – health care IT budgets are typically one-fifth the size of budgets in other industries – it represents only half the story. Perhaps an even more critical issue is clinician adoption or acceptance of wireless solutions. To date, health care IT vendors have been notorious for over-committing and under-delivering, with most solutions falling well short of ease-of-use requirements and failing to integrate well with established workflows. Moreover, most programs lacked the appropriate incentives to ensure widespread acceptance and compliance.

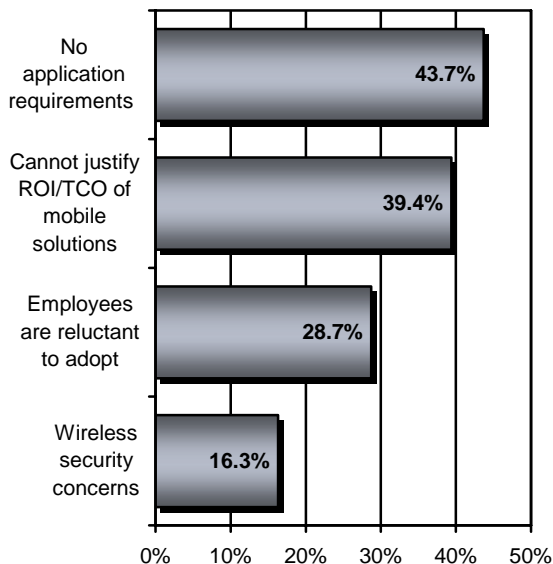
“In the medical profession we have to be compliant with both HIPAA to protect confidential patient information and FERPA to protect student data...What’s unique about BlackBerry smartphones is they use robust, cryptographic, key-based encryption. BlackBerry is a truly HIPAA- and FERPA-compliant solution for end-to-end communication.”

CIO, Harvard Medical School and Beth Israel Deaconess Medical Center

Partially as a result of these missed expectations, many health care and home care organizations claim a lack of viable wireless applications as the primary adoption barrier. Based on the advances in cost and performance of wireless technology and more widespread investment in gating HIS systems such as electronic health records, wireless investment risks have dropped measurably. Furthermore, based on similar research conducted in other service sectors, one of the most frequently cited regrets by organizations is not investing in wireless solutions earlier.

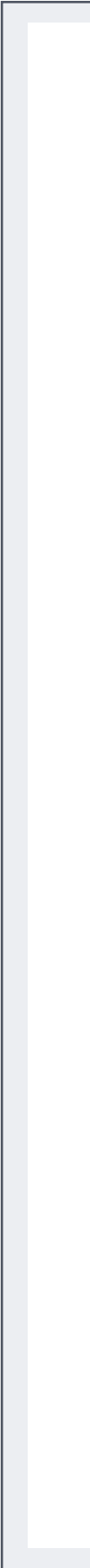
However, as the research and ROI analysis conducted by VDC suggests, many of the ‘traditional’ adoption barriers perceived by healthcare and homecare service providers have been overcome. There is substantial evidence that homecare service providers can benefit from a variety of wireless applications. Furthermore, the ROI of effectively deployed wireless solutions can be calculated in weeks and not months or years and whereas employees may have previously been reluctant to adopt new technologies and processes many currently view investment in wireless solutions as a critical reason to remain with a service provider.

Mobile Adoption Barriers²



Beyond funding and technology acceptance, security looms as a critical issue for organizations evaluating wireless applications, especially when sensitive patient data resides on the mobile device or is transmitted wirelessly. Clearly protecting patient information to comply with HIPAA regulations is an absolute requirement. Development of a comprehensive mobile security policy is necessary to balance the threats and problems associated with mobile device proliferation.

²Source: VDC 2006 Enterprise Mobility Service: Survey of 120 Health Care Professionals



So who will pay for these investments? Critical to understanding the benefits of wireless solutions is understanding the primary sources of financing (who pays for the services) and the payment or reimbursement methods. According to National Health Accounts Data, services provided by home care agencies are primarily financed by Medicare (20%), Medicaid (41%) and personal out-of-pocket sources (23%). Reimbursement policies vary by who is paying, and alternative reimbursement methods can create differing incentives for wireless systems adoption.

However, organizations with the best practices are using wireless solutions to address these billing and reimbursement complexities, especially in support of the stringent regulatory requirements surrounding the mandated submission of results data in MDS and OASIS forms. Traditionally supported by stand-alone information systems, leading organizations are integrating MDS/OASIS systems with systems supporting clinical applications. This is resulting in improvements in regulatory compliance and in the avoidance of non-payment for new admissions.

One of the major changes over the past two decades within the home care community is the dramatic shift from a not-for-profit business model. Today the largest segment of the home care service sector is comprised of private for-profit businesses. Most of these businesses are increasingly adopting an array of corporate-style cost-cutting and efficiency techniques, including strictly controlled headcounts, centralized administration, group purchasing, use of standardized procedures and forms, and leveraging low-skilled workers. Consequently, organizations are more prone to evaluate emerging technologies such as mobile and wireless than significantly enhancing productivity and ultimately profitability.

