Neurological Assessment Tools

Glasgow Coma Scale

Eye Opening	Verbal Response	Motor Response	Score
		Obeys	6
	Oriented	Localizes	5
Spontaneously	Confused	Withdraws	4
To voice	Inappropriate	Abnormal Flexion	3
To pain	Incomprehensible	Abnormal Extension	2
No eye opening	No vocalization	No Movement	1
___/4	____/5	____/6	___/15

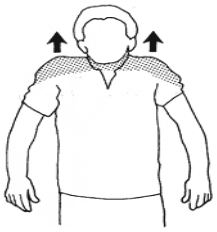
Motor Scoring Scale

5	Able to overcome strong resistance (normal strength)
4	Able to overcome mild resistance (mild weakness)
3	Supports limb against gravity but not resistance
2	Moves but not against gravity
1	Muscle flicker but no movement
0	No muscle movement
___/5	**Score**

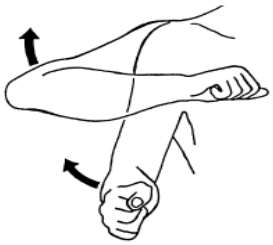
Motor Assessment/Spinal Cord Testing

Level of Function:

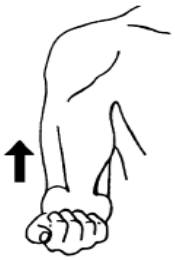
C4: Shrug shoulder



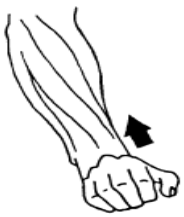
C4, C5: Abduct shoulder



C5: Bend elbow



C6, C7: Extend wrist

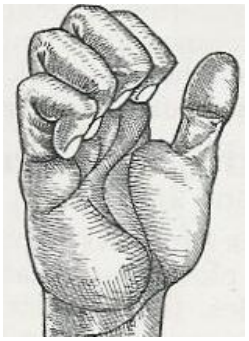


C7: Straighten elbow

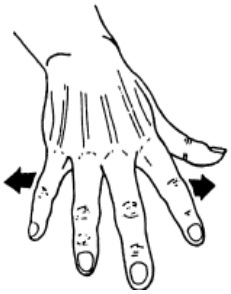
C7, C8: Bend wrist toward palm

Motor Assessment/Spinal Cord Testing

Level of Function:

