

Analgosedation: What Strategy is Best ?

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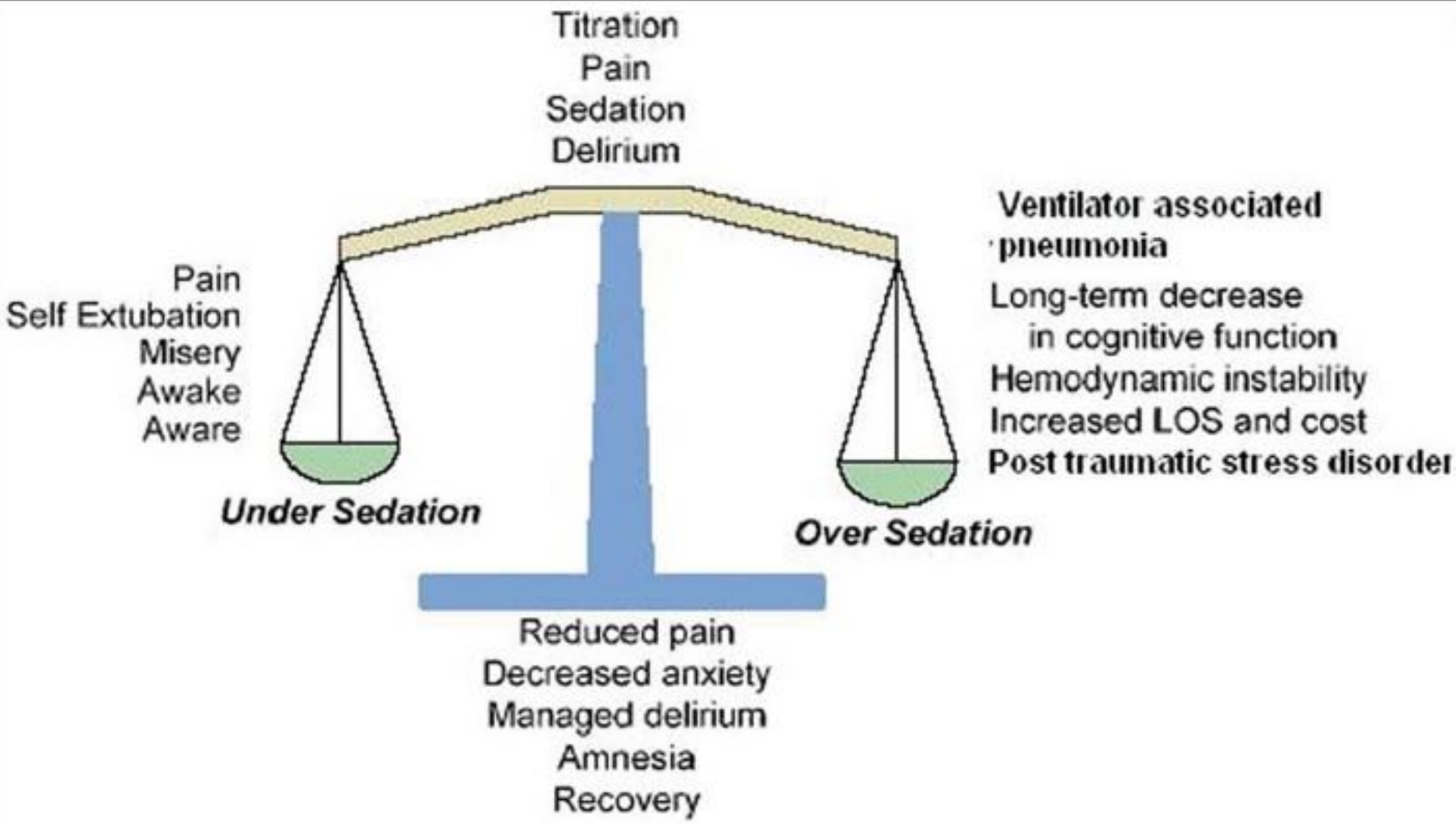


