

### WHO IS RESPONSIBLE FOR MANAGING SEDATION

The prevention of **pain**, **agitation** and **delirium** is an integral part of critical care delivery. However, achieving a balance between under and over sedation is a continual challenge to clinicians in intensive care.

**Which individuals in intensive care play key roles in the prevention of over and under sedated states?**

ICU Nurses



True

That's correct. ICU nurses are the key individuals who assess sedation regularly and are sensitive to patient needs on a continuous basis. The bedside nurse is also likely to have a more detailed knowledge of the patient's character and personality, and spend time with their family and friends. Bedside nurses are often expected to make regular changes, and sometimes undertake sedation "breaks" or "holds".



False

Physiotherapists



True



False

That's correct. In most ICUs physiotherapists do not alter sedation or analgesia dose. However, physiotherapy is known to be stimulating and potentially uncomfortable, especially chest physiotherapy. This may require boluses of analgesia or sedation prior to treatment. Early mobilisation of patients is also a key role for physiotherapists and requires the patient to be awake. Physiotherapists therefore need to work closely with bedside nurses to optimise sedation.

Dieticians



True



False

That's correct. Dieticians do not alter sedation or analgesia dose. However, excessive use of opiates or sedatives can decrease gastric mobility and affect enteral feeding, or cause nausea and constipation. Optimising sedation may indirectly help nutrition.

Medical Staff



True

That's correct. Doctors are usually responsible for deciding which agents to use, and will decide on when individual patients should be kept more deeply versus more lightly sedated based on their condition. With nursing staff they have a key role in agreeing general policies and guidelines in the ICU.



False

Pharmacists



True



False

That's correct. Pharmacists tend not to make decisions about drug dosage in individual patients. However, they have a detailed understanding of drug side effects, safety, and interactions with other drugs. They will also track overall drug use and cost in the ICU.

### Key point:

The management of Pain, Agitation, and Delirium is a team effort. Agreeing guidelines and protocols, implementing them effectively for individual patients, and ensuring drugs are used safely and appropriately involves many members of the multidisciplinary team.

## PRIMARY ASSESSMENT

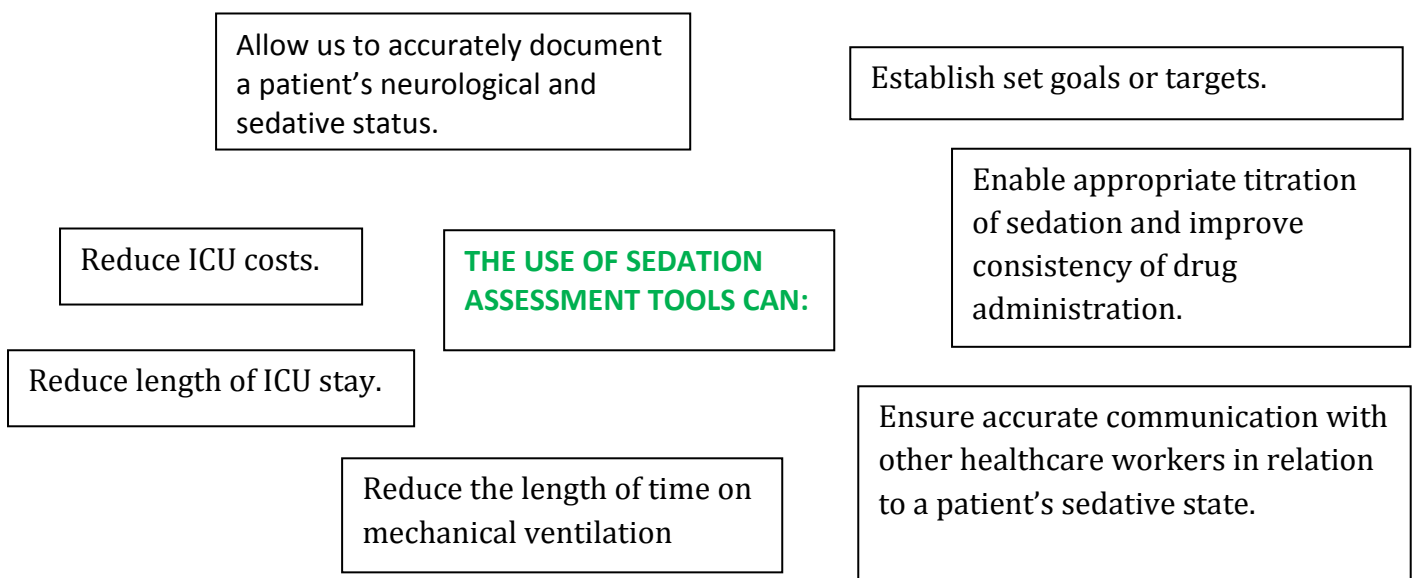
### What to think about before using a sedation assessment tool?

