### Neurological Assessment Tools

#### Motor Scoring Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Able to overcome strong resistance (normal strength)</td>
</tr>
<tr>
<td>4</td>
<td>Able to overcome mild resistance (mild weakness)</td>
</tr>
<tr>
<td>3</td>
<td>Supports limb against gravity but not resistance</td>
</tr>
<tr>
<td>2</td>
<td>Moves but not against gravity</td>
</tr>
<tr>
<td>1</td>
<td>Muscle flicker but no movement</td>
</tr>
<tr>
<td>0</td>
<td>No muscle movement</td>
</tr>
</tbody>
</table>

#### Glasgow Coma Scale

<table>
<thead>
<tr>
<th>Eye Opening</th>
<th>Verbal Response</th>
<th>Motor Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneously</td>
<td>Confused</td>
<td>Abnormal Flexion</td>
<td>3</td>
</tr>
<tr>
<td>To voice</td>
<td>Inappropriate</td>
<td>Abnormal Extension</td>
<td>2</td>
</tr>
<tr>
<td>No eye opening</td>
<td>No vocalization</td>
<td>No Movement</td>
<td>1</td>
</tr>
</tbody>
</table>

Score: **__/15**
Motor Assessment/Spinal Cord Testing

**Level of Function:**

C4: Shrug shoulder

C4, C5: Abduct shoulder

C5: Bend elbow

C6, C7: Extend wrist

C7: Straighten elbow

C7, C8: Bend wrist toward palm
Motor Assessment/Spinal Cord Testing

Level of Function:

C8: Bend fingers toward palm at first digit joint

T1: Spread fingers apart

L2, L3: Bend hip

L3, L4: Straighten knee

L4, L5: Dorsiflexion (pull toes toward nose)

S1, S2: Plantar flexion (point toes downward)
Sensory Assessment/Spinal Cord Testing

Test sensation twice, once for pin and once for light touch. Use a whisp of tissue for light touch and blunt end needle for pain/pin. Record the highest level of sensation using the dermatome chart below.

Test each dermatome on L and R side in anatomical descending order. Ask patient to close eyes so they cannot see you touching them.
Patient’s self-report of pain should be the primary goal for pain assessment.

- The numeric (0-10 out of 10) or visual analogue (shown below) should be included in the pain assessment whenever the patient can self-report.
  - The actual score is not as important as the patient’s perception of change during reassessment (worse or better).
  - Whenever possible, determine the characteristics of the pain using the PQRST mnemonic (next page). This will help to identify the cause of the pain and the most appropriate treatment plan.
Pain Assessment: Able to Self-Report

PQRST Mnemonic for Pain Assessment

P (provokes, precipitates):
• Location of pain
• What brings it on (e.g., activity, specific movement, breathing)
• What relieves it?

Q (quality):
• What is the quality of the pain (in the patient’s own words)
• Prompt only if necessary, to determine if pain is dull, sharp, stabbing, pins and needles, “electrical”, etc.

R (radiation, referral):
• Does the pain move to any other spot?
• Are there any other symptoms with the pain (e.g., nausea, vomiting, shortness of breath)

S (severity):
• How does the patient rate the pain on a scale of 1-10? (use patient prompt)

T (time):
• When did the pain start?
• Has this pain occurred before?
• Is the pain intermittent or constant?
## Pain Assessment: Unable to Self-Report

