Slide 1

(CMSM System, 2014)

Evaluation of Continuous Multi-Parameter Surveillance Monitoring, a Patient-Wearable Medical Device, on Code Blue/Treat Team Events for Medical-Surgical Floor Patients
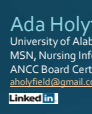
Continuous Multi-Parameter Surveillance Monitoring

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Slide 2

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Slide 3

Objectives:

- Define continuous multi-parameter surveillance monitoring (CMSM)
- Describe how CMSM alerts staff of clinically relevant alarms
- Explain how the CMSM device can improve patient outcomes for medical-surgical floor patients
- Discuss the importance of staff education with CMSM device usage

Slide 4

Problem: Preventing Failure to Rescue

Failure to Rescue is:

Failure to Recognize Patient Deterioration

Leading to Failure to Intervene

Leading to Fatality

(AHRQ, 2016)

Slide 5

Problem: Preventing Failure to Rescue
(continued)

- Studies "have shown deterioration of vital signs 6-12 h prior to a serious clinical event " (Welch et al., 2015).

- "Institute for Healthcare Improvement (IHI) data reveals that between 25-75% of non-DNR hospital deaths in U.S. hospitals occur unmonitored, outside of the ICU" ("Effective Surveillance Monitoring," 2015).

- "health care systems should be able to rapidly identify and treat complications" (AHRQ, 2016).

Slide 6

Solution:

Continuous Multi-Parameter Surveillance Monitoring (CMSM)

- 24/7 non-stop monitoring of:
  - Heart Rate
  - Respirations
  - SpO2
  - Temperature
  - Continuous Non-Invasive Blood Pressure (cNIBP)
    (multiple blood pressure readings per minute)

CMSM Facilitates:

- Early Recognition and Identification of Patient Deterioration
  - To Promote Early Intervention
    - To Decrease Failure to Rescue Events

(Hravnak et al., 2008)

Solution: (continued)

The CMSM Device:

- Is Patient-wearable
- Communicates via Wi-Fi
- Integrates with EHR (Real-Time)
- Has Data Trend Views
- Facilitates Patient Mobility

(CMSM Monitor, 2017)

Solution: (continued)

CMSM Monitoring

- Vital signs viewed via:
  - Remote viewer display (RVD)
  - Patient's CMSM device at bedside
  - EHR
- Alerts staff of clinically relevant alarms via:
  - RVD
  - Mobile, handheld device
  - Patient's CMSM device at bedside (visual)

(CMSM RVD, 2013)

Background

Large, Southeastern, Suburban Hospital

CMSM used on a 50-bed Medical-Surgical Floor

- Side A: 25 beds configured for CMSM usage
- Side B: 25 beds not configured for CMSM usage

Patient Assignment to CMSM Rooms

- Patients randomly assigned by bed control without regard to CMSM or Non-CMSM rooms

CMSM Patients versus Non-CMSM Patients

- Analysis of code blue/treat team events of medical-surgical floor patients to determine if CMSM improve patient outcomes
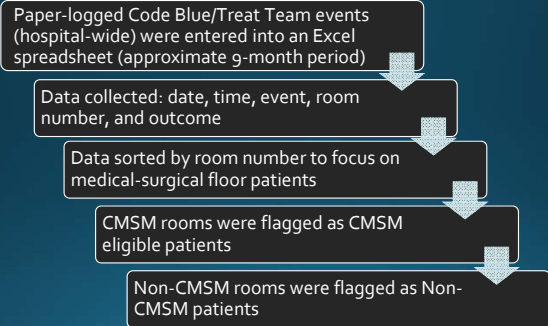
Motivation for this Study

- Contracted with vendor to:
  - Collect metric data, patient surveys, & staff support
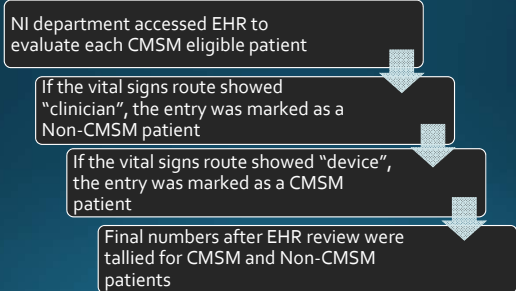- Noticed very few code blue/treat team events for CMSM patients

Prompted the Questions:

- Number of code blue/treat team events on the unit after CMSM implementation?
- Was CMSM making a difference in patient outcomes?
- What were the outcomes?
- What factors contributed to the outcomes?

Methods Used for Data Analysis

Paper-logged Code Blue/Treat Team events (hospital-wide) were entered into an Excel spreadsheet (approximate 9-month period)

Data collected: date, time, event, room number, and outcome

Data sorted by room number to focus on medical-surgical floor patients

CMSM rooms were flagged as CMSM eligible patients

Non-CMSM rooms were flagged as Non-CMSM patients

Methods Used For Data Analysis
(continued)

NI department accessed EHR to evaluate each CMSM eligible patient

If the vital signs route showed "clinician", the entry was marked as a Non-CMSM patient

If the vital signs route showed "device", the entry was marked as a CMSM patient

Final numbers after EHR review were tallied for CMSM and Non-CMSM patients

Results: CMSM vs Non-CMSM Patients

CMSM PATIENTS HAD

DECREASE
- •Overall Code Blue/Treat Team Events
- •Transfers to Higher Level of Care Post an Event

Patients Remaining on the floor after a Treat Team Event

INCREASE

Results: CMSM vs Non-CMSM Patients

FAILURE TO RESCUE

- •Comparable in Both Groups
- •EHR Review Revealed Incorrect CMSM Usage

INCORRECT CMSM USAGE DEFINED AS:

- No cNIBP for > 30 Minutes
  (after 30 minutes of no cNIBP, device must be recalibrated to resume cNIBP)
  - •Possibly attributed to:
    - •Unaddressed CMSM Technical Alerts
    - •Staff Education

Staff CMSM Education Evaluation

Vendor Recommendations

- •Formal instruction with CMSM application practice
- •Competency Testing
- •Workflow Document
- •Clinical Skills Checklist
- •Vendor Instructional Videos
- •Educational Flyers
- •Designate Super Users

Staff CMSM Education Evaluation

Unit Practices

- •Peer to Peer Training
- •Education Flyers Displayed
- •New Hires Given Orientation Binder that included:
  - •Outdated Material
    - • CMSM Policy & Procedure Manual
    - • Clinical Skills Checklist
      - •(was not being utilized by staff)
  - •Dysfunctional Weblink to training videos
- •No Testing/Competency Review

Lessons Learned

Staff Education

- • Educate staff of Data Trends and How to Respond
- • Ensure New Hires Receive Consistent, Structured Training
- • Reinforce Existing Staff Knowledge of CMSM

Communicate Findings with Staff

- • A Dashboard can show CMSM's Impact and Actions
  - • Seeing Results Engages the Staff

Management and Culture

- • Management involvement from the top - down
- • Increase use of super-users on the floor
- • Develop a culture of ownership among staff

Questions/Comments?

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