1) What sedative and analgesic drugs are currently being administered?

2) Are there any reasons the patient requires deeper sedation?

- mechanical ventilation and ventilator synchrony,
- reduction of raised intracranial pressure (by reducing the cerebral metabolic rate of oxygen consumption),
- spinal trauma,
- post cardiac arrest cooling protocol,
- prone positioning
- Potential return to theatre.

## THE VALUE OF SEDATION ASSESSMENT TOOLS



## MODULE 2: ASSESSING SEDATIVE STATE

### PROPERTIES OF A HIGH QUALITY SEDATION ASSESSMENT

A range of assessment tools have been specifically designed for sedation assessment. The important properties of these tools are:

<b>VALIDITY</b>	Reflects the degree of accuracy of an assessment tool or scoring system. For example, does the tool have clear domains for agitation, comfort, and lack of response to stimulation? Can the tool distinguish between these?
<b>RELIABILITY</b>	When two or more individuals use the tool, do they get the same result? This is called inter-rater reliability. Reliability is important when many different people are using the same scoring system.
<b>RESPONSIVENESS</b>	Responsiveness is defined as the ability of a scoring system to accurately detect change when it has occurred. For example, when a patient regains consciousness following a sedation hold.

#### Key point:

The RASS (Richmond Agitation Sedation Scale) and the SAS (Sedation Agitation Scale) have the highest inter-rater reliability and validity in relation to other sedation scoring systems. The RASS and the SAS are generally considered the most valid and reliable tools for assessing a sedated adult ICU patient.

### GLASGOW COMA SCALE

The Glasgow Coma Scale (GCS) is the most widely used **neurological assessment tool**. It classifies **brain injury** into 3 levels: Severe (GCS < 9), Moderate (GCS 9-12), Minor (GCS ≥ 13).

#### GLASGOW COMA SCALE

The Glasgow Coma Scale was primarily devised for...



Sedation Assessment



Pupillary changes



Head trauma patients



Correct. The GCS was devised by Teasdale and Jennet (professors of neurosurgery) in 1974. It is a reliable tool for estimating the level of consciousness particularly after head injury.

Delirium



Verbal response

## MODULE 2: ASSESSING SEDATIVE STATE

### Key point:

The GCS was not designed or validated for sedation assessment. It should not be used to identify the sedative state of your patient. An appropriate sedation assessment tool should be used to assess your patient's level of sedation.

## SEDATION SCALES

Several subjective sedation assessment scales are used to monitor agitation and depth and quality of sedation in adult ICU patients. Each scale consists of different methods of sedation assessment and different scale measurements.

To date, the Richmond Agitation Sedation Scale (RASS) and the Riker-Sedation Agitation Scale are generally considered the most valid and reliable sedation assessment scales among multiple levels of health care professionals in adult ICU patients.

### THE RIKER SEDATION AGITATION SCALE (SAS)

The Riker Sedation Agitation Scale (SAS) was specifically designed for sedation assessment in ICU patients.

#### Riker Sedation Agitation Scale

RIKER SEDATION AGITATION SCALE (SAS)		
SCORE	TERM	DESCRIPTOR
7	Dangerous Agitation	Pulling at ET 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 ETT
5	Agitated	Anxious or physically agitated, calms to verbal instructions
4	Calm and Cooperative	Calm, easily rousable, 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	Unrousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

#### SAS: SCENARIO 1

***During the night your patient attempted to pull out his ET tube; he appeared angry, aggressive and combative.***

RIKER SEDATION AGITATION SCALE (SAS)		
SCORE	TERM	DESCRIPTOR
7	Dangerous	Pulling at ET tube, trying to remove catheters, climbing over bedrail,

## MODULE 2: ASSESSING SEDATIVE STATE

	Agitation	striking at staff, thrashing side to side
6	Very Agitated	Requiring restraint and frequent verbal reminding of limits, biting ETT
5	Agitated	Anxious or physically agitated, calms to verbal instructions
4	Calm and Cooperative	Calm, easily rousable, follows commands
3	Sedated	Difficult to arouse but wakens to verbal stimuli or gentle shaking, follows simple commands but drifts off again
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Correct answer is 7.

