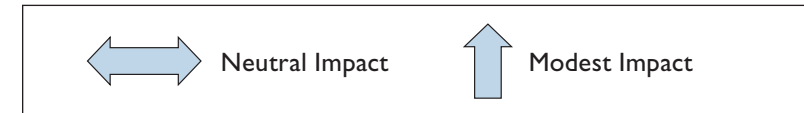


Surveying the Landscape of

	Automated Vital Sign Capture	Automated Chart Retrieval	Fast-Track Admission Forms	Automated Discharge Plans	Intelligent Communication Devices	Real-Time Patient Tracking	Smart Cards	Intelligent Data Displays
Description	Automatically captures vital signs, calculates summary reports	Uses RFID to automatically load patient chart from EMR onto caregiver's tablet PC	Electronic clipboards for patient registration	Automatically populates printed discharge instructions and prescriptions	Voice-controlled, wireless badges worn on caregiver lapels; middleware triages alerts to preferred output devices	Care maps created from multiple systems to present detailed view of patient location, orders, and room status	Allows single sign-on to disparate systems; predicts user's data needs to optimize information displays	Physician portal that allows real-time access to comprehensive patient data
Impact on Efficiency/Cost	↑↑	↑	↑↑↑	↑↑	↑↑	↑↑↑	↑	↑↑
Impact on Quality/Safety	↑↑	↑	↔	↑	↑	↔	↑	↑↑
Vendor/Technology Profiled	Siemens/ChartAssist; Sensitron Inc./careTrends™ wireless bridge system	Homegrown	Galvanon, Inc./eClipboard™	Homegrown	Vocera Communications, Inc./Vocera Communications System; Emergin, Inc./Emergin Communication Gateway	Awarix, Inc./Patient Care Communication Board	Siemens/HiPath™ Scurity® clinic card; Sentillion, Inc./Sentillion Vergence Platform	Homegrown (Azyxxi)
Suggested/Required IT Infrastructure	Bluetooth®-enabled output devices; real-time results review; HL7 compatibility; electronic medical record	Handheld/Tablet PC, or other mobile devices with RFID reader; context management software; electronic medical record	Handheld/Tablet PC with swipe card reader integrated with Admission, Discharge, Transfer (ADT) or patient registration systems	Clinical Data Repository (CDR)—e.g., Lab, Pharmacy, Radiology, ADT systems; HL7 compatibility; electronic medical record	Wifi Network (802.11.x WLAN); Wireless-enabled output devices (e.g., pagers, cell phones, Vocera badges)	Active RFID tags on dedicated Wifi network; CDR; real-time results review; TeleTracking	Smart Card: 128-bit encryption; password verification; context management software/Sentillion: single sign-on; context management software; ASP.net platform for web services; electronic medical record/CDR	CDR; ASP.net platform for web services; PACS; digital video; electronic medical record
Representative First-Mover Results	Charting times per 12-hour shift decreased from 3–6 hours to 1–2 hours with use of ChartAssist at Nebraska Heart Hospital in Lincoln, NE	40% decrease in documentation time for medication administration, resulting in estimated \$22,000 annual savings per inpatient unit at Owen Medical Center ¹	27% decrease in registration times for first-time patients, 73% decrease in registration time for follow-up appointments at Baylor University Medical Center in Dallas, TX	Increased legibility of discharge instructions, fewer callbacks, and better medication reconciliation across entire hospital stay at Lehigh Valley in Allentown, PA	84% decrease in nurse-to-nurse communication time using Vocera System at St. Agnes HealthCare in Baltimore, MD	19% increase in average monthly bed turns, 12% increase in monthly patient volumes, and reduction in room cleaning time from 30 to 10 minutes at St. Vincent's Hospital in Birmingham, AL	Clinician-arrival to application-launch time decreased 87% with Smart Cards at Nebraska Heart Hospital in Lincoln, NE; sign-on to data-availability time decreased 85% with Sentillion at Christiana Care in Wilmington, DE	Azyxxi accessed for 95% of clinical queries at Washington Hospital Center in Washington, DC



¹ Pseudonym.

Emerging IT Innovations

Streamlined Drug Delivery	Automated Dosing Adjustment	Wireless Smart Pumps	Diagnosis Decision Support	Dynamic Order Sets	Guided Ordering	Wireless ECG Transmission	Wireless Mobile Monitoring	Continuous Infection Monitoring	House-Wide Risk Dashboard
Combines RFID and bar coding for faster, more cost-effective medication administration verification	Automatic dosing calculator built into order entry system to minimize incorrect dosing	Wirelessly transmits alerts when programmed dose falls outside of acceptable range for patient	Diagnosis decision support system at point-of-care	Embeds evidence-based order sets into decision support systems	System anticipates and suggests clinician orders based on analysis of patient information	ECG tracings transmitted from ambulance to on-call cardiologist while en route to hospital	Patient packs monitor vital signs and track geographic location throughout hospital ED	Infection surveillance and antibiotic management software	Enterprise-wide risk analysis; alerts caregivers to patients at risk of negative clinical events
Sculptor VeriScan/ Sculptor VeriScan Pocket PC	Homegrown	ALARIS Medical Systems/ Guardrails® Safety Software	Isabel Healthcare, Ltd./ Isabel	Zynx Health Incorporated/ ZynxOrder™	Homegrown (SmartForms)	Homegrown	Homegrown; Sonitor Technologies (ultrasound tags)	Cereplex, Inc./SetNet, PharmWatch	CliniComp, Intl., Essentris OnWatch™
Handheld/Tablet PC with RFID reader and Bar Code reader	CDR; CPOE with real-time results review and dosing decision-support algorithm	Wifi Network (802.11.x WLAN)	Vendor application; (electronic medical record)	Vendor application; (electronic medical record, CPOE)	Electronic medical record (CPOE, Documentation, CDR, etc.) with ordering decision-support algorithm	802.11.g-enabled handheld PDA; data trending, analysis software	2-lead EKG, pulse oximeter with alerts; PDAs with Linux-based decision-support; Wifi Network (802.11.x WLAN); ED system; ultrasound tags and receivers	Lab, pharmacy, ADT systems; Thin client; web interface; HL7 compatibility	CDR/electronic medical record; rules engine for alerts; web interface; ETL software
600 to 5,000 increase in number of potential medication errors identified at Morris Hospital ¹ across one year	Led to higher accuracy in dosing (vs. control group) in patients with compromised renal function at Brigham and Women's Hospital in Boston, MA	0 alerts per day captured and analyzed upon deployment at St. Joseph's/Chandler Health System in Savannah, GA	Used in 1 out of 8 cases at Imperial College School of Medicine at St. Mary's Hospital in London and reduced the number of diagnostic errors-of-omission	Using Zynx order sets, Adventist Health System saved \$1,316 per case in pathway vs. non-pathway patients in 2004	Currently in deployment at Partners Healthcare in Boston, MA	50 minute door-to-reperfusion time (versus national average of 100 minutes) at Duke University Medical Center in trial study	Currently in trial development at Brigham and Women's Hospital in Boston, MA	23% reduction in antibiotic costs, 52% reduction in mortality at University of Maryland Medical Center using Cereplex PharmWatch	Following a six-month period with OnWatch, Sharp Healthcare in San Diego decreased blood sugar levels in diabetes patients by 7.8%

Large Impact

Significant Impact

Source: Clinical Advisory Board interviews and analysis.