Washington Township Health Care District
2000 Mowry Avenue, Fremont, California 94538-1716 | 510.797.1111
Kimberly Hartz, Chief Executive Officer

BOARD OF DIRECTORS MEETING

Wednesday, August 11, 2021 – 6:00 P.M.
Meeting Conducted by Zoom
https://us02web.zoom.us/j/82124650071?pwd=bjJob1U1T0dHaUphR3Q3bS9rOTJPZz09
Password: 776637

AGENDA - Revised

		PRESENTED BY:
I.	**CALL TO ORDER & PLEDGE OF ALLEGIANCE**	William Nicholson, M.D. Board President
II.	**ROLL CALL**	Dee Antonio District Clerk
III.	**COMMUNICATIONS**	
	A. Oral *This opportunity is provided for persons in the audience to make a brief statement, not to exceed three (3) minutes on issues or concerns not on the agenda and within the subject matter of jurisdiction of the Board.. "Request to Speak" cards should be filled out in advance and presented to the District Clerk. For the record, please state your name.*	
	B. Written	
IV.	**CONSENT CALENDAR** *Items listed under the Consent Calendar include reviewed reports and recommendations and are acted upon by one motion of the Board. Any Board Member or member of the public may remove an item for discussion before a motion is made.*	William Nicholson, M.D. Board President *Motion Required*
	A. Consideration of Minutes of the Regular Meetings of the District Board: July 14, 19, 26, and 28, 2021	
	B. Consideration of Medical Staff: Critical Care Service Manual (July 26, 2021)	
	C. Consideration of Morris Hyman Critical Care Pavilion Privacy Curtains	

D. Consideration of Replacement Computers for Washington Hospital

E. Consideration of Replacement Computers for Washington Township Medical Foundation

F. Consideration of Epic Healthy Planet Project

V. PRESENTATION

Pharmacy Clinical Interventions	Minh-Thu Dennen Director, Pharmacy

VI. REPORTS — **PRESENTED BY:**

A. Medical Staff Report	Shakir Hyder, M.D. Chief of Medical Staff
B. Service League Report	Sheela Vijay Service League First Vice President
C. Lean Report Supply Chain Lean Transformation Plan	Charlie Sax Director, Supply Chain
D. Quality Report: Quality Dashboard Quarter Ending June 30, 2021	Mary Bowron, DNP, RN, CIC, CNL, CPHQ Chief of Quality & Resource Management
E. Finance Report	Chris Henry Vice President & Chief Financial Officer
F. Hospital Operations Report	Kimberly Hartz Chief Executive Officer

VII. ACTION ITEM

A. Temporary UPS Replacement Project

VIII. ANNOUNCEMENTS

IX. ADJOURN TO CLOSED SESSION

A. Report of Medical Staff and Quality Assurance Committee, Health & Safety Code section 32155

B. Conference involving trade secrets pursuant to Health & Safety Code section 32106: Existing Services

X.	**RECONVENE TO OPEN SESSION & REPORT ON PERMISSIBLE ACTIONS TAKEN DURING CLOSED SESSION**	William Nicholson, M.D. Board President
XI.	**ADJOURNMENT**	William Nicholson, M.D. Board President

In compliance with the Americans with Disabilities Act, if you need assistance to participate in this meeting, please contact the District Clerk at (510) 818-6500. Notification two working days prior to the meeting will enable the District to make reasonable arrangements to ensure accessibility to this meeting.

CALL TO ORDER

PLEDGE OF ALLEGIANCE

A meeting of the Board of Directors of the Washington Township Health Care District was held on Wednesday, July 14, 2021 via Zoom in order to comply with California Governor Gavin Newsom's Reopening Plan for California and Executive Order N-29-20. We will continue to conduct our meetings remotely while we develop plans to return to in-person meetings and develop hybrid formats that maintain Brown Act compliance while also providing greater accessibility and transparency to the public. Director Nicholson called the meeting to order at 6:00 pm and led those in attendance of the meeting in the Pledge of Allegiance.

ROLL CALL

Roll call was taken: Directors present: William Nicholson, MD; Jeannie Yee; Bernard Stewart, DDS; Jacob Eapen, MD; Michael Wallace
Absent:

Also present: Kimberly Hartz, Chief Executive Officer; Dee Antonio, District Clerk

Guests: Chris Henry, Larry LaBossiere, Paul Kozachenko, Mary Bowron, Angus Cochran, Debbie Feary, Kristin Ferguson, Dr. Kadeer Halimi, Gisela Hernandez, Dr. Shakir Hyder, Kel Kanady, Nick Legge, Maria Nunes, Dr. Jack Rose, Sheela Vijay,Falisa Fullard, and Sri Boddu.

OPENING REMARKS

Director Nicholson welcomed any members of the general public to the meeting. He noted that Washington Township Health Care District continues to comply with the Brown Act in providing appropriate connection information in order to provide the public the opportunity to participate in the meeting and that Public Notice for this meeting, including connection information, was posted appropriately on our website. This meeting, conducted via Zoom, will be recorded for broadcast at a later date. When asked if any members of the general public were in attendance and/or interested in speaking, there was no response.

CONSENT CALENDAR

Director Nicholson presented the Consent Calendar for consideration:

A. Minutes of the Regular Meetings of the District Board: June 9, June 21, June 23, and June 28, 2021

In accordance with District law, policies, and procedures, Director Eapen moved that the Board of Directors approve the Consent Calendar, item A. Director Yee seconded the motion.

Roll call was taken:

William Nicholson, MD – aye
Jeannie Yee – aye
Bernard Stewart, DDS – aye
Jacob Eapen, MD – aye
Michael Wallace – aye

The motion unanimously carried.

COMMUNICATIONS: ORAL

There were no Oral communications.

COMMUNICATIONS: WRITTEN

There were no Written communications.

PRESENTATION: STROKE PROGRAM CALENDR YEAR 2020 REVIEW AND QUALITY REPORT

Kimberly Hartz, CEO, introduced Dr. Jack Rose, Co-Medical Director for the Stroke Program. Dr. Rose began his presentation with a review of the Stroke Program for the Calendar Year 2020. He talked about Patient Centered Stroke Care and the cross-functional teamwork focused on a target stroke goal of Door to Drug, < 30-45 minutes. He noted that Washington Hospital achieved certification as a Primary Stroke Center in July 2007. He discussed the Stroke Program's quality performance as benchmarked against the Get With the Guidelines Measures. He noted that the volume has remained steady despite the increase in other local stroke programs. He also noted there was no significant decrease in volume due to COVID-19. He reviewed the education given to staff, patients, and the community.

Notable achievements in 2020:

- Get With the Guidelines Award-Gold Plus Elite Award for Stroke and Target Honor Roll for Diabetes.
- Increased number of Thrombectomy cases.
- Interprofessional Team Excellence Award
- Institution of RAPID software for real time CT Imaging results, facilitating enhanced outcomes
- Continued participation in CREST-2 clinical trial (Principal Investigator: Dr. Ash Jain)

MEDICAL STAFF REPORT

Dr. Shakir Hyder, Chief of Staff, reported there are 586 Medical Staff members including 357 active members and 95 ambulatory members. The 2021-22 Medical Staff Officers took office effective July 1st:

- Shakir Hyder MD – Chief of Staff
- Mark Saleh MD – Chief of Staff-Elect
- Prasad Kilaru MD – Immediate Past Chief of Staff
- Timothy Tsoi MD – Medical Staff Liaison Officer

The Medical Staff Dinner Dance will be held on August 7, 2021 at Barone's in Pleasanton. Dr. John Thomas Mehigan will be honored as Physician of the Year at that event.

SERVICE LEAGUE REPORT

Ms. Sheela Vijay, Service League First Vice President reported 69 members of the Service League volunteered 947 hours over the past month as many staffing assignments have been able to open up. These include assignments in the Surgical Waiting area, the Telemetry Unit, the Imaging Center, and the return of the WOOF Canine Therapy teams in the Oncology Unit.

FINANCE REPORT

Chris Henry, Vice President & Chief Financial Officer, presented the Finance Report for May 2021. The average daily census was 130.4 with admissions of 744 resulting in 4,042 patient days. Outpatient observation equivalent days were 312. The average length of stay was 5.11 days. The case mix index was 1.641. Deliveries were 119. Surgical cases were 343. Joint Replacement cases were 143. Neurosurgical cases were 22. Cardiac Surgical cases were 13. The Outpatient visits

were 7,464; Emergency visits were 3,812. Total productive FTEs were 1,279.9. FTEs per adjusted occupied bed were 6.39.

HOSPITAL OPERATIONS REPORT

Kimberly Hartz, Chief Executive Officer, presented the Hospital Operations Report for June 2021. Preliminary information for the month indicated total gross revenue at approximately $186,637,000 which is 102.6% of the pre-COVID-19 average. We had 14 COVID-19 discharges which represented 2% of total discharges.

The Average Length of Stay was 5.63. The Average Daily Census was 139.5. It was noted that Observation patients were not included in the census. COVID-19 patients have a significantly higher than average acuity and length of stay at 9.6 days. Of the 14 COVID-19 discharges in the month, the average length of stays was 16.5 days; eight patients has lengths of stay greater than 31 days with one patient staying longer than 54 days. Still in house at the end of June were four patients with length of stays of over 30 days. including one patient with a length of stay of 121 days and counting.

There were 4,185 patient days. There were 405 Surgical Cases and 409 Cath Lab procedures at the Hospital. Deliveries were 132. Non-Emergency Outpatient visits were 7,984. Emergency Room visits were 3,881 and we are at 86% of pre-COVID level. Total Government Sponsored Preliminary Payor Mix was 71.8%, against the budget of 71.4%. Total FTEs per Adjusted Occupied Bed were 6.25. The Washington Outpatient Surgery Center had 606 cases and the clinics had approximately 17,162 visits. The Washington Urgent Care Clinic operated at reduced hours and closed on June 30, 2021. The Ohlone College Student Health Center remains open, but students have been off-campus since March 2020; they are looking at instituting more of a hybrid clinic program.

ANNOUNCEMENTS

- During the month of June, the Washington Township Medical Foundation continued to operate our community vaccination clinic. We have distributed a total of 65,188 doses to date.
- Wednesday, June 16th: Breathe Easier with Pulmonary Rehab.
- Wednesday, June 30th: Fun Fresh Summer Cooking Demonstration.
- Scheduled for Thursday, July 15th: Staying Fit this Summer.
- Scheduled for Tuesday, August 3rd: Chronic Venous Disease – Causes, Symptoms and Treatment
- July Employee of the Month: Joe Kim, Lead Cath Lab Technologist

ADJOURNMENT

There being no further business, Director Nicholson adjourned the meeting at 7:34 pm.

_____ _____

William F. Nicholson, M.D. Michael J. Wallace
President Secretary

CALL TO ORDER

A regular meeting of the Board of Directors of the Washington Township Health Care District was held on Monday, July 19, 2021 via Teleconference in order to comply with California Governor Gavin Newsom's Reopening Plan for California and Executive Order N-29-20. We will continue to conduct our meetings remotely while we develop plans to return to in-person meetings and develop hybrid formats that maintain Brown Act compliance while also providing greater accessibility and transparency to the public. Director Nicholson called the meeting to order at 6:01 p.m. and led those present in the Pledge of Allegiance.

ROLL CALL

Roll call was taken. Directors present: William Nicholson, MD; Jeannie Yee; Bernard Stewart, DDS; Jacob Eapen, MD

Absent: Michael Wallace

Also present: Kimberly Hartz, Chief Executive Officer; Ed Fayen, Chief Operating Officer; Chris Henry, Chief Financial Officer; Larry LaBossiere, Chief Nursing Officer; Paul Kozachenko, Legal Counsel; Dee Antonio, District Clerk

COMMUNICATIONS

There were no oral communications.

There were no written communications.

CONSIDERATION OF MEDICAL STAFF: GOALS AND OBJECTIVES MATERNAL FETAL MEDICINE (MFM) FELLOW ROTATIONS

In accordance with District Law, Policies, and Procedures, Director Yee moved that the Board of Directors approve the Final Goal and Objectives Maternal Fetal Medicine Prenatal Diagnostic Fellow Rotations as presented.

Director Stewart seconded the motion.

Roll call was taken:

William Nicholson, MD – aye
Jeannie Yee – aye
Bernard Stewart, DDS – aye
Jacob Eapen, MD – aye
Michael Wallace – absent

The motion carried.

ANNOUNCEMENTS

Kimberly Hartz announced that Washington Hospital has received Magnet Recognition

ADJOURN TO CLOSED SESSION

In accordance with Health & Safety Code Sections 32106 and 32155 and California Government Code 54956.9(d)(2), Director Nicholson adjourned the meeting to closed session at 6:08 p.m., as the discussion pertained to a Conference involving trade secrets pursuant to Health & Safety Code section 32106: Audit Plan and FY 2022 Affiliates Budget Preview, Conference with Legal Counsel-Anticipated litigation pursuant to government code section 54956.9(d)(2), and consideration of closed session Minutes: May 17 and 26, 2021. Director Nicholson stated that the public has a right to know what, if any, reportable action takes place during closed session. Since this is a Teleconference call and we have no way of knowing when the closed session will end, the public was informed they could contact the District

Clerk for the Board's report beginning July 20, 2021. He indicated that the minutes of this meeting will reflect any reportable actions.

RECONVENE TO OPEN SESSION & REPORT ON CLOSED SESSION

Director Nicholson reconvened the meeting to open session at 7:03 pm. The District Clerk reported that the Board approved the Closed Session Minutes of June 21, and 23, 2021 in closed session by unanimous vote of all Directors present:

William Nicholson, MD
Jeannie Yee
Bernard Stewart, DDS
Jacob Eapen, MD

ADJOURNMENT

There being no further business, Director Nicholson adjourned the meeting at 8:03 pm.

_____ _____

William Nicholson, M.D.
President

Michael J. Wallace
Secretary

CALL TO ORDER

A meeting of the Board of Directors of the Washington Township Health Care District was held on Monday, July 26, 2021 via Zoom in order to comply with California Governor Gavin Newsom's Reopening Plan for California and Executive Order N-29-20. We will continue to conduct our meetings remotely while we develop plans to return to in-person meetings and develop hybrid formats that maintain Brown Act compliance while also providing greater accessibility and transparency to the public. Director Nicholson called the meeting to order at 7:30 a.m.

ROLL CALL

Roll call was taken. Directors present: William Nicholson, MD; Bernard Stewart DDS; Jacob Eapen; Jeannie Yee
Excused: Michael Wallace

Also present: Shakir Hyder, MD; Tim Tsoi, MD; Jeff Stuart, MD; Prasad Kilaru, MD; Mark Saleh, MD; Jan Henstorf, MD; Kimberly Hartz, Chief Executive Officer; Larry LaBossiere, Vice President & Chief Nursing Officer

COMMUNICATIONS

There were no oral or written communications.

ADJOURN TO CLOSED SESSION

Director Nicholson adjourned the meeting to closed session at 7:30 a.m. as the discussion pertained to Medical Audit and Quality Assurance Matters pursuant to Health & Safety Code Sections 1461 and 32155.

RECONVENE TO OPEN SESSION & REPORT ON CLOSED SESSION

Director Nicholson reconvened the meeting to open session at 8:30 a.m. and reported no reportable action taken in closed session.

ADJOURNMENT

There being no further business, the meeting adjourned at 8:30 a.m.

_____
William Nicholson, M.D.
President

_____
Michael Wallace
Secretary

CALL TO ORDER

A regular meeting of the Board of Directors of the Washington Township Health Care District was held on Wednesday, July 28, 2021 via Teleconference in order to comply with California Governor Gavin Newsom's Reopening Plan for California and Executive Order N-29-20. We will continue to conduct our meetings remotely while we develop plans to return to in-person meetings and develop hybrid formats that maintain Brown Act compliance while also providing greater accessibility and transparency to the public. Director Nicholson called the meeting to order at 6:01 p.m. and led those present in the Pledge of Allegiance.

ROLL CALL

Roll call was taken. Directors present: William Nicholson, MD; Jeannie Yee; Bernard Stewart, DDS; Jacob Eapen, MD; Michael Wallace

Also present: Kimberly Hartz, Chief Executive Officer; Ed Fayen, Chief Operating Officer; Chris Henry, Chief Financial Officer Larry LaBossiere, Vice President; Nicholas Kozachenko, Legal Counsel; Dee Antonio, District Clerk

COMMUNICATIONS

There were no oral communications.

There were no written communications.