***Agitated patients are scored by their most severe degree of agitation as described in the SAS score.***

### SAS: SCENARIO 2

**Your patient appears sedated. You call his name, he appears relaxed; he nods his head and smiles when asked if he is comfortable.**

RIKER SEDATION AGITATION SCALE (SAS)		
SCORE	TERM	DESCRIPTOR
7	Dangerous Agitation	Pulling at ET 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 ETT
5	Agitated	Anxious or physically agitated, calms to verbal instructions
4	Calm and Cooperative	Calm, easily rousable, follows commands
3	Sedated	Difficult to arouse but wakens to verbal stimuli or gentle shaking, follows simple commands but drifts off again
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Correct answer is 4

## MODULE 2: ASSESSING SEDATIVE STATE

***If the patient is awake or awakens easily to voice (“awaken” means responds with voice or head shaking to a question or follows commands), that is SAS 4 (same as calm and appropriate- might even be napping).***

### SAS: SCENARIO 3

***If on observation the patient appears sedated, call the patient’s name, the patient now follows simple commands but she is unable to stay awake. To ensure she hears your description of your daily plan you have to gently shake their shoulder.***

RIKER SEDATION AGITATION SCALE (SAS)		
SCORE	TERM	DESCRIPTOR
7	Dangerous Agitation	Pulling at ET 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 ETT
5	Agitated	Anxious or physically agitated, calms to verbal instructions
4	Calm and Cooperative	Calm, easily rousable, follows commands
3	Sedated	Difficult to arouse but wakens to verbal stimuli or gentle shaking, follows simple commands but drifts off again
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Correct answer is 3.

***If more stimuli such as shaking is required but patient eventually does awaken that is SAS 3.***

### SAS: SCENARIO 4

***The patient has their eyes closed and they do not appear to respond when you call their name. When you shake their shoulder they appear to move their upper limbs but they do not try and communicate.***

RIKER SEDATION AGITATION SCALE (SAS)		
SCORE	TERM	DESCRIPTOR
7	Dangerous Agitation	Pulling at ET 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 ETT
5	Agitated	Anxious or physically agitated, calms to verbal instructions

## MODULE 2: ASSESSING SEDATIVE STATE

4	Calm and Cooperative	Calm, easily rousable, follows commands
3	Sedated	Difficult to arouse but wakens 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	Unrousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

Correct answer is 2.

***If the patient arouses to stronger physical stimuli (May be noxious) but never awakens to the point of responding yes/no or following commands, that is SAS 2.***

### SAS: SCENARIO 5

The patient has their eyes closed; there is no response when you call their name. You shoulder shake the patient and again there is no response. You perform sternal rubbing, there is no movement observed and the patient makes no attempt to communicate.

### RIKER SEDATION AGITATION SCALE (SAS)

SCORE	TERM	DESCRIPTOR
7	Dangerous Agitation	Pulling at ET tube, trying to remove catheters, climbing over bedrail, striking at staff, thrashing side to side
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4	Calm and Cooperative	Calm, easily rousable, follows commands
3	Sedated	Difficult to arouse but wakens 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	Unrousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

Correct answer is 1.

***After score 1 is clicked-Little or no response to noxious physical stimuli represents SAS 1***

## MODULE 2: ASSESSING SEDATIVE STATE

### RICHMOND AGITATION SEDATION SCALE (RASS)

The RASS was first developed by a group of critical care physicians, nurses and pharmacists. Research findings to date have proven that it has high inter-rater reliability and validity for most patient categories in ICU. This suggests that it is the most reliable and most valid sedation scoring system for measuring depth and quality of sedation in ICU. The RASS score is a ten point scale with 5 negative and 4 positive scores with alert and calm at 0.

#### Key point:

A unique feature of the RASS, in comparison to other sedation assessment tools, is that it scores patients on sustained eye contact.