### Critical-Care Pain Observation Tool (CPOT)

*Add score 0-2/2 for each section to produce total score.*

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Assessment</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial Expression (score 0, 1 or 2)</td>
<td>Relaxed, Neutral</td>
<td>0</td>
<td>No muscle tension observed</td>
</tr>
<tr>
<td></td>
<td>Tense</td>
<td>1</td>
<td>Presence of frowning, brow lowering, orbit tightening and contraction of upper eyelid; or Any other change (e.g., opening eyes or tearing during noxious procedures)</td>
</tr>
<tr>
<td></td>
<td>Grimacing</td>
<td>2</td>
<td>All above facial movements plus eyelids tightly closed (may present with mouth open or biting ETT)</td>
</tr>
<tr>
<td>Body Movement (score 0, 1 or 2)</td>
<td>Absence of movement/normal position</td>
<td>0</td>
<td>Does not move at all (doesn’t necessarily mean absence of pain); or Normal position (movements not aimed toward the pain site or not made for the purpose of protection)</td>
</tr>
<tr>
<td></td>
<td>Protection</td>
<td>1</td>
<td>Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements</td>
</tr>
<tr>
<td></td>
<td>Restlessness</td>
<td>2</td>
<td>Pulling tube, attempting to sit up, moving limbs/thrashing, not following commands, striking at staff, trying to climb out of bed</td>
</tr>
<tr>
<td>Ventilator Compliance (ventilated patient)</td>
<td>Tolerating ventilator or movement; or, <strong>talking in normal tone or no verbal sound</strong></td>
<td>0</td>
<td>Alarms not activated, easy ventilation; or, <strong>Talking in normal tone or no sound</strong></td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>Coughing but tolerating ventilator; or <strong>sighing or moaning</strong></td>
<td>1</td>
<td>Coughing, alarms may be activated but stop spontaneously; or, <strong>Sighing, moaning</strong></td>
</tr>
<tr>
<td>Vocalization (non-intubated)</td>
<td>Fighting ventilator; or, <strong>crying out or sobbing</strong></td>
<td>2</td>
<td>Asynchrony, blocking ventilator, alarms frequently activated; or, <strong>Crying out, sobbing</strong></td>
</tr>
<tr>
<td>Muscle Tension (evaluate by passive flexion and extension of upper limbs when patient is at rest or during turning)</td>
<td>Relaxed</td>
<td>0</td>
<td>No resistance to passive movements</td>
</tr>
<tr>
<td></td>
<td>Tense, rigid</td>
<td>1</td>
<td>Resistance to passive movements</td>
</tr>
<tr>
<td></td>
<td>Very Tense or rigid</td>
<td>2</td>
<td>Strong resistance to passive movements, incapacity to complete them</td>
</tr>
</tbody>
</table>

**TOTAL SCORE**

SUM/8 Sum of scores from each of the 4 categories.
Sedation Assessment: VAMASS

Ventilator Adjusted: Motor Assessment Scoring Scale
For unventilated patients, score MASS only. If MASS >2, screen for delirium.

<table>
<thead>
<tr>
<th>MASS Score</th>
<th>Description of MASS</th>
<th>VA Score</th>
<th>Description of VA</th>
</tr>
</thead>
</table>
| 0          | Unresponsive to pain
             Does not move to noxious stimulus.                                               | A        | Minimal coughing; few alarms; tolerates movement                                  |
| 1          | Opens eyes and/or moves to pain only
             Opens eyes OR raises eyebrows OR turns head towards stimulus OR moves limbs with noxious stimulus. | B        | Coughing, frequent alarms when stimulated; settles with voice or removal of stimulus |
| 2          | Opens eyes and/or moves to voice
             Opens eyes OR raises eyebrows OR turns head towards stimulus OR moves limbs when touched or name is spoken. | C        | Distressed, frequent coughing or alarms; high RR with normal/ low PaCO2           |
| 3          | Calm and cooperative
             No external stimulus is required to elicit movement AND patient is adjusting sheets or clothes purposefully and follows commands. | D        | Unable to control ventilation; difficulty delivering volumes; prolonged coughing   |
| 4          | Restless but cooperative; follows commands
             No external stimulus is required to elicit movement AND patient is picking at sheets or tubes OR uncovering self & follows commands |          |                                                                                  |
| 5          | Agitated; attempts to get out of bed; may stop behaviour when requested but reverts back
             No external stimulus is required to elicit movement AND patient is attempting to sit up OR moves limbs out of bed AND does not consistently follow commands (e.g. will lie down when asked but soon reverts back to the attempts to sit up or move limbs out of bed). |          |                                                                                  |
| 6          | Dangerously agitated; pulling at tubes or lines, thrashing about; does not obey commands
             No external stimulus is required to elicit movement AND patient is attempting to sit up OR thrashing side to side OR striking staff OR trying to climb out of bed AND doesn't calm down when asked. |          |                                                                                  |
Delirium Screening in CCTC