CONSIDERATION OF VIZIENT eCOMMERCE EXCHANGE AND TRANSACTION MANAGEMENT

In accordance with District Law, Policies, and Procedures, Director Eapen moved that the Board of Directors authorize the Chief Executive Officer to enter into the necessary contracts and proceed with the purchase of software and implementation services for a total amount not to exceed $31,200.00.

Director Wallace seconded the motion.

Roll call was taken:

William Nicholson, MD – aye
Jeannie Yee – aye
Bernard Stewart, DDS – aye
Jacob Eapen, MD – aye
Michael Wallace – aye

The motion unanimously carried.

ADJOURN TO CLOSED SESSION

In accordance with Health & Safety Code Sections 32106 and 32155 and California Government Code 54956.9(d)(2), Director Nicholson adjourned the meeting to closed session at 6:06 p.m., as the discussion pertained to a Report of Medical Staff and Quality Assurance pursuant to Health & Safety Code Section 32155, Conference involving Trade Secrets pursuant to Health & Safety Code section 32106, and a Conference with Labor Negotiators. Director Nicholson stated that the public has a right to know what, if any, reportable action takes place during closed session. Since this is a Teleconference call and we have no way of knowing when the closed session will end, the public was informed they could contact the District Clerk for the Board's report beginning July 29, 2021. He indicated that the minutes of this meeting will reflect any reportable actions.

RECONVENE TO OPEN SESSION & REPORT ON CLOSED SESSION

Director Nicholson reconvened the meeting to open session at 8:16 pm. The District Clerk reported that the Board approved the Medical Staff Credentials Report in closed session by vote of all Directors present:

William Nicholson, MD
Jeannie Yee
Bernard Stewart, DDS
Jacob Eapen, MD
Michael Wallace

ADJOURNMENT

There being no further business, Director Nicholson adjourned the meeting at 8:06 pm.

_____
William Nicholson, M.D.
President

_____
Michael J. Wallace
Secretary

Washington Hospital Healthcare System

SINCE 1948

Memorandum

DATE: July 27, 2021

TO: Kimberly Hartz, Chief Executive Officer

FROM: Shakir Hyder, MD, Chief of Staff

SUBJECT: MEC for Board Approval:

The Medical Executive Committee, at its meeting of July 19, 2021, approved the ICU Manual dated July 26, 2021.

Please accept this memorandum as a formal request for presentation to the Board of Directors for final approval of the attached ICU Manual dated July 26, 2021.

Critical Care Service Manual

Table of Contents

CRITICAL CARE UNIT
DEPARTMENT & SERVICES MANUAL

SECTION 1 – Function, Objectives Administrative Policies

Critical Care Service

The Critical Care Service is a Hospital service with Medical Staff oversight of quality of care. It has a director(s) who is on medical staff. The critical care units are housed in the Morris Hyman Critical Care Pavilion (MHCCP).

The Functions of the Critical Care Service

The critical care service aims to utilize evidence based practices and procedures to give comprehensive quality care to the critically ill patient. The services mission is to provide the highest quality, evidence-based care to all critically ill patients and their families. The vision is to engage patients and families in comprehensive, highly coordinated interdisciplinary care with a human touch.

The Objectives of the Critical Care Service

1. To reduce the morbidity and mortality rate among critically ill patients with potentially life threatening medical conditions.

2. To assist critically ill patients and their families over the acute phase of illness, surgery, or injury with quality nursing and medical care.

3. To provide orientation and reorientation for all members of the inter-professional care team in all phases of operation of the service. To acquaint the team members with the specific and overall practices and procedures of the service, including recognition of change in patient condition and initiation of emergency treatment. To provide ongoing education for all staff by means of formal lectures, informal bedside discussions, demonstrations, conferences as well as written text and materials.

The Critical Care Service Administrative Policies

The Critical Care Service has the following administrative units:

1. Medical Director

2. Nursing Service

Attending Physician Responsibilities

Individual patient care is the responsibility of the attending physician. The attending physician in the critical care unit is the Intensivist.

1. The intensivist is directly responsible for the coordination of care of all patients in the critical care units, and will make daily visits in the unit and write daily progress notes and keep nursing staff updated on patient progress and treatment plans.

2. There is an intensivist on-site 24/7 for management of patients in the critical care unit

3. The attending physician is responsible for updating his/her replacement in regards to patient condition and treatment plan.

4. All Critical Care orders should be approved by the intensivists except dialysis, post op and cardiac cath orders.

5. Multidisciplinary rounds will be conducted by the intensivist. Multidisciplinary patient/family care conferences will be conducted as needed.

6. Upon transfer out of the critical care unit, the intensivist caring for the patient shall sign-out to the primary care physician or hospitalist who will be assuming care of the patient. Transfer orders will be completed by the intensivist before discharge from the Critical Care Unit.

Medical Director Responsibilities

The critical care service clinical functions are under the direction of a Medical Director. His/her responsibilities are:

1. To provide a knowledgeable medical perspective of hospital practices in critical care, and to introduce and regulate such practices for the benefit of our patients and their families.

2. To provide overall supervisory control and execute decisions regarding policy and procedures in the critical care units.

3. To relate to the Hospital Medical Staff as a specialist in critical care. He/she shall be knowledgeable in the procedures and techniques of critical care and shall be responsible for the quality of critical care service provided.

4. The Medical Director or his/her designee will be available for discussion in regards to any issues relating to the critical care service at all times. In the absence of the Medical Director, a qualified physician will be designated by the Medical Director for administrative and consultative decisions.

5. The Medical Director will be responsible to the Medical and Surgical Committees and hospital Administration.

6. The Medical Director will carry on a continuing medical education program for the professional personnel in the Hospital and will review the appropriateness of education programs relating to critical care.

7. It is the responsibility of the Medical Director to ensure that the delivery of care is in accordance with the standards of practice in the community, and should advise staff physicians when such is not the case.

8. In the event of deviation in the standard of practice or a disagreement over admission/discharge eligibility, the Medical Director should:
    a. Discuss these concerns with the physician(s) responsible for the patient.
    b. If there is a disagreement or the physician cannot be reached, the chairman of the appropriate department and/or Chief of Staff should be notified in an attempt to arbitrate the situation in accordance with the standing orders of the appropriate department manual and Medical Staff Bylaws.

9. The Medical Director shall assure that the quality, safety and appropriateness of patient care services provided within the unit are reviewed and evaluated on a regular basis and that appropriate action is taken based on the findings of the review and evaluation of activities.

10. The Medical Director shall have the authority to triage patients. Every attempt should be made to have at least one empty bed at all times for emergency admissions. (See Triage Criteria.)

Nursing Service Responsibilities

1. Nursing Supervisors and the Critical Care Nursing Manager shall assume responsibility on a 24-hour basis for all nursing care administered by the nursing staff and will enforce all policies and regulations as set forth by Administration, the Medical Committee and the Surgery Committee.

2. The charge nurses will have responsibility for the area during the shift and will bring to the attention of the critical care manager any problems related to the functions of the unit. In situations where there is concern regarding a patient's care, the nurse will follow the Numbered Memorandum "Chain of Command".

3. The procedures to be performed by the critical care nursing staff will follow the standards of nursing care for the critically ill.

4. A list with specification as to who may perform special procedures, under what circumstances, and under what degree of supervision will be available on the unit.

5. Refrigerated storage is provided for biologicals and all other supplies requiring such storage within the critical care units. Special or supplementary dietary requirements are stored separately from biologicals and supplies.

6. Special precautions, including those related to electrical and device safety, are taken when the care of a patient requires the use of any type of electrically operated device.

Visiting Regulations

The critical care units are reserved for critically ill patients and affords constant, expert nursing care. In order to facilitate this, the following regulations apply:

1. Visitors will be limited to two members of the immediate family or significant others. Visitation is allowed 24 hours per day, with quiet time after 8 pm. Visitation will be coordinated by the care team.

2. Visitors may be asked to leave, if unit activity is such that visiting would interfere with patient care.

3. Flowers, plants and food may not be brought to the unit.

4. The patient may keep dentures, eyeglasses and hearing aids at the bedside. All other personal articles should be taken home by the family. Valuables or money not taken by the family members, will be sent to the Hospital safe.

SECTION 2 – Standard Dysrhythmia Orders and Bedside Procedures

1. **Standard Dysrhythmia Orders**

   Dysrhythmia orders shall be initiated upon physician order. ACLS guidelines are followed and may be referred to for guidance.

BEDSIDE PROCEDURES PERFORMED IN CRITICAL CARE

(Approved by Critical Care Committee 9/06; Surgery Committee 9/06; MEC 10/16/06; Board 2/14/07)

The purpose of this document is to outline a mechanism for physicians with clinical privileges to perform procedures in the Critical Care Unit. Consideration will be given to providing the same standard of care, minimizing the risk for nosocomial infection, meeting environmental requirements, assuring staff competency and maintaining patient safety.

New procedures done at the bedside will be reviewed by the Critical Care Committee for the following elements:

- MD Credentialing
- Policies and Procedures
- Equipment and Supplies
- Staff Training
- Standard of Care
- Risk of Infection

If a patient is too unstable to be transferred to the Operating Room, the attending physician will inform the charge nurse of the need for the procedure to be done at the bedside. The charge nurse will inform the Critical Care Nursing Manager and/or Assistant Nurse Manager and Medical Director who will consider staff competency and patient safety, the required medical equipment and supplies, the risk for nosocomial infection and the availability of OR team to facilitate the process. The Critical Care Nursing Manager and/or Assistant Nurse Manager and Medical Director will facilitate the communication among all health care providers and administration.

Critical Care Unit Bedside Procedure List

When clinically appropriate, local anesthesia, moderate sedation or monitored anesthesia care can be used during any procedure in the Critical Care Units.

The following invasive procedures can be performed in the Critical Care Units:

Skin:

- Repair of simple scalp and skin lacerations
- Layered closure of complex scalp and skin lacerations
- Layered or simple closure of open surgical wounds
- VAC (NPWT) dressing change
- Change of complex dressings
- Incision and Drainage of abscess + Electrocautery
- Debridement of wounds and pressure ulcers + Electrocautery

Catheters:

- Arterial line insertion any route
- PICC line insertion any route
- Single/Double/Triple lumen central venous catheter insertion any route
- Temporary hemodialysis catheter insertion
- Insertion and removal of Pulmonary artery catheter
- *Removal of temporary or permanent hemodialysis catheter + Electrocautery
- Removal of peritoneal dialysis catheter

Cardiac and Thoracic:

- Endotracheal intubation
- Percutaneous tracheostomy
- Surgical cricothyrotomy/airway
- Tracheostomy tube exchange
- Temporary transvenous pacemaker placement and removal
- Cardioversion/Defibrillation
- *Emergency open sternotomy
- *Emergency thoracotomy
- Chest tube placement and removal

- Thoracentesis
- Pericardiocentesis
- *Pleurodesis using sterile talc or antibiotic powder or any approved material
- Intra-Aortic balloon pump insertion and removal
- Impella percutaneous VAD removal
- *Transesophageal echocardiogram (TEE)
- Fiberoptic bronchoscopy

Abdominal:
- Paracentesis
- *PEG insertion
- Intraabdominal pressure monitoring/transcystic or transgastric or transcolonic
- *Percutaneous jejunostomy tube insertion
- *Replacement of gastrostomy or jejunostomy tube
- *Diagnostic peritoneal lavage
- Insertion of blakemore sengstaken tube for esophageal variceal bleeding
- *Esophago-gastro-duodenal endoscopy + sclerotherapy + biopsy
- *Colonoscopy
- Maturation of colostomy/ileostomy
- *Sigmoidoscopy rigid or flexible
- *Proctoscopy + sclerotherapy + biopsy
- *I&D simple perianal or perirectal abscess
- *I&D infected or thrombosed hemorrhoids

Neurosurgical:
- ICP monitor removal
- Lumbar puncture and cisternal puncture
- Intraventricular catheter insertion
- Transcranial Doppler monitoring
- Placement of Halo traction device
- Emergent burr hole procedure

ENT:
- Nasal packing, removal and replacement
- Nasal harness
- Ice caloric testing for vestibular function
- CSF fluid drainage
- Needle biopsy/Excision biopsy
- *Endoscopic Biopsy
- *Endoscopic Foreign Body Removal
- *Endoscopic Nasal Debridement
- Volumetric Reduction of Turbinate Tissue
- *I&D Head and Neck Abscess including Peritonsilar Abscess and Retropharyngeal Abscess
- Direct Laryngoscopy
- Tympanostomy Tube Placement
- Nasal Endoscopy +/- Cautery
- Wound Irrigation

Urology:
- Suprapubic cystostomy
- Placement of urinary catheter, bladder lavage and control of bladder bleeding
- Dilatation of urethral stricture
- I&D of scrotal and peroneal abscess

Pain Management:
- Epidural catheter placement and removal

Orthopedic:

- Compartment pressure measurement
- Application of External fixation device
- Closed reduction and splinting/casting of fractures
- Percutaneous pinning
- *Removal of Percutaneous pins/hardware
- Arthrocentesis
- Joint Injections
- Insertion of Skeletal Traction Pins
- Emergency Fasciotomy

Hematology:

- Bone marrow biopsy

* These procedures may require Peri-operative staff to assist in the ICU/CCU.

Approved by:

Critical Care Committee	Date10/17/17, 2/11/2020
Medical Executive Committee	Date: 1/21/08, 03/17/14, XXXXX
Board of Directors	Date: 2/13/08, 03/24/14, XXXXX

SECTION 3 – Admission, Discharge and Triage Criteria

ADMISSION CRITERIA

1. Eligibility of patient for admission to the Critical Care Unit will be determined on an individual basis by the consulting intensivist, considering the nature and severity of the illness, the level of care required, and the prognosis.

2. Patients who do not require critical care services may still be admitted to the critical care unit due to hospital administration directive.

3. Only those "DNR/DNI" patients with acute reversible problems requiring critical care will be considered for admission. Patients whose nursing care needs are limited to basic supportive therapy only or through documentation have been designated a "DNR/DNI" are generally ineligible for admission to Critical Care Unit, unless nursing care requirements exceed the intensity of care which can be provided in another unit.

4. Patients admitted to the Critical Care Unit may have any of the diagnosis outlined below:

   A. Cardiac System
      1. Acute myocardial infarction with complications
      2. Cardiogenic shock
      3. Complex arrhythmias requiring close monitoring and intervention
      4. Acute congestive heart failure with respiratory failure and/or requiring hemodynamic support
      5. Hypertensive emergencies
      6. Unstable angina, particularly with dysrhythmias, hemodynamic instability, or persistent chest pain
      7. S/P cardiac arrest
      8. Cardiac tamponade or constriction with hemodynamic instability
      9. Dissecting aortic aneurysms
      10. Complete heart block

   B. Pulmonary System
      1. Acute respiratory failure requiring ventilatory support
      2. Pulmonary emboli with hemodynamic instability
      3. Patients in an intermediate care unit who are demonstrating respiratory deterioration
      4. Need for nursing/respiratory care not available in lesser care areas such as floor or intermediate care unit
      5. Massive hemoptysis
      6. Respiratory failure with imminent intubation

   C. Neurologic Disorders
      1. Acute stroke with altered mental status
      2. Coma: metabolic, toxic, or anoxic
      3. Intracranial hemorrhage with potential for herniation
      4. Acute subarachnoid hemorrhage
      5. Meningitis with altered mental status or respiratory compromise
      6. Central nervous system or neuromuscular disorders with deteriorating neurologic or pulmonary function
      7. Status epilepticus
      8. Brain dead or potentially brain dead patients who are being aggressively managed while determining organ donation status
      9. Vasospasm
      10. Severe head injured patients

   D. Drug Ingestion and Drug Overdose
      1. Hemodynamically unstable drug ingestion
      2. Drug ingestion with significantly altered mental status with inadequate airway protection
      3. Seizures following drug ingestion

E. Gastrointestinal Disorders
   1. Life threatening gastrointestinal bleeding including hypotension, angina, continued bleeding, or with comorbid conditions
   2. Fulminant hepatic failure
   3. Severe pancreatitis
   4. Esophageal perforation with or without mediastinitis

F. Endocrine
   1. Diabetic ketoacidosis complicated by hemodynamic instability, altered mental status, respiratory insufficiency, or severe acidosis
   2. Thyroid storm or myxedema coma with hemodynamic instability
   3. Hyperosmolar state with coma and/or hemodynamic instability
   4. Other endocrine problems such as adrenal crises with hemodynamic instability
   5. Severe hypercalcemia with altered mental status, requiring hemodynamic monitoring
   6. Hypo or hypernatremia with seizures, altered mental status
   7. Hypo or hypermagnesemia with hemodynamic compromise or dysrhythmias
   8. Hypo or hyperkalemia with dysrhythmias or muscular weakness
   9. Hypophosphatemia with muscular weakness

G. Surgical
   1. Post-operative patients requiring hemodynamic monitoring/ventilatory support or extensive nursing care
   2. Post Cardiac Surgery

H. Miscellaneous
   1. Septic shock with hemodynamic instability
   2. Hemodynamic monitoring
   3. Clinical conditions requiring critical care level nursing care
   4. Environmental injuries (lightning, near drowning, hypo/hyperthermia)
   5. New/experimental therapies with potential for complications

I. Critically ill patients requiring specialized monitoring available in the critical care area:
   1. Hemodynamic monitoring.
   2. Intracranial Pressure (ICP) monitoring, and/or ventricular drains.
   3. Arterial or pulmonary artery lines.
   4. Pharmacologic therapy requiring continuous cardiac monitoring and q 1 hour or more frequent vital signs.
   5. Mechanical ventilation.

