Reducing Delirium in the ICU

Distinguished Achievement in Patient Safety Innovation

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INTRODUCTION
What is Delirium?

• Delirium (acute brain dysfunction)
  – potentially life threatening disturbance in brain function that frequently occurs in critically ill patients

• When someone becomes delirious, it means:
  – Cannot think clearly
  – Trouble paying attention
  – Not aware of what is going on around them
  – May experience auditory and/or visual hallucinations
Delirium Statistics

- Most frequent form of organ dysfunction experienced by critically ill patients
- Remains unrecognized in 66-84% of patients
- 8 out of 10 ventilated patients experience delirium
- 10% remain delirious at time of hospital discharge
- Delirium leads to three-fold increase of death in ICU patients
Workgroup Leads

- Terry Moody, Director of Acute Care
- Dr. Jason Birnbaum, Medical Director of ICU
- Suzanne McHugh, Clinical Nurse Manager of ICU
- Kathleen Amrein, ICU Charge Nurse
- Jessica Rossi, ICU Physical Therapist
- Tennile Ramsay, Patient Safety Officer
- Sherry Thorpe, MSN Student
- Jessica Dowches-Wheeler, IMPRV Program Manager
Project Team

- Judy Billings, ICU Nurse
- Alva Heilmann, ICU Nurse
- Cindy Graziosi, Clinical Nurse Manager (HMH)
- Donna Horney, ICU Nurse
- Jennifer King, Manager of Respiratory Therapy
- Christina Savage, ICU CRNP
- Meg Schnitzlein, ICU Nurse Educator
- Sue Froehlich, ICU Critical Care Tech
- Jennifer Bui, ICU Clinical Pharmacist
PROBLEM STATEMENT
Prior to July 2014, delirium was inconsistently recognized and assessed in the ICU at UM Upper Chesapeake Medical Center.

In 2014, there were 779 total ICU cases with an average length of stay (LOS) of 68 hours.

7% of patients had a recorded delirium diagnosis with average LOS of 146 hours.
Project Goals

• Increase team member engagement and buy-in to the process of reducing delirium

• Decrease in delirium diagnoses

• Decrease in patient length of hospital stay

• Decrease in cost

• Decrease in self-extubations
PROCESS & SOLUTION
Methodology

**IMPRESS**

- Identify
- Measure
- Process
- Re-Think
- Validate

**IMPRESS**

**IMPrOve**
is a business process improvement and engagement strategy designed to improve the patient experience and reduce operational waste within Upper Chesapeake Health.

**IMPrOve**
is founded upon UCH’s Culture of Excellence and leverages industry leading techniques and tools from PDCA, Lean, Six Sigma, Business Process Reengineering, Project and Change Management disciplines.
Identify Phase

IDENTIFY

To clearly define the problem state and develop a solid business justification for executive and business sponsorship.
# IMPRV Toolkit

## Project Title: Reducing Delirium in the ICU

### Process Opportunity

Delirium is a disturbance of consciousness marked by acute onset of fluctuating course of inattention, change in cognition or a perceptual disturbance and impaired ability to receive, process, store, or recall information. In hospitals 20-80 percent of patients develop delirium but may not be recognized by clinicians. In the ICU delirium is a predictor of increased mortality, length of stay, time on vent, costs, re-intubation, long-term cognitive impairment and discharge to long-term care facilities. This costs about $38-152 billion per year and contributes to 25-30% of hospital mortality. The Confusion Assessment Method (CAM) is a bedside assessment tool for delirium. Opportunities exist in the ICUs at University of Maryland Upper Chesapeake Medical Center and Harford Memorial Hospitals including Team Member buy in with CAM process, understanding the importance of CAM and variability in CAM tool utilization.

### Scope Definition

- In – Nursing interventions that reduce delirium; Increase mobilization; quiet time (12-3am); Increase ADL activity; medication titration for sedation; Using WII
- Out – Medication changes; rehab interventions; weaning trials; other providers and bedside nursing

### Objectives & Benefits

- Decrease patient mortality; adverse outcomes; hospital stay; cost; falls and self extubation
- Increase team member buy in process to reduce delirium
- Increase Team member understanding of importance of CAM
- Reduce variability in CAM tool utilization