The facts

- Despite the efforts to optimize sedation and comfort of ICU's patients:
 - More than 50% of patients from several studies recalled experiencing moderate to extreme pain, anxiety, fear and inability to sleep during ICU stay.
 - Managing sedation is an important unmet challenge in ICUs worldwide.
 - Pain management is often left aside despite major interventions
 - There is no gold standard regarding pharmacological options for managing pain and sedation

The target

- Identification of the critically ill patient's need for pain relief and correct level of sedation decreases the risk of complications and reduces the LOS.
- Personalized pain treatment and sedation in the ICU also improve the patient's comfort and raise the tolerance threshold for ICU treatment



Sedation – Analgesia Model

- Patients are given constant sedatives to relieve anxiety or distress, with extra analgesia given to relieve pain.
- There is a tendency of oversedation between 40-60% of the patients
- There are several adverse effects of the drugs use in the sedation model

Sedation-Analgesia Model

- Recent publications have found that there are advantages of sedation protocols, assessment scales and daily interruptions of sedatives.
- However there is a great heterogeneity in sedation practices across countries
- Ideally, patients need to be awake or only lightly sedated unless there is a clinical need for deep sedation

Sedation-Analgesia Model

Recall of ICU Stay in Patients Managed With a Sedation Protocol or a Sedation Protocol With Daily Interruption

TABLE 4. Characteristics of Patients Who Reported That They “Did Not Remember Being in the ICU” and Those Who Did on Day 28^a

Characteristic	Remember Being in ICU (n = 88)	Patients Who Reported They “Did not Remember Being in the ICU” (n = 31)	p
Age (yr), mean (sd)	57.6 (15.5)	53.5 (16.4)	0.22
Female	42 (47.7)	10 (32.3)	0.14
Randomization group			0.19
Protocolized sedation	42 (47.7)	19 (61.3)	
Protocolized sedation plus daily sedation interruption	46 (52.3)	12 (38.7)	

Pain in the ICU

- Two possible origins:
 - Acute pain from the basal illness
 - Acute pain from ICU procedures

- Reasons for untreated pain:
 - Underestimate pain in the sedated patient
 - Lack of knowledge of specific assessment tools

Pain: The unmet player

Determinants of Procedural Pain Intensity in the Intensive Care Unit

The Europain® Study



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Table 2: Differences in Pain Intensity from before the Procedure to during the Procedure

Procedure	N (%)	Preprocedural Pain Intensity Median (IQR)	Pain Intensity During the Procedure Median (IQR)	Difference Median (IQR)	P Value*
Chest tube removal	292 (6.1)	2 (0–4)	5 (3–7)	2.5 (0.5–4)	<0.0001
Wound drain removal	75 (1.6)	2 (0–4)	4.5 (2–7)	2 (0–4.5)	<0.0001
Arterial line insertion	199 (4.1)	1 (0–2.5)	4 (2–6)	2.75 (0–5)	<0.0001
Endotracheal suctioning	767 (15.9)	1 (0–4)	4 (1–6)	1.5 (0–4)	<0.0001
Tracheal suctioning	302 (6.3)	1 (0–3.5)	4 (1–6)	1 (0–4)	<0.0001
Peripheral intravenous insertion	315 (6.5)	1 (0–3)	3 (1–5.5)	1 (0–3)	<0.0001
Peripheral blood draw	328 (6.8)	0.5 (0–3)	3 (1–5)	1 (0–3)	<0.0001
Turning	873 (18.1)	1.75 (0–4)	3 (0.25–6)	1 (0–2.5)	<0.0001
Respiratory exercises	439 (9.1)	2 (0–4)	3 (1–5)	1 (0–2)	<0.0001
Positioning	371 (7.7)	1 (0–4)	3 (0–5)	1 (0–2)	<0.0001
Wound care	301 (6.3)	2 (0–4)	3 (1–6)	0.5 (0–2)	<0.0001
Mobilization	526 (10.9)	1 (0–3)	2 (0–5)	0 (0–2)	<0.0001

Definition of abbreviation: IQR = interquartile range.

Pain intensity was scored on a 0–10 numerical rating scale.

*Wilcoxon signed rank sum test.

