

# ABCDEF Bundle ICU Liberation

Critical Care – Less is More



## **Assess, prevent & manage pain**

- CPOT or BPS to assess pain, insure adequate pain control
- Use of regional anesthesia and nonopioid adjuncts
- Analgesia-based sedation techniques with fentanyl



## **Both SAT & SBT**

- Daily linked SAT and SBT
- Multidisciplinary coordination of care
- Faster liberation from MV



## **Choice of sedation**

- Targeted light sedation when sedation necessary
- Avoidance of benzodiazepines
- Dexmedetomidine if high delirium risk, cardiac surgery, MV weaning



## **Delirium monitoring & management**

- Routine CAM-ICU or ICDSC assessments
- Nonpharmacologic intervention, including sleep hygiene
- Dexmedetomidine or antipsychotic if hyperactive symptoms



## **Early mobility & exercise**

- Physical and occupational therapy assessment
- Coordinate activity with SAT or periods of no sedation
- Progress through range of motion, sitting, standing, walking, ADLs

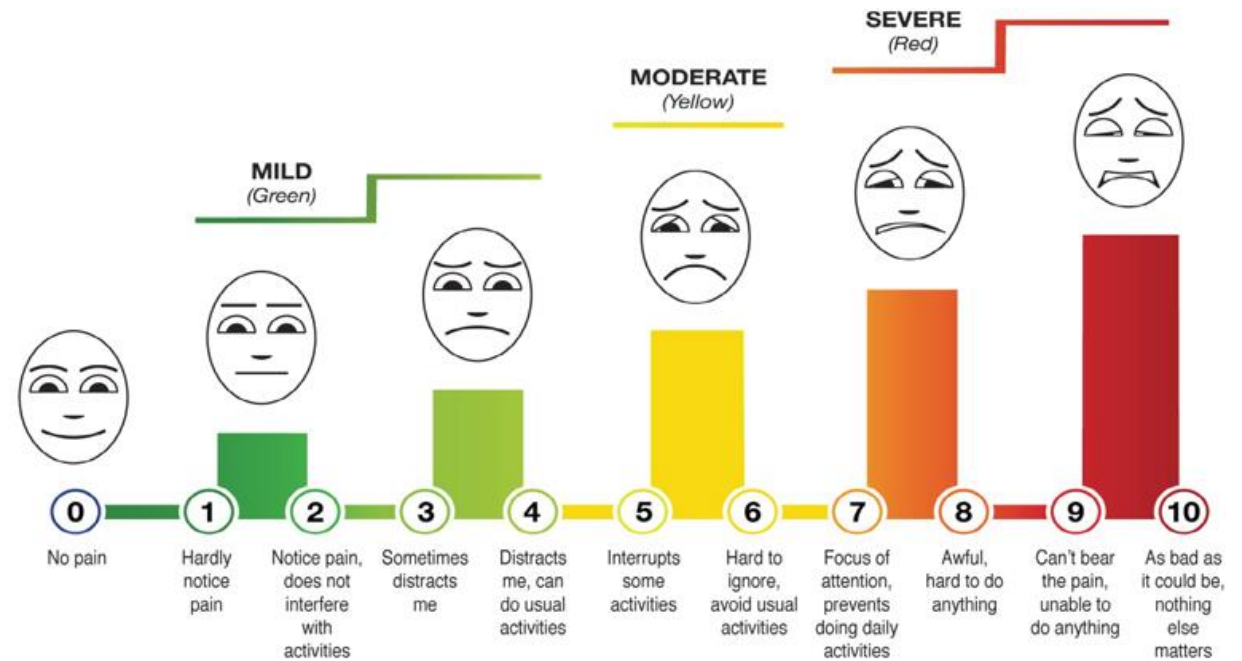


## **Family engagement & empowerment**

- Reorientation, provision of emotional and verbal support
- Cognitive stimulation, participation in mobilization
- Participation in multidisciplinary rounds