J. Eligibility for direct admission to the Critical Care Unit from outside facilities will be approved by the Intensivist based on medical appropriateness.

K. Acute psychiatric disorder or alcoholic intoxicated patients will not be admitted to the Critical Care Unit unless accompanied by unstable physiological complications, patient is suicidal, or on authorized legal hold.

L. The ER physician or transferring physician are responsible in notifying patient's family of admission to the Critical Care Unit. The intensivists will update primary care and family when appropriate.

DIRECT ADMISSIONS TO THE ICU AFTER SURGERY

(Approved by Board 7/9/03, Rev. approved by MEC 6/21/04, Board 7/14/04)

Postoperative patients should be cared for in the Post Anesthesia Care Unit until recovery from anesthetic agents has occurred. Patients may bypass the PACU and be admitted directly to the Critical Care Unit from surgery when the level of care required can best be rendered in the critical care setting as determined by the intensivist. The following is a list of some, but not all, conditions that may warrant immediate transfer to the Critical Care Unit from the operative suite:

- Postoperative craniotomy patients requiring intracranial pressure monitoring
- Post-cardiac surgery patients
- Postoperative aortic aneurysm repair
- Patients requiring continued ventilator support who were cared for in the ICU preoperatively
- Patients with shock requiring treatment with multiple vasoactive drugs and intensive fluid resuscitation
- Patients with complex ventricular arrhythmias

Upon the surgeon's/anesthesiologist's request and acceptance by the intensivist, if the patient warrants transfer to the Critical Care Unit, the nurse supervisor will check for bed and staffing availability. When direct admission to the Critical Care Unit from surgery is required, the Critical Care Unit charge RN must be notified in advance by the OR nursing staff. A comprehensive report should be called to the RN admitting the patient specifying the surgical procedure performed, any relevant lab results from intraoperative testing (ABGs, hematocrit/hemoglobin, electrolytes) estimated blood loss, I & O during the procedure, ventilator settings and any complications. In addition, notification should occur regarding monitoring requirements and/or the need for mechanical ventilation. Notification regarding equipment requirements should occur in a timely manner to allow for set-up of required equipment.

When patients are admitted directly to the Critical Care Unit from surgery, the anesthesiologist/surgeon will remain in the Critical Care Unit until the hand-off process has been completed and the patient's care transferred to the intensivist.

Approved by:

Critical Care Committee	Date: 02/18/14, 2/11/2020
Medical Executive Committee	Date: 1/21/08, 03/17/14, XXXXXX
Board of Directors	Date: 2/13/08, 03/24/14, XXXXXX

DISCHARGE CRITERIA

1. Patients will be transferred or discharged from the Critical Care Unit when it is determined they can safely and appropriately be cared for in an alternative location. Eligible patients for transfer are those who are no longer deemed critically ill by the intensivist, and generally, fall within the following guidelines:
   a. Hemodynamically stable.
   b. Monitoring of vital signs every two (2) hours or less frequently.
   c. Any non-critical patient that has been admitted to Critical Care Unit due to lack of non-critical beds.
   d. Patient's condition stable enough to transfer to another facility's Critical Care Unit.

2. Transfer of ventilator dependent patients with a tracheostomy from the Critical Care Unit will be accomplished under the following guidelines:
   a. The patient may be transferred when there is no longer a need for frequent nursing and respiratory interventions and the following criteria are met:
      i. When the ventilator therapy is stable, and patient's condition does not require ventilator adjustment on a regular basis.
      ii. Tracheal suctioning and pulmonary nursing care not to exceed greater than 15 minutes' every 2 hours.
      iii. When the receiving Nursing Unit and Respiratory Care Department can adequately staff to meet the patient care needs following transfer.

3. Transfer orders will be completed by the intensivist before discharge from the Critical Care Unit.

4. Patients in the Critical Care Unit, requiring services not provided by the Critical Care Unit will be evaluated by the intensivist for transfer to a tertiary facility which can provide the needed services.

TRIAGE CRITERIA

(Approved 1/21/08 MEC (with changes); 2/13/08 Board)

If no beds are available in the Critical Care Unit, the following actions will occur:

- The on-call intensivist will attempt to triage and transfer out of the critical care unit those patients who no longer need critical care. If the accepting physician does not agree with the assessment of the on-call intensivist, the Critical Care Unit Medical Director will be notified. The Medical Director or designee, will review the charts of the patients in question and decide which patient or patients are in most need of critical care.

Approved by:

Critical Care Committee	Date: 02/18/14, 2/11/2020
Medical Executive Committee	Date: 1/21/08, 03/17/14, XXXXXX
Board of Directors	Date: 2/13/08, 03/24/14, XXXXXX

SECTION 4 -- Weaning/Extubation Protocol and B - Both SAT and SBT Algorithm

WEANING/EXTUBATION PROTOCOL

Purpose

To outline the Nursing and Respiratory Care responsibilities for the withdrawal of mechanical support and extubation of intubated patients.

Level

Interdependent, requires physicians order for initiation of protocol, and dependent functions.

SUPPORTIVE DATA:

1. Patients managed with SAT / SBT (Spontaneous Awakening Trials / Spontaneous Breathing Trial) daily after intubation saw a decrease in number of ventilator days as well as shorter ICU stays.

2. Definitions:
    a. Spontaneous Breathing Trial (SBT): Time limited (30-120minutes) trial of spontaneous breathing for mechanically intubated patient.
    b. RSBI (Rapid Shallow Breathing Index) = RR ÷ VT. Formula used to predict ability to wean off ventilator and is also known as a TOBIN Score. A score of 60-105 indicates a patient is weanable.
    c. Tidal Volume (TV or V_T): Volume of air inhaled and exhaled with each breath during quiet breathing.
    d. Minute Ventilation Expired (V_E): Volume per minute.
    e. RASS: Richmond Agitation Sedation Scale. A scale used to assess and communicate a patient's level of arousal or sedation. A score of 0 = Alert and Calm, scores range from -5 (completely Unarousable) to +4 (very agitated and combative).
    f. Terminal Wean: Weaning of ventilator support when a patient is expected to die, in order to allow for a natural death. Refer to Withdrawal of Ventilator Support at End of Life Protocol.
3. Patients receiving enteral nutrition via a naso-gastric tube may have feedings continued as follows:
    a. Gastric feedings –
        i. Via large bore NGT or PEG: may continue feeding until prior to extubation; empty stomach contents prior to extubation.
        ii. Via small bore NGT: HOLD feeding 1 – 2 hours prior to and during SAT/SBT. RESTART feeding immediately if patient fails SAT/SBT. Consult Intensivist as needed.
    b. Post-pyloric or small bowel feedings – feedings may be continued during

SBT ADDENDUM:

Addendum A – SAT (Spontaneous Awakening Trial) And SBT (Spontaneous Breathing Trial) Algorithm
Addendum B -- Spontaneous Breathing Trial Readiness Criteria (Weaning Screening) Addendum C -- Parameters for Failure of a Spontaneous Breathing Trial

PRIOR TO INITIATING WEANING

1. Ensure ventilator orders are in patient's chart, including order to perform SAT + SBT.

BEGIN WEANING – PERFORM SAT + SBT

2. Follow Algorithm attached for B = SAT + SBT, RN and RCP to coordinate.
3. CPAP Trials: If anticipating rapid extubation, do not leave patients on CPAP for greater than 30 minutes.
4. Monitor for signs of respiratory muscle fatigue. If the patient fatigues, slightly increase mechanical support to let the patient rest and recover.

    Signs of fatigue: (refer to Addendum C)
    a. Increased respiratory rate (> 30/min.)
    b. Tachycardia (> 120/min.)
    c. Increase or decrease in BP (20 mm Hg or more)
    d. Presence of increasing dysrhythmias
    e. Angina

f. Cyanosis
g. pH < 7.3
h. SpO2 is less than 92% or as ordered by MD
i. Decrease in minute ventilation

5. If patient "fails" weaning, i.e., shows signs of respiratory fatigue, return to previous ventilator settings and allow patient to rest. Consult MD and consider repeating SAT + SBT later in the day, if cause of failure was reversible and has been treated.

6. If patient tolerates SBT, Assess the following parameters before extubation. Consult with MD regarding patient's ability to protect airway.
   a. Mental status – ideally, awake, alert and able to follow basic commands.
   b. Quantity / quality of secretions, and suctioning frequency.
   c. Strength of cough
   d. Cuff Leak testing if needed

EXTUBATION

7. If patient passes SBT, consult with MD to extubate and need for cuff leak testing. Consider and obtain ABG if needed.

8. Consult MD for nutrition orders post-extubation.

9. Implement Aspiration Prevention Protocol.

DOCUMENTATION

10. Nursing to document assessments, interventions and patient's responses.

11. RCPs to record all ventilator weaning parameters, per department policy.

ADDENDUM A

SAT (Spontaneous Awakening Trial) and SBT (Spontaneous Breathing Trial) Algorithm

To occur at the start of day shift

B Both SAT (Spontaneous Awakening Trial) And SBT (Spontaneous Breathing Trial)

SAT (Spontaneous Awakening Trial) SAFETY SCREEN

SAT Safety Screen Inclusion Criteria

- ü No active Seizures
- ü No active Alcohol Withdrawal
- ü No Agitation
- ü No Paralytics/Neuro-Muscular Blocking Drugs
- ü No active Myocardial Ischemia
- ü No evidence of Increase Intracranial Pressure & Neuro-Surgical Service OK with Sedation Vacation
- ü Stable Hemodynamics:
  - ü SBP 90 – 180 & MAP greater than 65
  - ü No increase in vasopressor dose within 1 hour
  - ü HR 50 – 110 & no life-threatening arrhythmias
- ü For CABG patients:
  - ü Urine Output greater than or equal to 0.5-1 mL/Kg/hr
  - ü Chest Tube drainage less than 150 mL/hr for greater than 2 hrs.
- ü No immediate need of operation/re-operation

FAIL → Notify MD, if will not be at bedside within 3 hrs

PASS

- ü Perform SAT (Ensure pt. adequately restrained to prevent self-extubation)
- ü **STOP** all sedatives and analgesics except dexmedetomidine
- ü Notify RT

RASS > 0: Assess pain and use PRN boluses of analgesics as needed. If needing >2 boluses in ½ hr, restart analgesic drip at prior rate. If RASS still > 0 after 1 hr, resume sedatives at ½ the prior rate.

RASS <1: Leave analgesics and sedatives off and reassess pt in ½ hr.

RASS is -1 to 0
Notify RT for SBT

SBT (Spontaneous Breathing Trial) SAFETY SCREEN

SBT Safety Screen Inclusion Criteria

- ü Chest X-ray (refer to radiology report or MD assessment)
  - ü No new/significant infiltrates
- ü Oxygenation
  - ü SpO2 greater than 92% on FiO2 less than 0.5, PEEP less than +8 cm H2O

Assess & Document Weaning Parameters (per RT Policy & Procedure)

RR < 30/min HR Δ20/min BP Δ 20mmHg (SBP90 – 180)
Minute Vent. <13L/min RSBI <105 SpO2 ≥92%
SvO2 >60%, if available
→ ABGs within acceptable limits → No significant arrhythmia
→ Presence of cough reflex → Absence of respiratory distress
→ Ability to lift or turn head directionally on command
→ Positive Cuff Leak Test for pts at high risk for post-extubation stridor (e.g., Neuro, ENT or >3days on ventilator)

PASS

SBT Screening (2 min. observation)
CPAP(PEEP≤8) PS=10 FiO2 ≤ 0.5

FAIL → **Discontinue SBT Screening Trial**
Repeat SAT/SBT next day

PASS

SBT Trial

- ü CPAP+PS mode (FIO2 ≤0.5, PEEP ≤8, PS+10)
- ü Decrease to PS+5 as tolerated
- ü Position pt > 30 degrees upright
- ü SBT: 30-120 minutes as tolerated by pt
- ü RSBI = RR ÷ VT (Liter)
- ü Obtain Arterial Blood Gases at end of SBT

FAIL → **Discontinue SBT Screening Trial**
Repeat SAT/SBT next day

PASS → **EXTUBATE** **Prior to extubation, refer to ventilator orders and obtain order from Intensivist

ADDENDUM B

Spontaneous Breathing Trial Readiness Criteria (Weaning Screening)

Required Inclusion Criteria:

1. The underlying cause of respiratory failure is improving
2. $PaO_2 \geq 60$ or $SpO_2 \geq 90$ on $FiO_2 \leq 50\%$ and $PEEP \leq 8$
3. FiO_2 and PEEP requirements have not increased in past 24 hours
4. Hemodynamic stability (no or low dose vasopressors)
5. Able to initiate inspiratory effort
6. Awake and alert and able to follow commands

Exclusion Criteria:

1. Elevated ICP (ICP > 20 mmHg or CPP < 60 mmHg)
2. Persistent hypotension or increasing vasopressor requirements
3. Evidence of myocardial ischemia
4. Minute ventilation consistently > 15 L/min
5. Specific order from MD to not perform SBT

ADDENDUM C

Parameters for Failure of a Spontaneous Breathing Trial

1. Respiratory distress
    a. Increased work of breathing
    b. Abdominal paradox
    c. Diaphoresis
    d. Use of accessory muscles
2. Tachypnea > 32 breaths per minute
3. Desaturation – SpO2 $\leq$ 90
4. Persistently low tidal volumes or prolonged apneic periods a. Ensure ventilator alarm settings appropriate
5. Tachycardia > 120 beats per minute
6. Changes to systolic blood pressure > 180 mmHg or < 90 mmHg
7. New onset arrhythmia (eg., Atrial fibrillation with rapid ventricular rate or frequent premature ventricular contractions)

SECTION 5 -- Glucose Management and Critical Care Glucose Management Algorithm

WASHINGTON HOSPITAL CRITICAL CARE POLICY & PROCEDURE	Policy #:
SUBJECT: GLUCOSE MANAGEMENT	Effective Date: 7/15/2014, 06/2020
Approved By: Diabetes Advisory Committee, Critical Care Committee, PN and T Committee	

GOAL:

The goal of critical care glucose management program is to continuously optimize glucose control in critical care patients by delivering multidisciplinary and best practice care to patients.

SUPPORTING EVIDENCE

- Inpatient hyperglycemia has been associated with poor clinical outcomes, longer length of hospital stay, higher mortality, morbidity, and overall complications.
- Studies had demonstrated that intensive glycemic management reduces infections, hospital complications, and mortality.
- Insulin is the preferred medication in critical care settings. The short half-life of insulin allows flexibility in adjusting doses based on unpredicted changes in nutritional intake or the patient's health. Additionally, hypoglycemia due to insulin can be readily managed with D50W injection.

