

# Regular Board Packet

May 7, 2026

Board Packet

**Agenda**

**05.07.2026 Board Agenda ..... 2**

**ONRC Report**

**May 2026 Board Report ..... 6**

**Regular Board Meeting Minutes**

**04.02.2026 Board Meeting Minutes ..... 7**

**Medical Staff Report**

**05-07-2026\_Board\_Packet ..... 13**



# Oak Valley Hospital District

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## OUR MISSION

“We Focus on Personalized Quality Health Care and Wellness for Those We Serve”

## OUR VISION

“Oak Valley Hospital District Will Continue as an Independent Locally Controlled and Governed Special District Hospital. To Accomplish This We Will Adhere to the Following Guidelines:  
Being Fiscally Responsible in Our Decision Making Process  
Maintain and Expand Services that Best Reflect Our Needs and Resources Available  
Promote Positive Change in the Health Status of Employees and Area Residents.”

## OUR VALUES

“Accountability; Being Responsible for Actions Taken and Not Taken  
Integrity; Doing the Right Thing for the Right Reason  
Respect; Valuing All People at All Times”

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## **REGULAR MEETING OF THE BOARD OF DIRECTORS OF OAK VALLEY HOSPITAL DISTRICT**

**May 7, 2026, 5:30 p.m.  
350 S. Oak Ave. Oakdale, CA 95361  
REDWOOD ROOM**

| <u>Time</u> | <u>Action</u> | <u>Item</u>                                                |
|-------------|---------------|------------------------------------------------------------|
| 5:30 p.m.   | Action        | <b>MEETING CALLED TO ORDER</b><br>Dan Cummins, Chairperson |

## **PUBLIC COMMENT**

In compliance with the California Brown Act the District Board of Directors welcomes comments from the public.

This is the opportunity for members of the public to directly address the District Board of Directors on any item of interest to the public under the jurisdiction of the District including items on this agenda.

Persons wishing to make a presentation to the Board of Directors shall observe the following procedure:

1. A written request to the Board on the form provided at the meeting (optional)
2. Oral presentations are limited to three (3) minutes.
3. Members of the public will be afforded the opportunity to speak at the beginning of the public meeting during the general Public Comment section of the agenda on any item under the jurisdiction of the District as well as during the consideration of an individual item on the agenda for that public meeting, however the three-minute limit described in item 2, above, will be applied to an individual’s cumulative comments during the meeting.

The proceedings of the Board are recorded and are part of the public record.

Materials related to an item on this Agenda, submitted to the Oak Valley Hospital District after distribution of the agenda packet, are available for public inspection in the Secretary’s Office at 350 S. Oak Ave., Oakdale, CA during normal business hours.

Information/Action    **CONSENT CALENDAR ITEMS**  
Items 1- 2 comprise the consent agenda, unless there is discussion by a member of the audience or Board Members, they may be approved in one motion.

- 1. Oakdale Nursing and Rehabilitation Center Report**  
Will Pringle, V.P., Oakdale Nursing and Rehabilitation Center
  
- 2. Approval of Minutes –**
  - April 2, 2026 – Regular Meeting

Action                    **MEDICAL STAFF REPORT –**Matthew Tilstra, M.D., Chief of Staff

**The Medical Executive Committee requests the District Board’s approval of the following items forwarded from the April 21, 2026 meeting.**

**Committee Reports**

- A. The Department of Surgery Committee Report – (04/14/2026)  
Andrew Huber, MD, Chairperson
  - i. Summary Review **Discussion**
  
- B. The Quality Council Report – (04/16/2026)  
Lee Horwitz, MD, Chairperson
  - i. Summary Review **Discussion**
  
- C. Interdisciplinary Practice Committee Meeting (IDPC) – (Next Mtg 05/05/2026)  
Chaitanya Mahida, MD, Chairperson **Standing**
  
- D. Credentials Committee Meeting – (Next Mtg 05/05/2026)  
Chaitanya Mahida, MD, Chairperson **Standing**
  
- E. The Department of Medicine Committee Report – (Next Mtg 05/12/2026)  
Lee Horwitz, MD, Chairperson **Standing**

**Other**

- A. Policy **Approval**
  - i. Titration of Intravenous Medications policy reviewed. The committee discussed the policy and agreed to the changes. The committee discussed the changes and agreed the changes were valid.
  
- B. Annual Radiation Safety Officer **Approval**
  - i. The Radiation Safety Officer was delegated to the Radiology department chair, Dr. Rahul Nayyar. He will fulfil all the responsibilities of the position and will oversee the radiation safety practices, compliance and protocols for the organization. The committee discussed this process and agreed to this change.

**FINANCE COMMITTEE – Dan Cummins, Chairperson**  
- Chang Ahn, Chief Financial Officer

- Action 1. Financial Reports for March 2026 – Chang Ahn, Chief Financial Officer  
- Approval of March 2026 Financial Statements

**CHAIRPERSON REPORT**  
- Dan Cummins Chairperson

- Information 1. Chairperson Comments

- Information 2. Report on Board Member Vacancies and Process of Appointment of New Members and Election of Officers  
• Opportunity for Interested Candidates to Address the Board

**CHIEF EXECUTIVE OFFICER REPORT**  
- Matt Heyn, President and Chief Executive Officer

- Information 1. Chief Executive Officer Report  
• Quality Reporting Change

**ADJOURN TO CLOSED SESSION**

- Action 1. **Approval of Closed Session Minutes –**  
• April 2, 2026 - Regular Meeting

**(See attached Agenda for Closed Session)**

**RECONVENE TO OPEN SESSION**

- Information **REPORT OF CLOSED SESSION**

- Action **ADJOURNMENT**

**The next Regular meeting of the Board of Directors is scheduled on June 4, 2026 at 5:30p.m.**

Posted on: May 4, 2026

By: Sheryl Perry, Clerk of the Board

**OAK VALLEY HOSPITAL DISTRICT  
BOARD OF DIRECTORS  
AGENDA FOR CLOSED SESSION**

Pursuant to California Government Code Section 54954.2 and 54954.5, the board agenda may describe closed session agenda items as provided below. No legislative body or elected official shall be in violation of Section 54954.2 or 54956 if the closed session items are described in substantial compliance with Section 54954.5 of the Government Code.