Screen all patients admitted > 24 hours Q 12 H. Screen during second half of shift. Document screening time and score in Neuro section of AI Assessment Record.

**Step 1: Screen for PAIN**
- ✓ Screen using Numeric Ratings Scale (able to self-report) or CPOT (unable to self-report)

**Step 2: Screen for SEDATION**
- ✓ Screen using VAMASS if ventilated
- ✓ Screen using MASS portion only if unventilated

**Step 3: Screen for DELIRIUM**
- ✓ Screen using Intensive Care Delirium Screening Checklist (ICDSC)

**First: Perform Pain Assessment**
- ✓ Screen all patients for pain during initial assessment
  - • Consider past pain history and medications
  - • Obtain self-report of pain as priority
  - • If unable to self-report, use Critical Care Pain Observation Tool (CPOT)
- ✓ Reassess pain q 4 h and prn (e.g., with turning, procedures or clinical change)
- ✓ Reassess pain following administration of analgesia

**Second: Perform Sedation Assessment**
- ✓ Screen all patients using VAMASS or MASS (unventilated patient) at the start of each shift
- ✓ Repeat VAMASS q 4 h and before and after each prn dose of sedation

**Third: Perform Delirium Assessment**
- ✓ Screen all patients admitted for > 24 hours for delirium once per shift
- ✓ Screen in second half of shift and document time of assessment in neuro section of AI record
- ✓ Delirium screening requires pain, sedation and delirium assessment
- ✓ If MASS is < 2 record “unable to assess” for delirium screen
- ✓ If MASS is ≥ 2, screen using Intensive Care Delirium Screening Checklist (ICDSC)
**Intensive Care Delirium Screening Checklist (ICDSC)**

Give a score of “1” to each of the 8 items below if the patient clearly meets the criteria defined in the scoring instructions. Give a score of “0” if there is no manifestation or unable to score. If the patient scores ≥4, notify the physician. The diagnosis of delirium is made following clinical assessment; document in the Assessment and Intervention record (RN) and progress note (MD).

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Scoring Instructions</th>
<th>Score</th>
</tr>
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</table>
| 1. Altered Level of Consciousness* | - If MASS portion of VAMASS is 0 (no response) or 1 (response to noxious stimulus only), record “U/A” (unable to score) and do not complete remainder of screening tool  
- Score “0” if MASS score is 3 (calm, cooperative, interacts with environment without prompting)  
- Score “1” if MASS score is 2, 4, 5 or 6 (MASS score of 2 is a patient who only interacts or responds when stimulated by light touch or voice – no spontaneous interaction or movement; 4, 5 and 6 are exaggerated responses) |       |
| 2. Inattention                    | “1” for any of the following:  
- Difficulty following conversation or instructions  
- Easily distracted by external stimuli  
- Difficulty in shifting focuses |       |
| 3. Disorientation                 | “1” for any obvious mistake in person, place or time                                                                                                                                                                   |       |
| 4. Hallucination/delusions/psychosis | “1” for any unequivocal manifestation of hallucinations or of behaviour probably due to hallucinations (e.g. catching non-existent object)  
- Delusions  
- Gross impairment in reality testing |       |
| 5. Psychomotor agitation or retardation | “1” for any of the following:  
- Hyperactivity requiring additional sedatives or restraints in order to control potential dangerousness (e.g. pulling out IV lines, hitting staff)  
- Hypoactivity or clinically noticeable psychomotor slowing (differs from depression by fluctuation in consciousness and inattention) |       |
| 6. Inappropriate speech or mood   | “1” for any of the following (score 0 if unable to assess):  
- Inappropriate, disorganized or incoherent speech  
- Inappropriate display of emotion related to events or situation |       |
| 7. Sleep wake/cycle disturbance   | “1” for any of the following:  
- Sleeping less than 4 hours or waking frequently at night (do not consider wakefulness initiated by medical staff or loud environment)  
- Sleeping during most of day |       |
| 8. Symptom fluctuation            | “1” for fluctuation of the manifestation of any item or symptom over 24 hours (e.g., from one shift to another)                                                                                                      |       |
| **TOTAL SCORE 0-8 / 8**           | A score ≥ 4 suggests delirium. A score > 4 is not indicative of the severity of the delirium                                                                                                                       |       |
Quality Bundles:  
VAP Reduction Bundle