### Constraints & Dependencies

- FTE
- Team member engagement
- Time
- Limitations of current EMR system

### Key Milestones/Dates

<table>
<thead>
<tr>
<th>BPI Phases/Activities</th>
<th>Status</th>
<th>Project Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Improvement charter</td>
<td>Complete</td>
<td>*Executive Sponsor: Terrence Moody</td>
</tr>
<tr>
<td>SIPOC</td>
<td>Complete</td>
<td>*Provider Sponsor: Jason Birnbaum MD</td>
</tr>
<tr>
<td>Process Flowchart</td>
<td>Complete</td>
<td>*Process Owner: Suzanne McHugh</td>
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<tr>
<td>5 whys analysis</td>
<td>Complete</td>
<td>*Project Facilitator(s): Tennille Ramsay, Sherry Thorpe, Jessica Dowches-Wheeler</td>
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<tr>
<td>Future state VSM</td>
<td>Complete</td>
<td>*Project Team: Kathy Amrein, Judy Billing, Alva Heilman, Cindy Graziosi, Donna Horney, Jennifer King, Jessica Rossi, Christina Savage, Meg Schnitzlein</td>
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<tr>
<td>Implementation plan</td>
<td>Complete</td>
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<tr>
<td>Visual story board</td>
<td>Pending</td>
<td></td>
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<tr>
<td>Internal Audit</td>
<td>TBD</td>
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</table>

**Every Patient, Every Encounter, Every Day**
## SIPOC Diagram (Process Map)

**Process Name:** Reducing Delirium in the ICU

<table>
<thead>
<tr>
<th><strong>S</strong> Suppliers</th>
<th><strong>I</strong> Inputs</th>
<th><strong>P</strong> Process</th>
<th><strong>O</strong> Outputs</th>
<th><strong>C</strong> Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sending Unit</td>
<td>Verbal/ written report</td>
<td>1 Obtain report from ED, PACU, or Unit</td>
<td>Patient information/ Knowledge/ Room Prep</td>
<td>ICU</td>
</tr>
<tr>
<td>Sending Unit</td>
<td>Patient</td>
<td>2 Pt admitted</td>
<td>Patient</td>
<td>ICU</td>
</tr>
<tr>
<td>RN</td>
<td>Admission/ Assessment, screen &amp; CAM tool sheet</td>
<td>3 Initial Assessment( CAM included)</td>
<td>Information</td>
<td>Care Team, Patient, family</td>
</tr>
<tr>
<td>RN/ PCT</td>
<td>Packet with delirium brochure, Admission</td>
<td>4 Invite Family back to unit</td>
<td>Information</td>
<td>Patient/Family</td>
</tr>
<tr>
<td>Provider</td>
<td>Chart and EMR</td>
<td>5 Patient Orders</td>
<td>Information/Plan of care</td>
<td>RN, Pharmacy, ancillary</td>
</tr>
<tr>
<td>Respiratory Therapist</td>
<td>Respiratory Assessment/ Intervention screens</td>
<td>6 Respiratory assessment</td>
<td>Information/Plan of Care</td>
<td>Care team &amp; Patient</td>
</tr>
<tr>
<td>Provider</td>
<td>Test</td>
<td>7 Ancillary testing for patient</td>
<td>results</td>
<td>Care team &amp; Patient</td>
</tr>
<tr>
<td>Care Team</td>
<td>Plan of Care</td>
<td>8 Care plan implementation</td>
<td>Interventions</td>
<td>Patient/ Family</td>
</tr>
<tr>
<td>Care Team</td>
<td>Ongoing assessments, interdisciplinary rounds</td>
<td>9 Patient monitoring</td>
<td>Plan of Care</td>
<td>Care team &amp; Patient / Family</td>
</tr>
<tr>
<td>Care Team</td>
<td>Ongoing assessments, interdisciplinary rounds</td>
<td>10 Patient reassessed</td>
<td>Plan of Care</td>
<td>Care team &amp; Patient / Family</td>
</tr>
<tr>
<td>RN</td>
<td>Patient, RASS &amp; CAM tools</td>
<td>11 CAM Positive</td>
<td>Information</td>
<td>Care team &amp; Patient / Family</td>
</tr>
<tr>
<td>Care Team</td>
<td>Ongoing assessments, interdisciplinary rounds</td>
<td>12 re-evaluation of medications/ Interventions?</td>
<td>Interventions/ Plan of Care</td>
<td>Care team &amp; Patient / Family</td>
</tr>
<tr>
<td>Care Team</td>
<td>report/ Discharge process, screen and information</td>
<td>13 Transfer/ Discharge</td>
<td>Patient leaves</td>
<td>Patient/ Family</td>
</tr>
</tbody>
</table>
Measure Phase

**MEASURE**

To thoroughly understand the current state of the process and collect sound data on process performance.
Decreasing Delirium in the ICU

**Provider**
- Call from OR, ED or Provider/RRT call
- Patient Assessment
- Admission treatment orders
- Transfer/admit to ICU

**Nursing**
- Notified of Admission
- Room Preparation
- Review H&P, lab work, prior hospitalization
- Vitals, height/weight and check order
- Initiate Standard of care
- Admission Assessment
- Review Plan of care
- Initiate Standard of care
- Admission Assessment
- Review Plan of care

**Respiratory**
- Respiratory notified of admission
- Assessment
- Order Sets & Vent management, intubations
- Weaning protocol