**Regular Meeting of the Board of Directors of the Oak Valley Hospital District  
May 7, 2026 5:30 p.m.  
350 S Oak Ave., Oakdale, CA 95361  
Redwood Room**

**CLOSED SESSION AGENDA ITEMS**

**HEARINGS / REPORTS**

(Government Code §37624.3 & Health and Safety Code §§1461, 32155)

**Chief Executive Officer Report – Matt Heyn, President & CEO**

REPORT INVOLVING TRADE SECRET

(Government Code §37606 & Health and Safety Code §32106)

Discussion will concern: Strategic planning related to potential expansion of services, programs, or facilities.

## May 2026 ONRC Board Report

ONRC recorded an average daily census of 97 patients per day, an increase month over month. Encouragingly, April's census has remained constant and will likely close with a very similar average.

From a regulatory standpoint, ONRC experienced zero unannounced complaint surveys and submitted no new self-reports to CDPH during the past month. I'm pleased to report our findings from a self-report submitted two months prior. ONRC was found to be deficiency free. Finally, we remain in our annual survey window and are eagerly awaiting their arrival.

Regarding the physical plant, Engineering is completing the two new showers within ONRC and progress is moving along nicely. We also recently started purchasing replacement furniture for resident rooms. This is a much needed and meaningful improvement to our community. The room refresh has an immediate and positive effect on those residing here. We are incredibly grateful for these ongoing community improvements.

This concludes our ONRC monthly board report.

**REGULAR MEETING OF THE BOARD OF DIRECTORS  
OF OAK VALLEY HOSPITAL DISTRICT  
OPEN SESSION  
April 2, 2026 5:30 p.m.  
350 S. Oak Ave, Oakdale, CA 95361  
Redwood Room**

**Board**

Dan Cummins, Chairperson  
Frances Krieger, Vice Chairperson  
Edward Chock, M.D., Secretary  
Sara Shipman, Director  
Danielle Sanders, Director

**Staff**

Matt Heyn, President and CEO  
David Rodrigues, Sr. VP/COO  
David Neal, Sr. VP/CNO  
Chang Ahn, VP/CFO  
Will Pringle, VP/Chief Administrator, LTC

**CALLED TO ORDER**

The District Board of Directors Meeting was called to order by Dan Cummins, Board Chairperson at 5:30 p.m.

**PUBLIC COMMENT**

Public comment read. No public input.

**Addition of Item to Agenda**

*Government Code Section 54954.2(b)(2)*

The Chairperson announced the addition of an item to the agenda for consideration at the end of Open Session, prior to adjourning to Closed Session. The item was: *Consideration and Possible Approval of Fire Alarm Panel Replacement, Not to Exceed \$110,000*, including authorization for the President/CEO to execute all necessary documents related to the purchase.

A motion was made by Edward Chock, M.D., to add this item to the agenda for consideration at the end of Open Session, prior to Closed Session. The motion was seconded by Sara Shipman. There was no public comment.

Cummins – Aye  
Krieger – Aye  
Chock – Aye  
Shipman – Aye  
Sanders – Aye

**MOTION CARRIED**

**Action – Resolution No. 2026-02**

Consideration and Adoption of Resolution No. 2026-02

Approving the adoption of an electoral zone map (Map 4) for the election of members of the Board of Directors and establishing the sequencing of elections in accordance with applicable law.

A presentation was provided by Redistricting Insights and District Counsel regarding final map options for the transition to zone-based elections. Minor revisions to Maps 3 and 4 were reviewed, with no material impact to population balance or compliance requirements. The Board discussed the options and received clarification as needed.

A motion was made by Sara Shipman and seconded by Danielle Sanders to adopt Resolution No. 2026-02 approving the electoral zone map (Map 4) and establishing the sequencing of elections. There was no public comment.

Roll Call by Sheryl Perry, Clerk of the Board:

Chairperson Cummins – Aye

Vice Chairperson Krieger – Aye

Dr. Chock – Aye

Director Shipman – Aye

Director Sanders – Aye

**MOTION CARRIED**

**CONSENT CALENDAR**

The following items, 1-2, will be acted on by one action, with discussion, unless a director or other person requests that an item be considered separately. In the event of such a request, the item will be addressed, considered, and acted upon separately.

**1. Oakdale Nursing and Rehabilitation Center Report**

- Will Pringle, V.P., Oakdale Nursing and Rehabilitation Center

**2. Approval of Minutes -**

- March 5, 2026 – Regular Meeting

Edward Chock, M.D., made the motion to approve the Consent Calendar items. Danielle Sanders made the second. No public input.

Cummins – Aye

Krieger – Aye

Chock – Aye

Shipman – Aye

Sanders – Aye

**MOTION CARRIED**

**MEDICAL STAFF REPORT - Matthew Tilstra, M.D., Chief of Staff**

The Medical Executive Committee requests the District Board's approval of the following items forwarded from the March 17, 2026, meeting.

**A. The Department of Medicine Committee Report - (03/10/2026) Standing**

Lee Horwitz, MD, Chairperson

i. Summary Report - Informational

ii. Policies - Approval

Clinical Manual

o Blood Recipient ID Bands

Emergency Department Manual

o RN Initiation of Clinical Protocols

B. The Department of Surgery Committee Report – (Next Sch Mtg 04/14/2026) Standing  
Matthew Huber, MD, Chairperson

C. The Quality Council Report – (Next Sch Mtg 04/16/2026) Standing  
Lee Horwitz, MD, Chairperson

Edward Chock, M.D., made the motion to approve the Medical Staff Report. Sara Shipman made the second. No public input.

