Collaboration and Coordination in the MRICU:
An Interprofessional Approach to Implementation of a Daily Review of Sedation Strategy, Liberation Potential and Mobility Plan

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April 2017
28 bed ICU
Two service teams (Red/Blue) that are similar in design admit patients to the service on a rotating basis

Established Interdisciplinary Team

- Nursing
- Medicine (Attending, Fellow, Resident, Intern)
- Advanced Practice Provider
- Physical Therapy
- Occupational Therapy
- Pharmacy
- Respiratory Therapy
VCU Langston Quality Scholars Program

Experiential learning program designed to deliver continuing professional development focused on the science of improvement and leadership skills.

- Teams of physician-nurse dyads (may add other discipline to team)
- Didactic and online modules, embedded leading of a QI experience in the workplace, with improvement coach/advisor
  - Curriculum designed in collaboration by team of education experts in assessment and evaluation, health administration, medicine, nursing, and science of improvement professionals
  - 43.75 CME or CEUs (8 evenings, 1 full day, 12 on-line modules)
  - Less than 1 year in duration

- Content:
  - Science of improvement methods & tools, leadership and theory
  - Coaching by a healthcare science of improvement expert biweekly
  - Note: Support for analysis & data visualization provided by health system data analysts/experts
Implementing the ABCDEF Bundles in Adult ICUs

A. Assess, Prevent & Manage Pain
B. Both SAT & SBT
C. Choice of Analgesia and Sedation
D. Delirium: Assess Prevent and Manage
E. Early Mobility and Exercise
F. Family Engagement and Empowerment

Reference: SCCM: ICULIBERATION.ORG
Both SAT & SBT

- Both Spontaneous Awakening Trials (SAT) and Spontaneous Breathing Trials (SBT), focuses on setting a time(s) each day to stop sedative medications, orient the patient, assess awakefulness, and conduct an SBT in an effort to liberate the patient from the ventilator.

- Synergistic use of SAT/SBT has shown in studies to decrease mechanical ventilation days, hospital lengths of stay and delirium.
CHOICE OF ANALGESIA AND SEDATION

• ICU sedation can reduce anxiety and agitation for patients, facilitate mechanical ventilation, and decrease traumatic memories.

• However, deep sedation has been found to reduce six-month survival and increase hospital mortality, ICU lengths of stay, ventilator duration and physiologic stress.

• Evidenced based guidelines for sedation: Pain, Agitation and Delirium (SCCM 2013)
CHOICE OF ANALGESIA AND SEDATION

The Richmond Agitation–Sedation Scale (RASS)

<table>
<thead>
<tr>
<th>Score</th>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>Overtly combative or violent; immediate danger to staff</td>
</tr>
<tr>
<td>+3</td>
<td>Very agitated</td>
<td>Pulls on or removes tube(s) or catheter(s) or has aggressive behavior toward staff</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
<td>Frequent nonpurposeful movement or patient–ventilator dyssynchrony</td>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious or apprehensive but movements not aggressive or vigorous</td>
</tr>
<tr>
<td>0</td>
<td>Alert and calm</td>
<td>Spontaneously pays attention to caregiver</td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Not fully alert, but has sustained (more than 10 seconds) awakening, with eye contact, to voice</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation</td>
<td>Briefly (less than 10 seconds) awakens with eye contact to voice</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation</td>
<td>Any movement (but no eye contact) to voice</td>
</tr>
<tr>
<td>-4</td>
<td>Deep sedation</td>
<td>No response to voice, but any movement to physical stimulation</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
<td>No response to voice or physical stimulation</td>
</tr>
</tbody>
</table>
EARLY MOBILITY AND EXERCISE

- ICU-acquired weakness – Impairs ventilator weaning and functional mobility

Patients with ICU-acquired weakness require approximately 20 additional ventilator days and have increased mortality

- Goal to identifying strategies for successful implementation of early mobilization programs

- Safety screens prior to mobilizing patients

- Mobility plan should be discussed every day during interdisciplinary rounds

Reference: SCCM: ICULIBERATION.ORG

VCUHealth

APRIL 2017
Identifying The Problem
Building The Team

MD- Attending
MD- Fellow
Nurse Practitioner
RN- Clinical Coordinator
RN- Bedside
Physical Therapist
Occupational Therapist
Respiratory Therapist
Pharmacist
The Aim

By October 2016, achieve daily interprofessional communication and coordination of care relevant to patient sedation level, liberation potential and mobility plan for all MRICU Blue team CCH4 intubated or trached patients as evidenced by increased compliance with SAT/SBT, adherence to RASS goal, and discussion and implementation of a daily mobility plan.
Daily Interprofessional Huddle
8 am M-F

Scripted; 2 min or less per patient

Small tests of change

Discussed plan of care for Sedation, Liberation potential and Mobility
The Solution
Bundle Huddle