Moreover, a renewed emphasis on evaluating the viability of a pay-for-performance model could act as an indirect catalyst for organizations to invest in and adopt tools that would enhance their service quality and ultimately their competitive position. The current payment system places little to no emphasis on the quality of care delivered, does little to promote coordinated communication among multidisciplinary teams and caregivers, and offers few disincentives for overuse of higher cost services. More importantly, a shift to pay for performance should significantly lower the bar for service providers to invest in next-generation technologies that improve the consistency, expediency and accuracy of quality of care tracking.

WIRELESS HOME CARE BENEFITS: MORE THAN JUST PROCESS AND PRODUCTIVITY IMPROVEMENTS

The value proposition for wireless solutions in the home care service sector is multifaceted, however, perhaps the most compelling initial argument in favor of wireless deployments centers on the biggest HR challenge facing home care service organizations: improving the quality of life and job satisfaction of the individual service staff (nurses, therapists, etc.). One of the biggest burdens for these workers is the amount of time they spend on paperwork and other administrative tasks – up to 25% of their average day (this ratio may be slightly lower in Canada where the paperwork requirements are less extensive). Eliminating or at least reducing this workload through a wireless solution that enabled remote access to important caseload data (schedule, activity reports, etc.) can enhance the efficiency of this staff and more importantly their quality of life on the job.

In addition, the reduction in administrative support required is substantial and can yield significant cost savings. While much of the analysis of the benefits of wireless in home care has focused on making the service staff more efficient (i.e. manage a larger caseload in the same time) a more significant near-term benefit will be derived from the cost savings of reducing the administrative overhead. In other words it is not necessarily about getting additional visits processed by the service staff but rather delivering more services with less service staff.

Standard Service Staff to Administrative Staff Ratio	Service Staff to Administrative Staff Ratio if Using Wireless	Administrative Staff FTE (Fully Loaded)	Administrative Staff Cost Savings per Service Staff
20:1	40:1	\$60,400.00	\$1,510

However, over time, as service staff become more familiar and comfortable with the wireless devices and as home care service organizations extend more back-end office applications onto the wireless client (as opposed to email and voice-centric applications) productivity enhancements of home care workers will be more tangible. According to the most recent figures from NAHC (National Association for Homecare & Hospice), home care service staff productivity (measured in total number of visits per day) ranges between 4.9 and 6.0. (Case managers have a much lower productivity level to reflect the number of other responsibilities they have in addition to patient care). Wireless solutions, on average, can yield a 20-35% productivity enhancement which can result in up to a \$13,000 increase in annual charges per service staff.

Home Care Worker	Standard Visit Staff Productivity (Visits/Day)	Wireless Productivity Enhancement	Enhanced Visit Staff Productivity	Average Charges/Visit	Increase in Annual Charges
Case Managers	0.9	+21.7%	1.1	\$120.00	\$4,239.00
RN (Registered Nurse)	4.9	+34.5%	6.6	\$45.00	\$13,505.00
Licensed Practice Nurse (LPN)	6.0	+28.5%	7.7	\$36.00	\$9,990.00
Health Care Aide (HCA)	5.2	+21.5%	6.3	\$19.00	\$2,840.00

In addition to increasing average annual billing/ charges through productivity enhancements, improvements in record keeping and documentation through wireless solutions is expected to drive increased reimbursement per patient for services rendered. As a result of the strict record-keeping requirements, many services provided are not reimbursed because of errors in coding and in transcription. According to VDC's research, more accurate coding and transcription could result in as much as an additional reimbursement of \$18.50 per patient per day, however, more data is required to draw more definitive conclusions about this potential benefit. Moreover, this benefit is applicable to nursing staff and not paraprofessionals and does not apply to the opportunity in Canada where a single payment is provided for delivery of a range of services.

In addition to hard benefits realized by the adoption of wireless solutions, other benefits should not be overlooked. Some include:

- **Improved employee retention.** One of the biggest challenges facing home care organizations is retaining their employees. In fact, the national average for turnover among nurses is 21.3% (Source: HSM Group). Some of the turnover can be directly tied to the level of frustration experience by the amount of time spent on non-value adding administrative tasks. The average cost of replacing registered professionals exceeds \$30,000 and can reach as much as \$100,000.
- **Improved patient care through inter-team communication.** As patients move among different physicians and care settings (for example hospital to home care), the care they are receiving is frequently fragmented and lacks coordination. Deployment of wireless solutions and adoption of electronic patient records should provide greater access to critical information and foster improved coordination of care among the patients various providers through an entire period of illness.

WIRELESS HOMECARE ROI MODELS

To calculate ROI of wireless solutions, an accurate mobile computer TCO model is required. Data to support this model is from VDC's 2007 Mobile Computer TCO Analysis. Annual TCO by mobile computer is itemized below.