Cummins – Aye  
Krieger – Aye  
Chock – Aye  
Shipman – Aye  
Sanders – Aye

**MOTION CARRIED**

**Financial Report for February 2026**

The financial overview noted that monthly IGT payments of approximately \$1.8 million continue to be reported as an operating expense, impacting operating margin. Despite this, the organization reported strong performance, with February operating income of approximately \$710,000. Gross patient revenue remained strong at approximately \$31.1 million, reflecting continued growth. Days cash on hand decreased temporarily due to DHDP and QIP IGT payments but are expected to improve with anticipated supplemental funding. Improvements in cash collections and accounts receivable days were also noted.

Fran Krieger made the motion to approve the February 2026 Financial Report. Sara Shipman made the second. No public input.

Cummins – Aye  
Krieger – Aye  
Chock – Aye  
Shipman – Aye  
Sanders – Aye

**MOTION CARRIED**

**Chairperson Report – Dan Cummins**

The Chairperson noted that adoption of zone-based elections is a difficult but required step under the California Voting Rights Act and will result in changes to Board composition. Appreciation was expressed for the current Board’s collaboration.

**Chief Executive Officer Report - Matt Heyn**

Mr. Heyn reported that 42 robotic surgeries have been completed since implementation of the da Vinci system, representing cases that would not have previously been performed at the District, with continued growth anticipated.

A reminder was provided regarding the upcoming strategic planning retreat scheduled for June 4, with Board participation encouraged. Updates were also shared on campus improvements, including the development of an outdoor staff seating area adjacent to the cafeteria and plans for a mural in collaboration with a local art association.

Additional updates included an invitation to the upcoming employee service awards event, which has strong attendance expected, and the submission of an application for designation as a Bariatric Center of Excellence to support program growth.

**Consideration and Possible Approval for Purchase of Ambulance and First Responder Vehicle. Not to Exceed \$125,000. – Dave Hunter, Chief of Ambulance Services**

The Board received a report regarding the proposed purchase of an ambulance and a first responder vehicle. It was noted that two ambulances were recently lost due to accidents, reducing the fleet below required levels under the County contract. Insurance proceeds have been received and are expected to offset costs, resulting in a net request of approximately \$125,000.

Danielle Sanders made a motion to approve the purchase of an ambulance and first responder vehicle, not to exceed \$125,000. Sara Shipman seconded the motion. No public input.

Cummins - Aye  
Krieger - Aye  
Chock - Aye  
Shipman - Aye  
Sanders - Aye

**MOTION CARRIED**

**Consideration and Possible Approval for Purchase of Urology Ultrasound System, Not to Exceed \$135,000.**

The Board considered the purchase of a urology-specific ultrasound system to support MRI fusion prostate biopsies. This equipment represents the final component needed to integrate with the District's MRI and Dynacad systems, enhancing diagnostic capabilities and expanding specialized services.

A motion was made by Edward Chock, M.D., to approve the purchase of a urology ultrasound system, not to exceed \$135,000. The motion was seconded by Sara Shipman. No public input.

Cummins - Aye  
Krieger - Aye  
Chock - Aye  
Shipman - Aye  
Sanders - Aye

**MOTION CARRIED**

**Consideration and Possible Approval for Purchase of General Ultrasound System. Not to Exceed \$125,000.**

The Board considered the purchase of a general ultrasound system to address increased demand and capacity constraints. It was noted that ultrasound volumes have significantly increased compared to the prior year, generating approximately \$1 million in additional revenue in the first seven months of the fiscal year. The additional unit is needed to support continued growth and patient demand.

A motion was made by Edward Chock, M.D., to approve the purchase of a general ultrasound system, not to exceed \$125,000. The motion was seconded by Danielle Sanders. No public input.

Cummins - Aye  
Krieger - Aye  
Chock - Aye  
Shipman - Aye  
Sanders - Aye

**MOTION CARRIED**

**Consideration and Possible Approval of Fire Alarm Panel Replacement. Not to Exceed \$110,000.**

The Board considered the replacement of the hospital's fire alarm panel system, not to exceed \$110,000. It was noted that the existing panel in the older hospital is outdated, no longer supported, and presents a safety concern. The proposed replacement would modernize the system and support future expansion, including increased capacity for additional facilities.

A motion was made by Danielle Sanders to approve the replacement of the fire alarm panel system, not to exceed \$110,000. The motion was seconded by Fran Krieger. There was no public comment.

Cummins - Aye  
Krieger - Aye  
Chock - Aye  
Shipman - Aye  
Sanders - Aye

**MOTION CARRIED**

**ADJOURNMENT TO CLOSED SESSION**

Danielle Sanders made the motion to adjourn to Closed Session. Fran Krieger made the second. No public input.

Cummins - Aye  
Krieger - Aye  
Chock - Aye  
Shipman - Aye  
Sanders - Aye

**MOTION CARRIED**

The Oak Valley Hospital District meeting was adjourned to Closed Session at 6:38 p.m.

**RECONVENE TO OPEN SESSION**

**ANNOUNCEMENT OF CLOSED SESSION**

- Approval of Closed Session March 5, 2026 – Regular Meeting Minutes
- Approval of Medical Staff Credentialing Report
- Rejection of Claim for Damages Pursuant to Government Code §912.6

**ADJOURNMENT**

Danielle Sanders made the motion to adjourn the Board of Directors meeting. Edward Chock, M.D., made the second. No public input.

Cummins - Aye  
Krieger - Aye  
Chock - Aye  
Shipman - Aye  
Sanders - Aye

**MOTION CARRIED**

The Board of Directors meeting was adjourned at 6:52 p.m.  
Recorder: Sheryl Perry, Clerk of the Board.

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
Chairperson



# Oak Valley Hospital District

SUBJECT: Governing Body Approval of Appointment – Radiation Safety Officer

Date:

From: Board of Directors

In accordance with The Joint Commission standards and regulatory requirements from federal and state radiation control authorities, the Governing Body of Oak Valley Hospital District hereby formally approves the appointment of:

**Dr. Rahul Nayyar, MD**

**Position: Radiation Safety Officer**

**Effective Date: May 7, 2026**

The Radiation Safety Officer will be responsible for the implementation, management, and oversight of the hospital's Radiation Safety Program. This includes ensuring the safe use of ionizing radiation in diagnostic and therapeutic procedures, compliance with all applicable regulations, and protection of patients, staff, and the public from unnecessary radiation exposure.