Glucose Values Parameter	**Quality Improvement indicator** *(benchmark against Society of Hospital Medicine March-Sept 2018 top quartile performance)*
	percent glucose POC per patient-day
Therapeutic Range : 70-179 mg/dL	≥ 80%**
Hypoglycemia : <70 mg/dL	≤3.6%
Hyperglycemia : ≥299 mg/dL	≤5%

***Internal goal. Note that the Society of Hospital Medicine March-Sept 2018 top quartile performance was ≥ 77.7% per patient-stay in critical care unit*

PROCEDURE:

- Under the leadership of Critical Care Intensivist Director, the Critical Care Unit (CCU) interdisciplinary team will collaboratively deliver a team-approach evidence-based diabetes management to critical care patients.
- All patients admitted to the Critical Care unit will be placed on insulin per pharmacy protocol. The clinical pharmacist initiate Insulin therapy per pharmacy protocol to appropriate patients as needed for tight glucose control. See algorithm for appropriate patient identification.
- The CCU interdisciplinary team will assess glucose control during daily rounds and as need arises. The clinical pharmacist will manage insulin therapy and discuss goals with CCU team.
- Priority intensive monitoring and interventions (e.g., insulin SQ regimen, carbohydrate meal planning) will be implemented according to patients' glucose levels and risk factors. See algorithm for stepwise management details.
- Registered dietitian will evaluate patients' diet orders and in collaboration with CCU team to implement appropriate carbohydrate controlled meal plan in appropriate patients, including patients on clear or full liquid diets. Registered dietitian will call physician for a change in tube feeding or will collaborate with pharmacy to formulate parenteral nutrition regimen as appropriate. In patients with

unpredictable meal intakes and fluctuating glucose values, pharmacists may order assessment of actual intake (e.g., carbohydrate count, calorie count) to be implemented.

- Nurses will provide close monitoring of patients requiring glucose management and document assessment of nutritional intakes including carbohydrate intake in Electronic Medical Record.
- When appropriate, Diabetes educator will manage patient's and family's education and provide support to CCU staff nurses.
- Intensivist will coordinate the overall diabetes management for critical care patient and provide general guidance to the rest of the CCU team.
- Oversight of the program will be provided by the Critical Care Intensivist Director, in collaboration with the Diabetes Advisory Committee and Pharmacy.

OUTCOME MEASURE:

- Critical Care Committee and Diabetes Advisory Committee will assess the overall program success and review quality outcome measures.
- Pharmacy will track progress of clinical outcome measures and report to the Critical Care Committee and the Diabetes Advisory Committee o Hypoglycemia rate o Hyperglycemia rate o Therapeutic range of glucose POC o Focus area of improvement as identified by the CCU team.

Approved: ICU Diabetes Task Force 2014; Diabetes Advisory Committee 07/14 and 06/20, Critical Care Committee 07/14, 06/20, PN and T Committee 06/20

CRITICAL CARE GLUCOSE MANAGEMENT ALGORITHM

Follow order sets for DKA or insulin pump pts

Admitted to ICU **with** insulin per pharmacy protocol/insulin drip order

**Insulin order not per pharmacy protocol will be converted to per pharmacy protocol unless managed by endocrinologist.*

***Insulin drip pts will be considered on insulin per protocol for the purpose of IV to SQ transition unless managed by endocrinologist*

Admitted to ICU **without** insulin order

FSBS ≥180, RN to call RX to start insulin per pharmacy protocol

FSBS<180

HIGH RISK CRITERIA:

- On Oral diabetic medications or insulin PTA
- HgA1C >8
- On Steroid
- On Tube feeding or parenteral nutrition
- Post-op CABG, Stroke, Sepsis, Hypothermia

RN, RX, and Intensivist perform **Daily Rounds** on Critical Care patients.

Pts without insulin order will be started on insulin per pharmacy protocol if they meet high risk criteria/ hyperglycemic. *Diabetes Educator, Dietitian, or Attending MD joins daily rounds as time permits*

On insulin per pharmacy protocol or insulin drip or has endocrinologist on the case

Pharmacy: Monitor FSBS , adjust/discontinue insulin regimen (correctional or basal/bolus insulin) PRN, order HgA1C if none available within 3 months

If Endocrinologist on the case, Endocrinologist will manage the glucose

Nurse: (1) Document grams carbohydrate intake if on PO diet; (2) Check Diabetes MAR and administer insulin doses as ordered (e.g., hold nutritional dose when NPO/tube feeding held and pt not on PO/supplemental diet); (3) Communicate with endocrinologist/pharmacist when there are changes to steroid order, CRRT, tube feeding order; (4) Adjust insulin drip rate per order set

Dietitian: Nutritional intervention

ICU team to initiate insulin drip (RX will write order per protocol) for

1) Critically ill pts whose FSBS are above 180 mg/dL for more than 50% of the times despite SQ insulin x24-36 hrs. Corticosteroids and tube feeding pts are first priority.

(Mechanically ventilated/hemodynamically unstable pts with fluctuating and uncontrolled FSBS despite SQ insulin may benefit from insulin infusion)

As directed by related order sets, RN will initiate insulin drip for

3) Severe sepsis pts who have FSBS above 180 mg/dL x2 consecutively per order set

4) Hypothermia pts who have FSBS ≥150 mg/dL per order set

If FSBS consistently ≥ 180 mg/dL for 24 hours while on insulin infusion, consider endocrinologist consult.

ICU Team to discontinue insulin drip (RX will write order per protocol):

1) On Insulin Drip for at least 24 hours, **AND**

2) FSBS are consistently at goal and insulin rate is reasonably stable for the last 6 hours and pt is NOT ventilated/NOT on pressors (hemodynamically stable)

3) Preferably steroid dose is not being titrated up or down

4) Preferably ready for nutrition initiation (PO/Enteral(Cortrak)/Parenteral)

***For DKA pts, see DKA orders for IV to SQ transition criteria, Insulin pump pts may require drip throughout ICU stay*

RN to administer transition dose of SQ insulin 2 hours prior to discontinuing Insulin infusion

RX will order basal-bolus SQ insulin regimen on pts requiring more than 10-15 units insulin per day *(the last 4-6 hours insulin rates will be given higher consideration than previous rates)*.

If Endocrinologist is on the case, Endocrinologist will manage patient's glucose.

Continue glucose monitoring.

RX will continue to monitor pts on pharmacy protocol when pts transferred to Med-Surg

Recommend diabetes educator and endocrinologist consult for complicated cases.

NOT on any insulin regimen

Monitor AM BG

AM BG ≥180 mg/dL? Starting on streroid/tube feeding/ parenteral nutrition?

YES

NO

RN to monitor AM blood glucose from BMP daily. If none available, perform FSBS. Reassess if glucose <70 mg/dL or ≥180 mg/dL or if pt's condition changes *(NPO, steroid, TPN, TF, stroke, sepsis)*

SECTION 6: MASSIVE TRANSFUSION

Adult Massive Transfusion (MTP) Policy/Protocol

Purpose:
To provide efficient and effective procurement and delivery of blood products for patients exhibiting or at risk of hemorrhagic shock.

Background:

1. Traditionally, 'massive transfusion' may be defined as a transfusion of one blood volume (adult blood volume is approximately 70 mL/kg) over 24 hours. For practical reasons 'massive transfusion' will be defined here as a transfusion, or anticipation of the need to transfuse, 4 units of PRBC's in < 4 hours.

2. At WHHS the standard ratio of MTP transfusion products is:
   4 Units PRBC: 4 Units Frozen Plasma: 1 Plateletpheresis.

3. Massive Transition Protocol continues indefinitely until the physician discontinues the protocol, i.e., blood bank continues to thaw and prepare product. Emergency release is an alternate option to order large quantities of blood product, blood bank will not continue to prepare and thaw product unless additional product is requested.

Activation:

1. MTP can be activated in the following settings: ED, OR, ICU/CCU, L+D, Radiology, Cath Lab.

2. It is recommended that a critical care trained physician be consulted for the management of every patient for which an MTP is initiated.

3. MTP can also be activated for patients who are in the general hospital population who are being transferred to the above locations for further management and care.

Implementation:

1. Pt identified and adequate access established - 2 large bore PIV's, central access (introducer or HD catheter preferred over 3 lumen catheter)
2. Call blood bank (**x5437**) to activate MTP or emergency release, and place orders in EHR.
3. Designate specific a person at the bedside and in the blood bank to facilitate communication
4. Draw labs and send as STAT - T+C, DIC panel, BMP, mg, ionized Ca++, ABG, lactate
5. Blood to be allocated in the following ratios: 4 PRBC's : 4 FFP : 1 PLTs and released according to table below.
6. Blood bank will immediately begin working on preparing a new MTP "pack" for transport unless MTP is discontinued.

Blood Product	Order of release based on completion of type and cross	Time to release
RBC's	O Negative (O Positive if O Negative is unavailable); then ABO compatible, uncrossmatched; then ABO compatible, crossmatched	2 units O negative always ready for immediate emergency release Additional units ready in approximately 10 minutes
Plasma	AB (if AB unavailable use A); then ABO compatible	4 units available in approximately 15 minutes
Plateletpheresis	AB (if AB unavailable use A, then B and last O); then ABO plasma compatible	Immediately available UNLESS standard inventory is depleted. Additional units available in approximately 1 hour from ARC

Special issues (coagulopathy):

The following interventions / medications should be considered:
1. If patient has recently received Heparin – 1 mg protamine for every 100 units of heparin given
2. If patient has recently received Warfarin – 10 mg IV Vitamin K

3. If fibrinogen less than 100 - 1 pooled unit of Cryoprecipitate
4. If patient has recently received other oral anticoagulants - Prothrombin Complex Concentrate may be considered.
5. In trauma pts if < 3 hours after initial injury - Tranexamic Acid 1 gm bolus over 10 minutes followed by 1 gm infusion over 8 hours then discontinue.

Additional patient management recommendations other than blood products:

1. **Maintain normothermia**
   a. Consider warm IVF's prior to arrival of blood products if needed.
   b. Use fluid warmers for the infusion of fluids at 42°C (Level 1 Rapid Infuser).
   c. Use humidified mechanical ventilator circuits warmed to 41°C.
   d. Passive External Rewarming
      Passive external rewarming involves removing blood - or saline-soaked dressings or blankets, increasing ambient room temperature, and decreasing air flow over the patient by keeping the room doors shut.
   e. Active External Rewarming
      Convective-air and aluminum space blankets placed over the patient provide greater heat exchange by creating a 43°C microenvironment around the patient, which effectively stops heat loss. Superior warming is achieved when standard cotton blankets are placed over these blankets and the edges secured, although this limits patient access. Head covering is of prime importance; because significant vasoconstriction does not occur in scalp vessels, and as much as 50% of radiant heat loss occurs from the neck up.

2. **Invasive BP monitoring**
   Permissive hypotension and minimal volume resuscitation, strategies in which systolic blood pressures of 80–100 mm Hg are tolerated while bleeding is controlled, have been used since World War I; several studies have shown survival benefit. Permissive hypotension is widely practiced for ruptured abdominal aortic aneurysms. Permissive hypotension is contraindicated in patients with traumatic brain injury, because reduced perfusion pressure and oxygenation can lead to secondary brain injury.

3. **Avoid large volumes of crystalloids**

4. **Maintain iCa++ greater than 1.13**

5. **Acidosis** –
   Therapy for metabolic acidosis remains directed toward correcting the underlying hypoperfusion. Resuscitation endpoints include normalization of arterial pH, base deficit, and lactate. In clinical trials, researchers have failed to demonstrate any clear advantage of bicarbonate administration, whereas the potential adverse effects are well documented. Bicarbonate administration should be deferred until the pH persists below 7.2, despite optimal fluid loading and inotropic support.

References

1. OU Medical Center trauma massive transfusion protocol – http://www.oumedicine.com/docs/default-source/ad-obgyn-workfiles/mtp-trauma-ou-11-7-2012-.pdf

2. University of Toledo massive transfusion protocol - http://www.utoledo.edu/policies/utmc/bloodbank/pdfs/3364-108-405.pdf

3. Vanderbilt University Medical center massive transfusion protocol - http://www.mc.vanderbilt.edu/dept/obgyn/LD_Policies/Blood_Bank_Transfusion_Protocol.pdf

4. Orlando Regional Medical Center massive transfusion protocol - http://www.surgicalcriticalcare.net/Guidelines/massive%20transfusion%20protocol%202012.pdf

5. Young PP, Cotton BA, Goodnough LT. Massive Transfusion Protocols for Patients with Substantial Hemorrhage. Transfus Med Rev. 2011 October; 25(4): 293–303. [PubMed: 21664104]

6. Holcomb JB, Wade CE, Michalek JE, et al. Increased plasma and platelet to red blood cell ratios improves outcome in 466 massively transfused civilian trauma patients. *Ann Surg*. 2008 Sep; 248(3):447-58.

7. Shaz BH, Dente CJ, Nicholas J, et al. Increased number of coagulation products in relationship to red blood cell products transfused improves mortality in trauma patients. *Transfusion*. 2010 Feb;50(2):493-500

8. UC Davis Medical Center massive transfusion protocol - http://www.ucdmc.ucdavis.edu/pathology/services/clinical/change_of_service/cp/2012/020112_Massive_Transfusion_Guideline.pdf

9. Patient Blood Management Guidelines - Module 1 Critical Bleeding/Massive Transfusion. National Blood Authority (NBA) Australia - http://www.blood.gov.au/sites/default/files/documents/pbm-module1_0.pdf

MASSIVE TRANSFUSION PROTOCOL

Initiation by physician or physician designee

Patient Criteria –
1) Exsanguinating and Requires 4 units PRBC in less than 4 hours
2) Located in or Transferring to ED, OR, ICU/CCU, L&D, Radiology or Cath Lab

Establish Adequate IV access –
2 large bore PIV's,
Introducer/Cordis or HD Catheter
or Triple Lumen CVC

IDENTIFY COMMUNICATOR --
ONE specific person at patient bedside/location to act as Liaison to Blood Bank

Obtain Pre-Transfusion Labs (if possible) –
Type & Screen REQUIRED
DIC panel
BMP
Magnesium
Ionized Calcium
Lactate
ABG

Place Orders –
Call Blood Bank
Massive Transfusion line
x3176
Place orders in EHR

**** AFTER direct verbal communication product available –**
PRBC – 2 units O neg immediate emergency release
Plasma – 4 units in approx. 15 minutes
Plateletpheresis – 1 unit immediate release, additional units in approx. 1 hour

Blood Bank will prepare MTP blood products
4 units PRBC
4 Plasma
1 Plateletpheresis

NO

Massive Transfusion Complete

YES

Transfuse Blood Products

Additional Patient Management
1) Maintain normothermia –
Consider warm IV Fluids
Use fluid warmers
Use Bair Hugger
Use Head covering to prevent heat loss through scalp
2) Invasive BP monitoring – consider permissive hypotension
3) Avoid large volumes of crystalloids
4) Maintain ionized Ca++ greater than 1.13
5) Acidosis – defer Bicarbonate administration until pH persists below 7.2, despite optimal fluid loading and inotropic support

Ordering Physician, Designee or Communicator notifies Blood Bank MTP Ended

Complete Emergency Release Documentation

Consider Coagulopathy issues
1) Heparin recently – 1 mg protamine for every 100 units of heparin given
2) Warfarin recently – 10 mg IV Vitamin K
3) Other oral anticoagulants or Trauma – consider Prothrombin Complex Concentrate
3) Fibrinogen less than 100 – 1 pooled unit of Cryoprecipitate
4) Initial Trauma injury less than 3 hours –
Tranexamic Acid 1 gram bolus over 10 minutes, then drip of 1 gram over 8 hours, then discontinue

CRITICAL CARE UNIT

GENERAL PRESCRIBING AND DISPENSING POLICY

- Physician's orders of critical drips must include a starting dose, maximum dose, titration rate and goal parameters.
- Pharmacy will prepare all critical drips except in emergency. Standard solution for ALL critical drips will be 250 mL D5W. Normal Saline 250 mL will be used when the drug is not compatible with D5W or when it becomes necessary to limit dextrose intake in a severely hyperglycemic patient who is already on insulin and has multiple drips that amount to significant dextrose intake per day. Pharmacist will determine drug's compatibility with Normal Saline before changing the solution to Normal Saline.
- Medication will be prepared according to standard concentrations (single, double, quadrupled). Pharmacy will prepare medication as standard single concentration unless physician orders double or quadrupled concentration.

STANDARD CONCENTRATION

- Pharmacy will prepare drips according to standard concentrations. Some drips are available in single, double, and quadrupled concentrations. Bolded concentrations are available as premix bag.

