ICU Management protocol No. 3

CONTINUOUS INTRAVENOUS SEDATION

Sedative medications are widely used in the intensive care unit. Titrating the dose of the medication based on a sedation scale will help prevent oversedation, treat undersedation as well as restlessness and agitation.
Nurses and doctors are encouraged to change the sedative infusion rate based on this protocol.

1. Patients are to be assessed for sedation and agitation based on the revised Riker Sedation and Agitation scale every 4 hours. The worst score within the last 4 hours is to be recorded.

2. Titrate the sedative infusion rate with the aim of keeping the sedation score between -1 to +1

3. Exceptions to keeping the sedation score between -1 and +1:
   a. *head injured on cerebral protection*: sedation score -3
   b. *severe sepsis on high inotropic support*: sedation score of at least -1
   c. ARDS *on high ventilatory support*: sedation score of at least -2
   d. *tetanus*: sedation score of at least -2

4. The standard sedative infusion to be used in patients admitted to ICU is midazolam and morphine. 30mg midazolam and 30mg morphine is diluted in up to 30mls normal saline. The infusion may be started between 2 – 3mls per hour

5. Fentanyl may be used instead of midazolam and morphine in the following conditions:
   a. renal failure
   b. hepatic failure

6. 200mcg Fentanyl is diluted in up to 20mls normal saline. The infusion rate is between 2 - 5mls per hour (20 -50mcg/hour)

7. Postoperative cases that are for overnight ventilation may be put on
   a. morphine $\pm$ propofol
   b. dexmedetomidine (only for 24 hours)

8. Consider daily interruption of continuous sedative infusion at a fixed time every morning.

9. If sedation score is +2, exclude other causes of agitation such as pain, hypoxia etc. Calm patient down by communicating with him. Increase the sedative infusion rate. There may be a need to add further sedation
   For example: Tab. Lorazepam 1-2 mg ON / bd
   Tab. Alprazolam 0.5mg bd / tds

10. If sedation score +3, exclude other causes of agitation. Bolus midazolam/morphine and increase infusion rate except in non ventilated patients. IV haloperidol will probably be indicated:
    Age < 60 years: 5 -10mg PRN / 4 -6hourly
    Age > 60 years: 2.5 -5 mg PRN / 6 hourly

11. If sedation score: -2, half the intravenous sedative infusion. Decrease the sedative infusion every 4 hours until a score of -1 is achieved

12. If sedation score: -3, off sedative infusion. Assess 4 hours later. Restart at half the infusion rate once a score of -1 has been reached.

13. Patients that are paralysed need not be scored and should be denoted with a capital "P"

References:

1. Clinical practice guidelines on the sustained use of sedatives and analgesics in the critically ill. Judith Jacobi et al: *Crit Care Med* 2002; Vol 30

Revised Riker Sedation Agitation Scale

Score	Description	Definition
+3	Agitated and restless	When awaken or otherwise, pulling at ETT, trying to remove catheters or requires physical restraints
+2	Awake but mildly agitated	Anxious but mildly agitated. Attempts to sit up but calms down with verbal instructions
+1	Awake and calm	Awake, calm and easily follows commands
0	Aroused by voice and remains calm	Awakens easily to verbal stimuli. Remains awake, calm and easily follows command
-1	Aroused by movement	Awakens to loud verbal stimuli or gentle shaking. Has eye contact for at least 10 seconds but drifts off to sleep OR Awakens to loud verbal stimuli or gentle shaking and follows simple commands
-2	Aroused by painful stimuli	Localising or flexion to pain. Does not communicate or follow commands
-3	Unarousable	Extension, minimal or no response to painful stimuli