## Critical-Care Pain Observation Tool (CPOT)

Indicator	Description	Score
<b>Facial expression</b>	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 eyelid tightly closed	Grimacing 2
<b>Body movements</b>	Does not move at all (does not necessarily mean absence of pain)	Absence of movements 0
	Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements	Protection 1
	Pulling tube, attempting to sit up, moving limbs/ thrashing, not following commands, striking at staff, trying to climb out of bed	Restlessness 2
<b>Muscle tension</b> Evaluation by passive flexion and extension of upper extremities	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
<b>Compliance with the ventilator (intubated patients)</b>	Alarms not activated, easy ventilation	Tolerating ventilator or movement 0
	Alarms stop spontaneously	Coughing but tolerating 1
	Asynchrony: blocking ventilation, alarms frequently activated	Fighting ventilator 2
or		
<b>Vocalization (extubated patients)</b>	Talking in normal tone or no sound	Talking in normal tone or no sound 0
	Sighing, moaning	Sighing, moaning 1
	Crying out, sobbing	Crying out, sobbing 2
<b>Total, range</b>	<b>Sum each category</b>	<b>0-8</b>



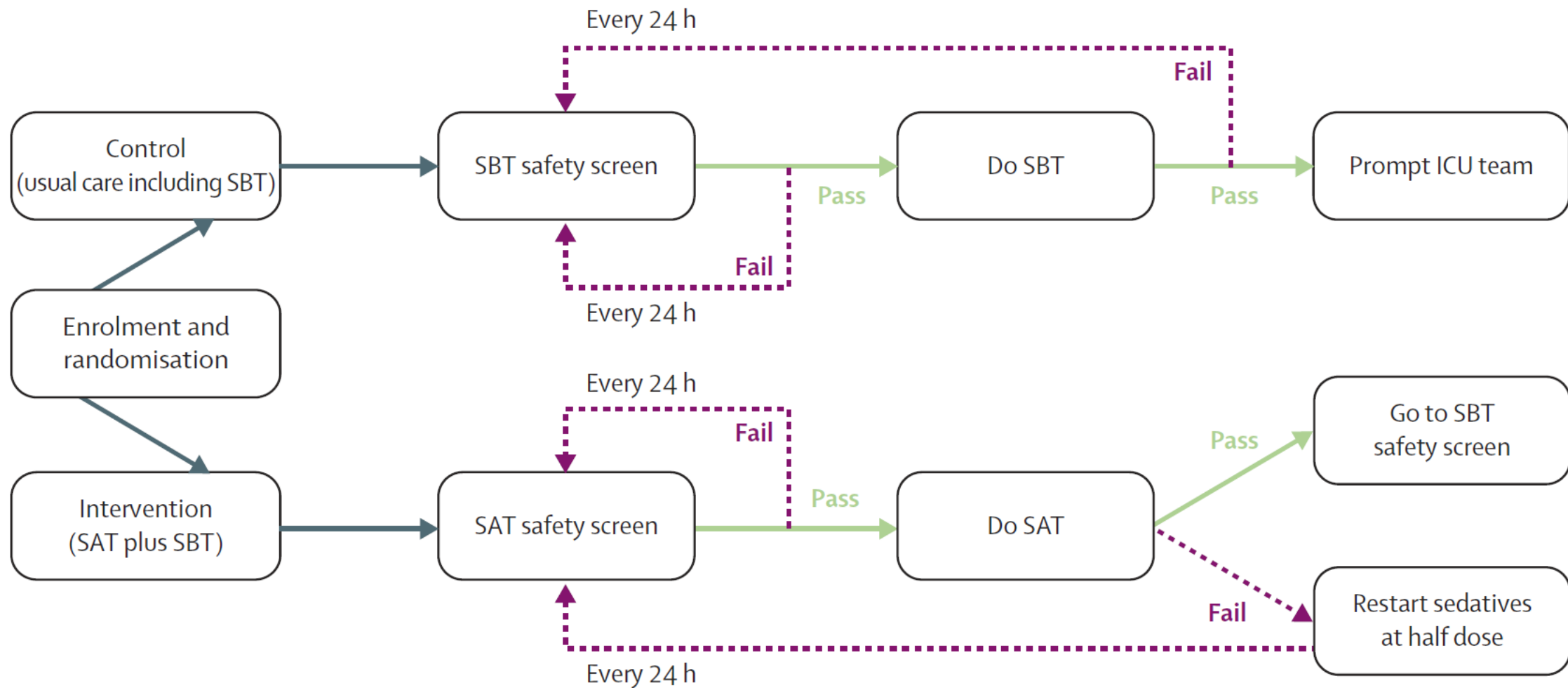
Gélinas C, et al. *Am J Crit Care* 2006; 15:420-427.

Gélinas C, et al. *Clin J Pain* 2007; 23:497-505.

