Sedation: Tools for Assessment

The need to assess sedation, agitation and pain in mechanically ventilated ICU patients has been recognized for decades. Reliable assessment tools can improve consistency in drug administration, can be incorporated into sedation protocols, and can improve precision of medication titration as patient needs change.[1] Attempts to develop sedation assessment tools were first made in the 1970s, and these tools have evolved over time. Three of the most commonly used scales today are:

- Ramsay Sedation Score (RSS): Developed in 1974 and designed as test of rousability.[2] This was the first established assessment tool and the most employed for 25 years.
- Riker Sedation-Agitation Scale (SAS): Developed in 1999 with the goal of clearly defining and providing more inclusive levels of sedation and agitation than the Ramsay score[3]
- Richmond Sedation Agitation-Sedation Scale (RASS): Developed in 2002 to provide broader discrimination across multiple levels of sedation and to function as an easy-to-use tool with logical feedback[1]

RAMSAY SEDATION SCORE (RSS)[4,5]

SCORE	DESCRIPTION
1	Anxious and agitated, or restless or both
2	Cooperative, oriented and tranquil
3	Responding to commands only
4	Brisk response to light glabellar tap or loud auditory stimulus
5	Sluggish response to light glabellar tap or loud auditory stimulus
6	No response to stimuli

GUIDELINES FOR RSS ASSESSMENT[2]

Observe patient, if awake score 1 or 2 depending on demeanor

Give voice command, score 3 or 4 depending on speed of response

If no response to voice, give louder voice command or glabellar tap, score 4 or 5 depending on response

If no response to stimuli, score 6

CHARACTERISTICS OF RSS[2,8]

- Useful wherever sedatives/narcotics are given (not limited to ICU)
- Relative lack of discrimination—only one level each for agitation and sedation
- Inconsistent interrater reliability

RIKER SEDATION-AGITATION SCALE (SAS)[3,6]

SCORE	DEFINITION	DESCRIPTION
7	Dangerous Agitation	Pulling at endotracheal tube, trying to remove catheters, climbing over bedrail, striking at staff, thrashing side-to-side
6	Very Agitated	Requiring restraint and frequent verbal reminding of limits, biting endotracheal tube
5	Agitated	Anxious or physically agitated, calms to verbal instruction
4	Calm and Cooperative	Calm, easily arousable, follows commands
3	Sedated	Difficult to arouse but awakens to verbal stimuli or gentle shaking, follows simple commands but drifts off again
2	Very Sedated	Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously
1	Unarousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

GUIDELINES FOR SAS ASSESSMENT[3,6]

Agitated patients are scored by their most severe degree of agitation as described

If patient is awake or awakens easily to voice (responds with voice or head shaking to a question or follows commands), assign SAS of 4 (calm and appropriate, might even be napping)

If more stimuli (e.g. shaking) is required to awaken, assign SAS of 3

If patient arouses to stronger physical or noxious stimuli but never awakens to the point of responding or following commands, assign SAS of 2

Little or no response to noxious physical stimuli represents SAS of 1

CHARACTERISTICS OF SAS[3]

- Increased differentiation for agitation and sedation compared to RSS
- Symmetric range of levels for agitation and sedation

RICHMOND AGITATION-SEDATION SCALE (RASS)[7]

SCORE	DEFINITION	DESCRIPTION
+4	Combative	Overtly combative, violent, immediate danger to staff
+3	Very Agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious but movements not aggressive or vigorous
0	Alert and Calm	
-1	Drowsy	Not fully alert, but has sustained awakening (eye opening/eye contact) to voice (>10 seconds)
-2	Light Sedation	Briefly awakens with eye contact to voice (<10 seconds)
-3	Moderate Sedation	Movement or eye opening to voice (but no eye contact)
-4	Deep Sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

Verbal stimulation

Physical stimulation

GUIDELINES FOR RASS ASSESSMENT[7]

1. Observe Patient: Patient is alert, restless or agitated — Score 0 to +4

2. If not alert, state patient's name and ask to open eyes and look at speaker

- Patient awakens with sustained eye opening and eye contact — Score -1
- Patient awakens with eye opening and eye contact, but not sustained — Score -2
- Patient has any movement in response to voice but no eye contact — Score -3

3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum

- Patient has any movement to physical stimulation — Score -4
- Patient has no response to any stimulation — Score -5

CHARACTERISTICS OF RASS[1,7,8]

- Provides logical feedback with (+) numbers representing varying levels of anxiety/agitation and (-) numbers varying levels of sedation
- Broader discrimination of patient status via the logical progressive assessment of arousal, cognition and sustainability of common responses
- Improves the ability to provide target-specific sedation and allows for more precise medication titration
- Uses maintenance of eye contact following verbal stimulation as principal means of titrating sedation. Separates verbal from physical stimulation.

CHARACTERISTICS COMMON TO SAS AND RASS[1,3,9,10]

- Useful as a screening instrument to determine eligibility for delirium assessment
- Considered the most valid and reliable sedation scales
- Difficult to categorize patients who are sedated but aroused in an agitated state when stimulated (recommend scoring based on behavior when aroused)
- Not suitable for patients who have significant auditory or visual impairments
- Patients administered neuromuscular blockers are not assessable

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