DRUG	SINGLE	DOUBLE	QUADRUPLE	STICKER**
AMIODArone	Drip: 450 MG/250 mL Bolus: 150 MG/100 mL	NA	NA	
Bumetanide	10 MG/100 mL	NA	NA	
Cisatracurium	20 MG/200 mL in **NS**	40 MG/200 mL in **NS**	NA	
Dexmedetomidine	200 mcg/50 mL in D5W/NS 400 mcg/100 mL in D5W/NS	NA	NA	
Diltiazem	125 MG/125 mL	NA	NA	
DOBUTamine	**500 MG/250 mL**	1000 MG/250 mL	NA	Protect from light
DOPamine	**400 MG/250 mL**	800 MG/250 mL	1600 MG/250 mL	
EPINEPHrine	4 MG/250 mL	8 MG/250 mL	16 MG/250 mL	Protect from light
Esmolol	**2.5 gm/250 mL** in **NS**	2 gm/100 mL in **NS**	NA	
FentaNYL	**2500 mcg/250 mL**	5000 mcg/250 mL	10,000 mcg/250 mL	
FUROSemide	100 MG/100 mL	200 MG/100 mL	NA	Protect from light Do not refrigerate
Hydromorphone	20 MG/100 mL	100 MG/250 mL	200 MG/250 mL	
Insulin	100 units/100 mL in **NS**	NA	NA	
Isoproterenol	2 MG/250 mL	4 MG/250 mL	8 MG/250 mL	
Ketamine	500 mg/ 250 mL			
Labetalol	300 MG/300 mL in **NS**	600 MG/300 mL in **NS**	NA	Protect from light
Lidocaine	**2 gm/250 mL**	4 gm/250 mL	NA	
LORazepam	100 MG/100 mL	NA	NA	Protect from light
Midazolam	100 MG/100 mL			
MILrinone	**20 MG/100 mL**	NA	NA	
Morphine	50 MG/100 mL	100 MG/100 mL (ICU)	NA	
NiCARdipine	25 MG/250 mL in **NS**	50 MG/250 mL in **NS**	NA	Protect from light Do not refrigerate
NitroGLYcerin	**50 MG/250 mL**	100 MG/250 mL	200 MG/250 mL	Protect from light
NitroPRUSSide	50 MG/250 mL	100 MG/250 mL	NA	Protect from light
NORepinephrine	**4 MG/250 mL**	8 MG/250 mL	16 MG/250 mL	Protect from light
PHENYLephrine	50 MG/250 mL in **NS**	100 MG/250 mL in **NS**	200 MG/250 mL in **NS**	Protect from light
Procainamide	1000 MG/250 mL in **NS**	NA	NA	
Propofol	**1000 MG/100 mL**	NA	NA	
Vasopressin	40 units/50 mL	NA	NA	
Vecuronium	50 MG/250 mL	NA	NA	

** High Alert drips will have HIGH ALERT stickers. Drips available as single, double, and quadrupled will also have concentration labels.

ADMINISTRATION GUIDELINE

- Critical drips will be administered per physician's order. Administration table on page 2 to 4 will only serve as general references for dosing, titration, and monitoring parameters.
- Initial ICU admission weight will be used as the standard weight for calculating initial and subsequent doses of any weight-based critical drips.

Refer to Drip Guidelines - Critical Care for additional information.

INTERMEDIATE CARE UNIT

GENERAL PRESCRIBING AND DISPENSING POLICY

- Physician's orders of IV infusion drips must include a starting dose, a maximum dose, a titration rate and goal parameters.
- Pharmacy will prepare all IV infusion drips except in emergency. Standard solution for ALL IV infusion drips will be 250 ml D5W. Normal Saline 250 ml will be used when the drug is not compatible with D5W or when it becomes necessary to limit dextrose intake in a severely hyperglycemic patient who is already on insulin drip and has multiple drips that amount to significant dextrose intakes per day. Pharmacist will determine drug's compatibility with Normal Saline before changing the solution to Normal Saline.

STANDARD CONCENTRATION

- Pharmacy will prepare drips according to standard concentrations. Single concentration bag will be the standard concentration except in critical care unit where double and quadrupled concentration bag may be used.

ADMINISTRATION AND MONITORING GUIDELINE

- IV infusion drips will be administered per physician's order. Administration table on page 2 to 3 will only serve as general references for dosing, titration, and monitoring parameters.
- Initial ICU admission weight will be used as the standard weight for calculating initial and subsequent doses of any weight-based IV infusion drips. If patient is admitted directly to IMC unit then IMC unit admission weight will be used as the standard weight for calculating doses.
- Patients receiving IV infusion drips will be on cardiac monitoring.
- Critical care library in the ALARIS pump will be used to administer IMC IV infusion drips.
- Nurses in IMC unit will titrate IV infusion drips less frequently (i.e., Q30 min - Q1hour depending on the medication). Transfer to ICU (critical care unit) will be considered when titration frequency is increasing (i.e. more often than Q30min) and/or patient is requiring more than the maximum dose allowed in the IMC unit.
- Transfer to ICU (critical care unit) should also be considered for patients requiring 2 or more vasoactive agents.
- Consult IV guidelines for medications not listed on this table.

Refer to Drip Guidelines -- Intermediate Care Unit (IMC) for most up to date information.

CRITICAL CARE PAIN, AGITATION/SEDATION, DELIRIUM, IMMOBILITY AND SLEEP DISRUPTION POLICY AND PROCEDURE

Purpose

- To implement a comprehensive interdisciplinary process for identifying and managing patients who require pain relief and sedation, and are at risk for developing delirium, immobility and sleep disruption. Recognized safe and effective practices and evidence-based guidelines will be adopted for screening and managing these patients.

Background

- Optimal pain, sedation, delirium, immobility and sleep management require an interdisciplinary team approach, as well as consistent execution of their identification and treatment.
- Critically ill patients on mechanical ventilation commonly experience acute pain, anxiety, and delirium. As many as 1/3 of ICU patients are mechanically ventilated worldwide.
- ICU patients are at risk from pain and physical discomfort due to their pre-existing conditions, prolonged immobility, and multiple invasive procedures and monitoring that they have to endure during their ICU stay.
- Unrelieved pain causes inadequate sleep and disorientation and has been associated with worse outcomes, worse perception of patient's experience in ICU, and delirium.
- Anxiety occurs commonly in ICU secondary to patient's inability to communicate, the presence of continuous noise (alarms, personnel, and equipment), continuous ambient lighting, and excessive stimulation (inadequate analgesia, frequent vital signs, reposition, lack of mobility, and room temp).
- Sedation is indicated in the treatment of anxiety, treatment of agitation, and to facilitate mechanical ventilation.
- Inappropriate sedative selection and continuous sedative infusion have been shown to increase the duration of mechanical ventilation and the length of ICU stay. Frequent assessment of the level of sedation and coordinated daily interruption of sedative infusion to determine the optimal sedative dose have been shown to decrease the duration of mechanical ventilation and length of ICU stay, and are associated with healthier long term emotional/psychological impact of the ICU stay.
- Delirium is the most common psychiatric disorder found in the hospital setting. Its prevalence ranges from 11 to 87% in medical and surgical ICUs. In many cohorts, it has been diagnosed in 60 to 85% of patients receiving mechanical ventilation. Despite its high prevalence, it often goes undetected due to difficulty in diagnosis and lack of awareness by the medical team.
- Interdisciplinary approach to pain, sedation, delirium, immobility and sleep in critical care unit improves patient outcome by allowing all disciplines to work together to deliver a comprehensive yet individualized treatment.

Procedure

1. An interdisciplinary team of intensivists, nurses, pharmacists, dietitians, respiratory therapists, physical therapists, occupational therapists, and speech therapists will assess patients' need for pain relief, optimal sedation, risk and management of delirium, and mobility during daily interdisciplinary rounds, during their individual patient encounter, and as needed. The intensivist leads the interdisciplinary team and the daily rounds.
2. The interdisciplinary team will develop an individualized patient intervention based on the expert recommendation from each discipline.
3. Prescribers are encouraged to use the ventilator order set and the delirium order set to ensure all the appropriate interventions are delivered in timely manner.
4. Nurses will assess pain, sedation level, and delirium according to nursing protocols (see below). Nursing care will be provided per nursing standards and unit policy.
    a) Nurses will assess pain on admission, with vital signs as appropriate to patient status, prior to medication administration, one hour post-medication administration, and prior to discharge or transfer. Pain will be assessed using one of the following scales according to their ability to respond; Analog, Verbal, CPOT (Critical Care Pain Observation Tool), Wong-Baker Faces, FLACC or PAINAD. (See Nursing Generic Protocol – Pain Management for additional information.)
    b) Nurses will perform baseline neurological function and follow-up monitoring with Richmond Agitation Sedation Scale (RASS) and CAM-ICU (Confusion Assessment Method for ICU) for all admitted ICU patients. See nursing protocol below.

SEDATION AND DELIRIUM NURSING PROTOCOL

ASSESSMENT AND INTERVENTION

Obtain data on patient's baseline mental/cognitive status pre-admission.
Assess patient every shift for delirium using the Richmond Agitation Sedation scale (RASS) every 4 hours and CAM-ICU (Confusion Assessment Method for ICU) every shift, or more often if acute change in mental status noted. See attachment 2
Maintain therapeutic environment to decrease controllable delirium risk factors:

1. Reorient patient and provide explanation with all interventions/interactions
2. Control environment, i.e., bundle interventions to provide longer periods of time for rest, keep volume of alarms at lowest possible safe level, provide day/night simulation through light, provide cognitive stimulation (e.g. ask family to read to patient, or bring pictures that can be used to re-orient patient)
3. Minimize use of restraints, eliminate foley catheter as soon as possible
4. Assure pain is monitored / managed
5. Determine need to use glasses and hearing aids (assure ears are free of wax)
6. Include family/significant other in the reorientation process and other interventions as appropriate

Implement **ABCDEF** (Awakening, Breathing Coordination, Delirium Interventions, Early Exercise & Mobility, and Family Engagement) attachments (3a,3b,4), if patient ventilated and receiving sedation in collaboration with Respiratory Therapist. Utilize the non-ventilator management portion of the ABCDEF algorithm for non-ventilated patients.
Implement progressive mobility. Consult physician for Physical Therapy and/or Occupational Therapy Evaluation and Treatment order as indicated by patient status.
Inform physician of positive CAM-ICU.
Consult with physician for implementation of Delirium Order Set and clinical pharmacist about patient's medication regimen.
Monitor patient for response to interventions.
Modify treatment plan in collaboration with interdisciplinary team members (physician, clinical pharmacist, respiratory therapist, dietitian, physical therapist, occupational therapist, and speech therapist).
Teach patient / family / significant other(s) about ICU delirium and weakness, and interventions implemented. Include patient / family / significant other(s) in interventions as appropriate.

DOCUMENTATION

Document physical assessment findings according to ICU Standards; specifically sedation scores every 4 hours and CAM-ICU every shift.
Document Delirium as a Problem with patient interventions / goals.
Document interventions and responses as indicated.
Document teaching to patient / family / significant other(s) on MAP.

5. Pharmacists provide pharmacological counsel on the selection of the medication and the appropriate dose based on the principle of pharmacokinetics and pharmacodynamics of the medications, the patient's current demographic and hemodynamic status, and the patient's physiologic response to the medications. Additionally, pharmacist reviews patient's medication list daily to assess its potential for adverse reaction or delirium and to aid in streamlining the regimen or selecting alternative agents.
6. The Interdisciplinary Team will utilize the Analgesia, Sedation, Delirium algorithm and the ABCDEF Algorithm (Awakening, Breathing Coordination, Delirium Interventions, Early Exercise & Mobility and Family Engagement) to assist and guide assessments, interventions and support actions delineated above.
7. The Respiratory Therapists in collaboration with RN, will utilize the ABCDEF algorithm, focusing on the ABC portion to guide Ventilator Weaning in conjunction with the Ventilator Orders. It is well documented that early and rapid weaning of patients from ventilator support decreases the risk and occurrence of Delirium.
8. REHAB: Progressive mobility – Early Exercise / Mobility should be implemented according to physician orders, and guided by the ABCDEF Algorithm. Early Mobility has been proven to shorten ventilator support duration, ICU length of stay and occurrence of delirium.
9. Poor nutrition status has been correlated with delirium and other psychiatric disorders such as dementia and depression. Patient's risk for having drug-induced delirium is increased in low protein and low albumin state as the protein-bound form of the drug dwindles. Registered Dietitians will provide counsel on proactive nutritional therapies that mitigate and/or correct nutrient deficiencies/abnormalities that promote positive patient outcomes. The Critical Care Nutrition algorithm will serve to guide nutrition intervention decisions, as will the Academy of Nutrition and Dietetics' Nutrition Care Manual.

10. Non-pharmacologic strategies will always be attempted initially to prevent pain and delirium and to improve patient's comfort. Pharmacological intervention will be implemented when the non-pharmacologic treatment fails to achieve desired outcome or to prevent undesired events, or when patient's symptoms compromise patient's safety or interrupt the provision of essential care.

Non-Pharmacological Intervention

- Sleep promotes tissue healing and a robust immune function. Unfortunately, sleep for ICU patients, is often interrupted by the necessary medical interventions and the constant noises from bedside communication or the equipment. As such, sleep in ICU has been associated with incomplete sleep cycles and inadequate rapid-eye-movement (REM) sleep. Studies revealed that many ICU patients were, in fact, sleep deprived.
- The ICU interdisciplinary team collaborates to reduce the causes of inadequate sleep such as inadequate pain relief, frequent interruptions and noises, and to review patient's sleep adequacy routinely. Patient self-report is the most reliable tool of assessing patient's adequacy of sleep. However, when patient is unable to communicate, systematic observation of patient's sleep time is most helpful.
- Lack of sleep leads to exhaustion and disorientation and delirium.
- To reduce the risk of delirium, patients should be allowed and encouraged to have 60 to 90 minutes naps during the day and uninterrupted 90 minutes sleep at night.
- In general, the ICU team will promote sleep by implementing non-pharmacological interventions such as:
    1. Treat pain and anxiety FIRST.
    2. Provide quiet rest periods to promote sleep / minimize unnecessary noise/stimuli.
    3. "Bundle" interventions as much as possible to provide longer uninterrupted periods of rest
    4. Provide day / night orientation. Orient patient to time, place and situation. Open blinds during the day, turn off lights and TV at night.
    5. Incorporate Family into Treatment Interventions, i.e., have family assist in re-orienting patient to day, time and place. Have family bring one or two familiar objects to patient's bedside; read newspaper etc.
    6. Implement early / progressive mobility.
    7. Remove catheters and physical restraints as soon as possible.
    8. Use patient's eyeglasses, magnifying lenses or hearing aids as appropriate.
- Non-pharmacological interventions to reduce pain include massage therapy, music therapy, cold therapy for procedural pain (e.g., cold ice packs applied for 10 minutes and wrapped in dressing gauze on area around the chest tube prior to its removal) and relaxation techniques.

Analegsia

- ICU patients frequently experience pain due to their pre-existing conditions, invasive procedures or trauma, and routine procedures such as airway suctioning and dressing changes.
- Unrelieved pain may contribute to inadequate sleep, possibly causing exhaustion, disorientation and delirium.
- Physiologic signs of pain include tachycardia, hypertension, sweating brow, muscle tension, facial grimacing, and guarding. Pain may also result in a generalized muscle rigidity or spasm that restricts the movement of the chest wall and diaphragm.
- Pain and pain relief after the administration of an analgesic agent will be evaluated according to hospital policy. The appropriate pain assessment scale will be used based on the patient's communication ability. Patients who cannot communicate should be assessed using the cognitively impaired scale with indicators that relate to observed behaviors. (see nursing protocol)
- Non-pharmacologic interventions such as attention to proper positioning of patients, stabilization of fractures, and elimination of irritating physical stimulation are important to maintain comfort.
- Pharmacologic therapies include opioids, nonsteroidal anti-inflammatory drugs, acetaminophen, and neuropathic pain medications. Combining different analgesics that act by different mechanism and at different sites in the nervous system results in additive or synergistic analgesia and lowered adverse effects.
- Morphine, hydromorphone and fentanyl are the drugs of choice in the critically ill patient. The greatest concerns with opioids are their respiratory, hemodynamic, CNS, and gastrointestinal effects. The use of morphine may increase the risk of delirium.
- Acetaminophen is suggested as an adjunct to an opioid to decrease pain intensity and opioid consumption.
- Low-dose ketamine can be used as an adjunct to opioid therapy when seeking to reduce opioid consumption in post-surgical ICU patients.
- Neuropathic pain meds (i.e., gabapentin, carbamazepine, and pregabalin) are recommended with opioids for neuropathic pain management.
- Prevention of pain is more effective than treating established pain. When prescribed on an "as needed" basis, patients may receive less than the prescribed dose and encounter significant delays in treatment.
- Analgesics should be administered on a continuous or scheduled intermittent basis, with supplemental bolus doses as required. Analgesic orders should be written to allow titration to achieve the analgesic goal and to balance the

potential impact of adverse effects.

- Constipation is a common side effect of all opioids (Codeine > Morphine > Fentanyl). Typically, orally administered opioids have greater inhibitory effects than parenterally administered agents.

