

Evaluation of Two Risk Assessment Tools in ICU

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INTRODUCTION

Intensive Care Units (ICU) tend to have the highest incidence of pressure injuries in acute care. The same adult pressure injury risk assessment is often used across the hospital units and is not specific to some ICU risk factors. The Braden Scale (1987), Norton Scale (1979) and Waterlow (1985) are commonly used in the ICU setting. More recently ICU specific tools have been created including the COMHON Index (2013). All are based upon different risk factors for pressure injury, resulting in different criteria to determine the risk of pressure injury.

OBJECTIVES

This study intends to identify ICU nurses’ familiarity with pressure injury risk assessment tools by comparing the COMHON Tool and the Braden Scale.

METHODOLOGY

ICU nurses were requested to complete a questionnaire and including both Braden Scale and COMHON Tool scores on 2 patients.

The COMHON Tool was selected for its simplicity and attached subscale definitions. The tool addresses Consciousness, Mobility, Haemodynamics, Oxygenation and Nutrition.

The Braden Scale was selected as it is in use in our facility and is the most utilized risk assessment in the Unites States.

Utilizing the Braden Scale and COMHON Tool scores and a questionnaire, we evaluated perceived ease of use, perceived clinical accuracy to patient presentation and risk assessment accuracy.

COMHON Tool

The COMHON Index (RASS = Richmond Agitation Sedation Scale)

Please circle the most appropriate sections of the chart below:

Score	Level of consciousness	Mobility	Haemodynamic	Oxygenation	Nutrition
1	Awake and alert (RASS 0, + 1) (Glasgow 15)	Independent, walking with help	No haemodynamic support	Spontaneous breathing and $FI_{O_2} < 0.4$	Full oral diet
2	Agitated, restless, confused (RASS > 1) (Glasgow 13 – 14)	Limited, bed-chair activity	Volume expanders	Spontaneous breathing and $FI_{O_2} \geq 0.4$	Enteral or parenteral feeding
3	Sedated but responsive (RASS –1 to –3) (Glasgow 9 – 12)	Very limited but tolerates position change	Dopamine or norepinephrine or adrenaline. Mechanical support	Non-invasive mechanical ventilation	Oral fluids. Incomplete oral feeding
4	Coma, sedated and unresponsive (RASS < –3) (Glasgow < 9)	Unable to change position; lying prone	Needing two of the above	Invasive mechanical ventilation	No feeding

LOW RISK: 5 – 9, MODERATE RISK: 10 – 13, HIGH RISK: 14 – 20

TOTAL PATIENT SCORE = RISK LEVEL =

SUBSCALE DEFINITIONS	
Level of consciousness 1. Awake and alert: RASS 0 to + 1 The patient is conscious and orientated to time and space, obeys commands and recognises and responds to any stimulus in their environment. Glasgow Coma Score 15. 2. Agitated/restless/confused: RASS > 1 The patient is aware but is partially or intermittently disorientated to time and/or space and responds inadequately to stimuli. Glasgow Coma Score 13 to 14. 3. Sedated but responsive: RASS –1 to –3 The patient has a Glasgow Coma Score of 9 to 12 or is sedated with RASS –1 to –3. 4. Coma, sedated and unresponsive: RASS –4 to –5 The patient is comatose with Glasgow Coma Score < 9 or sedated with RASS –4 to –5.	2. Volume expanders The patient requires use of blood products, colloid or crystalloid to maintain haemodynamic status. 3. Dopamine or norepinephrine or adrenaline or cardiopulmonary mechanical support The patient requires one or more of the above drugs by continuous infusion or cardiopulmonary mechanical assistance e.g. intra-aortic balloon pump, extra-corporeal membrane oxygenation, ventricular assist device, to maintain haemodynamic stability. 4. Needing two of the above The patient requires two or more of the above supports to maintain haemodynamic stability.
Mobility 1. Independent/walking with help The patient walks alone or needs a support system to maintain balance. 2. Limited/bed-armchair activity The patient is in bed and can move on their own. The patient has alternating periods of bed rest with periods of rest in a chair. The patient can stand up with or without assistance. 3. Very limited but tolerates change in position The patient is in bed and cannot move without assistance but can be moved without affecting haemodynamic or respiratory status. 4. Unable to change position or lying prone The patient is in bed and must not be moved due to haemodynamic or respiratory instability or the patient is lying in the prone position.	Oxygenation 1. Spontaneous breathing and low FI_{O_2} (<0.4) The patient is breathing by themselves and requires no extra oxygen or less than 40%. 2. Spontaneous breathing and high FI_{O_2} (≥ 0.4) The patient is breathing by themselves and requires supplementary oxygen greater than 40%. 3. Non-invasive mechanical ventilation The patient requires non-invasive mechanical ventilation. 4. Invasive mechanical ventilation The patient requires invasive mechanical ventilation.
Haemodynamic 1. No haemodynamic support The patient does not require vasopressor drugs or plasma expanders or mechanical haemodynamic support (e.g. intra-aortic balloon pump).	Nutrition 1. Full oral diet The patient tolerates liquids and solids and is eating enough food to meet their needs. 2. Enteral nutrition / parenteral feeding The patient is being fed with parenteral nutrition, enteral nutrition or both and may also be partially eating orally or not eating at all. 3. Oral fluids. Incomplete oral feeding The patient has an inadequate or reduced diet that does not meet their needs and is not being enterally or parentally fed. 4. No feeding The patient is not being fed at all.

