High Tech Meets High Touch:
Using Technology to Redefine Inpatient Care Delivery in the Fort Belvoir Community Hospital

The Quadruple Aim: Working Together, Achieving Success

Dr Rick Repeta
COL Kathleen Ford
26 Jan 2011

DeWitt Army Community Hospital, Fort Belvoir, VA
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Objectives

- Review EBD Principles and Goals for FBCH
- Discuss how the use of Technology will Re-Design Work Processes and Improve Outcomes
- The Path to Redefined Care
Creating Healing Environments

- Transformational Leadership & Culture
- Infrastructure: Brick and Mortar, Digital & Technology
- Reengineered Clinical & Administrative Processes
- Creating Healing Environments
Evidence Based Design Principles:
Patient and Family Centered Care & Care of the Whole Person

EBD Goals:
- Decrease stress
- Increase social support
- Provide light
- Provide positive distractions
- Improved wayfinding
EBD Goals:

- Greater sense of control
- Large windows for natural light
- Family Zone
- Improve rest and sleep
- Provide positive distractions

EBD Principles:

Patient and Family Centered Care & Care of the Whole Person
EBD Principle:
Improve Healthcare Quality and Safety

EBD Goals:
- Decrease hospital based infections
- Prevent patient falls
- Reduce medication errors
- Reduce noise stress to improve speech intelligibility
But it can get even better….

We are seeking
Transformational
not Incremental Change!
The Next Step: Using Technology to Re-Engineer Processes

- Technology can contribute to transforming the health care environment by
  - Allowing patient to control their environment and actively participate in their care
  - Improving rest and sleep
  - Reducing noise and improving speech intelligibility
  - Increasing care coordination and team effectiveness

- Bridge the gap between physical structure and organization through information and communications infrastructure
Smart Suite Technology in the Fort Belvoir Community Hospital

The Cerner Smart Suite combines innovative technologies, medical device interoperability and workflow solutions to improve patient care and clinician efficiency. The Smart Suite incorporates key elements of the patient and clinician experience to streamline care. The objective of the Smart Suite is to create an environment that:

- Connects medical devices to the EMR
- Allows caregivers to view relevant clinical data from the EMR and medical devices
- Empowers patients and their families by connecting them to their personal health record.

CareAware myStation
Offers interactive health information, education and entertainment to improve the patient and family experience.

CareAware iAware
Provides clinicians a personalized view of all information relevant to patient care by enhancing communication and access to information.

CareAware RoomLink
Electronic signage outside a patient room to communicate appropriate data to clinicians, including falls risk and allergies, as well as whether or not a clinician visit is in-progress.

CareAware AlertLink
Improves patient outcomes by routing alerts to a clinician’s mobile device.

CareAware iBus
Inclusion of Bed Connectivity
CareAware iBus™ is the core component of the CareAware architecture that manages two-way communication between devices and the EMR.

CareAware EPS
A fully integrated, enterprise-wide positioning and real-time location solution that delivers clinical integration and process improvement benefits.
Smart Suite Technology in the Fort Belvoir Community Hospital

- iAware: Clinical Dashboard
- CareAware iBus: Biomedical Device Integration
  - AlertLink for Device Alert/Alarm Routing
- Enterprise Positioning Solution
  - Real Time Location System (RTLS) = Sonitor
- myStation: Interactive Patient System
  - Environmental Control (lights, shades, temp)
- RoomLink: Electronic Room Signage
- Integrated with MHS Legacy EHR systems
  - Essentris (CliniComp)
  - AHLTA (Armed Forces Health Longitudinal Health Application)
  - CHCS (Composite Healthcare System)
Smart Suite Video
Making the Case for Change

- “how well we are cared for by nurses affects our health…” (IOM, 2004)
- Nursing actions are directly related to better patient outcomes (Kahn et al., 1990)
- Less nursing time provided to patients is associated with higher rates of infection, gastrointestinal bleeding, pneumonia, cardiac arrest, and death (Needleman et al., 2002)
- How nursing time is divided (Hendrich et al., 2008)
  - 7.2% time on physical assessment/surveillance
  - 35.3% documentation
  - 17.2% medication administration
  - 20.6% care coordination (communicating with team)
  - Median walking distance in 10 hr shift = 3.0 miles
Poor Communication is Leading Cause of Death

A Joint Commission study found that poor communication was the leading cause of accidental death and serious injury in hospitals.