Table 1: Pharmacology of Opiate Analgesics

Agent	Dose	Onset / Duration of intermittent dose	Half-life (hrs)	Adverse Effects	Additional Information	Equiv Analgesic Dose**
Fentanyl	See critical care drip guideline	O: <1-2 mins D: 30-60 mins	1.5-6	Chest wall rigidity with high doses	Rapid onset, shortest duration, and less hypotension than other opioids. Highly lipophilic parent drug accumulates in adipose and other tissue with repeated or prolonged administration.	100 mcg
Hydromorphone (Dilaudid)	See critical care drip guideline	O: 5-10 mins D: 3-4 hours	2-3	Hypotension (less than morphine)	Lacks a clinically significant active metabolite or histamine release. Potentially neuro-excitatory metabolite may accumulate in hepatic or renal impairment.	1.5 mg
Morphine	See critical care drip guideline	O: 5-10 mins D: 3-5 hours	3-7	Histamine release and vagally mediated venodilation, hypotension, and bradycardia	Alternative opioid where preload reduction and myocardial depressive effects are desirable or tolerable. May accumulate in hepatic or renal impairment and cause prolonged sedation.	10 mg

**Equivalent analgesic dose should be calculated based on 24 hours dose requirement. Contact pharmacy for appropriate dose conversion.

Table 2: Pharmacology of Nonopiate Analgesics

Agent	Dose	Onset / Duration	Half-life (hrs)	Adverse Effects	Additional Information
Acetaminophen	PO/PR: 325-1000 mg Q4-6H IV: 1000 mg Q8H or 15 mg/kg Q4-6H for pts <50kg (max 3 g/day)	PO: 30-60 min PR: variable IV: 5-10 min Duration: 4-6 hrs	2- 4	Generally well tolerated. Nausea, vomiting, and hypotension have been reported with IV acetaminophen.	Avoid or use lower daily dose in older adults and patients at risk for hepatotoxicity. May be contraindicated in patients with significant hepatic dysfunction (avoid or reduce max to 2 g/day)
Ketamine	0.5 mg/kg IVP then 0.1-0.5 mg/kg/hr	O: 30-40 sec D: 10-15 mins (single dose)	2-3	May cause hallucinations, delirium upon withdrawal, tonic-clonic movements, dissociative experiences, hypersalivation, nausea, and vomiting	Potent dissociative sedative-anesthetic with marked analgesia that maintains cardiac output and MAP without inhibition of respiratory drive. May reduce acute opioid tolerance. Caution of sympathetic stimulation (HR, myocardial oxygen demand, ICP, SBP). Alternative choice for post-surgical pain management, severe agitation, or as an adjunct

					analgesic in patients with severe refractory pain
Gabapentin	Start: 100 mg PO TID Maintenance: 900-3600 mg/day PO in 3 dvd doses	N/A	5-7	Sedation, confusion, dizziness, ataxia	Effective for neuropathic pain, low risk of drug interactions. Adjust dose in renal impairment. Abrupt discontinuation associated with drug withdrawal symptoms and seizures
Pregabalin	Start: 75 mg daily or BID Maintenance: 150-300 mg BID	N/A	6.3	Sedation, blurred vision, dry mouth, dizziness, ataxis	Effective for neuropathic pain, low risk of drug interactions, oral bioavailability is more reliable than gabapentin. Adjust dose in renal impairment. Abrupt discontinuation associated with drug withdrawal symptoms and seizures
Ketoralac	15-30 mg IV/IM Q6H up to 5 days (max 120 mg/day for pts < 65 yo and wt ≥ 50 kg) (max 60 mg/day for pts ≥ 65 yo or wt < 50kg)	O: ~30 mins D: 4-6 hrs	2-9	Headache, gastrointestinal pain, dyspepsia, nausea, dizziness	Effective anti-inflammatory. Can reversibly inhibit platelet functioning and may alter cardioprotective effect of aspirin. Avoid use in renal dysfunction, GIB, platelet abnormality, concomitant ACEI therapy, CHF, asthma. Contraindicated for the treatment of perioperative pain in CABG surgery.

Sedation

- Prior to initiating sedative therapy, efforts must be made to provide adequate analgesia, treat underlying physiologic disturbances (i.e., hypoglycemia, hypoxemia, hypotension, pain, and withdrawal from alcohol or drugs), and reduce anxiety (i.e., frequent reorientation, maintenance of patient comfort, and optimization of the environment).
- Analgosedation may not be appropriate in patients with GABA agonist/sedative needs such as alcohol/drug withdrawal and drug intoxication, neuromuscular blockade, elevated ICP or status epilepticus.
- Sedatives may be necessary to improve the tolerance to routine ICU procedures and mechanical ventilation. A continuous drip may be considered **along with** intermittent boluses in order to achieve sedation goals.
- Subjective assessment of sedation and agitation will be performed routinely per nursing protocol to facilitate the titration of sedatives to predetermined endpoints.
- In the ICU the target level of sedation is a calm patient that can be easily aroused with maintenance of the normal sleep-wake cycle. However, some patients may require deeper levels of sedation to facilitate mechanical ventilation. Sedation level will be assessed using Richmond Agitation Scale (RASS) see Figure 1.
- Daily sedation interruption facilitates the tapering of the sedatives and has been shown to reduce the length of mechanical ventilation days and ICU stay.
- The interdisciplinary ICU team performs daily "awakening" on patients who are on continuous sedative agents and mechanical ventilation according to ABCDEF algorithm.

Figure 1: The Richmond Agitation and Sedation Scale – RASS

Score	Term	Description	
+4	Combative	Overtly combative, violent, immediate danger to staff	
+3	Very agitated	Pulls or removes tubes(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 (eye-opening/eye contact) to *voice* **(≥10 seconds)**	Verbal Stimulation
-2	Light sedation	Briefly awakens with eye contact to *voice* **(<10 seconds)**	
-3	Moderate sedation	Movement or eye opening to *voice* **(but no eye contact)**	
-4	Deep Sedation	No response to voice, movement/ eye opening to *physical* stimulation	Physical Stimulation *(shaking shoulder or rubbing sternum)*
-5	Unarousable	No response to *voice or physical* stimulation	

SELECTION OF SEDATIVES

- Either Propofol or dexmedetomidine is suggested for sedation in critically ill, mechanically ventilated adults over benzodiazepines.
- Clinically significant shortened time to light sedation and time to extubation has been shown with Propofol compared to a benzodiazepine.
- No significant difference in time to extubation for dexmedetomidine compared to Propofol.

Propofol

- Intravenous, highly lipid soluable general anesthetic agent that has sedative, hypnotic, anxiolytic and anterograde amnestic properties at subanesthetic dosages. Patients **must be** intubated and mechanically-ventilated.

- Rapid onset and short duration once discontinued. Long-term (> 48 hours) continuous infusion of propofol accumulates within lipid stores - slow return from deep peripheral compartments of muscle and fat into the blood results in prolonged elimination phase.

- Available as a phospholipid single use emulsion with no antimicrobial preservatives. It provides 1.1kcal/ml from fat and should be counted as a caloric source.

- High-dose or long-term infusions may result in hypertriglyceridemia. Other adverse effects include hypotension, bradycardia, heart block, SVT, metabolic acidosis, and pain on injection.

- Prolonged propofol infusions (> 5 days) may produce tolerance and physical dependence. Delayed withdrawal pattern characterized by restlessness, mental status changes (including hallucinations) and seizures occurred 5-6 days after discontinuation of infusion.

Dexmedetomidine (Precedex®)

- Highly selective centrally acting α-2 agonist with multiple pharmacological effects including anxiolytic, analgesic, sedative and sympatholytic properties.

- Although package insert does not recommend continuous infusion to exceed 24 hour, studies have shown effective and safe use of continuous infusion of dexmedetomidine for 5 days or longer**.** Although the incidence is low, the prolonged use of dexmedetomidine (> 24 hours) may result in a clonidine-like withdrawal syndrome (nervousness, agitation, hypertensive crisis) and adrenal insufficiency.

- It is indicated for sedation of initially intubated and mechanically ventilated patients during treatment in an intensive care setting and is also used for sedation prior to and/or during surgical or other procedures of nonintubated patients. Dexmedetomidine can be used in patients before, during and after extubation from mechanical ventilation.

- Dexmedetomidine causes less respiratory depression than benzodiazepines and propofol and also significantly reduces postoperative sedation and narcotic requirements of mechanically ventilated patients recovering from cardiac and other surgeries. It effectively diminishes the increases in blood pressure and heart rate occurring with intubation.

- During continuous infusion, patients remain sedated when undisturbed, but arouse readily with gentle stimulation.

- The most common adverse effects experienced with dexmedetomidine therapy in clinical trials include hypotension, bradycardia, hypertension, nausea, fever, vomiting, and tachycardia.

- Dexmedetomidine should be used with caution in patients who are hypovolemic, hypotensive, or elderly and in those with advanced heart block, and severe ventricular dysfunction.

- Administration of a loading infusion may increase the risk of hemodynamic compromise (hypotension or bradycardia). For this reason, the loading dose may be omitted. If loading dose is required, administer over minimum 10 minutes. For patients already on a sedating agent consider eliminating the loading dose.

Benzodiazepines

- Benzodiazepines cause anterograde amnesia (block the acquisition of unpleasant experiences) but do not induce retrograde amnesia. They lack analgesic properties, but they have an opioid-sparing effect by moderating the anticipatory pain response.

- Patient specific factors such as age, concurrent diseases, prior alcohol abuse, and concurrent drug therapy, affect the intensity and duration of activity of benzodiazepines. Elderly patients and patients with compromised renal or hepatic function exhibit slower clearance of benzodiazepines and their active metabolites.

- Benzodiazepine therapy should be titrated to a predefined endpoint, often requiring a series of loading doses.

- Maintenance of sedation with intermittent doses of a benzodiazepine may be adequate to accomplish the goal of sedation. Patients requiring frequent doses to maintain the desired effect may benefit from a continuous infusion.

- Hemodynamically unstable patients may experience hypotension with the initiation of sedation.

- Continuous infusions must be used cautiously, as the accumulation of the parent drug or active metabolites may produce inadvertent oversedation. Frequent reassessment of a patient's sedation requirements and active tapering of the infusion rate can prevent prolonged sedative effects.

- Paradoxical agitation may occur during light sedation, and may be due to drug-induced amnesia or disorientation. Recent data also shows benzodiazepines may cause dose-dependent delirium.

Benzodiazepine use may be preferred in the following situations, but not limited to these:
Alcoholic withdrawal
Chronic benzo use
Status epilepticus
Inability to tolerate other agents due to side effects
Refractory agitation/anxiety despite use of first line agents.

Table 3: Pharmacology of Selected Sedatives

Agent	Intermittent IV Dose and Infusion Range	Onset IV dose	Half-life of Parent Compound	Active Metab	Unique Adverse Effects	Comments
Propofol	See critical care drip guideline	1-2 min	1.5-12 hr	None	Hypotension, bradycardia, respiratory depression, decreased myocardial contractility, pain on injection, elevated triglycerides, and rarely propofol infusion syndrome	Immediate onset and rapid awakening upon discontinuation when administered short-term. Not affected by renal or hepatic impairment and few drug interactions. No analgesic effect. Effectively decreases intracranial pressure, lowers cerebral metabolism, controls intractable seizures, and may reduce shivering in the rewarming phase of induced hypothermia.
Dexmedetomidine (Precedex)		5-8 min	2 hrs	None	Hypotension, hypertension, and bradycardia. Rapid administration of loading dose may be associated with hypotension, tachycardia, or heart block	Moderate anxiolysis and analgesia without clinically significant effect on respiratory drive. Can be used in non-mechanically ventilated ICU patients and continued as needed following extubation. Does not induce the deep sedation needed for neuromuscular blockade.

Midazolam		2-5 min	3-11 hr (short acting)	Yes	Risk of delirium	• Immediate onset and short duration when used short term. • Long term (>48 hrs) use of midazolam results in a prolongation of the drug's effects and recovery time • May cause prolonged sedation in patients with renal failure (possibly due to accumulation of an active metabolite), obesity, or low albumin • Inhibitors of cytochrome P450 3A4 (propofol, diltiazem, macrolides) inhibit midazolam metabolism
Lorazepam		5-20 min (full onset ~15-20 min)	8=15 hr (intermediate acting)	None	Risk of delirium Solvent related acidosis/renal failure in prolonged high doses (>20 mg/hour)	• Compared to midazolam, lorazepam has slower onset and few drug interactions, is longer acting, associates with less hypotension, causes equally effective anterograde amnesia, and produces more rapid awakening with prolonged administration • Infusion is difficult to titrate due to its long half-life, delayed response, and accumulation in peripheral tissues
Diazepam		2-5 min	20-120 hr (long acting)	Yes	Risk of delirium Phlebitis	• Rapid onset and awakening after a single dose • It's long-acting metabolites may prolong sedation after repeated doses

Delirium

- Delirium is defined as acute and fluctuating disturbance in consciousness and cognition. Although disorientation and hallucinations are commonly associated with delirium, the hallmark feature of delirium is in fact in attention.

- The pathophysiology of delirium is not well understood but the leading hypothesis focuses on the roles of neurotransmission, inflammation, and chronic stress.
- Delirium occurs because there are excessive or deficiency productions of neurotransmitters which then alter their interactions with the receptors.
  - Extensive evidence supports the role of cholinergic deficiency and increased serum anticholinergic activity as contributing factors to delirium and this may be why anticholinergics can worsen/precipitate delirium. Opiates may potentate delirium via anticholinergic pathways as suggested by one study. Physostigmine reverses delirium caused by anticholinergics and cholinesterase inhibitors may have some benefit in delirium cases not caused by medications. Although studies on these reversal agents are scarce.
  - Excessive CNS dopamine secondary to dopaminergic meds (i.e., levodopa or buproprion) may down regulate acetylcholine in the CNS resulting in worsening delirium symptoms. It makes sense, then that dopamine antagonists (i.e. antipsychotics) are the drugs of choice for treatment of delirium.
  - Alterations in other neurotransmitters like norepinephrine, serotonin, GABA, glutamate, and melatonin may exacerbate delirium via their cholinergic and dopaminergic pathways. Cytokines like (interleukins, TNF-α, and interferon) may increase the permeability of the blood brain barrier resulting in altered neurotransmission.
  - GABA-ergics may worsen delirium by disrupting sleep patterns and circadian rhythm/melatonin release as well as central acetylcholine inhibition.
  - Chronic stress brought on by illness or trauma activates the SNS and HPA-axis resulting in increased cytokine and cortisol release. Chronic hypercortisolism adversely affects the serotonin receptors ($5HT_{1A}$) in the hippocampus worsening delirium.
- Delirium is a form of brain dysfunction characterized by a change in the level of consciousness and a change in cognition. It is often manifested as fluctuating mental status, inattention, and either disorganized thinking or an altered level of consciousness. There are three sub-types of delirium:
  - Hyperactive (rare in pure form) characterized by attempts to pull out tubes, emotional lability, agitation and restlessness. The incidence of hyperactive is 5%.
  - Hypoactive (thought to be most common, but frequently not identified) characterized by withdrawal, flat affect, apathy, lethargy, and decreased responsiveness. The incidence of hypoactive form of delirium is 40%.
  - Mixed which is characterized by periods of hypoactivity and hyperactivity. The incidence rate of a mixed form of delirium is 50%.
- Delirium is a strong independent predictor of prolonged hospital / ICU length of stay, reintubation, higher mortality and morbidity during hospitalization and post-discharge, and higher cost of care. Patients who developed delirium during hospital stay tend to have worse outcomes.
- Delirium prevention, early detection, and comprehensive management are part of WHHS ICU daily workflow. The nurse vigilantly screens patient for evidence of delirium using CAM-ICU. The pharmacist collaborates with the Intensivist to provide optimum therapy for delirium and to streamline the med regimen to prevent delirium.
- Risk factors for delirium include modifiable, pre-existing and precipitating risk factors. **"THINK"** is a useful acronym for identifying possible causes of delirium
  - **T**oxic situations and meds: CHF, Shock, dehydration, NEW organ failure, deliriogenic meds
  - **H**ypoxemia
  - **I**nfection/sepsis (nosocomial), inflammation, immobilization
  - **N**onpharamcological interventions
  - **K^+** (potassium) or other electrolyte interventions.