# A: Assess, Prevent, & Manage Pain

Drug	Loading Dose	Maintenance dose range	Onset (minutes)	Duration of intermittent dose
Fentanyl	1 - 2 mcg/kg (25 - 100 mcg)	0.5 mcg/kg q 30 - 60 min or Infusion	1 - 2 minutes	30 to 60 minutes
Hydromorphone (Dilaudid)	0.5 to 2 mg	0.2 to 0.6 mg q 1-2 hours	5 -10 minutes	4 - 5 Hours
Morphine	2 - 10 mg	2 to 4 mg q 1-2 hours	5 -10 minutes	4 - 5 Hours
Acetaminophen (Tylenol)	N/A	650 mg q4h - 1000 mg q6h - Max 3-4 GM/day	PO: 30 - 60 minutes IV: 5 - 10 minutes	4 - 5 Hours
Ibuprofen (Motrin, Caldolor)	None	400 mg IV or PO q4h - Max 2400 mg/day	30 minutes	4 - 5 Hours
Neurontin (Gabapentin)	None	Begin 100 mg q8h, titrate daily	Variable	6-8 Hours

# A: Assess, Prevent, & Manage Pain



# B: Both SAT & SBT

Medication	Loading Dose	Maintenance Dose Range	Onset (Minutes)	Duration of Intermittent Dose (Minutes)
Propofol	N/A	Begin 5-10 mcg/kg/min - titrate q5-10 min up to 70 mcg/kg/min	1-2 minutes	3-10 minutes
Dexmedetomidine	0.5 to 1 mcg/kg over 30 minutes	Begin 0.2 mcg/kg/hr, titrate q30 min up to 1.5 mcg/kg/hr	5-10 min with loading dose, 15 minutes without loading	60 to 120 minutes
Midazolam	0.5 to 4 mg IV	2 to 8 mg/hr infusion	2 to 5 minutes	30 minutes
Ketamine	0.1 to 0.5 mg/kg	0.05 to 0.4 mg/kg/hr	< 1 minute	10 - 15 minutes