RICHMOND AGITATION SEDATION SCALE (RASS)			
SCORE	TERM	DESCRIPTOR	TYPE OF STIMULATION
+4	Combative.	Overtly combative, immediate danger to staff.	Observation.
+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 sec).	Verbal Stimulation.
-2	Light Sedation.	Briefly awakens with eye contact to voice (<10 sec).	
-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.	Physical Stimulation.
-5	Unrousable.	No response to voice or physical stimulation.	

#### RASS: SCENARIO 1

**On observation the patient appears aggressive, they are trying to pull out their ET tube and they have already pulled their nasogastric tube out. However, they do not attempt to strike or injure the nursing staff.**

Step 1: Select the level of stimulation required

#### Type of Stimulation

#### Observation



## MODULE 2: ASSESSING SEDATIVE STATE

**Verbal  
Stimulation**

**Physical  
Stimulation**

Correct answer: Observation

Step 2: Select the correct score

<b>+4</b>	<b>Combative</b>	<b>Overtly combative, immediate danger to staff.</b>
<b>+3</b>	<b>Very Agitated</b>	<b>Pulls or removes tube(s) or catheter(s); aggressive</b>
<b>+2</b>	<b>Agitated</b>	<b>Frequent non- purposeful movement, fights ventilator.</b>

Correct answer +3. **Agitated** patients should be scored by their highest level of agitation. The RASS assessment allows broad discrimination between all levels of an agitated ICU patient.

### RASS: SCENARIO 2

The patient appears relaxed, they have their eyes open and nod their head when asked if they are comfortable.

Step 1: Select the level of stimulation required

**Type of Stimulation**

**Observation**

**Verbal  
Stimulation**

**Physical  
Stimulation**

Correct answer: Verbal stimulation

Step 2: Select the correct score

## MODULE 2: ASSESSING SEDATIVE STATE

<b>+1</b>	<b>Restless</b>	<b>Anxious but movements not aggressive or vigorous</b>
<b>0</b>	<b>Alert and Calm</b>	

Correct answer: 0.

### RASS: SCENARIO 3

Your patient is sedated and has his eyes closed and remains still in bed. You ask your patient to open his eyes and look at you. He appears drowsy but maintains eye contact while you explain to him your daily assessment plan.

Step 1: Select the level of stimulation required

Type of Stimulation
Observation
Verbal Stimulation
Physical Stimulation

Correct answer: Verbal stimulation

Step 2: Select the correct score

<b>-1</b>	<b>Drowsy</b>	<b>Not fully alert but has sustained awakening (Eye opening/eye contact) to voice (&gt;10 sec)</b>
<b>-2</b>	<b>Light Sedation</b>	<b>Briefly awakens with eye contact to voice (&lt;10 sec)</b>
<b>-3</b>	<b>Moderate Sedation</b>	<b>Movement or eye opening to voice (but no eye contact)</b>

Correct answer: -1

### RASS: SCENARIO 4

Your patient remains sedated, he has his eyes closed and remains still in bed. You call his name and ask him to look at you; he glances at you briefly but closes his eyes again before you can tell him the date and time.

Step 1: Select the level of stimulation required

## MODULE 2: ASSESSING SEDATIVE STATE

Type of Stimulation
Observation
<i>Verbal Stimulation</i>
Physical Stimulation

Correct answer: Verbal stimulation

Step 2: Select the correct score

-1	Drowsy	Not fully alert but has sustained awakening (Eye opening/eye contact) to voice (>10 sec)
-2	Light Sedation	Briefly awakens with eye contact to voice (<10 sec)
-3	Moderate Sedation	Movement or eye opening to voice (but no eye contact)

Correct answer: -2

### RASS: SCENARIO 5

Your patient appears sedated, you call her name and direct her to look at you but she remains still with her eyes closed. You physically stimulate her by shaking her shoulder. She appears to move her lower limbs.

Step 1: Select the level of stimulation required

Type of Stimulation
Observation
<i>Verbal Stimulation</i>
Physical Stimulation

Correct answer: Physical stimulation

## MODULE 2: ASSESSING SEDATIVE STATE

Step 2: Select the correct score

<b>-4</b>	<b>Deep Sedation</b>	<b>No response to voice but movement or eye opening to physical stimulation</b>
<b>-5</b>	<b>Unroutable</b>	<b>No response to voice or physical stimulation</b>

Correct answer: -4

### RASS: SCENARIO 6

Your patient remains sedated. You call their name and ask them to look at you but they do not open their eyes or move their limbs. You physically stimulate them by shaking their shoulder. Again there is no response. You perform sternal rubbing the patient does not open their eyes or make any movement.