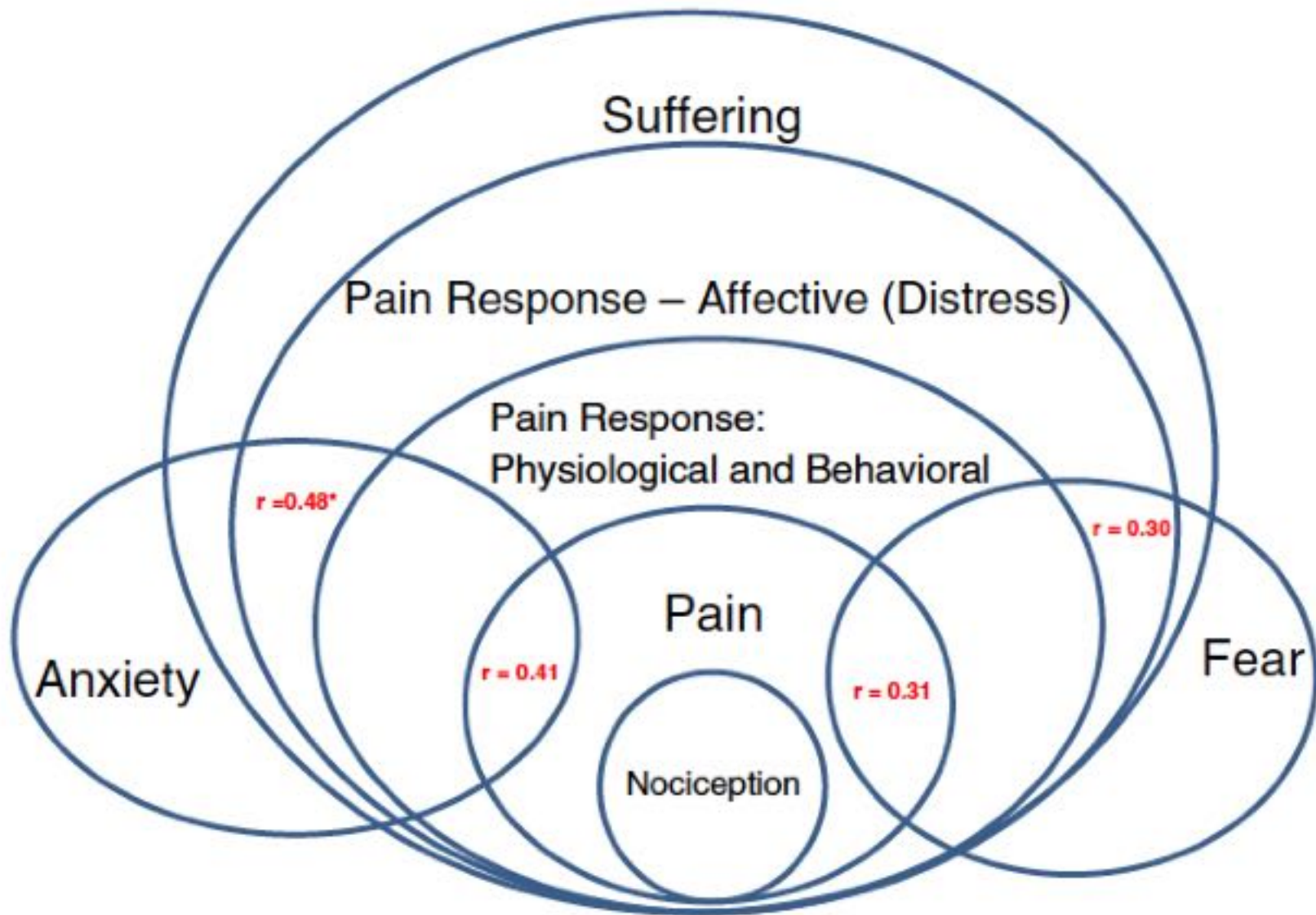


Fig. 1 The multidimensionality of pain and other symptoms.