Delirium Risk Factors

Age greater than 75 yrs	Substance abuse &withdrawal	Severe illness (e.g., infections, hypotension/hypoxia, malnutrition
Male Gender	Dementia, pre-existing	Metabolic disorders (e.g., cardiac, hepatic, dehydration)
Sleep deprivation	Poorly controlled pain	Medications (e.g., serotonergic agents or anticholinergics)
Oversedation		CNS pathology (e.g. stroke, Intracranial hemorrhage)

- Non-pharmacologic treatment strategies such as removing unnecessary lines / devices /restraints, correcting sensory deficits (eyeglasses, hearing aids), environmental manipulation (light, noise) to promote normal circadian rhythm, and early extubation, mobilization and physical therapy will be attempted first prior to administering pharmacological intervention. (see non-pharmacological intervention section above).
- Pharmacological therapy should be considered only after underlying causes of delirium are treated (e.g., infection, hypoxia, drugs), and if patients' symptoms of delirium compromise their safety or interrupt provision of essential therapy (e.g., mechanical ventilation).
  a) In general, the use of anticholinergic agents and benzodiazepines should be minimized/ avoided in delirious patients.
  b) Pain should be managed adequately since pain itself can cause delirium; however, to prevent opioid-induced delirium, use of the lowest effective dose of analgesic agents is preferred. Alternative pain medications that lower

the risk of delirium should be considered. If pain is controlled but patient remains delirious, some experts based on their clinical experiences have recommended opioid rotation (e.g., switch from morphine to fentanyl/hydromorphone).

c) Daily "awakening" and administering the lowest optimal dose of sedative agents lower the risk of delirium.

- Although evidence is scarce, haloperidol and atypical antipsychotics are usually prescribed for the treatment of delirium.
  a) Hyperactive delirium is usually treated with haloperidol. To prevent adverse reactions from haloperidol, baseline EKG and QTc measurements should be monitored, and potassium or magnesium deficits are corrected. Avoid haloperidol when baseline QTc is > 450 msec.
  b) Atypical antipsychotic has also been studied in hyperactive delirium. Due to limited data, atypical antipsychotics such as quetiapine and risperidone are typically prescribed when haloperidol is contraindicated or not desired.
  c) Routine treatment of hypoactive delirium is controversial, initial antipsychotic treatment will be initiated at physician's discretion and generally at lower doses than hyperactive delirium
  d) Combination therapies of atypical and haloperidol can be used when patient requires frequent rescue haloperidol or when patient remains delirious despite high dose of haloperidol (25 mg/day)
  e) If delirium persists despite high dose haloperidol and atypical, switching to a different atypical agent maybe helpful.
  f) Dexmedetomidine may be used for delirium patients where agitation is precluding weaning/extubation.
- Use of haloperidol, atypical antipsychotics, dexmedetomidine, statins, or ketamine to <u>prevent</u> delirium in critically ill adults is not recommended.

- Drugs Believed to Induce Delirium:

Acyclovir	Cimetidine	Furosemide	Oxycodone
Alprazolam	Ciprofloxacin	Gentamycin	Pancuronium
Amantadine	Clindamycine	Hydralazine	Paraldehyde
Amiodarone	Clozapine	Hydrochlorothiazide	Paroxetine
Amitriptyline	Cocaine	Hydroxyzine	Perphenazine
Amphotericin B	Codeine	Imipramine	Piperacillin
Ampicillin	Corticosteroids	Isosorbide	Propofol
Anticonvulsants	Cotrimazole	Intraconazole	Quinidine
Antihistamines	Cyclobenzaprine	Ketamine	Ranitidine
Antiparkinsonian drugs	Cyclosporine	Levodopa/carbidopa	Risperidone
Aspirin	Desipramine	Lidocaine	Scopolamine
Atropine	Digoxin	Lithium	Sympathomimetics
Azathioprine	Diltiazem	MAOIs	Tamoxifen
Azithromycin	Dipyridamoe	Methyldopa	Theophylline
Barbiturates	Disultiram	Methotrexate	Tobramycin
Benzodiazepines	Dopamine	Mirtazapine	Trazodone
Beta-blockers	Doxepin	Nicotine (and withdrawal)	Triamterene
Betamethasone	Ergotamine	Nifedipine	Vancomycin
Bupropion	Ethanol	Nitroprusside	Vincristine
Captopril	Famotidine	Nortriptyline	Warfarin
Cephalosporins	Fentanyl	Opioids (and withdrawal)	Zolpidem

Table 4: Pharmacology of Antipsychotics

Agent	Dose	Onset / Duration	Half-life (hrs)	Adverse Effects	Additional Information
Haloperidol (Haldol)	2.5-5 mg IV Q6H	O: 5-20 mins for IV D: 0.5-6 hrs	14-26 (IV) 14-37 (oral)	Dose-dependent QT interval prolongation and hypotension	Moderately sedating used to control the positive symptoms of delirium and ICU psychosis. Complex hepatic metabolism, may interact with some common ICU drugs. Extrapyramidal symptoms (EPS) and neuroleptic malignant syndrome (NMS) are rare.
Olanzapine (Zyprexa)	5-10 mg PO once daily Increase every 24 hrs as needed by 5-mg	O: 15-45 mins for IM	30	Orthostatic hypotension, hyperglycemia,	Less risk of EPS and QT prolongation than haloperidol. Half-life may be prolonged with

	increments up to 20 mg/day Acute agitation: 5-10 mg IM, may repeat every 2-4 hrs if needed (max total 30 mg)	D: ≥ 2 hrs for IM		somnolence, QT prolongation, and anticholinergic effects	increased risk of accumulation in elderly patients, female, nonsmoker, and/or hepatic or renal impairment. Short-acting IM formulation available for acute agitation. Potential alternative or adjunct to IV haloperidol.
Quetiapine (Seroquel)	50 mg PO BID Increase every 24 hrs as needed up to 400 mg/day	O: 60 mins for PO, >24 hrs for full effect D: 6-12 hrs	6	Sedation, orthostatic hypotension, QT prolongation	Less risk of EPS and QT prolongation than haloperidol. Hepatically metabolized to active and inactive metabolites. Reduce dose and titrate in advanced hepatic impairment. Potential alternative or adjunct to IV haloperidol.
Ziprasidone (Geodon)	20-40 mg PO BID Acute agitation: 10 mg IM, may repeat every 2 hrs if needed (max total 40 mg)	O: 30 mins for IM D: ≥ 90 mins for IM	2-7	Sedation, orthostatic hypotension, hyperglycemia, QT prolongation	Less risk of EPS than haloperidol. Hepatically metabolized to active and inactive metabolites. Reduce dose in advanced hepatic impairment. Short-acting IM formulation available for acute agitation, but contains cyclodextrin (a potential nephrotoxin) which can accumulate in renal impairment. Potential alternative or adjunct to IV haloperidol.

Sleep

- Poor sleep is a common complaint and a source of distress for many critically ill patients.
- Sleep disruption can be severe and is characterized by sleep fragmentation, abnormal circadian rhythms, increased light sleep, and decreased deep sleep and REM sleep.
- Sleep is considered a modifiable risk factor influencing recovery in critically ill patients.
- Pain, environmental stimuli, health care-related interruptions, psychologic factors, respiratory factors, and medications each affect sleep quality in the ICU.
- Although an association between sleep quality and delirium occurrence exists, a cause-effect relationship has not been established.
- An association between sleep quality and duration of mechanical ventilation, length of ICU stay, and ICU mortality remains unclear.
- The effects of sleep quality and circadian rhythm alterations on outcomes after ICU discharge are unknown.
- Noise and light reduction strategies to improve sleep are recommended.
- 3 small RCTs (n=60) evaluating the use of melatonin 3-10 mg at bedtime have reported mixed outcomes and no clear improvements in sleep. These studies involved lower acuity patients with chronic respiratory failure. While relatively safe and low cost, melatonin has not been FDA regulated.
- Given melatonin's low side effect profile, it can be considered in ICU patients to reduce the risk of delirium by promoting sleep. However, more definitive recommendations cannot be given until large randomized controlled trials demonstrate its benefit.
- Sleep-promoting, multicomponent protocol is recommended to improve sleep in critically ill adults (earplugs, eye shades, clustering of care, and removal of meds known to worsen sleep).

Approval/Review/Revision: Critical Care Committee 2008 and 07/12, PN and T Committee 2008, and (pending 09/12) and MEC 2008 and (pending 09/12); Critical Care Committee 7/21/2021

Authors: Carmen Agcaoili, M.D., Kathy Weinberg, R.N., CCNS, Cindy Lau, PharmD, Bhavjot Kaur, PT, DPT

Distribution: ICU Service Manual (interdisciplinary: physicians, nurses, pharmacists, respiratory therapist, rehabilitation department (Rehab, Speech, OT, PT), dietitian)

References:

1. Ballas MC et al., Critical Care Nurses' role in implementing the "ABCDE" bundle into practice. Critical Care Nurse 2012;32(2):35-47
2. Bergeron N et al., Intensive Care Delirium Screening Checklist evaluation of a new screening tool. Intensive Care Medicine 2001;27:859-864
3. Girard TD et al., Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomized controlled trial. The Lancet 2008;371:126
4. Honiden S. et al., Managing the agitated patient in the ICU: sedation, analgesia, and neuromuscular blockade. Journal of Intensive care medicine 2010;25(4):187-204
5. Hooper MH et al., Sedation and weaning from mechanical ventilation: linking spontaneous awakening trials and spontaneous breathing trials to improve patient outcomes. Critical Care Clinics 2009;25:515-525
6. Jacobi J. et al., Clinical practice guidelines for the sustained use of sedatives and analgesics in the critically ill adult. Critical Care med 2002;30(1):119-141
7. Kress JP et al., Daily interruption of sedative infusions in critically ill patients undergoing mechanical ventilation. New England Journal of Medicine 2000;342:1471-1477
8. Riker RR et al., Prospective evaluation of the Sedation-Agitation scale for adult critically ill patients. Critical Care Medicine 1999;27:1325-1329
9. San Diego Patient Safety Council. Tool Kit: ICU sedation guidelines of Care. www.carefusion.com/center accessed July 11th, 2012
10. Sessler CN et al., The Richmond Agitation-Sedation Scale: validity and reliability in adult intensive care patients. American Journal Critical Care Medicine 2002;166:1338-1344
11. Vasilevskis E et al. Reducing Iatrogenic risks: ICU-Acquired delirium and weakness – crossing the quality chasm. Chest 2010;138;1224-1233
12. www.icudelirium.org. Wesley Ely, M.D., Vanderbilt University. Accessed October 2011
13. www.micromedex.com
14. www.uptodate.com Tietze KJ et al., Sedative-analgesic medications in critically ill patients: properties, dosage regimen, and adverse effects. (last updated April 15, 2011)

ANALGESIA, SEDATION, and DELIRIUM ALGORITHM *(PAD: PAIN, AGITATION, DELIRIUM)*

Rule out and correct reversible causes
Use non-pharmacological interventions and Optimize environment
Implement PAD during daily rounds, every patient encounter, and PRN

ASSESS

TREAT

PREVENT

1st — PAIN
(TREAT PAIN FIRST, THEN SEDATE)

Physiologic signs of pain include: tachycardia, hypertension, sweating brow, muscle tension, facial grimacing

Use pain scale to assess for pain with every Vital Sign (VS) and PRN and document on ICU flow chart.
Analog, Verbal, FLACC, PAINAD

Treat pain within 30 minutes then reassess:

(1) Non-pharmacological treatment
(2) Pharmacological treatment
a. Non-neuropathic pain : IV opioids ± non opioid analgesics
Hemodynamically stable: Fentanyl, HYDROmorphone, Morphine
Hemodynamically Unstable: Fentanyl
Renal Impairment: Fentanyl, HYDROmorphone
Strategy: bolus for pain control and then infusion to sustain control
See Critical Care drip guideline for bolus doses and infusion rates.
b. Neuropathic pain --> gabapentin or carbamazepine, plus IV opioids

Administer pre-procedural analgesia and/or non pharmacological interventions
TREAT PAIN FIRST, THEN SEDATE

2nd — AGITATION / ANXIETY
Apprehension that occurs in patients who feel they are in a threatening situation

Use RASS scale (-5 to +4) to assess for agitation every 4 hours and PRN and document on ICU flow chart
GOAL: RASS score 0 to (-1) for NON-ventilated patients OR score 0 to (-2) for ventilated patients

(1) Non-pharmacological treatment
(2) Pharmacological treatment
a. Anticipate sedation (≤72 hrs): Propofol, Dexmedetomidine, MIdazolam
b. Anticipate sedation (>72hrs): Propofol, Dexmedetomidine
c. Renal Impairment: Lorazepam, Propofol, dexmedetomidine

If under sedated (RASS>0), assess and treat pain first, treat with sedatives PRN. If over sedated (RASS <-2), hold sedatives until goal, then restart @50% of previous dose

See Critical Care drip guideline for bolus doses and infusion rates.

Implement **ABCDEF bundle**
(Awakening, Breathing Coordination, Delirium and Early Exercise/Mobility)

3rd — DELIRIUM
Change in level of consciousness and cognition; inattention

USE CAM-ICU to assess for delirium every shift and PRN and document on ICU flow chart

(1) Non-pharmacological treatment
a. Daily Awakening
b. Continually reorient patient
c. Early mobilization
d. Promote effective sleep/awake cycles
e. Timely removal of catheters/physical restraints
f. Ensure the use of eyeglasses, magnifying lenses, and hearing aids
g. Minimize noises/stimulation at night
(2) Pharmacological treatment
a. Haloperidol (monitor QTc)
b. Atypical Antipsychotic
c. Avoid benzodiazepines unless ETOH or benzodiazepines withdrawal suspected Consider dexmedotomidine if patient requires continuous sedation or if patient fails spontaneous breathing trials secondary to agitation.
d. Avoid rivastigmine

Implement **ABCDEF bundle** and non-pharmacological interventions
Restart baseline psychiatric meds, if indicated

Reassess goal daily
Titrate and taper therapy to maintain goal
Perform **daily awakening**, if appropriate
(Hold infusion until patient reaches RASS goal, then resume at one-half previous rate. Titrate per written order.)
Taper if >1 week high-dose therapy and monitor for **withdrawal**
(The potential for opioids/benzodiazepines withdrawal should be considered for patients receiving high doses or seven (7) days of continuous therapy. Doses should be tapered systematically (i.e., 10-30% per day) to prevent withdrawal symptoms)

Signs &Symptoms of Opiate Withdrawal:
Pupil dilation, Vomiting, Hypertension, Diarrhea, Lacrimation, sweating, Rhinorrhoea, Fever, Piloerection, Tachypnea, Tachycardia, Agitation
Signs &Symptoms of benzodiazepine withdrawal:
Fever, HTN, Tachycardia, Tachypnea, Tremors/seizures, Hyper-reflexia, altered mental status, disorientation, hallucinations, psychotic behaviors

WASHINGTON HOSPITAL HEALTHCARE SYSTEM – CRITICAL CARE DELIRIUM ASSESSMENT WORKSHEET

The Richmond Agitation and Sedation Scale – RASS

Score	Term	Description
+4	Combative	Overtly combative, violent, immediate danger to staff
+3	Very agitated	Pulls or removes tubes(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 (eye-opening/eye contact) to *voice* **(≥10 seconds)**
-2	Light sedation	Briefly awakens with eye contact to *voice* **(<10 seconds)**
-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
-5	Unarousable	No response to *voice or physical* stimulation