Your duties as Radiation Safety Officer shall include, but are not limited

- Developing and enforcing radiation safety policies and procedures
- Monitoring radiation exposure levels and maintaining personnel dosimetry records
- Ensuring regulatory compliance with NRC and/or state-specific radiation control programs
- Conducting audits, inspections, and radiation safety training
- Serving as a liaison to regulatory bodies and reporting to hospital leadership on radiation safety matters

Please retain this letter as an official record of the Governing Body's approval.

Sincerely,

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**Dan Cummins**  
**Board Chairman**

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**Date**

# OAK VALLEY HOSPITAL DISTRICT

## Pharmacy Manual

|                                                                                                                      |                     |                                          |                                  |
|----------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------|----------------------------------|
| <b>Policy/Procedure:</b>                                                                                             |                     |                                          |                                  |
| <b>TITRATION OF INTRAVENOUS MEDICATIONS</b>                                                                          |                     |                                          |                                  |
| <i>Also indexed as: Medication Titration</i>                                                                         |                     |                                          |                                  |
| <b>Effective Date:</b> 12/2008                                                                                       |                     | Page 1 of <del>12</del> 11 (Attachments) |                                  |
| <b>Areas Affected:</b> Pharmacy, Nursing Departments of Hospital (based on unit standards for allowable medications) |                     |                                          |                                  |
| <b>Composed by:</b>                                                                                                  |                     |                                          |                                  |
| <input type="checkbox"/> Reviewed <input checked="" type="checkbox"/> Revised by: Director of Pharmacy               |                     |                                          |                                  |
| <b>Dept / Committee Approval:</b>                                                                                    | <b>Dept/Title:</b>  | <b>Date</b>                              | <b>Approved</b>                  |
| Policy, Procedures, Forms Comm.                                                                                      | VP of Nursing       | 12/03/2025                               | X                                |
| P&T Infection Control                                                                                                | Medical Staff Coord | 12/17/2025                               | X                                |
| Department of Medicine                                                                                               | Medical Staff Coord | 01/13/2026                               | X                                |
| Medical Executive Committee                                                                                          | Medical Staff Coord | 01/20/2026                               | X                                |
| District Board                                                                                                       | Board Liaison       | 02/05/2026                               | X                                |
| <b>Revised:</b> 1/12; 10/16; 7/20; 4/21, 8/23, 8/24, 8/25                                                            |                     | <b>Reviewed:</b>                         | <b>Next Review Date:</b> 02/2029 |

### POLICY

Oak Valley Hospital allows orders for medication titration, which is the progressive increase or decrease of the medication dose in response to the patient’s clinical status.

### PURPOSE

To establish guidelines for intravenous medication orders that require titration.

### SUPPORTIVE DATA

1. Upward adjustments depend on how rapid the onset of the drug occurs and the length of time before it peaks
2. Downward adjustments are generally related to the drug’s half-life and duration.
3. Medications ordered for titration must be approved by the Pharmacy and Therapeutics Committee. Safe dose ranges for medications that are to be titrated must be reviewed and approved by that committee.
4. Titration increments may vary depending on the patient’s clinical status, co-morbid conditions and other factors.

## PROCEDURE

1. Orders for medications that require titration must include the clinical goal/parameters the prescriber desires for the patient (e.g., titrate medication to achieve B/P of \_\_\_\_ / \_\_\_\_), titrate medication to achieve Richmond Agitation Sedation Scale [RASS]
2. Dosage adjustment increments must be known before titrating medication to allow clinical staff to determine how much and how fast to increase or decrease the medication as attempts are made to achieve the clinical goal for the patient.
3. For titrated medications:
  - A starting rate, incremental rate change, maximum rate, and targeted goal must be set by prescriber for each titrated medication ordered
  - Accepting orders for titration of medications without dose limits is unsafe.
  - Pharmacists will add titration parameters per protocol from Table 1 to titrated medication orders missing such parameters. The pharmacist will document intervention in Meditech.
  - If a titrated medication continues at and goes beyond above the dose limit, the physician must be contacted and approve the current dose for least every 24 hours by writing specific orders with a new dose limit.
  - Dose limits must be clearly documented on all labels of titrated solutions.
  - Clinical staff must assess the patient frequently (as recommended in the attached table) when titrating medications to detect potential problems as early as possible unless otherwise specified by prescriber.
4. More detailed guidelines for administration of titratable medications are provided in Table 1.
5. Richmond Agitation Sedation Score (RASS) guidelines are provided in Appendix A.
6. All controlled substances drips are required to be placed in lockboxes. Lockboxes are stored in MedSurg Medication Room and keys are accessible in Pyxis in MedSurg and Emergency Department (ED) and Intensive Care Unit (ICU).
7. Below dosing charts are not for emergent patient care. Follow Advanced Cardiovascular Life Support (ACLS) guidelines in emergent situations.

