Use of Improvement Methodology to Introduce a Sedation Hold (in ventilated patients) Within 4 Hours of Admission to ICU

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Sedation in ICU – Why the Need for Change

- Sedatives cause patient harm and are strongly linked with delirium
- Risk of prolonged mechanical ventilation
- ICU length of stay
- Hospital mortality (Delaney et al, 2018)
Background

Pain, Agitation and Delirium
Scoring Tools
By assessing, treating and preventing all of the above will:
↓ mechanical ventilation duration
↓ ICU and hospital length of stay
↑ ICU throughput (less bed shortages)

Pain, Agitation, and Delirium Are Interrelated

The Values Management Approach

The Values Management approach outlined a plan initially tested by NHS Highland and IHI, which aims to improve both patient and relative outcomes and experience whilst eliminating waste and reduction in efficiency savings.
University Hospital Crosshouse ICU

Introduction of a Values Management Approach

**Aim / Outcome**

By introducing a Values Management Approach within ICU Crosshouse we aim to improve patient and relatives care and experience and eliminate waste and reduce costs by Dec 2019.

**Primary Drivers**

<table>
<thead>
<tr>
<th>Service</th>
<th>Quality: Improving patient outcomes and experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure safety and reliability in care provided</td>
<td>Improved shift handover Improved ICU documentation</td>
</tr>
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</table>

**Secondary Drivers**

<table>
<thead>
<tr>
<th>People</th>
<th>Finance</th>
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<tbody>
<tr>
<td>Improving staff wellbeing</td>
<td>Ensure value and cost efficiency by addressing waste reduction</td>
</tr>
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</table>

**Change Ideas for Testing**

<table>
<thead>
<tr>
<th>Test new handover</th>
<th>Review documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced sedation and LOS</td>
<td>Improved Delirium Management Early Mobilisation Improved Discharge process</td>
</tr>
<tr>
<td>Flexible working conditions Staff movement guidance What matters to us</td>
<td>Stock Control Reducing variation in lab samples</td>
</tr>
</tbody>
</table>

- Meaningful activities
- EM Guideline
- Flexible working hours
- Guideline for staff movement
- Visual management system
- Guideline for routine blood sampling
Quality
Sedation Hold within 4 hours of Admission

Invested interest
Project already in progress
Positive patient outcomes
Continued improvement work
Aim
Introduce a Sedation Hold on eligible ventilated patients within 4 hours of admission to ICU and achieve 90% compliance by December 2019

How We Did It

Primary Driver
- Improved sedation practice and reduce incidence of Delirium
- Reduce ventilator days and ICU length of stay
- Improve patient and family experience

Secondary Driver
- Roll out a sedation hold guideline within 4 hours of admission to ICU
- Ensure all patients have CAM-ICU measured
- Liase with Pharmacy
- Utilise data from Ward watcher to identify ventilator days and ICU length of stay

Specific ideas to test or change
- Staff education/LNA
- Development of a guideline with identified exclusions
- Introduction of back of bed whiteboards
- Roll out on 1 admission first (PDSA Methodology)
- Liase with Pharmacy re propofol usage
- Audit – use of ward watcher

Patient specific goal setting
- Improved communication between patient and family
- Earlier mobilisation
Measurement Plan

Process Measures:
• % compliance with 4 hour sedation hold on all eligible ventilated patients
• % of patients who required to be restarted on propofol

Outcome Measures:
• To reduce delirium in our patients and reduction in ventilator days and ICU length of stay

Balancing Measure:
• Reduction in Propofol Usage
Phase 1&2 - Education and Awareness Sessions

- Visit to Glasgow Royal Infirmary (Feb 2018)
- Presentation at last ICU Study Day (March 2018)
- Bed side information – formation of admission Crib Sheet
- Design of Whiteboard
# CROSSHOUSE ICU ADMISSION CRIB SHEET