**Rehab**
- OT consulted as needed
- PT consulted as needed
- PT assessment and determines interventions
- Daily round with Care team

**Speech Therapy**
- Speech Therapy Consult
- Speaking valve Swallowing studies, and other

**CAM Assessment**
- Positive
  - Discuss in rounds
  - Address interventions
  - Update White board
  - Q12 hour assessments and frequent focused
- Negative
  - CAM assessment at 0500 & 1700

**RASS**
- Initiate interventions

**Rounding every 12 hours**

**Orders to correspond with plan of care**

**Consult**
- CAM assessment at 0500 & 1700

**Address interventions**

**Update White board**

**Q12 hour assessments and frequent focused**

**Write on white board; assist with mobility**

**Assist with procedures**

**Begin Patient/ Family education**

**Assist with procedures**

**Patient vitals, weight, glucose, labs, other duties as**

**Write on white board; assist with mobility**

**Assist with procedures**

**Negative**

**Positive**

**Daily round with Care team**
To assess and analyze process data for root cause identification of waste and inefficiency.
## 5 Whys Analysis

### IMPRV 5 Whys Analysis
**Process Name:** Reducing Delirium in the ICU

<table>
<thead>
<tr>
<th>Why #1 – Problem</th>
<th>Lack of provider support</th>
<th>No interventions for Positive CAM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Why #2 – Symptom</strong></td>
<td>Disconnect among provider groups</td>
<td>Patients require less and currently not addressing positive CAMs</td>
</tr>
<tr>
<td><strong>Why #3 – Symptom</strong></td>
<td>Lack of prioritization</td>
<td>Not in standard of care or perceived as issue</td>
</tr>
<tr>
<td><strong>Why #4 – Symptom</strong></td>
<td>Not a part of the rounding discussion</td>
<td>Knowledge deficit of importance of CAM interventions and comfort level with interventions</td>
</tr>
</tbody>
</table>

| Why #5 – Root Cause | Lack of provider championship |  |

| Solution | Consistent initiation and discussion of CAM in rounds by RN | Add to standard of care, Education and accountability among care team and family (Hands on training) |
Re-Think Phase

RE-THINK

To architect a more efficient process and draft full scale implementation plan of improvement solutions.
Solutions

• Add delirium interventions to plan of care

• Change RASS (Richmond Agitation Assessment Scale) assessment time

• Add RASS and full CAM assessment to the same screen in Meditech V6
### Nursing Assessment

#### Interventions
- Confusion Assessment Method ICU 0500&1700

#### Assess ICU RASS -3 or Greater
- **Unable to Assess**
  - RASS -4/-5 Only
  - Reassessment is Required if RASS changes during shift

#### Assessments
- **Feature 1**
  - **Acute Mental Status Fluctuation**
    - Acute Change from Baseline
    - Fluctuated in Past 24 Hrs
    - None

- **Feature 2**
  - **Inattention**
    - More than 2 Errors
    - Tell Patient to Squeeze Hand when Hearing the Letter "A"

- **Feature 3**
  - **Level of Consciousness**
    - RASS is not 0

- **Feature 4**
  - **Disorganized Thinking**
    - >1 Error to Questions and Commands
    - View Protocol for Set A & B Questions and Commands

#### Delirium Assessment
- **Delirium Present**
  - If Positive document Critical Results in Critical Value Screen and Notify Provider.

- **Provider Notified**
  - Yes
  - No
  - N/A

#### Interventions
- **Nursing Intervention**
  - Ambulate
  - Assess & Manage Pain
  - Encourage Family Interaction
  - Glasses/Hearing Aid
  - Minimize Noise
  - Reorient w/ Each Contact
  - Uninterrupted Sleep
Delirium is different from dementia

DELIRIUM
- Delirium comes on quickly, in hours or days. Signs of delirium can change from one day to the next.
- Delirium can make memory and thinking problems worse.
- Delirium usually clears up after a few days or even a week.

DEMENTIA
- Usually dementia is a permanent condition.
- Dementia is a disturbance of thinking. It comes on over months or even years.
- Patients with dementia are more likely to develop delirium.

How you can help
- Speak softly and use simple words or phrases
- Remind the patient of the day and date.
- Talk about family and friends.
- Bring glasses, hearing aids.
- Decorate the room with calendars, posters, or family pictures. These familiar items might be reminders of home.
- Provide the patient with favorite music or TV shows.
- If your loved one has delirium, we might ask you to sit and help calm them.

Does delirium cause thinking problems after a patient leaves the hospital?
- Research shows that patients who develop delirium might have dementia-like thinking problems that can last for months.
- At this time we cannot predict who might develop dementia-like thinking problems.