## RELATED POLICIES

1. Moderate Sedation
2. Patient Care Guidelines for Neuromuscular Blocking Agent (NMBAs)

| Medication                                                                                                                                                                               | Bolus                                                                                | Dosing                    | Titration                                                                                                                                                                                                      | Monitoring                                                                              | Standard Admixture                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| <i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i>                                                                                             |                                                                                      |                           |                                                                                                                                                                                                                |                                                                                         |                                                                            |
| <b>Amiodarone</b> (Cordarone)<br>Anti-arrhythmic agent with multiple actions, including some beta blocker activity. Use for atrial and ventricular arrhythmias.<br>↑QT ↑QRS, ↑PR ↓HR     | <b>150 mg/100mL of D5W over 10 minutes</b><br><br>May repeat as ordered by physician | <b>0.5 - 1 mg/min</b>     | Start: <b>1 mg/min x 6 hrs;</b><br>Reduce to <b>0.5 mg/min for next 18 hrs</b><br><br>Maximum rate: <b>1mg/min.</b>                                                                                            | HR, EKG, BP every 15minutes x 1 hour, then every hour                                   | 150mg/100mL (1.5mg/mL)<br>&<br>360mg/200mL (1.8mg/mL)<br><br><b>Premix</b> |
| <b>Cisatracurium</b> (Nimbex)<br>Non-depolarizing neuromuscular blocker used skeletal muscle relaxation during surgery and mechanical ventilation. It has minimal cardiovascular effects | <b>0.1-0.2 mg/kg</b>                                                                 | <b>1-10 mcg/kg/min</b>    | Start: <b>1 mcg/kg/min;</b><br>Titrate by <b>0.5 mcg/kg/min every 30 minutes</b><br><br>Goal: achieve target Train of Four (TOF) of 2/4 or as specified by physician<br><br>Maximum rate: <b>10 mcg/kg/min</b> | Train of four                                                                           | 200mg/250 mL of NS<br><br>(0.8 mg/mL)                                      |
| <b>Dexmedetomidine</b> (Precedex)<br>Alpha <sub>2</sub> -Adrenergic Agonist for sedation                                                                                                 | <b>Not recommended</b>                                                               | <b>0.2 – 1.5mcg/kg/hr</b> | Start: <b>0.2mcg/kg/hr</b><br>Titrate by <b>0.2mcg/kg/hr every 30 minutes</b><br>Goal: <b>achieve target RASS -1 to -3-score or specified by Physician</b><br>Maximum rate: <b>1.5 mcg/kg/hr</b>               | <b>Level of sedation; heart rate, respiration, rhythm, blood pressure; pain control</b> | 400mcg/100ml of D5W <b>or NS</b><br><br>(4mcg/mL)<br><br><b>Premix</b>     |

|                                                                                                                                                                                                                                                                                                                |                                                                                                        |                          |                                                                                                                                                                       |                                             |                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>Diltiazem</b> (Cardizem)<br>Calcium channel blocker. Used in SVT, atrial fibrillation, angina and hypertension. ↓HR                                                                                                                                                                                         | <b>0.25 mg/kg (max: 20mg) over 2 min</b><br><br>May repeat once in 15 min with 0.35 mg/kg (max: 25 mg) | <b>5 - 15 mg/hr</b>      | Start: <b>5 mg/hr</b><br><b>Titrate by: 5 mg/hr every 15 minutes</b><br><br><b>Maximum rate: 15 mg/hr</b>                                                             | HR, EKG , BP                                | 125 mg/125 mL of D5W or NS (1mg/mL)                                                     |
| <b>Medication</b>                                                                                                                                                                                                                                                                                              | <b>Bolus</b>                                                                                           | <b>Dosing</b>            | <b>Titration</b>                                                                                                                                                      | <b>Monitoring</b>                           | <b>Standard Admixture</b>                                                               |
| <i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i>                                                                                                                                                                                                                   |                                                                                                        |                          |                                                                                                                                                                       |                                             |                                                                                         |
| <b>Dobutamine</b> (Dobutrex)<br>Synthetic sympathomimetic catecholamine with inotropic, chronotropic, and vasodilator effects. Used in heart failure, cardiogenic shock.<br>↑CO, ↑ MAP, ↑ HR, ↓ SVR, ↓ CVP                                                                                                     |                                                                                                        | <b>2- 20 mcg/kg/min</b>  | Start: <b>2mcg/kg/min</b><br><b>Titrate by: 2.5 mcg/kg/min every 15 minutes</b><br><br>Goal: SBP over 90 mmHg, MAP over 65,<br><br><b>Maximum rate: 20 mcg/kg/min</b> | BP, MAP, HR/EKG                             | 500mg/250mL of D5W (2 mg/mL)<br><br><b>Premix</b>                                       |
| <b>Dopamine</b><br>Natural catecholamine that is the immediate precursor of norepinephrine. Used to raise blood pressure refractory to fluids, treat heart failure, correct hemodynamic imbalance in shock. Hemodynamic changes are dose-dependent; at doses over 10 mcg/kg/min: ↑CO, ↑ MAP, ↑ HR, ↑SVR, ↑ CVP |                                                                                                        | <b>2 - 20 mcg/kg/min</b> | Start: <b>2mcg/kg/min</b><br><b>Titrate by: 2 mcg/kg/min every 5 minutes</b><br><br>Goal: SBP over 90 mmHg<br><br><b>Maximum rate: 20 mcg/kg/min</b>                  | BP, HR/EKG<br>Urine output<br>Infusion site | 400mg/250 mL of D5W (1.6 mg/mL)<br><br><b>Premix</b>                                    |
| <b>Epinephrine</b><br>Catecholamine used to increase cardiac output by ↑ HR, resulting in an increase in cerebral and coronary blood flow and an increase in ↑SVR, ↑ CO, ↑ MAP, ↑ HR, ↑ SVR, ↑ CVP                                                                                                             | <b>1 mcg/min</b>                                                                                       | <b>1 - 15 mcg/min</b>    | Start: <b>1 mcg/min</b><br><b>Titrate by: 1 mcg/min every 5 minutes</b><br><br>Goal: SBP over 90 mmHg<br><br><b>Maximum rate: 15 mcg/min</b>                          | BP, HR/EKG                                  | 1mg/250mL of NS (4 mcg/mL)<br>2mg/250mL of NS (8 mcg/mL)<br>4mg/250mL of NS (16 mcg/mL) |