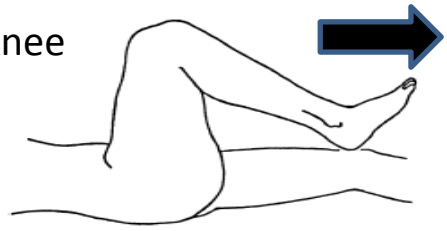


C8: Bend fingers toward palm at first digit joint

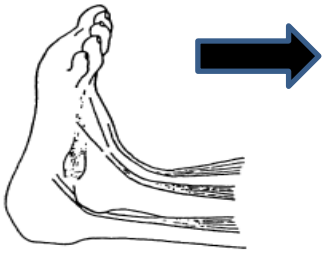


T1: Spread fingers apart

L2, L3: Bend hip



L3, L4: Straighten knee

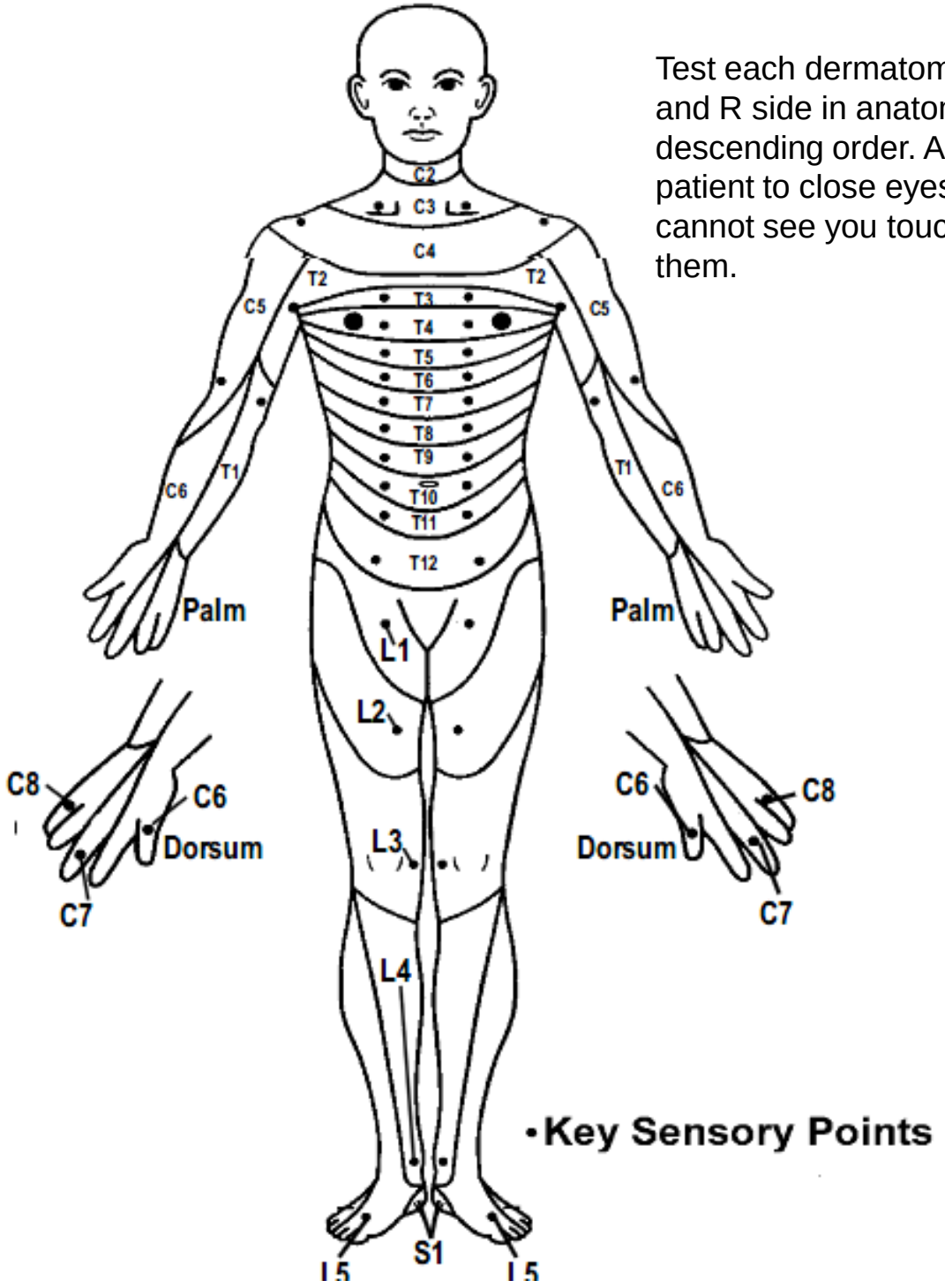


L4, L5: Dorsiflexion (pull toes toward nose)

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 wisp 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.

Sedation Assessment

VAMASS

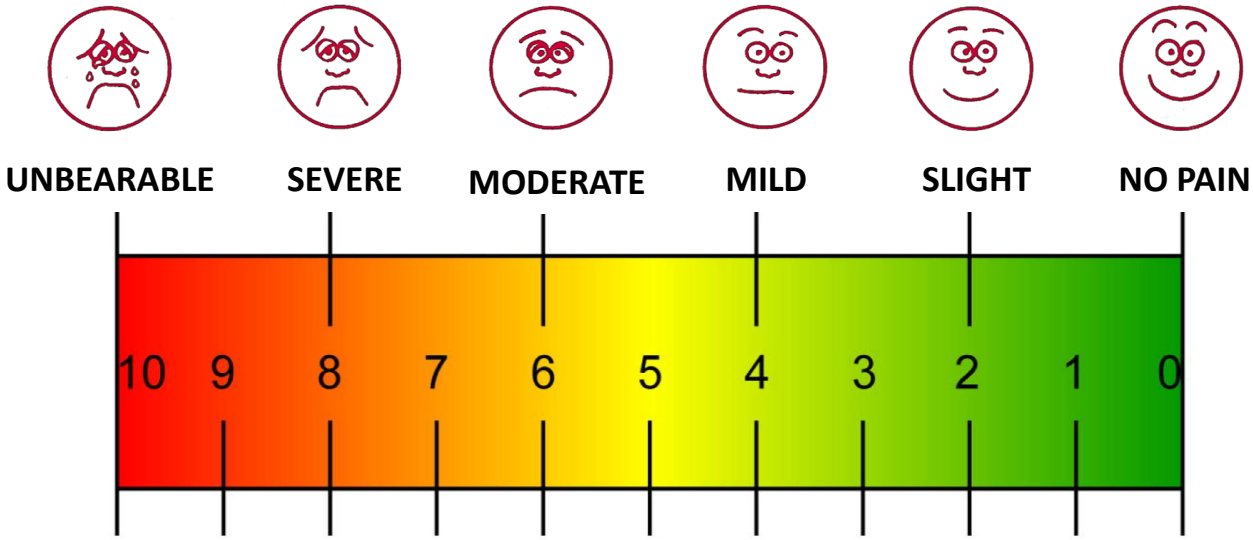
Ventilator Adjusted: Motor Assessment Scoring Scale
(if not ventilated, determine MASS only)