Pain in the ICU

- Successful analgesia starts with identifying and managing conditions that contribute to pain, well before the use of any medications.
- Insomnia, anxiety and delirium can amplify the pain experience and also require prompt treatment.

Clinical recommendations

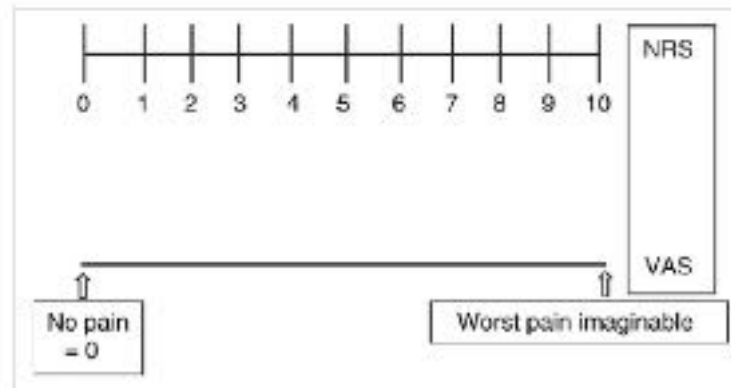


Figure 1. Visual Analog scale (VAS) and Numerical Rating scale (NRS). Adapted from Breivik et al,²⁴ with permission.

Table 1. Behavioral Pain Scale.²

Item	Description	Score
Facial expression	Relaxed	1
	Partially tightened (eg, brow lowering)	2
	Fully tightened (eg, eyelid closing)	3
	Grimacing	4
Upper limbs	No movement	1
	Partially bent	2
	Fully bent with finger flexion	3
	Permanently retracted	4
Compliance with ventilation	Tolerating movement	1
	Coughing but tolerating ventilation most of time	2
	Fighting ventilator	3
	Unable to control ventilation	4
Total score		3-12

² Adapted from Payen et al,³⁵ with permission.

Clinical recommendations

Table 2. Critical Care Pain Observation Tool.^a

Indicator	Description and Score
Facial expression	No muscular tension observed. Relaxed, neutral: 0 Presence of frowning, brow-lowering, orbit tightening, and levator contraction. Tense: 1 All of the above facial movements plus eyelids tightly closed. Grimacing: 2
Body movement	Does not move at all (does not necessarily mean the absence of pain). Absence of movements: 0 Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements. Protection: 1 Pulling at tube, attempting to sit up, moving limbs or thrashing, not following commands, striking at staff, trying to climb out of bed. Restlessness: 2
Muscle tension (evaluated by passive arm flexion and extension)	No resistance to passive movements. Relaxed: 0 Resistance to passive movements. Tense, rigid: 1 Strong resistance to passive movements, inability to complete them. Very tense or rigid: 2
Ventilator compliance (if intubated) or vocalization (if not intubated)	Alarms not activated, easy ventilation. Tolerating ventilation or movement: 0 Alarms stop spontaneously. Coughing but tolerating ventilator: 1 Asynchrony; blocking ventilation, alarms frequently activated. Fighting ventilator: 2 Talking in normal tone or no sound: 0 Sighing, moaning: 1 Crying out, sobbing: 2
Total score	0-8

^a Adapted from Gélinas et al,³⁹ with permission.

Analgo sedation

**Is it the
right answer?**



Analgo-Sedation

- **The ICU is an hostile environment**
- **Pain is often the root cause of distress**

- **Anxiety**
- **Dyspnea**
- **Delirium**
- **Sleep deprivation**



additive or
synergistic

Analgo-sedation

- The primary goal is to address pain and then add a hypnotic agent if necessary
 - Analgesia based sedation
 - Analgesia first sedation
- It is an approach to ICU sedation that may ameliorate significant patient safety concerns associated commonly with sedative agents.
- Puts a focus on the unmet need of providing adequate pain relief.

Analgo-sedation

- The trials reviewed by Devabhakthuni et al (2012) showed that:
 - Comparing the use of remifentanyl to propofol or midazolam, the approach of using remifentanyl alone in continuous infusion:
 - Led to optimal patient comfort studies
 - None of the remifentanyl studies used daily sedation interruption
 - Patients treated with this model were more likely to be weaned from ventilation more quickly, spend less time on ventilator support, and have a shorter ICU length of stay.