Source: Joint Commission 2006.
Communicating: Current State

- Page and wait
- Hunt and gather
- Hub and spoke
- Central Nurse Call system
Future State: Direct Communication at the Point of Care

Current Hub and Spoke Communication – leaving the bedside

Direct Wireless Communication

Vocera empowers clinical staff to communicate directly to the right person from the point of care
Vocera Features

- Connects staff members regardless of location
  - Place and receive calls world-wide
- Hands free, lightweight device
- 1:1 model
- Usage
  - By name
  - Role based
  - Action team
## Critical Alerts and Alarms Delivered to Vocera Devices

<table>
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<tr>
<th>System Type</th>
<th>Description</th>
<th>Impact</th>
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<tr>
<td>GE Telligence Nurse Call System</td>
<td>Caregivers can instantly receive call light inquiries and respond back to the room providing the best patient experience possible</td>
<td>Enhance Patient Experience</td>
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<td>Patient Monitoring</td>
<td>Patient monitoring systems provide notification to caregivers of deterioration or change in a patient’s condition.</td>
<td>Improve Nurse Responsiveness</td>
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<tr>
<td>Bed Management</td>
<td>Bed management systems provide notification to care teams to facilitate the timely transport of patients and room cleaning requests</td>
<td>Reduce Length of Stay (LOS)</td>
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Communication Workflow Improvement Example

Lab calls the department secretary to report critical patient lab results to the primary nurse caring for the patient

**Pre Vocera**

- Lab calls ICU to communicate critical lab results
- Unit secretary answers phone, puts lab on hold
- Nurse found and walks to closest department phone
- Lab reports to RN critical H&H on patient with GI bleed
- RN writes critical labs down on piece of paper then looks up MD no.
- RN pages MD to report critical H&H and obtain orders
- Physician calls back and nurse reports critical H&H and receives orders

Time for each step: 0:00 2:00 0:45 0:30 1:30 0:15 2:00

Running time: 0:00 2:00 2:45 3:15 4:45 5:00 7:00

**Post Vocera**

- Lab analyzes critical H&H on pt. then calls "room 303 nurse"
- Nurse answers with Vocera and writes critical H&H values down
- RN calls MD (intensivist) on Vocera and reports H&H and obtains orders

Time for each step: 0:30 0:15 0:30

Running time: 0:00 0:45 1:15

Total time saved by Vocera: 5:45 minutes

Source: Vocera customer research 2009
Producing a More Quiet Healing Environment

Gateway Hospital – Banner Health
7 Hospital System
Gilbert, AZ

Challenge:
Improve patient satisfaction and become a destination hospital by deploying evidence-based design features to reduce noise across inpatient units.

Status Quo

- Peak noise levels average 85 – 90 db(A)
- Patient sleep disruption and annoyance
- Increased staff fatigue and perceived work pressure

Approach

One Vocera badge deployed per 2.75 health system employees with particular emphasis placed on hospitalist utilization to eliminate use of overhead paging.
- 95% of employees with Vocera
- 85,000 monthly badge-badge calls

Vocera Results

- 93% of patients “likely to recommend hospital”; health system average 82%*
- 62% of patients report hospital is quiet at night; health system average 50%*
- Peak noise levels average 30 – 35 db(A)

* Press Ganey

2011 MHS Conference
Other Technologies

- Pneumatic Tube System
  - Lab and Pharm applications to improve patient experience
- Patient Queuing (Q-Flow)
  - Kiosks to start med prep process prior to arriving at window
  - Provide options and enhance convenience
- Live Data Video Integration
IT as a Conduit to the World

InTouch: VisitOR1
Sustainable Transformation

“a rope with 3 strands is hard to break” – Ecclesiastes 4:12

Evidence Based Design

Re-Engineered Processes
Leveraging Technology

Transformational Leadership and Culture
“First we shape our buildings; thereafter, they shape us.” ~ Winston Churchill
The Fort Belvoir Community Hospital

“Where Evidence Based Design meets Patient/Family Centered Care in a Culture of Excellence”