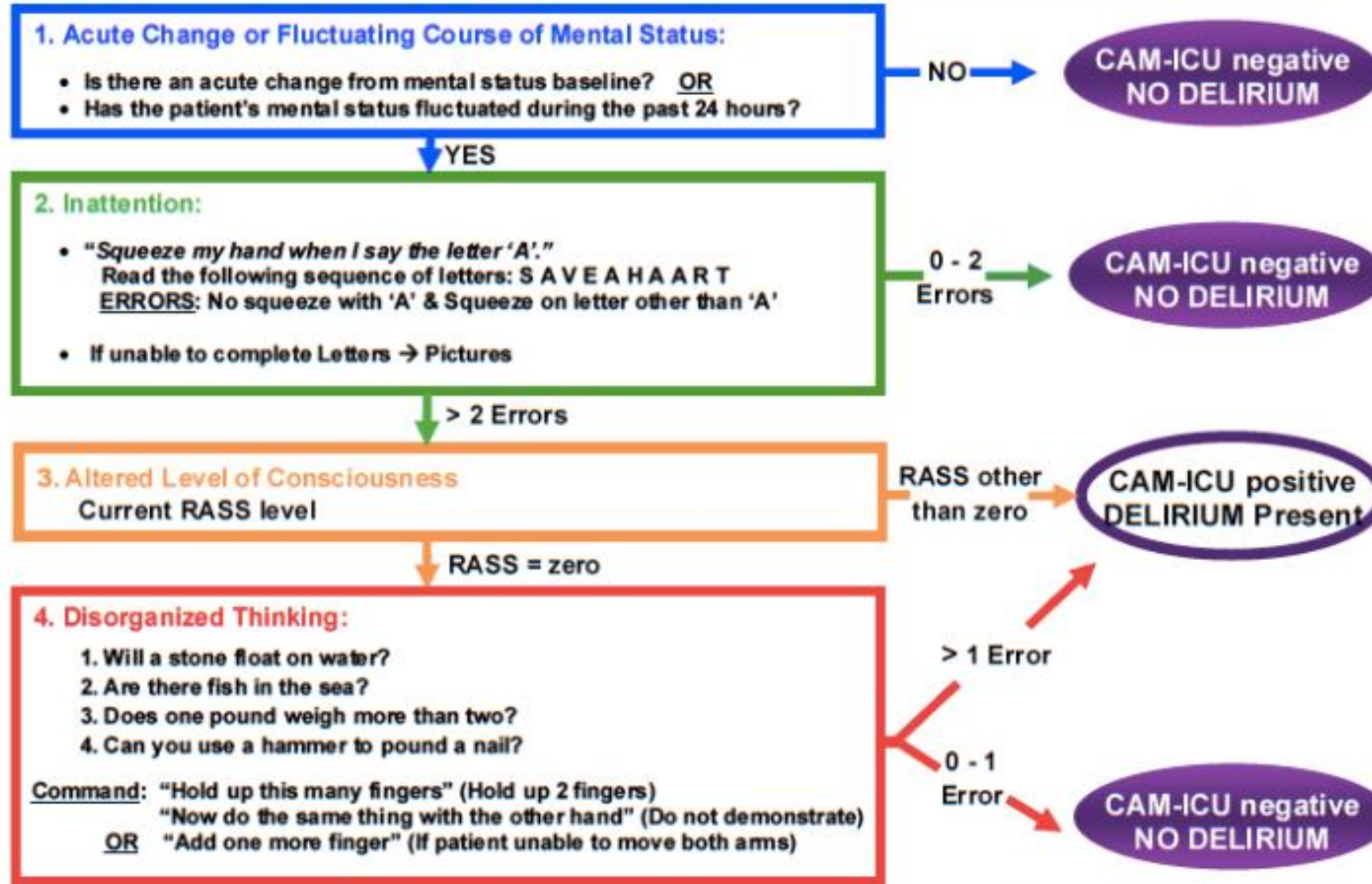
## C: Choice of Sedation



+4	COMBATIVE	Combative, violent, immediate danger to staff	VOICE
+3	VERY AGITATED	Pulls to remove tubes or catheters; aggressive	
+2	AGITATED	Frequent non-purposeful movement, fights ventilator	
+1	RESTLESS	Anxious, apprehensive, movements not aggressive	
0	ALERT & CALM	Spontaneously pays attention to caregiver	
-1	DROWSY	Not fully alert, but has sustained awakening to voice (eye opening & contact >10 sec)	
-2	LIGHT SEDATION	Briefly awakens to voice (eyes open & contact <10 sec)	
-3	MODERATE SEDATION	Movement or eye opening to voice (no eye contact)	TOUCH
If RASS is $\geq -3$ proceed to CAM-ICU (Is patient CAM-ICU positive or negative?)			
-4	DEEP SEDATION	No response to voice, but movement or eye opening to physical stimulation	
-5	UNAROUSABLE	No response to voice or physical stimulation	

## C: Choice of Sedation










## Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet



D:  
Delirium  
– Assess,  
Prevent,  
&  
Manage



# E: Early Mobility & Exercise

 <b>WVU Medicine</b>						
Highest Level of Mobility Score						
AMPAC Score	JH-HLM Scale			Yesterday's Score	Today's Goal	Today's Score
24	8	Walked 250 feet				
22-23	7	Walked 25 feet				
18-21	6	Walked 10 steps				
16-17	5	Static standing > 1 minute				
10-15	4	Transferred to chair/commode				
8-9	3	Sat on edge of bed				
6-7	2	Turned Self in Bed/ ROM				
	1	Lying in bed				

ICU Diaries

Family involvement on rounds

Family presence during code events

F: Family engagement & empowerment

**TABLE 2. Outcomes for Patients With Complete (vs Incomplete) ABCDEF Bundle Performance: Data are Adjusted Hazard Ratios (AHRs) and Adjusted Odds Ratios (AORs)**

Outcomes	Complete Bundle Performance	p Value
<b>Patient-Related Outcomes</b>	<b>AHR (95% CI)</b>	
ICU discharge <sup>a</sup>	1.17 (1.05–1.30)	< 0.004
Hospital discharge <sup>b</sup>	1.19 (1.01–1.40)	< 0.033
Death <sup>c</sup>	0.32 (0.17–0.62)	< 0.001
<b>Symptom-Related Outcomes<sup>d</sup></b>	<b>AOR (95%CI)</b>	
Mechanical ventilation	0.28 (0.22–0.36)	< 0.0001
Coma	0.35 (0.22–0.56)	< 0.0001
Delirium	0.60 (0.49–0.72)	< 0.0001
Significant pain	1.03 (0.88–1.21)	0.7000
Physical restraints	0.37 (0.30–0.46)	< 0.0001
<b>System-Related Outcomes</b>	<b>Adjusted OR (95%CI)</b>	
ICU readmission <sup>e</sup>	0.54 (0.37–0.79)	< 0.001
Discharge destination <sup>f</sup>	0.64 (0.51–0.80)	< 0.001

Proportion of ABCDEF Bundle Elements Performed