	Tablet Computer ¹	Wireless handheld/ BlackBerry smartphone ²	PDA ²
Hardware	\$476.60	\$241.57	\$283.65
Peripherals/ Accessories	\$146.36	\$57.47	\$63.51
Software	\$84.32	\$101.71	\$128.55
Implementation	\$83.58	\$60.74	\$76.51
Training	\$45.69	\$61.33	\$71.54
IT Support/Maintenance	\$288.59	\$194.29	\$158.75
Airtime (Data/Voice)	\$480.00	\$840.00	\$480.00
ANNUAL TCO	\$1,604.14	\$1,557.11	\$1,262.51

¹Assuming a three year replacement cycle

²Assuming a two year replacement cycle

Tablet Computer ROI²

Worker	Productivity Enhancement	Tablet TCO	Tablet ROI	Tablet Payback Period
Case Manager	\$4,239.00	\$1,604.14	264%	138 days

Wireless Handheld / BlackBerry Smartphone ROI

Worker	Administrative Staff Savings	Productivity Enhancement	Smartphone/Blackberry TCO	Smartphone/Blackberry ROI	Tablet Payback Period
RN	\$1,510.00	\$13,505.00	\$1,557.11	964%	38 days
LPN	\$1,510.00	\$9,990.00	\$1,557.11	739%	49 days
HCA	\$1,510.00	\$2,840.00	\$1,557.11	279%	130 days

PDA ROI³

Worker	Administrative Staff Savings	Productivity Enhancement	PDA TCO	PDA ROI	Tablet Payback Period
RN	\$1,510.00	\$13,505.00	\$1,262.51	1189%	30 days
LPN	\$1,510.00	\$9,990.00	\$1,262.51	911%	40 days
HCA	\$1,510.00	\$2,840.00	\$1,262.51	345%	106 days

RECOMMENDATIONS: BEST PRACTICES

1. Avoid multiple, non-integrated information systems.

The implementation of wireless home care solutions can create challenges for compliance with CMS (Centers for Medicaid and Medicare Services) reporting requirements. Home care organizations that are being reimbursed by CMS need to adhere to Minimum Data Set (MDS) guidelines. Many home care organizations currently operate separate health information systems to support federal reporting requirements (MDS, OASIS, etc.), and the differences in the required content for these systems creates barriers to electronic information exchange. The implementation of multiple, non-integrated home care information systems can result in significant additional costs and process overhead.

2. Understand the distribution of benefits received from wireless home care investments.

There are a number of stakeholders that stand to benefit from wireless home care solutions, including payors, care providers and, ultimately, the patients. These are based on several factors, with payors more likely to accrue the majority of benefits in a cost-reimbursed environment while in capitated environments service providers could receive greater benefits. In addition, the types of wireless applications will also influence to what extent benefits accrue.

² Tablet ROI only provided for case managers. Not perceived as viable platform for home care nurses and aides.

³ Does not include additional costs to support a separate phone or pager

3. Clearly identify issues to be addressed/benefits gained through wireless solution.

The benefits of wireless home care solutions are manifold. Essential to a successful investment is understanding which applications will provide the greatest ROI. According to the research conducted by VDC, many of the most successful wireless home care solutions initially focused on email-centric solutions that provided the necessary audit trail and supported remote access to critical schedule and client data and supported limited data entry for activity reports. Subsequent phases would focus on extended back-office applications such as payroll and billing, assessments, etc. As important as identifying leading applications to mobilize, is determining the appropriate mobile device for the application and user. Larger form factor tablets or notebooks are clearly most suitable for data-intensive applications such as completing OASIS forms by case managers.

However, the functionality provided by tablets and notebook computers – not to mention the significant bulk – is not required by the majority of home care service workers such as nurses, therapists and aides. A more suitable solution for these individuals would be a smartphone or BlackBerry smartphones.

4. Prepare for change

When asked what organizations would have done differently prior to deploying home care service automation solutions, invariably the response involved not properly anticipating and preparing for the change to business processes. Once home care workers are equipped with solutions that provide real-time access to critical data, changes are inevitable. These changes range from the positive – improved decision-making quality and expediency – to the challenging – such as managing the expectation those employees will be more productive. Moreover, during the initial roll-out productivity may actually decrease as users become accustomed to the system and transition from paper-based to electronic reporting.

One of the most significant benefits of service automation as evidenced by VDC's research is the automation or elimination of routine tasks, permitting the home care service workers to focus on higher value adding services. Leveraging these efficiencies into more value-adding tasks provides a key opportunity for organizations to improve and differentiate their service departments. Providing services such as performing product defect or enhancement analysis or making product recommendations for improved operations will be critical tools to establish market leadership positions. Just as critical will be anticipating and planning for these changes during the service automation evaluation and deployment process.

ABOUT VDC

Venture Development Corporation is an independent market research and strategy-consulting firm that specializes in a number of mobile & wireless, automatic identification, embedded and other enterprise IT markets. VDC has been operating since 1971, when graduates of Harvard Business School and MIT's Sloan School of Management founded the firm. Today we employ a talented collection of analysts and consultants who offer a rare combination of expertise in the market research process, experience in technology product and program management and formal training in engineering and marketing. For more information about VDC, visit www.vdc-corp.com or call 508.653.9000.

Venture Development Corporation

One Apple Hill Drive | Box 8190, Ste. 206 | Natick, MA 01760-9904
T: 508.653.9000 | F: 508.653.9836 | E: info@vdc-corp.com | W: www.vdc-corp.com