In the Intensive Care Unit
Delirium

A guide for families and patients

ICU Delirium &
Cognitive Impairment
Study Group

www.ICUdelirium.org
for questions, please email
delirium@vanderbilt.edu

www.ICUdelirium.org

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What is delirium?
The word “delirium” is used to describe a severe state of confusion. People with delirium
- cannot think clearly
- have trouble paying attention
- have a hard time understanding what is going on around them
- may see or hear things that are not there. These things seem very real to them.

Delirium is common
- About 2 out of 3 patients in ICUs get delirium.
- Seven out of 10 patients get delirium while they are on a breathing machine or soon after.

Causes of delirium
- Experts think delirium is caused by a change in the way the brain is working. This can be caused by:
  - less oxygen to the brain
  - the brain’s inability to use oxygen
  - chemical changes in the brain
  - certain medicines
  - infections
  - severe pain
  - medical illnesses
  - alcohol, sedatives, or pain killers
  - withdrawal from alcohol, nicotine

People most likely to get delirium
- People who
  - have dementia
  - are advanced in age
  - have surgery, especially hip or heart
  - have depression
  - take certain high-risk medicines
  - have poor eyesight or hearing
  - have an infection or sepsis
  - have heart failure

Signs of delirium
- Your family member may
  - appear agitated or even quiet
  - be confused
  - be aggressive
  - use inappropriate words
  - not be able to pay attention or follow directions
  - be unsure about where they are
  - be unsure about the time of day
  - see things that are not there
  - act different from usual
  - have changes in sleeping habits
  - have emotional changes
  - have movements that are not normal, like tremors or picking at clothes
  - have memory problems
• CAM score added to communication board in patient room
Solutions

• Patients are reoriented with each interaction of a multidisciplinary team member

• Assistive devices are employed to facilitate communication

• Family interaction is greatly encouraged
  – open visiting hours
  – participation in daily Interdisciplinary Rounds
Solutions

• Family members are provided education about delirium

• Staff members question family members about patients’ preferences

• Shades are open during the day and lights are dimmed at night
• Uninterrupted sleep is encouraged
  – Patients are not disturbed from 12 a.m. to 5 a.m.
  – Routine tests, treatments, and baths are avoided during those hours

• A calm and quiet environment is maintained
Solutions

• Patients reliant on ventilator support
  – Daily sedation weaning
  – Spontaneous breathing trial
  – Shift to shift and provider to provider results of trials are conveyed

• Early mobility is initiated ASAP

• Daily activity goals are determined
  – patient, their family, and the care team
• Charge nurses round on patients
  – ensure activity goals are met

• Use of restraints/restrictive medical devices
  – evaluated hourly
  – discontinued as soon as feasible.

• ICU point-of-care pharmacist reviews medication lists daily
Solutions

• CAM status
  – Interdisciplinary Rounds
  – nurse to nurse bedside report

• CAM positive status is a critical value

• Interventions to prevent or combat delirium are documented at least every 12 hours in the nursing computerized flowsheet
VALIDATE

To complete solution implementation, ensure process accuracy, and provide comprehensive training for improvement, sustainment and ownership.
MEASURABLE OUTCOMES
Measurable Outcomes

• After the implementation of the above standardized solutions

  – Number of delirium cases dropped to 5% (n=40)

  – LOS reduced by 55% for delirium patients (dropped to 80 hours)

  – 50% reduction in self-extubations (n=18 in first 6 months of 2014; n=17 in 12 months post implementation)
Measurable Outcomes

• On average, the approximate cost per day for an ICU patient is $8,730 (Dasta, et al. 2005)

• The decrease in LOS of **2.75 days** for the delirium population achieves a cost savings of over $24,000 per patient, or over **$960,000** for the year (n=40, ICU only)
SUSTAINABILITY
Sustainability

• The team developed standard interventions and protocols

• All interventions were added to the nursing worklist to ensure review and action

• The ICU care team has fully adopted the standard interventions and protocols and taken ownership in reducing delirium

• Delirium is monitored daily through the ICU’s IMPRV DASH (Daily Actions for Success Huddle)
ROLE OF COLLABORATION AND LEADERSHIP
The workgroup team consisted of:

- Bedside critical care nurses
- Critical care techs
- Providers (MD, CRNP)
- Respiratory Therapy
- Rehabilitation
- Pharmacy
- Clinical Nurse Manager
- Director of Nursing
- Performance Improvement
Leadership

• Partnership between performance improvement and nursing to improve patient safety and patient outcomes

• Physician sponsorship from the Medical Director of the Intensive Care Unit and Chairman of the Department of Medicine

• Executive sponsorship by the Director of Acute Care Nursing
INNOVATION
Innovation

- Daily interdisciplinary rounds in the unit, including a unit-based physical therapist, pharmacist and family
- Family presence policy of 24 hour visiting
- Five hours of uninterrupted rest
- Patient communication board with CAM score
- Collaborative team problem-solving approach using IMPRV
CONCLUSION & QUESTIONS
Contact Information

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