VAP REDUCTION BUNDLE

1. **HOB ≥ 30** degrees if intubated or a tracheostomy tube is in place, except during temporary procedures (e.g., bed changes, line insertion) unless contraindicated*

2. Maintain **appropriate level of sedation**:
   - Adjust sedation to target VAMASS
   - Attempt daily dose reduction of continuous sedatives unless contraindicated*

3. **Daily SBT**
   - Screen daily for SBT readiness
   - If screen is passed, conduct SBT daily*

4. **Subglottic Secretion Drainage (SSD)**
   - SSD for all patients with endotracheal tube
   - Routine changing if initially intubated with standard tube is not recommended

5. **Initiate safe enteral feeding within 24-48 hours** unless contraindicated*
   - Attempt small bowel placement for all feeding tubes
   - Avoid nasal placement for gastric drainage tubes; remove and replace orally within 48 hours unless contraindicated (e.g., esophageal/oral surgery or varices)

6. **Oral decontamination**
   - Oral hygiene with toothbrushing at least q12h per CCTC procedure (unless contraindicated*)
   - Chlorhexidine oral rinse q12h (unless contraindicated*)

*See reverse for details*
1. **HOB Elevation**: Document HOB elevation in degrees in 24 Hour Flowsheet with each change in position.
   - HOB > 30 degrees may be contraindicated or require modification in a number of situations, such as: unclear C-spines, open abdomen, hemodynamic instability, patient discomfort, skin breakdown, femoral lines or where alternate HOB elevation has been ordered.
   - If HOB < 30 degrees, the reason must be documented in the AI record. For hemodynamic instability or patient discomfort, reassess q 4h and position HOB at highest tolerated level.

2. **Sedation Assessment and Weaning:**
   a) **Adjust sedation to target VAMASS**: Chart VAMASS or MASS in 24 Hour Flowsheet, recording the “typical” score for the preceding hour.
      - Q shift for all patients
      - Q 4h for patients receiving sedatives
      - Chart the VAMASS on the MAR to explain reason for prn sedation.
      - At the end of each shift, document a DAR note under the heading “comfort”. Document overall assessment findings re pain, anxiety, and delirium and describe treatment and response
   b) **Attempt daily dose reduction of continuous sedatives unless contraindicated.**
      Examples of contraindications include patients receiving neuromuscular blocking agents, management of uncontrolled intracranial hypertension or hypothermia protocol. For patient’s with sedation goal of VAMASS 0 who are not on neuromuscular blocking agents, consider small dose reductions q 8-12 hours to ensure lowest possible dose.

