Benefits of Tele-ICU Management of ICU Boarders in the Emergency Department

Session #309, February 22, 2017

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Advocate Health Care

Disclaimer: The views and opinions expressed in this presentation are those of the author and do not necessarily represent official policy or position of HIMSS.
Speaker Introduction

Michael Ries, MD, MBA, FCCM, FCCP, FACP
Medical Director Adult Critical Care and eICU
Advocate Health Care
Conflict of Interest

Michael Ries, MD, MBA, FCCM, FCCP, FACP

Has no real or apparent conflicts of interest to report.
Learning Objectives

• Recognize that the success of telehealth is less by what technologies you have and more by how you use them

• Describe how tele-ICU can be used to achieve clinical and financial benefits across a large healthcare system

• State how tele-ICU is a facilitator of change management as much as an “intervention”

• Demonstrate how gap analysis affords an opportunity for telehealth to improve evidence-based practice adherence in the ICU

• Recognize that collaboratively employing population management tools between the tele-ICU and ICU can improve patient outcomes and realize financial benefits
The Value of Health IT

Treatment/Clinical
- Facilitates the handover of 125 patients at elntensivist shift change
- Provides real time experienced mentors for new nurse grads in the ICU
- Reduces ED boarder admissions to the ICU by 30%

Electronic Secure Data
- Provides monthly risk-adjusted data to administration and clinicians
- ICUs with best outcomes share best practices with other ICUs

Patient Engagement & Population Management
- Prevented 90 VAPS’s the first year
- Reduced Vent days by 5500/year the first year

Savings
- Decreased cost of VAPs by $2.8M/year
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Advocate Health Care

- 10 hospitals / Five Level One Trauma Centers
- 18 ICUs
- > 6000 physicians / > 100 Intensivists
- Total = 403 beds
  - 304 Critical Care beds (plus three Outreach programs = 99 additional beds)
  - eMobile carts in the ED (N = 7)
  - Critical Access Hospital with eMobile cart
- > 24,000 ICU Admissions in 2014
- Total direct costs for patients treated in the ICU: $200M or 17% of direct costs for inpatients
- eIntensivist and eRN coverage 24/7/365 with board certified critical care physicians
Transformation to Integrated Care

- Population Management and Evidence-Based Standardization
- Patient Centric Focus
- Information Technology
- Collaborative and Integrated Workflows
Benefits/ROI/VOI

- **Clinical**
  - Reduced mortality
  - LOS
  - Reduce adverse events
  - DVT
  - Sepsis Mortality
  - Ventilator days/VAP’s
  - CLABSI’s
  - Reduce Transfusions
  - Improve nutrition
  - Increase mobility

- **Financial**
  - Leapfrog compliant
  - Reduced costs (“avoid harm”, fewer complications, VAPs, ADE’s, sepsis, cost of 24/7 onsite intensivists….)
  - Reduced LOS
  - Increased Capacity
  - Reduce unnecessary tests, xrays
  - Reduce transfers to higher level facility

- **Other**
  - Standardize the delivery of ICU care (workflows and protocols)
  - Leverage scarcity of board-certified intensivists
  - Facilitate Data Reporting
  - Process Flow Variability (Gap) Solutions
  - Handover of patients
    - Avoid sleep deprivation
    - Housestaff training and satisfaction
    - Nurse satisfaction
    - Support of less experienced RN’s
    - Patient/family satisfaction
    - Decrease burnout of clinicians
    - Extend Intensivist and critical care nurse career (most experienced)
What Does Tele-ICU do to Improve Quality?