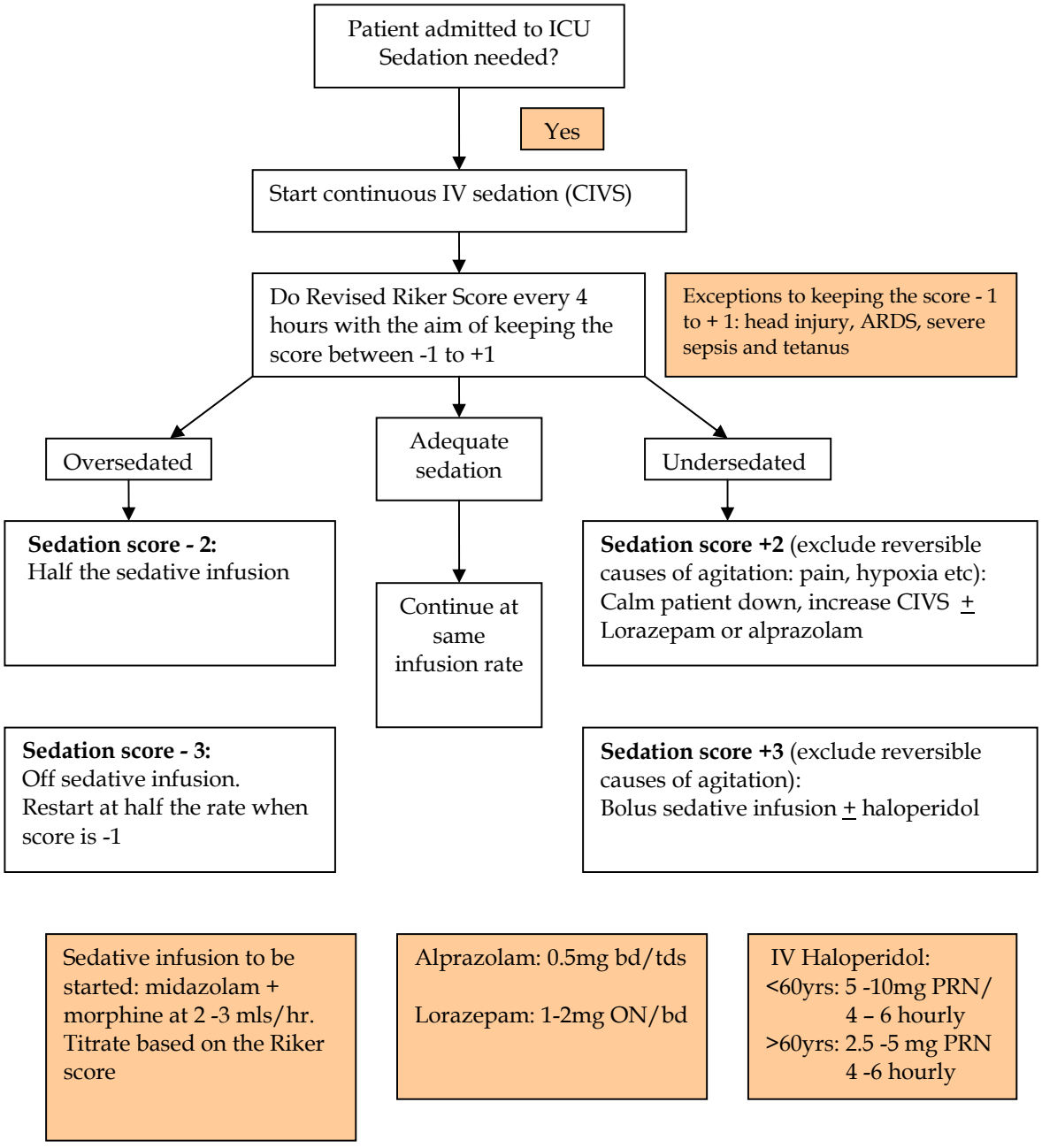
Assessment:

1. Observe patient: is the patient awake and calm? If yes, score +1
   Does the patient have behavior consistent with restless or agitation? If yes, score +2 or +3 based on the criteria above

2. If the patient is not awake, call the patient's name out or lightly tap on the shoulder. If awakens and remains awake, score is 0 but if drifts off to sleep after eye contact, score is -1

3. If does not respond to voice or gentle tapping, physically stimulate the patient. Observe response and score using the criteria above.

Algorithm for titration of continuous intravenous sedation using the Revised Riker Sedation Agitation Scale



Note: Consider daily interruption of CIVS at a fixed time every morning. Exceptions to this would be head injured on cerebral protection, acute myocardial infarct