Step 1: Select the level of stimulation required

Type of Stimulation
Observation
Verbal Stimulation
Physical Stimulation

Correct answer: Physical stimulation

Step 2: Select the correct score

<b>-4</b>	<b>Deep Sedation</b>	<b>No response to voice but movement or eye opening to physical stimulation</b>
<b>-5</b>	<b>Unroutable</b>	<b>No response to voice or physical stimulation</b>

Correct answer: -5

### RASS: PROS AND CONS

#### PROS

- It can be administered in 30-60 seconds utilising 3 methods.
  - **Visual**
  - **Auditory**
  - **Physical**
- It offers a broader range of discrimination between levels of agitation and sedation.
- The use of positive and negative numbers offers a logical approach.
- It can potentially establish an optimum level of sedation for the ICU patient consequently optimal sedation titration.

#### CONS

- Relies on auditory and visual acuity- unsuitable for those with hearing and sight impairments.
- Certain patients show violent response to physical or auditory stimulus which may indicate a high positive score; this may lead to immediate and unnecessary sedation boluses

### OTHER SEDATION SCALES

Other sedation assessment scales remain in use in some critical care areas. The Ramsay Assessment tool and the Modified Bloomsbury Scale are examples of such tools. However it is important to note that they are not considered the most valid and reliable scoring systems on assessing a patient's sedative state.

*For what reasons are the Bloomsbury and Ramsay scales not as reliable as the RASS and SAS?  
Click on the squares below to reveal the points...*

- The Bloomsbury scale has not been validated for its inter- rater reliability and validity and the Ramsay Scale has not yielded results that are as significant as the RASS and the SAS sedation assessment tools.
- There is no clear definition of the levels of agitation, therefore it is difficult to compare agitation levels and assess whether the patient's state of agitation has changed.
- There is no level to assess sustained eye contact which is a unique feature of the RASS and a good indicator of the patient's level of consciousness.

### BLOOMSBURY SCALE

Other sedation assessment scales remain in use in some critical care areas. The Modified Bloomsbury Scale is an example of such a tool. However it is important to note that it is not considered the most valid and reliable scoring system on assessing a patient's sedative state.

THE BLOOMSBURY SCALE	
SCORE	DESCRIPTION
3	Agitated and Restless
2	Awake and uncomfortable
1	Awake but calm
0	Roused by voice but remains calm
-1	Roused by movement or suction
-2	Roused by painful stimuli
-3	Unarousable
A	Natural Sleep

### THE RAMSAY SEDATION SCALE

Other sedation assessment scales remain in use in some critical care areas. The Ramsay Sedation Scale is an example of such a tool. However it is important to note that it is not considered the most valid and reliable scoring system on assessing a patient's sedative state.

THE RAMSAY SEDATION SCALE	
SCORE	DESCRIPTION
1	Patient is anxious and agitated or restless or both
2	Patient is cooperative, orientated and tranquil
3	Patient responds to commands only
4	Patient exhibits brisk response to light glabellar tap or auditory stimulus
5	Patient exhibits a sluggish response to light glabellar tap or loud auditory stimulus
6	Patient exhibits no response

## MODULE 2: ASSESSING SEDATIVE STATE

### SUMMARY

- It is imperative that a primary assessment is performed prior to using a sedation assessment tool with focus on the rationale for sedation and reasons behind the type of sedation as well as the sedation rate.
- Sedation tools use different forms of physical stimulation. The RASS recommends shoulder shaking and sternal rubbing to assess the patient's level of response.
- Sedation assessment tools have the potential to reduce the length of mechanical ventilation, ventilator associated pneumonia, and decrease ICU stay thus decreasing ICU costs.
- It is important to establish set goals or targets for optimal sedation.
- The RASS and the SAS are at present considered 'gold standard' sedation assessment tools. They have been validated for their reliability, validity and responsiveness in various research studies.

#### Key point:

Optimising a patient's level of sedation following an accurate sedation assessment can improve the quality of care for ICU patients and can potentially prevent complications as a result of over or under sedative states.