Analgo-sedation

- There has been also drawbacks in the analgo-sedation model:
 - Delirium has also been found to be associated with morphine administration.
 - Recall for unpleasant events before regaining consciousness, nightmares and hallucinations.
 - Immunosuppressive effects of opioids
 - Strong withdrawal effect following the discontinuation
 - Hyperalgesia and increased analgesic requirements following cessation of remifentanyl infusions

Analgo-sedation

- There are some concerns about the use of analgo-sedation if the patient:
 - Requires deeper levels of sedation (such as those with elevated intracranial pressure)
 - Ventilator disynchrony
 - Severe agitation
 - Other specific conditions

Analgesedation

- Which opioid is the best?
 - Remifentanyl is the ideal based on its pharmacokinetic properties...
 - More important role in patients with neurologic conditions that require closer monitoring.
 - Cause hyperalgesia
 - Fentanyl is also a reasonable choice with similar outcomes when compared to remifentanyl
 - Morphine accumulates in renal failure and has delirigenic effects

Table 2. Efficacy Outcomes

	Propofol	Fentanyl	P Value
Duration of mechanical ventilation (hrs)	46.7 (27.9–66.7)	46 (34.3–96.9)	0.19
ICU length of stay (days)	5 (4–8)	5 (3–7.3)	0.42
CPOT scores at goal	81%	84%	0.44
RASS scores at goal	41.2%	41.8%	0.94
RASS scores +1 to +4	19.1%	18.9%	0.95
RASS scores –2 to –5	39.7%	39.3%	0.91
Required rescue opioid	56%	34%	0.04
Rescue opioid dose (µg)	150 (90–443.8)	100 (25–232.5)	0.03
Required rescue benzodiazepine	24%	38%	0.19
Rescue benzodiazepine dose (mg)	6 (3.8–20)	8 (2–11.4)	0.74

Categorical data displayed as %.

Continuous data displayed as median (IQR).

ICU = intensive care unit; CPOT = Critical Care Pain Observation Tool; RASS = Richmond Agitation Sedation Scale.

Clinical recommendations

- A shift in current sedations practices to analgo-sedation should be considered in the care of mechanically ventilated ICU patients.
- Clinicians must avoid oversedation, which can be accomplished with the use of protocols and daily sedation interruptions.
 - Sedation interruptions should be targeted at achieving the lightest level of sedation possible to prevent excessive drug accumulation

Clinical recommendations

- When possible, analgesic effectiveness and requirements should be monitored through patient self-report.
 - Those unavailable to communicate, a validated assessment tool for pain should be use (visual analog pain scale or behavioral pain scale)
- Patient discomfort should be treated with analgesics such as remifentanil or fentanyl; leaving morphine reserved as a second-line agent due to its adverse effects.

Clinical recommendations

- The use of hypnotic agents such as propofol or dexmedetomidine should be considered in all patients requiring rescue therapy after the initiation of analgosedation.
- Benzodiazepines use should be kept to a minimum.
- The use of sparing agents such as acetaminophen or NSAIDs is currently under research

Clinical recommendations

- Anxiety, delirium and pain are not mutually exclusive, and treatment of one may exacerbate the other (eg: excessive ansiolytic administration promoting delirium)
 - Physicians must understand the relation of neuropsychiatric conditions of pain (multimodal sedation?)
 - Sedation protocols

Conclusions

- Critical care improves and patients benefit when ICU clinicians practice thoughtful and systematic pain management.
- Guidance through protocols is the best strategy to minimize pain and improve comfort without oversedation.
- Analgosedation although promising, needs further clinical confirmation