3. **Contraindications to SBT (reasons for screening failure):**
   - Underlying reason for ventilation has not been resolved (e.g., cardiogenic shock, acute brain injury, hypothermia protocol)
   - Use of deep sedation or paralytic agents (continuous or intermittent)
   - Inability to initiate spontaneous effort
   - Hemodynamic instability (including use of vasoactive infusions)
   - PaO2/FiO2 ratio < 200 on > 0.5 FiO2 or PEEP > 8 or pH < 7.30 *
   - Medical order
   - See SBT Screening: http://www.lhsc.on.ca/Health_Professionals/CCTC/protocols/SBT.pdf

4. **Contraindications to Subglottic Secretion Drainage (SSD):**
   - An SSD is not used if a patient requires a tube other than a standard endotracheal tube (e.g., blocker tube, armoured tube)

5. **Initiate enteral feeding within 24-48 hours:**
   - Contraindications must be documented in clinical record. Bundle compliance is confirmed if contraindication is documented or if feeding is started within 48 hours of an order to initiate enteral feeding in a patient with prior contraindications.

6. **Oral decontamination:**
   - Contraindications to toothbrushing include absence of teeth or recent oral surgery. Document oral care in 24 Hour Flowsheet. Identify * for toothbrushing and document contraindications in AI record.
   - Contraindications to Chlorhexidine include allergy or medical order (e.g., following recent oral surgery).
Insertion Bundle:

1. Hand hygiene before patient contact, after dressing removal and before donning sterile gloves
2. Pause to review procedure and assemble necessary equipment in advance; ensure appropriate catheter length for IJ/SC (16 cm NOT 20 cm)
3. Guidewire exchange should be avoided. If required, rationale for guidewire exchange should be documented
4. Hair removal with clippers before skin cleansing and draping
5. Scrub skin vertically and horizontally for 30 seconds with chlorhexidine 2% in 70% isopropyl alcohol
6. Allow skin to dry 2 minutes after cleaning
7. Cap, mask with face shield, sterile gown and sterile gloves for individual(s) performing insertion
8. Cap and mask for all individuals within 1 meter of sterile field
9. Broad draping of sterile field
10. Flush lumens with normal saline provided in sterile packaging
11. Any member of the team can remind others if any of these steps are overlooked
CLA-BSI Prevention Maintenance Bundle

1. Daily review of line insertion dates and the need for continued line use
2. Lines inserted in an emergency or where insertion technique is not clearly documented should be changed within 24-48 hours
3. Hand hygiene before patient contact, after dressing removal and before donning sterile gloves
4. Palpate and visually inspect site daily.
5. Use transparent dressing unless excessive oozing.
6. Change transparent dressing q 7 days and prn; if used, change gauze q 2 days and prn.
7. Hair removal with clippers before skin cleansing and draping
8. Cap and mask during dressing change
9. Scrub skin vertically and horizontally for 30 seconds with chlorhexidine 2% in 70% isopropyl alcohol
10. Allow skin to dry a full 2 minutes after cleaning
11. Drape area with sterile towel and don sterile gloves if catheter manipulation/contact required.
12. Apply Cavilon™ (swab stick) to the skin if patient diaphoretic/adherence is difficult (DO NOT APPLY to insertion site or area under the chlorhexidine pad); Cavilon™ must dry for 2 minutes prior to dressing application.
13. Apply dressing according to procedure.
14. Record date of change on dressing and kardex.
15. Scrub hub prior to line access or use antimicrobial cap
16. Draw blood via stopcock; maintain capped access
17. Routine tubing changes: a) TPN and insulin q 24 hrs, b) blood tubing after 2 units (except rapid infusor), c) propofol bottle and tubing q 12 hrs
18. Flush PICC or locked lumen with at least 20 ml after blood sampling.
19. Dedicated line for TPN
20. Do not touch insertion site after skin prep is done for venipuncture and peripheral IV insertion
21. Blood cultures:
   a) Minimum of 2 sets for any culture event
   b) If line > 48 hours, send venipuncture with line culture and request “CAB” assessment; draw and order all samples within 15 minute timeframe and send all bottles in one bag (or bags wrapped together)
   c) Identify catheter site and type (e.g., R IJ HD) and date of central and arterial catheter insertion (including PICC/HD lines) when ordering cultures
22. Any member of the team can remind others if any steps are overlooked