Braden SCALE

BRADEN SCALE – For Predicting Pressure Sore Risk				
SEVERE RISK: Total score ≤ 9		HIGH RISK: Total score 10-12		DATE OF ASSESS
MODERATE RISK: Total score 13-14		MILD RISK: Total score 15-18		
RISK FACTOR	SCORE/DESCRIPTION			
SENSORY PERCEPTION Ability to respond meaningfully to pressure-related discomfort	1. COMPLETELY LIMITED – Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation, OR limited ability to feel pain over most of body surface.	2. VERY LIMITED – Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness, OR has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.	3. SLIGHTLY LIMITED – Responds to verbal commands but cannot always communicate discomfort or need to be turned, OR has a sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	4. NO IMPAIRMENT – Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.
MOISTURE Degree to which skin is exposed to moisture	1. CONSTANTLY MOIST – Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	2. OFTEN MOIST – Skin is often but not always moist. Linen must be changed at least once a shift.	3. OCCASIONALLY MOIST – Skin is occasionally moist, requiring an extra linen change approximately once a day.	4. RARELY MOIST – Skin is usually dry; linen only requires changing at routine intervals.
ACTIVITY Degree of physical activity	1. BEDFAST – Confined to bed.	2. CHAIRFAST – Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	3. WALKS OCCASIONALLY – Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	4. WALKS FREQUENTLY – Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours.
MOBILITY Ability to change and control body position	1. COMPLETELY IMMOBILE – Does not make even slight changes in body or extremity position without assistance.	2. VERY LIMITED – Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	3. SLIGHTLY LIMITED – Makes frequent though slight changes in body or extremity position independently.	4. NO LIMITATIONS – Makes major and frequent changes in position without assistance.
NUTRITION Usual food intake pattern NPO: Nothing by mouth. IV: Intravenously. TPN: Total parenteral nutrition.	1. VERY POOR – Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement, OR is NPO and/or maintained on clear liquids or NPO for more than 5 days.	2. PROBABLY INADEQUATE – Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement, OR receives less than optimum amount of liquid diet or tube feeding.	3. ADEQUATE – Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally refuses a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs.	4. EXCELLENT – Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.
FRICTION AND SHEAR	1. PROBLEM – Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction.	2. POTENTIAL PROBLEM – Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	3. NO APPARENT PROBLEM – Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.	
TOTAL SCORE	Total score of 12 or less represents HIGH RISK			
ASSESSES	DATE	EVALUATOR SIGNATURE/TITLE	ASSESSES	DATE
1	/ /		3	/ /
2	/ /		4	/ /
NAME-Last First Middle		Attending Physician	Record No.	Room/Bed
Form 1345P BRIGGS, Des Moines, IA 50319 (REV) 10/12/03 www.briggsCorp.com R304 PRINTED IN U.S.A.		Source: Barbara Braden and Nancy Bergstrom. Copyright, 1988. Reprinted with permission. Permission should be sought to use this tool at www.bradenscale.com		

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RESULTS

- To compare risk results high risk was used for the COMHON Tool and high/very high risk for Braden Scale were used as there are 3 levels in COMHON Tool and 4 levels in Braden Scale
- 23 nurses submitted 31 questionnaires
- 100% of nurses have only used the Braden Scale.
- COMHON Tool easy to use: 97%
- Braden Scale to be more accurate reflection of patient risk: 62%
- COMHON Tool more accurate reflection of patient risk: 34%
- Comparison of the risk level of 31 patients were 13 were the same risk level
- Nine of 13 risk levels that scored the same were high risk patients
- One patients had difficulty fitting the Level of Consciousness section-one was not sedated and not responsive and not clear how to score

COMMENTS

- Both scales were easy to use and score
- Braden Scale accounts for moisture and shear better
- Braden Scale more pertinent to the integumentary system
- Braden Scale encompasses wide variety of risk factors
- Both were easy to use and scored the patient the same
- COMHON Tool more specific to critical care
- COMHON more extensive in how it explains the score
- COMHON Tool patient should have scored higher risk
- COMHON Tool accounts for ‘walkie talkie” better”
- COMHON Tool accounts for change in condition and devices slightly better
- COMHOM Tool more specific to mobility
- COMHON Tool more specific and detailed
- COMHON Tool simple and all inclusive

CONCLUSIONS

This small survey group has only used the Braden Scale. The Braden Scale does not address vasopressors or ventilation and the COMHON Tool does not address moisture. The COMHON Tool was easy to use. One third of the assessments found the COMHON Tool a more accurate ICU risk assessment tool. Issues identified with COMHON Tool might be better understood with more explicit training and larger sample size. Familiarity with the Braden Scale was high as no one ever used any other risk assessment and could affect perceptions of nursing staff regarding clinical accuracy. Device use was raised in the COMHON Tool Some comments indicate neither scale addressed all risk factors that all staff felt relevant to their patients.

REFERENCES

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ACKNOWLEDGEMENTS AND CONTACTS

Thank you to our ICU staff for the data submissions.
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