Analgosedation Pros and Cons

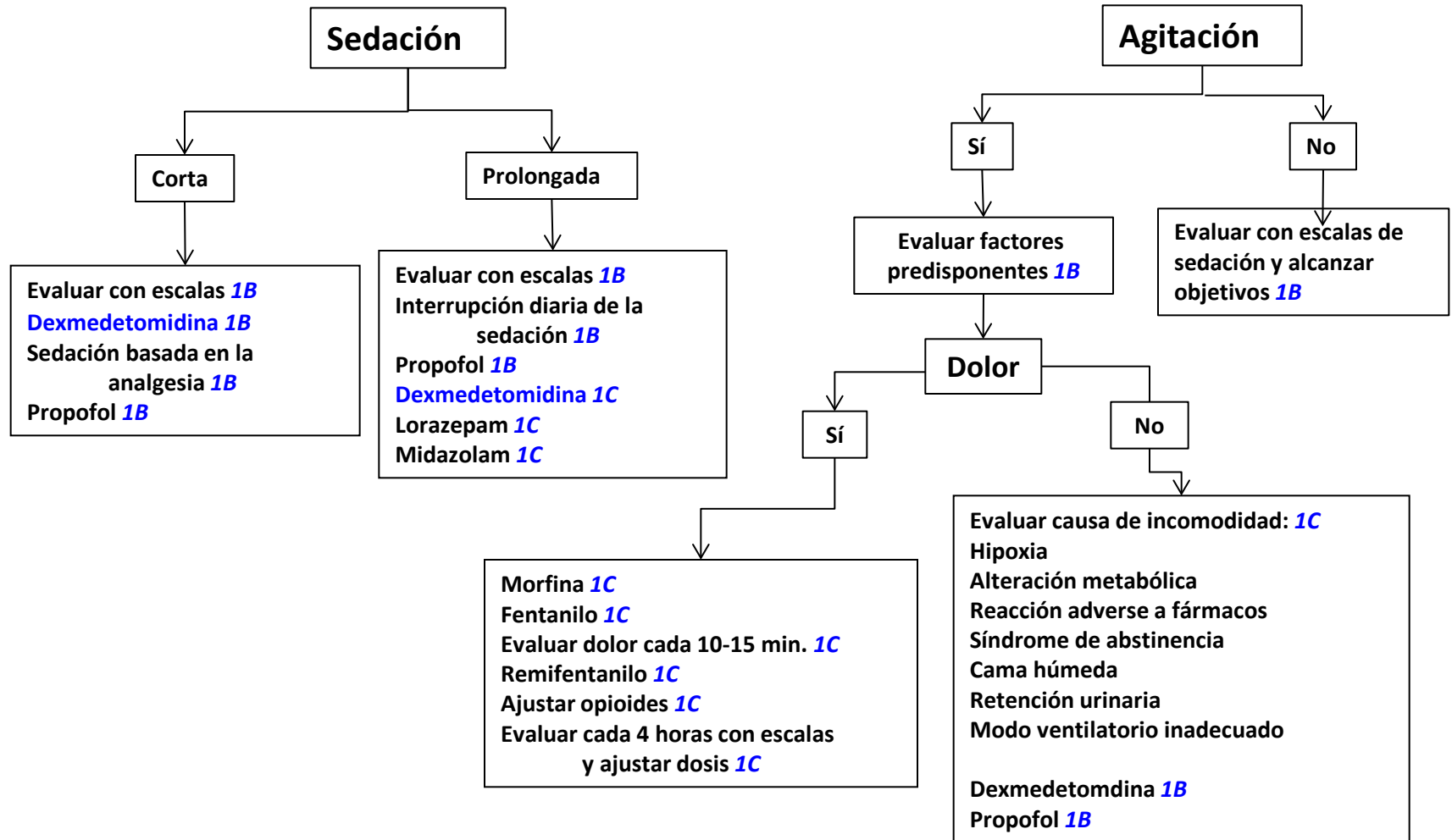
Advantages

- Reduction in hypnotics
- Less mechanical ventilation time
- Shorter ICU length of stay
- Rapid onset and offset of action
- Overall ICU cost savings?

Disadvantages

- Delirium
- Higher incidence of recall
- Nightmares
- Hallucinations
- Immunosuppression
- Withdrawal
- Hyperalgesia

Algoritmo para Sedación y Analgesia en TI



Hand Made



Thank you



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