IMPLEMENTATION OF AN OUTCOME MEASURE INTO ICU

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Wellington Hospital
Capital & Coast DHB
OBJECTIVES

- Why needed an outcome measure?
- What is the outcome measure?
- How we implemented it
- What changes we made
- Re-audit
- Staff survey
- Patient view
Why did we need an outcome measure?
Feasibility and inter-rater reliability of the ICU Mobility Scale

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Why CPAx?

(Chelsea Critical Care Physical Assessment Tool)
<table>
<thead>
<tr>
<th>Aspect of Physicality</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Function</td>
<td>Complete ventilator dependence. Mandatory breaths only. May be fully sedated/paralysed.</td>
<td>Ventilator dependence. Mandatory breaths with some spontaneous effort.</td>
<td>Spontaneously breathing with continuous invasive or non-invasive ventilatory support.</td>
<td>Spontaneously breathing with intermittent invasive or non-invasive ventilatory support or continuous high flow oxygen (&gt;15 litres).</td>
<td>Receiving standard oxygen therapy (&lt;15 litres).</td>
<td>Self-ventilating with no oxygen therapy.</td>
</tr>
<tr>
<td>Cough</td>
<td>Absent cough, may be fully sedated or paralysed.</td>
<td>Cough stimulated on deep suctioning only.</td>
<td>Weak ineffective voluntary cough, unable to clear independently e.g. requires deep suction.</td>
<td>Weak, partially effective voluntary cough, sometimes able to clear secretions e.g. requires yanker suctioning.</td>
<td>Effective cough, clearing secretions with airways clearance techniques.</td>
<td>Consistent effective voluntary cough, clearing secretions independently.</td>
</tr>
<tr>
<td>Dynamic Sitting (i.e. when sitting on the edge of the bed/unsupported sitting)</td>
<td>Unable/ Unstable.</td>
<td>Requires assistance ≥ 2 people (maximal).</td>
<td>Requires assistance ≥ 1 person (moderate).</td>
<td>Requires assistance 1 person (minimal).</td>
<td>Independent with some dynamic sitting balance, i.e. able to alter trunk position within base of support.</td>
<td>Independent with full dynamic sitting balance, i.e. able to reach out of base of support.</td>
</tr>
<tr>
<td>Standing Balance</td>
<td>Unable/ unstable/ bedbound.</td>
<td>Tilt table or similar.</td>
<td>Standing hoist or similar.</td>
<td>Dependant on frame, crutches or similar.</td>
<td>Independent without aids.</td>
<td>Independent without aids and full dynamic standing balance, i.e. able to reach out of base of support.</td>
</tr>
<tr>
<td>Sit to Stand (Starting position: ≤ 90 degrees hip flexion)</td>
<td>Unable/ Unstable.</td>
<td>Sit to stand with maximal assistance e.g. standing hoist or similar.</td>
<td>Sit to stand with moderate assistance e.g. 1-2 people.</td>
<td>Sit to stand with minimal assistance e.g. 1 person.</td>
<td>Sit to stand independently pushing through arms of the chair.</td>
<td>Sit to stand independently without upper limb involvement.</td>
</tr>
<tr>
<td>Transferring from Bed to Chair.</td>
<td>Unable/ Unstable.</td>
<td>Full hoist.</td>
<td>Standing hoist or similar.</td>
<td>Pivot transfer (no stepping) with mobility aid or physical.</td>
<td>Stand and step transfer with mobility aid OR physical.</td>
<td>Independent transfer without equipment.</td>
</tr>
</tbody>
</table>
### CPAx Tool

<table>
<thead>
<tr>
<th>Aspect of physicality</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
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<tr>
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</tr>
<tr>
<td>Moving within the bed (e.g. rolling)</td>
<td>Initiates movement. Requires assistance 1 person (minimal).</td>
<td>Independent in ≥3 seconds.</td>
<td>Independent in &lt;3 seconds.</td>
</tr>
</tbody>
</table>
Hospital Discharge based on CPAx

Corner et al 2014
HOW DID WE IMPLEMENT IT?
Pilot Objectives

Tests per patient

Time burden

Assist with physiotherapy assessment or treatment
Inclusion Criteria

- Requiring mechanical ventilation for >48 hours
- ICU stay of >72 hours
- Consultant diagnosis of ICU-acquired weakness
- RASS between +2 and -2
What were the results?
3 months

417 admitted

59 included

125 CPAx tests

2.1 tests per patient

3.9 days

21.6 days
Mean CPAx Score: 19.4/50
Mean assessment time: 20 mins
Useful CPAx tests: 33.6%
FURTHER ANALYSIS
<table>
<thead>
<tr>
<th>Score</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>COMBATIVE</td>
</tr>
<tr>
<td>+3</td>
<td>VERY AGITATED</td>
</tr>
<tr>
<td>+2</td>
<td>AGITATED</td>
</tr>
<tr>
<td>+1</td>
<td>RESTLESS</td>
</tr>
<tr>
<td>0</td>
<td>ALERT &amp; CALM</td>
</tr>
<tr>
<td>-1</td>
<td>DROWSY</td>
</tr>
<tr>
<td>-2</td>
<td>LIGHT SEDATION</td>
</tr>
<tr>
<td>-3</td>
<td>MODERATE SEDATION</td>
</tr>
<tr>
<td>-4</td>
<td>DEEP SEDATION</td>
</tr>
<tr>
<td>-5</td>
<td>UNAROUSABLE</td>
</tr>
</tbody>
</table>
Did CPAx assist, by RASS categories

<table>
<thead>
<tr>
<th>RASS -1 to +1</th>
<th>RASS &lt; -1 or &gt; +1</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Did CPAx assist in your assessment or treatment?
What did we change?
CHANGES TO IMPLEMENTATION

RASS between +1 & -1

Long term patients (≥5 days)

Physiotherapy discretion for use
Re-audit Results
<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average RASS</td>
<td>0</td>
</tr>
<tr>
<td>Average length of stay</td>
<td>20 days</td>
</tr>
<tr>
<td>Average CPAx tests</td>
<td>2.4 tests</td>
</tr>
<tr>
<td>Admission to first CPAx</td>
<td>11.6 days</td>
</tr>
</tbody>
</table>
One patient's CPAx journey

CPAx score

Test number

Theatre

Reintubated and trache

Theatre

Theatre
Staff Survey
RESULTS

78% response rate (39/50)

64% of nurses aware of CPAx

87% involved in long-term patient care

26% found CPAx helped motivate / monitor progress of patients
Patient's Thoughts
FEEDBACK FROM ONE PATIENT
HOW DOES IT HELP YOU?

- Follow patients progress
- Visual representation
- Easy to use
- Training package already in place
- Low floor and ceiling effects
- Quick idea of patients functional status
- Discharge destination predictor
GOING FORWARD.....
Any Questions?
WITH THANKS TO....

- Daniel Seller (Physiotherapist)
- ICU Staff
- Cardiorespiratory Physiotherapists at CCDHB
- Lisa Woods (for statistical analysis)
- Physiotherapy Team Leader (for funding of dynamometer)
REFERENCES

- Corner EJ, Handy JM, Brett SJ. 2016 eLearning to facilitate the education and implementation of the Chelsea Critical Care Physical Assessment: a novel measure of function in critical illness. BMJ Open