MASS Score	Description of MASS	VA Score	Description of VA
0	Unresponsive to pain	A	Minimal coughing; few alarms; tolerates movement
1	Opens eyes and/or moves to pain only	B	Coughing, frequent alarms when stimulated; settles with voice or removal of stimulus
2	Opens eyes and/or moves to voice	C	Distressed, frequent coughing or alarms; high RR with normal/ low PaCO2
3	Calm and cooperative	D	Unable to control ventilation; difficulty delivering volumes; prolonged coughing
4	Restless but cooperative; follows commands		
5	Agitated; attempts to get out of bed; may stop behaviour when requested but reverts back		
6	Dangerously agitated; pulling at tubes or lines, thrashing about; does not obey commands		

Pain Assessment:
Able to Self-Report

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 Observation Tool (CPOT)

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

Indicator	Assessment	Score	Description
Facial Expression (score 0, 1 or 2)	Relaxed, Neutral	0	• No muscle tension observed
	Tense	1	• 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)
	Grimacing	2	• All above facial movements plus eyelids tightly closed (may present with mouth open or biting ETT)
Body Movement (score 0, 1 or 2)	Absence of movement/normal position	0	• 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)
	Protection	1	• Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements
	Restlessness	2	• Pulling tube, attempting to sit up, moving limbs/thrashing, not following commands, striking at staff, trying to climb out of bed
Ventilator Compliance (ventilated patient) **OR** ***Vocalization*** *(non-intubated)* **(score 0, 1 or 2)**	Tolerating ventilator or movement; *or, talking in normal tone or no verbal sound*	0	• Alarms not activated, easy ventilation; or, *Talking in normal tone or no sound*
	Coughing but tolerating ventilator; *or, sighing or moaning*	1	• Coughing, alarms may be activated but stop spontaneously; or, *Sighing, moaning*
	Fighting ventilator; or, *crying out or sobbing*	2	• Asynchrony, blocking ventilator, alarms frequently activated; or, *Crying out, sobbing*
Muscle Tension (evaluate by passive flexion and extension of upper limbs when patient is at rest or during turning) **(score 0, 1 or 2)**	Relaxed	0	• No resistance to passive movements
	Tense, rigid	1	• Resistance to passive movements
	Very Tense or rigid	2	• Strong resistance to passive movements, incapacity to complete them
TOTAL SCORE		**___/8**	Sum of scores from each of the 4 categories.

Quality Bundles:

VAP Reduction Bundle

VAP REDUCTION BUNDLE

1. Assess/attempt daily Spontaneous Breathing Trial
2. Use appropriate sedation and remove when no longer needed:
   a) Adjust sedation to maintain target VAMASS score
   b) Institute daily weaning of sedation/convert continuous infusions to intermittent prn dosing unless contraindicated (e.g., acute brain injury, abdominal compartment syndrome, hemodynamic instability, high ventilator support/PEEP levels)
3. Keep HOB 30 degrees or greater unless contraindicated, if intubated, trached or enterally fed
4. Insert gastric drainage tubes orally versus nasally if patients orally intubated (nasal feeding tubes acceptable).
5. Attempt small bowel feeding tube placement for all initial feeding tube insertions, and if patients unable to tolerate gastric feeding
6. Use an EVAC tube for endotracheal intubation
7. Oral care protocol per CCTC procedure
   http://www.lhsc.on.ca/critcare/icu/procedures/oralcare.html

Quality Bundles:

CLA-BSI Prevention
Insertion Bundle

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

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 infuser), 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