• Disease Management
  - Acute interventions
  - Patient surveillance for proactive intervention
• “Population Management” – Best Practices
• Culture and Standards
• Support Individual Unit Special Needs – Process flow variability through “gap analysis”
• Education
  - Resident eRounds
  - Nurse Mentoring
“Population Management”

- VAPs prevention
  - DVT prophylaxis
  - CLABSI Prevention
  - Sepsis screen
- Ventilator liberation
  - Multidisciplinary Rounding Tool
  - Sedation Management
  - CPR Auditing
  - eNutrition
  - ePharmacy
  - Palliative Care
  - CAUTI Prevention
  - Ventilator Induced Lung Injury (VILI)
eICU Report Sheet
Multidisciplinary Round Checklist
### MDR Follow Up Form as Used by eICU

**MDR Date:** Friday, May 13, 2016

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Collaboration with Individual Sites on Certain Processes

- Pneumonia Screening
- CPR Audit
- Central Line insertion bundle compliance
- DVT Intensity of Prophylaxis
- Tele-Stroke Program
- Sedation Withdrawal
- Multidisciplinary Rounds
- ED Sepsis Management
- Resident Coverage/Nurse Mentoring
- eNutrition
- **ED Boarders**
Patient Safety Story

• 80 year old patient arrived at the ED with severe shortness of breath and O2 sats in the 70’s. She refused intubation and was placed on BIPAP. An ICU bed was requested, but none were available; there were already 4 other patients in the ED waiting for an ICU bed.

• While the patient was boarding in the ED, she was not tolerating BIPAP and was having runs of V-Tach. The ED physician intubated the patient. The intensivist discussed management of the patient several times with the ED physician.

• The patient continued to have runs of V-Tach for which she was given Mg and Amiodarone.

• Four hours later, the patient was still waiting for an ICU bed.
Patient Safety Story

• The patient continued to receive care in the ED and sixteen hours after the initial bed request, the patient was assigned a bed. On arrival to the MICU, a repeat EKG identified a STEMI, confirmed by troponins.

• The patient was taken to the Cath Lab but had clinically deteriorated and was a poor candidate for a CABG. The patient was returned to the ICU. Care was withdrawn and the patient expired.
Reasons for improvement:

- **MICCU residents work under intensivists who do not see patients before admit to MICCU.**
- **Patient Safety Goal Impacted:**
  - Death
  - Cardiogenic shock
  - Significant myocardial injury
  - Delay in cardiac cath
  - Delay in diagnosing STEMI
  - Pt admitted to MICCU and holding in ED
    - No beds available
    - Patients awaiting bed availability to transfer from MICCU.
    - Lack of available beds due to census.
  - ED physicians cannot write admit orders
  - No repeat labs/EKGs ordered
  - No ICU protocols utilized in ED
  - Patient not seen in ED by attending or MICCU docs/residents
  - Intensivist/Resident from MICCU not involved in patient care in ED
  - MICCU residents work under intensivists who do not see patients before admit to MICCU
  - Too busy with MICCU patients

- **Patient not seen in ED by attending or MICCU docs/residents**

- **Too busy with MICCU patients**

- **Limited treatment options for cardiac condition**
  - Patient hemodynamic unstable

- **Delay in diagnosing STEMI**
  - No admitting orders written on ICU holds in ED.

- **ED physicians cannot write admit orders**
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Corrective Strategy

Collaborate with eICU team to identify potential solutions

- 4 eICU carts
- Create workflow process
- Handover process with ED physician, ED resident, ED RN, Intensivist and eICU MD
- First eICU service in an ED with a continuous workflow process
Demonstration of Partnership
CMC ED eCareMobile Cart Data

Cumulative February 2015 thru February 2016

ECC eMobile Cart Percent by Unit Discharge Location

- ICU, 66%
- Floor, 23%
- Step-Down Unit (SDU), 10%
- Home, 1%
- Other Hospital, 0%
- Death, 1%
Comparison: 2014 ER to ICU LOS vs 2015 eMobile LOS

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<th>2014 ER to ICU LOS</th>
<th>2015 eMobile LOS</th>
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Legend:
- **2014 ER to ICU LOS**
- **2015 eMobile LOS**
ICU vs. MED/Surg Saved Expenditures
February 2015 - March 2016

Other Benefits:
- No additional Patient Safety events for ICU/ED boarders
- Shorter LOS indicates improved throughput
The Value of Health IT

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Questions

1. What are the pros and cons of building vs. buying telemedicine technology. What criteria drive the decision making process?
2. In thinking of your own institution, what is one technology that currently exists that could be leveraged for use “outside the box” in which it is currently used?
3. What strategies would you suggest for engaging others in telemedicine – physicians, nurses, administrators, CFO?
Thank you/Questions

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