|                                                                                                                                                                             |                                         |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                       |                               |                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------|
| <b>Esmolol (Brevibloc)</b><br>A $\beta$ 1-selective antagonist with negative chronotropic and inotropic effects. $\downarrow$ CO, $\downarrow$ HR, $\downarrow$ arterial BP | <b>500 mcg/kg over 1 minute</b>         | <b>50 – 300 mcg/kg/min</b>                             | Start: <b>50 mcg/kg/min for 4 minutes</b><br><b>Titrate by: 50 mcg/kg/min every 5 minutes</b><br><br>Goal: target BP specified by physician order<br><br><b>Maximum rate: 300 mcg/kg/min</b>                                                                                                                                                                                                          | HR, BP<br>Infusion site       | 2500mg/250mL of NS (10 mg/mL)<br><br><b>Premix</b>            |
| <b>Medication</b>                                                                                                                                                           | <b>Bolus</b>                            | <b>Dosing</b>                                          | <b>Titration</b>                                                                                                                                                                                                                                                                                                                                                                                      | <b>Monitoring</b>             | <b>Standard Admixture</b>                                     |
| <i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i>                                                                                |                                         |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                       |                               |                                                               |
| <b>Fentanyl (Sublimaze)</b><br>Opioid for analgesia and sedation.                                                                                                           | <b>25 – 100 mcg (or 0.5 – 1 mcg/kg)</b> | <b>25 – 200 mcg/hr (or 1 - 2 mcg/kg/hr)</b>            | Start: <b>25mcg/hr</b><br><b>Titrate by 25mcg/hr every 30 minutes</b><br><br>Goal: achieve target: RASS -1 to -3 or as specified by physician<br><br><b>Maximum rate: 200 mcg/hr</b><br><br><b>***Pediatric Patients (Pain and sedation for critically ill patients (ED)***</b><br><br><b>Bolus: 0.5-2 mcg/kg</b><br><br><b>Infusion rate: 0.5-2 mcg/kg/hr</b><br><br><b>Maximum rate: 200 mcg/hr</b> | BP, HR, RR,<br>pain relief    | 2500 mcg/250 mL of NS (10mcg/mL)                              |
| <b>Ketamine</b><br>Mechanically ventilated patients in the ICU, analgesia/sedation/agitation (adjunct or alternative agent) (Off-label use)                                 | <b>0.1 – 0.5 mg/kg</b>                  | <b>0.04 – 2.5 mg/kg/hr (or 0.67 – 41.7 mcg/kg/min)</b> | Start: <b>0.2 – 0.5 mg/kg/hr (or 3.3 – 8.3 mcg/kg/min)</b><br><b>Titrate by 0.1 mg/kg/hr every 15 minutes</b>                                                                                                                                                                                                                                                                                         | BP, HR, RR,<br>pain, sedation | 500 mg/500mL of NS or D5W (1 mg/mL)<br><br>Protect from light |

|                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                    |                              |                                                                                                                                                                                                                                                                                                                      |                                                                       |                                                            |
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| <p><b>Labetalol</b> (Trandate)<br/>An antagonist of <math>\beta_1</math>, <math>\beta_2</math> and <math>\alpha_1</math> that causes negative inotropic effects and vasodilation; the drop in blood pressure and cause a small increase in HR.<br/>↓ CO, ↓ HR, ↓ arterial BP, vasodilation</p>                                                    | <p><b>20 mg over 2 minutes</b><br/><br/>May repeat with 20 - 80 mg dose every 10 minutes (Max total of 300mg)</p>                  | <p><b>0.5 - 2 mg/min</b></p> | <p>Start: <b>0.5 mg/min</b><br/><b>Titrate by: 0.5 mg/min every 5 minutes</b><br/><br/>Goal: target BP specified by physician order<br/><br/><b>Maximum rate: 2 mg/min</b></p>                                                                                                                                       | <p>BP, HR</p>                                                         | <p>250 mg /250 mL of NS (1mg/mL)</p>                       |
| <p><b>Lidocaine</b><br/>Antiarrhythmic used to suppress ventricular irritability. Decreases automaticity and elevates the ventricular fibrillation threshold. First line agent for ventricular fibrillation or pulseless ventricular tachycardia.<br/>↓ conduction velocity, ↓refractory period, ↓automaticity</p>                                | <p><b>1 - 1.5 mg/kg over 2 - 3 minutes</b><br/><br/><b>may repeat 0.5 - 0.75 mg/kg every 5 min (to a total max of 3 mg/kg)</b></p> | <p><b>1 to 4 mg/min</b></p>  | <p>Start: <b>1mg/min</b><br/><b>Titrate by: 0.5 mg/min, every 15 minutes</b><br/><br/>Goal: achieve reduction in V tach as per physician order<br/><br/>Maximum: <b>4 mg/min</b></p>                                                                                                                                 | <p>EKG, Lidocaine levels, LFTs if therapy is longer than 24 hours</p> | <p>2 gm/500 mL of D5W (4 mg/mL)<br/><br/><b>Premix</b></p> |
| <b>Medication</b>                                                                                                                                                                                                                                                                                                                                 | <b>Bolus</b>                                                                                                                       | <b>Dosing</b>                | <b>Titration</b>                                                                                                                                                                                                                                                                                                     | <b>Monitoring</b>                                                     | <b>Standard Admixture</b>                                  |
| <i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i>                                                                                                                                                                                                                                                      |                                                                                                                                    |                              |                                                                                                                                                                                                                                                                                                                      |                                                                       |                                                            |
| <p><b>Lorazepam</b> (Ativan)<br/>Occupies a receptor that modulates GABA, the major inhibitory neurotransmitter in the brain. It produces sedation, anxiolysis and amnesia. It also has anticonvulsant and skeletal muscle relaxant effects.<br/>↓tidal volume, ↓BP, ↑ HR</p>                                                                     | <p><b>1 to 4 mg over 2-5 minutes</b></p>                                                                                           | <p><b>0.5 - 10 mg/hr</b></p> | <p>Start:<b>0.5 mg/hr</b><br/><b>Titrate by: 0.5 mg/hr every hour</b><br/><br/>Goal: achieve target RASS -1 to -3 or as specified by physician<br/><br/>Maximum: <b>10mg/hr</b></p>                                                                                                                                  | <p>RASS score, metabolic acidosis, delirium</p>                       | <p>100mg/100ml of NS (1 mg/mL)</p>                         |
| <p><b>Midazolam</b> (Versed)<br/>Benzodiazepine that is very short acting in most of the population. Occupies a receptor that modulates GABA, the major inhibitory neurotransmitter in the brain. It produces sedation, anxiolysis and amnesia. It also has anticonvulsant and skeletal muscle relaxant effects.<br/>↓tidal volume, ↓BP, ↑ HR</p> | <p><b>0.5-2 mg over ≥2 minutes</b></p>                                                                                             | <p>1 – 8 mg/hr</p>           | <p>Start: <b>1 mg/hr</b><br/><b>Titrate by 0.5 mg/hr every 15 minutes</b><br/><br/>Goal: achieve target RASS -1 to -3 or as specified by physician ; Once stable decrease rate by 10-25% every 3 hrs to find minimum effective rate<br/><br/>Maximum: <b>8 mg/hr</b><br/><b>***Pediatric Patients (Sedation,</b></p> | <p>RASS, delirium</p>                                                 | <p>100mg/100 mL of NS (1mg/mL)</p>                         |