*Use as a reference when admitting a patient and completing white board*

<table>
<thead>
<tr>
<th>Standard Care</th>
<th>Specific Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure height</td>
<td><strong>Septic Shock</strong></td>
</tr>
<tr>
<td>Record tidal volume on whiteboard as per IBW</td>
<td>Fluid challenge</td>
</tr>
<tr>
<td>Record targets on white board</td>
<td>CVC</td>
</tr>
<tr>
<td></td>
<td>Blood cultures</td>
</tr>
<tr>
<td>Document sedation hold target time</td>
<td>Abx – check time last given</td>
</tr>
<tr>
<td>(If no exclusions – see overleaf)</td>
<td>Prescribe vasopressors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Samples &amp; Investigations</th>
<th>Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinalysis +/- pregnancy test</td>
<td>Atypical screen and sticker</td>
</tr>
<tr>
<td>Bloods (BBV if RRT predicted)</td>
<td>Blood cultures</td>
</tr>
<tr>
<td>ECG</td>
<td>Sputum culture</td>
</tr>
<tr>
<td>CXR</td>
<td></td>
</tr>
<tr>
<td>MRSA</td>
<td></td>
</tr>
<tr>
<td>Sputum and urine culture</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post Cardiac Arrest</th>
<th>Head Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply criticool – Aim 36.0 °C</td>
<td>Pupils</td>
</tr>
<tr>
<td>Aim pCO2 4.5-5.5</td>
<td>Control pCO2 4.5-5kPa</td>
</tr>
<tr>
<td>Aim MAP &gt;80</td>
<td>Tape ETT</td>
</tr>
<tr>
<td></td>
<td>Head-up 30°</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miscellaneous</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Group and save – sample sent?</td>
<td></td>
</tr>
<tr>
<td>Blood available? Location?</td>
<td></td>
</tr>
<tr>
<td>Update family</td>
<td></td>
</tr>
</tbody>
</table>
Sedation Hold – *Potential* Exclusions

Therapeutic temperature management
Status epilepticus
Difficult ventilation
  – Paralysis
  – Prone Position
Head injury / ICP management
Airway concerns
Business\Acuity of the Unit
Use of PDSA for testing change

**Aim**
Roll out of Sedation Hold

Implement sedation hold

Cycle 1: Test sedation hold on 1 admission

Cycle 2: Review feedback and amend, retest using different pt

Cycle 3: Review, amend using different nurse

Cycle 4: Roll out on all eligible ventilated patients
Baseline Data

% compliance with 4 hour Sedation Hold

Percentage of Sedation Hold done within 4 Hours (of those eligible) : ICU UHC

High acuity
Number of pts restarted on Propofol

Total Number of patients required to be re-started on Propofol following sedation break

- Blue line: Total No with sedation hold done within 4 hours
- Red line: Total No required to be restarted on Propofol
Results so far....

- 90.4% compliance with the 4hr sedation hold in all eligible ventilated patients since roll out in April 2018
- Only 44% of those patients required to be restarted on propofol
- Potential cost benefit - £360 per year
Results so far......

• Difficulty capturing ventilation time as Ward Watcher works in days rather than hours
• Lack of Care View
• GRI reported a drop in 1 whole ventilator day once there 4 hour sedation hold was embedded in practice
• Monitoring CAM-ICU daily to detect presence of delirium
Challenges Along the Way.....

- Staff opinion
- Challenges of a busy ICU
- Is 4 hours long enough?
- Increased Improvement work – ‘big ask of staff’
- Valid exclusions
Staff Opinion

- LNA carried out
  - looked at staff perception/opinion
  - 80% compliance
Do you think the 4 hour sedation hold is effective?
Are we extubating our patients quicker?

- YES
- NO
- UNSURE
Are we using less Propofol?

- **YES**
- **NO**
- **UNSURE**
Do you see less delirium in our patients?

- YES
- NO
- UNSURE
Staff Reservations

“Will the unit be safe?”

Will everyone buy in to it?

“patient’s too agitated and unmanageable”

“too many patients awake at the same time”

“will 4 hours be long enough”

“4 hour hold felt to be most effective in post-op and over dose pts”
Next steps ......

• Link with CAM ICU project
• Continue with data collection
• Occupied bed days, ventilator days and length of ventilation
• CAM-ICU data
“Change is possible if we have the desire and commitment to make it happen.”

Mohandas Gandhi