July 12 - October 31, 2016

53 patients
269 Huddles

Drill Down Data Includes:
• 14 patients
• 50 Huddles
Outcomes of Bundle Huddle

1. Increased time at Richmond Agitation Sedation Scale (RASS) goal
2. Decreased benzodiazepine use
3. Increased compliance with Spontaneous Awakening Trial (SAT)
4. Increased compliance with Spontaneous Breathing Trial (SBT)
5. 99% of all patients had a mobility plan
Average Observed Inpatient Length of Stay for MRICU Admissions by Team

Pre-intervention
- Blue: 11.01
- Red: 9.95

Post Intervention
- Blue: 7.75
- Red: 9.22
Observed: Expected Inpatient Length of Stay by DRG for MRICU Admissions by Team

Post Intervention

1.17

1.23

Blue

Red
Average ICU Days for MRICU Admissions by Team

**Pre-intervention**
- Blue: 4.96
- Red: 3.76

**Post Intervention**
- Blue: 3.14
- Red: 4.28

VCUHealth
LOS difference  1.14 days
Blue team admissions  183
ICU days saved during intervention  208.62
Average cost of ICU day  $3184 *(Dasta, McLaughlin, Mody, Piech 2005)
Total cost savings of intervention  $664,246
Annual expected LOS difference between teams  711.64 days
Potential Yearly Savings  $2.26 Million

### Average MRICU Accommodation Charges Per Admission

<table>
<thead>
<tr>
<th></th>
<th>Non-intervention</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>N= 62 $28,312</td>
<td>N= 65 $31,330</td>
</tr>
<tr>
<td>After</td>
<td>N= 184 $33,316</td>
<td>N= 244 $29,019</td>
</tr>
</tbody>
</table>

### Average Respiratory Therapy Charges Per Admission

<table>
<thead>
<tr>
<th></th>
<th>Non-intervention</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>N= 62 $5,748</td>
<td>N= 65 $13,946</td>
</tr>
<tr>
<td>After</td>
<td>N= 184 $12,736</td>
<td>N= 244 $12,191</td>
</tr>
<tr>
<td>LQS PROGRAM -10 Months</td>
<td></td>
<td></td>
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<tr>
<td>------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Faculty (including fringe benefits)</td>
<td>$ 49,500</td>
<td></td>
</tr>
<tr>
<td>Center Staff</td>
<td>$ 13,500</td>
<td></td>
</tr>
<tr>
<td>Coach</td>
<td>$ 18,094</td>
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<tr>
<td>CME Credits</td>
<td>$ 2,520</td>
<td></td>
</tr>
<tr>
<td>DiSC (26)</td>
<td>$ 1,280</td>
<td></td>
</tr>
<tr>
<td>Student Access IHI Online (50)</td>
<td>$ 3,600</td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>$ 1,500</td>
<td></td>
</tr>
<tr>
<td>Outside Speakers</td>
<td>$ 5,000</td>
<td></td>
</tr>
<tr>
<td>Educational Supplies (notebooks/pens etc)</td>
<td>$ 500</td>
<td></td>
</tr>
<tr>
<td>Speakers Travel (1 night hotel &amp; flight )</td>
<td>$ 2,000</td>
<td></td>
</tr>
<tr>
<td>8 teams/16 scholars</td>
<td>$97,494</td>
<td></td>
</tr>
<tr>
<td>Price Per Dyad</td>
<td>$12,187</td>
<td></td>
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</table>
## Estimated Cost Per Huddle

20 mins/ huddle

<table>
<thead>
<tr>
<th>Role</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Attending</td>
<td>$21.15</td>
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<tr>
<td>Fellow</td>
<td>$6.51</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>$16.83</td>
</tr>
<tr>
<td>RN- Clinical Coordinator</td>
<td>$11.87</td>
</tr>
<tr>
<td>RN- Bedside</td>
<td>$9.15</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>$14.12</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>$14.12</td>
</tr>
<tr>
<td>Respiratory Therapy</td>
<td>$8.40</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>$18.35</td>
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</tbody>
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### Huddle Total Cost- Full Attendance

$120.50
Value = (Outcomes + Quality)/Cost

**Outcomes**
- Decreased Length Of Stay
- Patient Centered Outcomes (anecdotal evidence of improved patient/family satisfaction)
- Decreased Health Care Cost/Charges

**Quality**
- Staff Satisfaction
- Interprofessional Collaboration
- Improved Communication
- Science of Improvement Skills and Knowledge

**Cost**
- Cost Program
- Cost of Huddle Time
Conclusions:

- Our project makes a Case for High Value Continuing Professional Development
- The Langston Center provided the tools for a successful QI project
- When programs similar to The Langston Quality Scholars are implemented, this strategy can reduce health care costs and can be a successful return on investment
References


5. Iculiberation.org