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|                                                                                                                                                                                                                                                                       |              |                             | Maximum: 4 mg/dose, may repeat dose in 5 minutes if necessary                                                                                                                                                                                                                                                          |                                                                    |                                                                               |
| <b>Nicardipine</b> (Cardene)<br>Dihydropyridine Calcium Channel Blocker for hypertensive crisis.                                                                                                                                                                      | NA           | 5- 15 mg/hr                 | Start: <b>5 mg/hr</b><br>Titrate by: 2.5 mg/hr every 5-15 min<br><br>Goal: achieve target BP as specified by physician<br><br>Maximum: <b>15mg/hr</b>                                                                                                                                                                  | HR, BP                                                             | <b>20mg/200mL of NS</b><br>(0.1 mg/mL)                                        |
| <b>Nitroglycerin</b><br>Vascular smooth muscle relaxer and vasodilator.<br>↑HR, ↓MAP, ↓CVP, ↓SVR, ↑CO, ↓ BP,                                                                                                                                                          | NA           | <b>5 to 200 mcg/min</b>     | Start: <b>5 mcg/min</b><br><b>Titrate by: 5 mcg/min every 3 min up to 20 mcg/min, then Titrate by 10 mcg/min every 3 minutes</b><br><br>Goal:<br>- Chest pain: achieve relief of chest pain & maintain SBP as specified by physician<br>- Hypertension: target BP as specified by MD order<br><br>Maximum: 200 mcg/min | HR, SBP                                                            | 50mg/250mL of D5W<br>(200 mcg/mL)<br><br><b>Premix</b>                        |
| <b>Medication</b>                                                                                                                                                                                                                                                     | <b>Bolus</b> | <b>Dosing</b>               | <b>Titration</b>                                                                                                                                                                                                                                                                                                       | <b>Monitoring</b>                                                  | <b>Standard Admixture</b>                                                     |
| <i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i>                                                                                                                                                                          |              |                             |                                                                                                                                                                                                                                                                                                                        |                                                                    |                                                                               |
| <b>Nitroprusside</b> (Nipride)<br>Venous and arterial dilator used to increase cardiac output by decreasing left ventricular after load, to decrease blood pressure in hypertensive crisis and to decrease pulmonary hypertension.<br>↑ CO, ↓ MAP, ↑ HR, ↓ SVR, ↓ CVP | NA           | <b>0.25 - 10 mcg/kg/min</b> | Start: <b>0.25 mcg/kg/min</b><br>Titrate by: 0.5 mcg/kg/min every 5 min<br><br>Goal: achieve target BP as specified by physician<br><br>Maximum: <b>10 mcg/kg/min</b>                                                                                                                                                  | BP, serum creatinine, monitor for cyanide and thiocyanate toxicity | 50mg/100mL of NS<br>(0.5mg/mL)<br><br><b>Premix</b><br><br>Protect from light |
| <b>Norepinephrine</b> (Levophed)<br>Stimulates beta-1 and alpha receptors causing increased contractility and heart rate as well as vasoconstriction, thereby increasing systemic blood pressure and coronary blood flow<br>↑ CO, ↑ MAP, ↑ HR, ↑ SVR, ↑ CVP           | NA           | <b>2 – 30 mcg/min</b>       | Start: <b>2-5 mcg/min</b><br><b>Titrate by: 0.5 mcg/min every 5 minutes</b><br><br>Goal: achieve MAP > 65 & SBP > 90<br><br>Maximum: <b>30 mcg/min</b>                                                                                                                                                                 | BP, MAP                                                            | 4mg/250 mL of D5W<br>(16 mcg/mL)<br><b>Premix</b><br><br>8mg/250 mL           |

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|                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                                  | <p><b>***Pediatric Patients (Hypotension/shock, fluid-resistant)***</b></p> <p>Start: 0.02-0.1 mcg/kg/minutes; titrate to desired effect</p> <p>Maximum: 2 mcg/kg/minute</p>                                                |                                    | <p>of NS (32 mcg/mL)</p> <p>16mg/250 mL of NS (64 mcg/mL)</p>                                                                         |
| <p><b>Phenylephrine</b> (Neosynephrine)<br/>Potent, direct-acting pure alpha-adrenergic agonist; causes vasoconstriction of the arterioles of the nasal mucosa and conjunctiva; produces vasoconstriction of arterioles in the body; produces systemic arterial vasoconstriction and may increase CO, ↑ MAP, ↑ SVR, ↑ CVP, ↑ CO,</p>                        | <p><b>40 – 100 mcg/dose every 1 – 2 minutes (Hypotension during anesthesia)</b></p> | <p><b>40 to 180 mcg/min</b></p>  | <p>Start: <b>40 mcg/min</b><br/><b>Titrate by: 20 mcg/min every 15 minutes</b></p> <p>Goal: achieve MAP &gt; 65 &amp; SBP &gt; 90<br/>When BP stable, ↓ to 40 - 60 <u>mcg/mg/min</u></p> <p>Maximum: <b>180 mcg/min</b></p> | <p>BP, MAP</p>                     | <p><u>20mg/250mL of NS (80 mcg/mL) Premix</u><br/><u>10 mg/250 mL of NS (40 mcg/mL)</u><br/><u>10 mg/500 mL of NS (20 mcg/mL)</u></p> |
| <b>Medication</b>                                                                                                                                                                                                                                                                                                                                           | <b>Bolus</b>                                                                        | <b>Dosing</b>                    | <b>Titration</b>                                                                                                                                                                                                            | <b>Monitoring</b>                  | <b>Standard Admixture</b>                                                                                                             |
| <i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i>                                                                                                                                                                                                                                                                |                                                                                     |                                  |                                                                                                                                                                                                                             |                                    |                                                                                                                                       |
| <p><b>Procainamide</b> (Pronestyl)<br/>Class I anti-arrhythmic; Decreases myocardial excitability and conduction velocity and may depress myocardial contractility, by increasing the electrical stimulation threshold of ventricle, His-Purkinje system and through direct cardiac effects<br/>↓conduction velocity, ↑refractory period, ↓automaticity</p> | <p><b>10 - 17 mg/kg over 30 minutes</b></p>                                         | <p><b>2 to 6 mg/min</b></p>      | <p>Start: <b>2 mg/min</b><br/><b>Titrate by 1-2 mg/min based on reported drug concentration</b></p> <p>Goal: achieve target HR and rhythm specified by physician</p> <p>Maximum: <b>6mg/min</b></p>                         | <p>BP, EKG, drug concentration</p> | <p>1000 mg/250 mL of NS (4 mg/mL)</p>                                                                                                 |
| <p><b>Propofol</b> (Diprivan)<br/>General anesthesia used for induction of</p>                                                                                                                                                                                                                                                                              | <p><b>1-2mg/kg</b></p>                                                              | <p><b>5 to 50 mcg/kg/min</b></p> | <p>Start: <b>5mcg/kg/min</b><br/><b>Titrate by 5 mcg/kg/min every 10</b></p>                                                                                                                                                | <p>BP, oxygen saturation, ABG</p>  | <p>1000mg/100ml (10mg/mL)</p>                                                                                                         |

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| <p>general and for sedation in intubated mechanically ventilated patients.</p>                      |                     |                      | <p><b>minutes</b><br/> <b>Goal:</b><br/> <b>RASS -1 to -3</b><br/> <b>Maximum: 50mcg/kg/min</b></p> <p><b>***Pediatric Patients (Procedural sedation)***</b></p> <p>Bolus: 1 mg/kg, may repeat 0.5 mg/kg every 3-5 minutes</p> <p>Infusion rate: 5-9 mg/kg/hr</p> | <p>(with prolonged infusion)</p> | <p><b>Premix</b></p>             |
| <p><b>Medication</b></p>                                                                            | <p><b>Bolus</b></p> | <p><b>Dosing</b></p> | <p><b>Titration</b></p>                                                                                                                                                                                                                                           | <p><b>Monitoring</b></p>         | <p><b>Standard Admixture</b></p> |
| <p><i>Physician orders may vary from guidelines. If so, follow the patient-specific orders.</i></p> |                     |                      |                                                                                                                                                                                                                                                                   |                                  |                                  |

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| <p><b>Vasopressin (Pitressin)</b><br/> Potent vasoconstrictor including in GI tract. Increases the resorption of water; stimulates adenylate cyclase activity which enhances the membrane's permeability to free water.<br/> ↑MAP, ↓HR, ↓CO</p> | <p>NA</p>               | <p>See dosing range by indication</p> | <p><b><u>GI Hemorrhage</u></b><br/> Start: 0.2 units/min<br/> Titrate by: 0.2 units/min every hour<br/><br/> Goal: achieve cessation of hemorrhage<br/><br/> Maximum: 0.8 unit/min</p> <p><b><u>Vasodilatory shock</u></b><br/> Start: 0.03 units/min<br/> Titrate by: 0.005 units/min every 15 minutes<br/><br/> Goal: achieve MAP over 65<br/><br/> Maximum: 0.1 units/ min</p> <p><b><u>Septic shock</u></b><br/> Continuous Rate: 0.03 units/min added to Norepinephrine Drip as a fixed rate<br/><br/> Discontinuation in septic shock: Titrate down 0.01 units/minute every 30 to 60 minutes<br/><br/> Goal: achieve MAP over 65</p> | <p>Cessation of hemorrhage</p> <p>MAP over 65</p> | <p>100 units/250mL of NS or D5W (0.4 unit/mL)</p> <p>40 units/100 mL of NS or D5W (0.4 unit/mL)</p> |
| <p><b>Vecuronium</b><br/> Non-depolarizing neuromuscular blocker used skeletal muscle relaxation during surgery and mechanical ventilation. It has minimal cardiovascular effects</p>                                                           | <p>0.08 - 0.1 mg/kg</p> | <p>0.8 – 1.7 mcg/kg/min</p>           | <p>Start: <b>0.8 mcg/kg/min</b><br/> <b>Titrate by: 0.3 mcg/kg/min every 30 minutes</b><br/><br/> Goal: achieve target Train of Four (TOF) of 2/4 or as specified by physician<br/><br/> Maximum: <b>1.7 mcg/kg/min</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Train of Four</p>                              | <p>30 mg/70 100 mL of D5W (0.3 mg/mL)</p>                                                           |

## REFERENCES

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### Richmond Agitation Sedation Scale (RASS) \*

| Score | Term              | 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 vigorous                                                                    |                        |
| 0     | Alert and calm    |                                                                                                                  |                        |
| -1    | Drowsy            | Not fully alert, but has sustained awakening<br>(eye-opening/eye contact) to <i>voice</i> ( <b>≥10 seconds</b> ) | } Verbal Stimulation   |
| -2    | Light sedation    | Briefly awakens with eye contact to <i>voice</i> ( <b>&lt;10 seconds</b> )                                       |                        |
| -3    | Moderate sedation | Movement or eye opening to <i>voice</i> ( <b>but no eye contact</b> )                                            |                        |
| -4    | Deep sedation     | No response to voice, but movement or eye opening<br>to <i>physical</i> stimulation                              | } Physical Stimulation |
| -5    | Unarousable       | No response to <i>voice or physical</i> stimulation                                                              |                        |