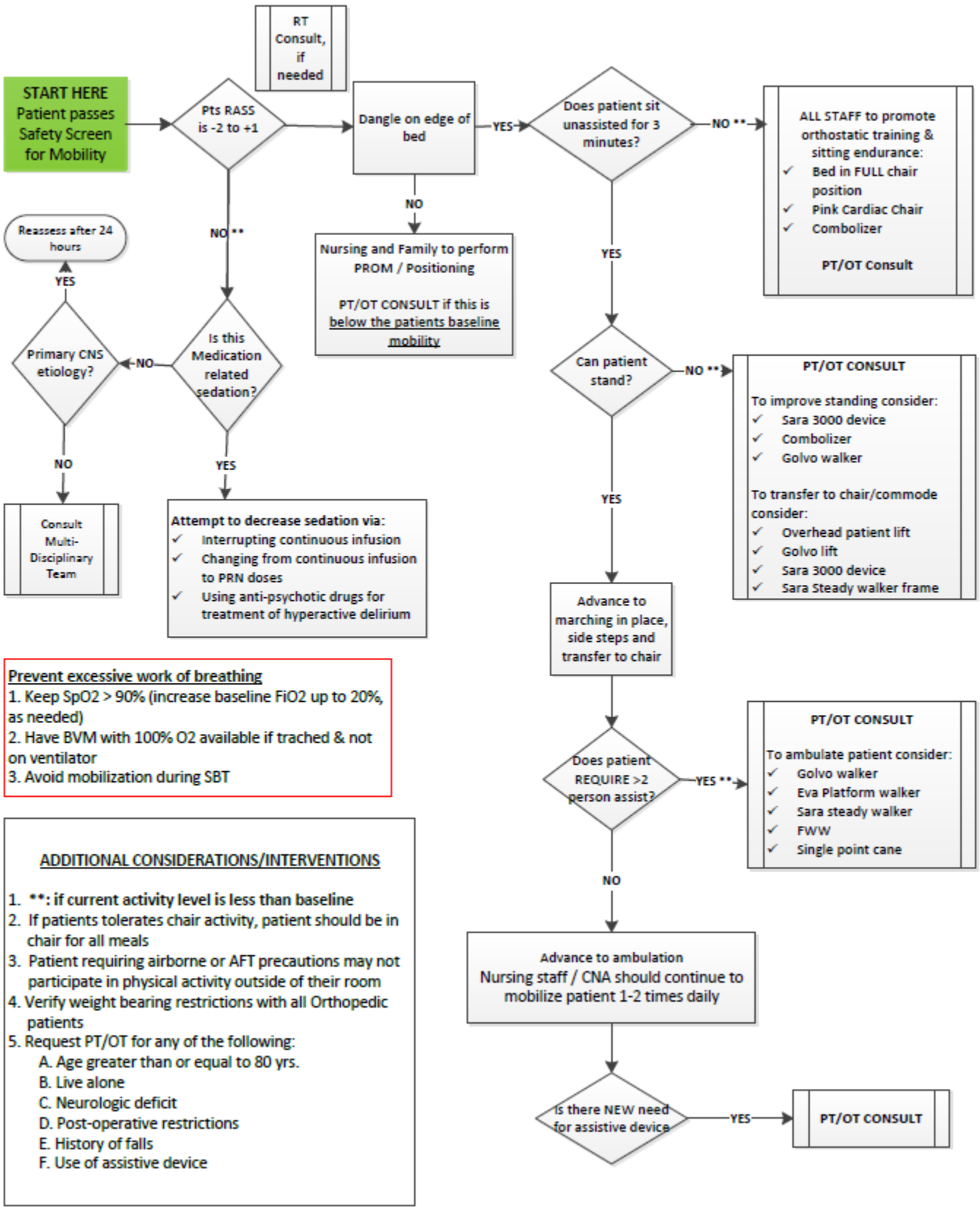
Verbal Stimulation

Physical Stimulation

CAM – ICU Worksheet

If RASS is -4 or -5 do not proceed with this assessment, reassess patient at a later time when RASS is above -4	**Negative Screen Stop at First "NO"**	**Positive Screen Continue to Next Feature**	**Check here if Present/ Positive**
Feature 1: Acute Onset or Fluctuating Course Is the patient different than his/her baseline mental status? OR Has the pt had any fluctuation in mental status in the past 24 hours as evidenced by fluctuation of RASS, GCS or previous CAM-ICU?	**No to both questions**	**Yes to either question**	
Feature 2: Inattention **Letter Attention Test** Say to patient, "I am going to read you a series of 10 letters (OR 10 numbers). Whenever you hear the letter 'A,' (OR number '1') indicate by squeezing my hand." Read the following letter list in a normal tone 3 seconds apart. S A V E A H A A R T OR 8 1 7 5 1 4 1 1 3 6 **Errors are counted when patient fails to squeeze on the letter 'A' (OR number '1') and when the patient squeezes on any letter other than 'A' (OR number '1').**	**2 or less**	**Greater than 2**	
Feature 3: Altered Level of Consciousness Present if the Actual RASS score is anything other than '0' = Alert and Calm	**RASS = '0'**	**RASS anything other than '0'**	
Feature 4: Disorganized Thinking **Yes/No Questions (See training manual for alternate set of questions)** 1. Will a stone float on water? 2. Are there fish in the sea? 3. Does one pound weigh more than two pounds? 4. Can you use a hammer to pound a nail? **Errors are counted when the patient incorrectly answers a question.** **Command** Say to patient: "Hold up this many fingers" Hold 2 fingers in front of patient "Now do the same thing with the other hand" Do not repeat number of fingers *If pt is unable to move both arms, for 2nd part of command ask pt to "Add one more finger" **An error is counted if patient is unable to complete the entire command**	**1 or Less errors**	**Combined number of errors > 1**	
Overall CAM-ICU **Feature 1 + 2 and either 3 or 4 present = CAM-ICU positive**			

Attachment 2: MOBILITY ALGORITHM



Prevent excessive work of breathing

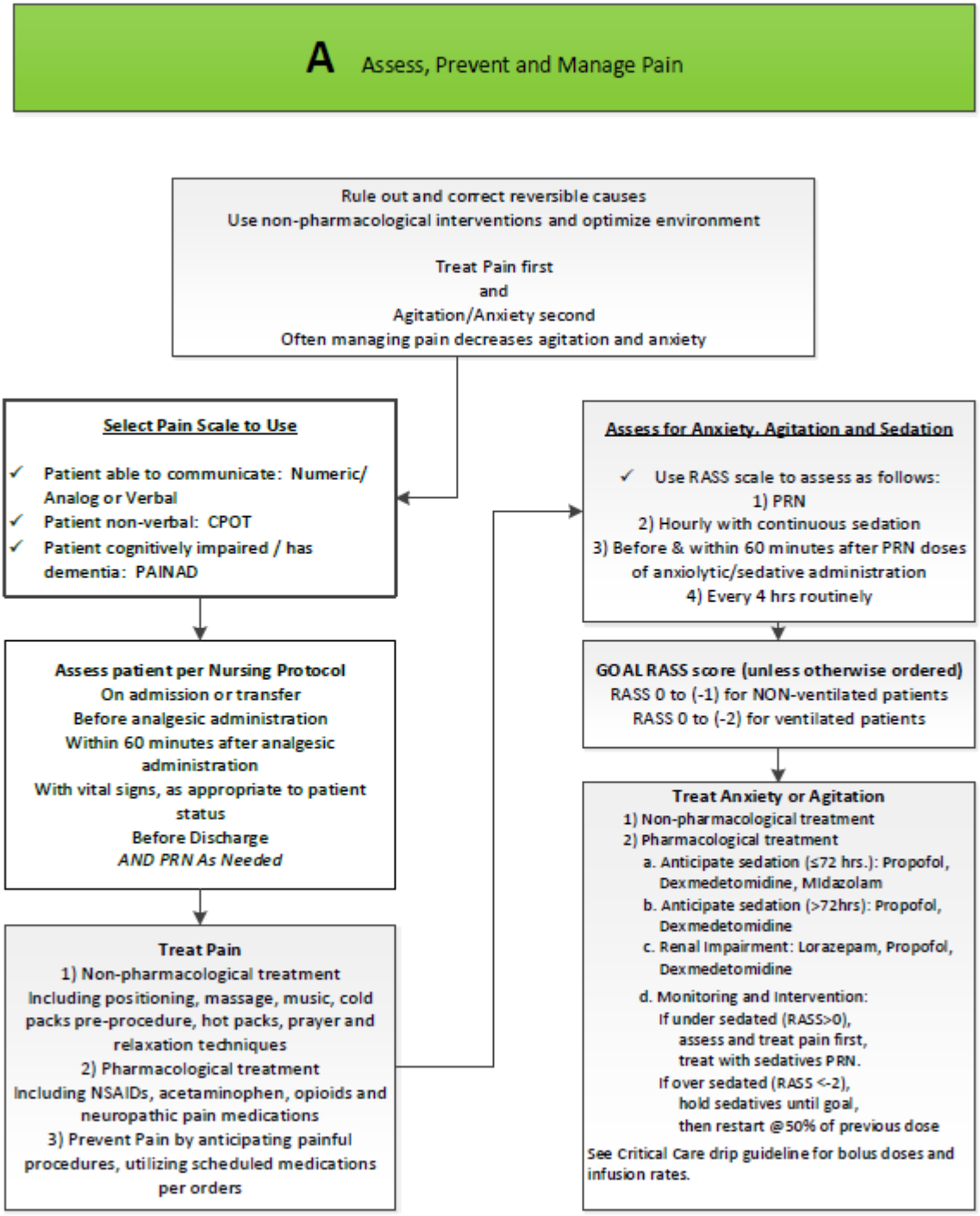
1. Keep SpO2 > 90% (increase baseline FiO2 up to 20%, as needed)
2. Have BVM with 100% O2 available if trached & not on ventilator
3. Avoid mobilization during SBT

ADDITIONAL CONSIDERATIONS/INTERVENTIONS

1. **: if current activity level is less than baseline
2. If patients tolerates chair activity, patient should be in chair for all meals
3. Patient requiring airborne or AFT precautions may not participate in physical activity outside of their room
4. Verify weight bearing restrictions with all Orthopedic patients
5. Request PT/OT for any of the following:
   - A. Age greater than or equal to 80 yrs.
   - B. Live alone
   - C. Neurologic deficit
   - D. Post-operative restrictions
   - E. History of falls
   - F. Use of assistive device

Reference: Engel, etal. ICU Early Mobilization: From Recommendation to Implementation at Three Medical Centers. *Crit Care Med.* 2013: 41(9):S69-S80.
Authors: Bhavjot Kaur, PT DPT, Laura Yastishak, PT DPT, Alisa Curry, PT DPT, Kathy Weinberg, MSN, RN, CCNS, CCRN (REV 2 6/2020)

A to F Bundle Algorithm



B Both SAT (Spontaneous Awakening Trial) And SBT (Spontaneous Breathing Trial)

SAT (Spontaneous Awakening Trial) SAFETY SCREEN

SAT Safety Screen Inclusion Criteria

- ✓ No active Seizures
- ✓ No active Alcohol Withdrawal
- ✓ No Agitation
- ✓ No Paralytics/Neuro-Muscular Blocking Drugs
- ✓ No active Myocardial Ischemia
- ✓ No evidence of Increase Intracranial Pressure & Neuro-Surgical Service OK with Sedation Vacation
- ✓ Stable Hemodynamics:
  - ✓ SBP 90 – 180 & MAP greater than 65
  - ✓ No increase in vasopressor dose within 1 hour
  - ✓ HR 50 – 110 & no life-threatening arrhythmias
- ✓ For CABG patients:
  - ✓ Urine Output greater than or equal to 0.5-1 mL/Kg/hr
  - ✓ Chest Tube drainage less than 150 mL/hr for greater than 2 hrs.
- ✓ No immediate need of operation/re-operation

FAIL → Notify MD, if will not be at bedside within 3 hrs

PASS

- ✓ Perform SAT (Ensure pt. adequately restrained to prevent self-extubation)
- ✓ STOP all sedatives and analgesics except dexmedetomidine
- ✓ Notify RT

RASS > 0: Assess pain and use PRN boluses of analgesics as needed. If needing >2 boluses in ½ hr, restart analgesic drip at prior rate. If RASS still > 0 after 1 hr, resume sedatives at ½ the prior rate.

RASS <1: Leave analgesics and sedatives off and reassess pt in ½ hr.

RASS is -1 to 0
Notify RT for SBT

SBT (Spontaneous Breathing Trial) SAFETY SCREEN

SBT Safety Screen Inclusion Criteria

- ✓ Chest X-ray (refer to radiology report or MD assessment)
  - ✓ No new/significant infiltrates
- ✓ Oxygenation
  - ✓ SpO2 greater than 92% on FiO2 less than 0.5, PEEP less than +8 cm H2O
- ✓ Chest Physical exam
  - ✓ Equal bilateral breath sounds and chest expansion
  - ✓ No crepitus
- ✓ CORE Blood Temperature greater than 97F (36-38C)

Assess & Document Weaning Parameters
(per RT Policy & Procedure)

RR < 30/min HR Δ20/min BP Δ 20mmHg (SBP90 – 180)
Minute Vent. <13L/min RSBI <105 SpO2 ≥92%
SvO2 >60%, if available
→ ABGs within acceptable limits → No significant arrhythmia
→ Presence of cough reflex → Absence of respiratory distress
→ Ability to lift or turn head directionally on command
→ Positive Cuff Leak Test for pts at high risk for post-extubation stridor (e.g., Neuro, ENT or >3days on ventilator)

PASS

SBT Screening (2 min. observation)
CPAP(PEEP≤8) PS=10 FiO2 ≤ 0.5

FAIL → **Discontinue SBT Screening Trial**
Return to AC mode or previous mode of ventilation
Document Reason for failure
Consult Intensivist for further ventilator orders

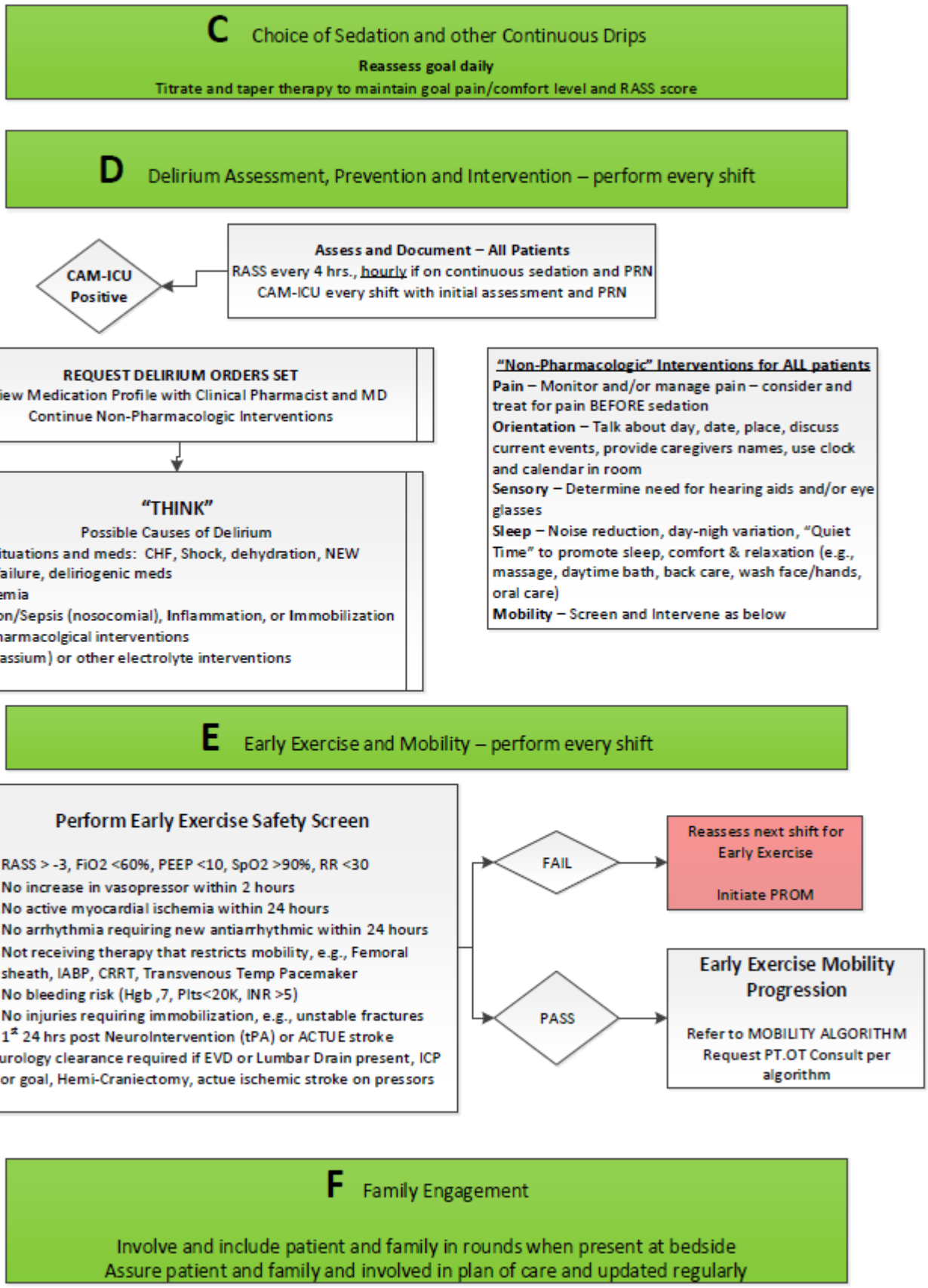
PASS

SBT Trial

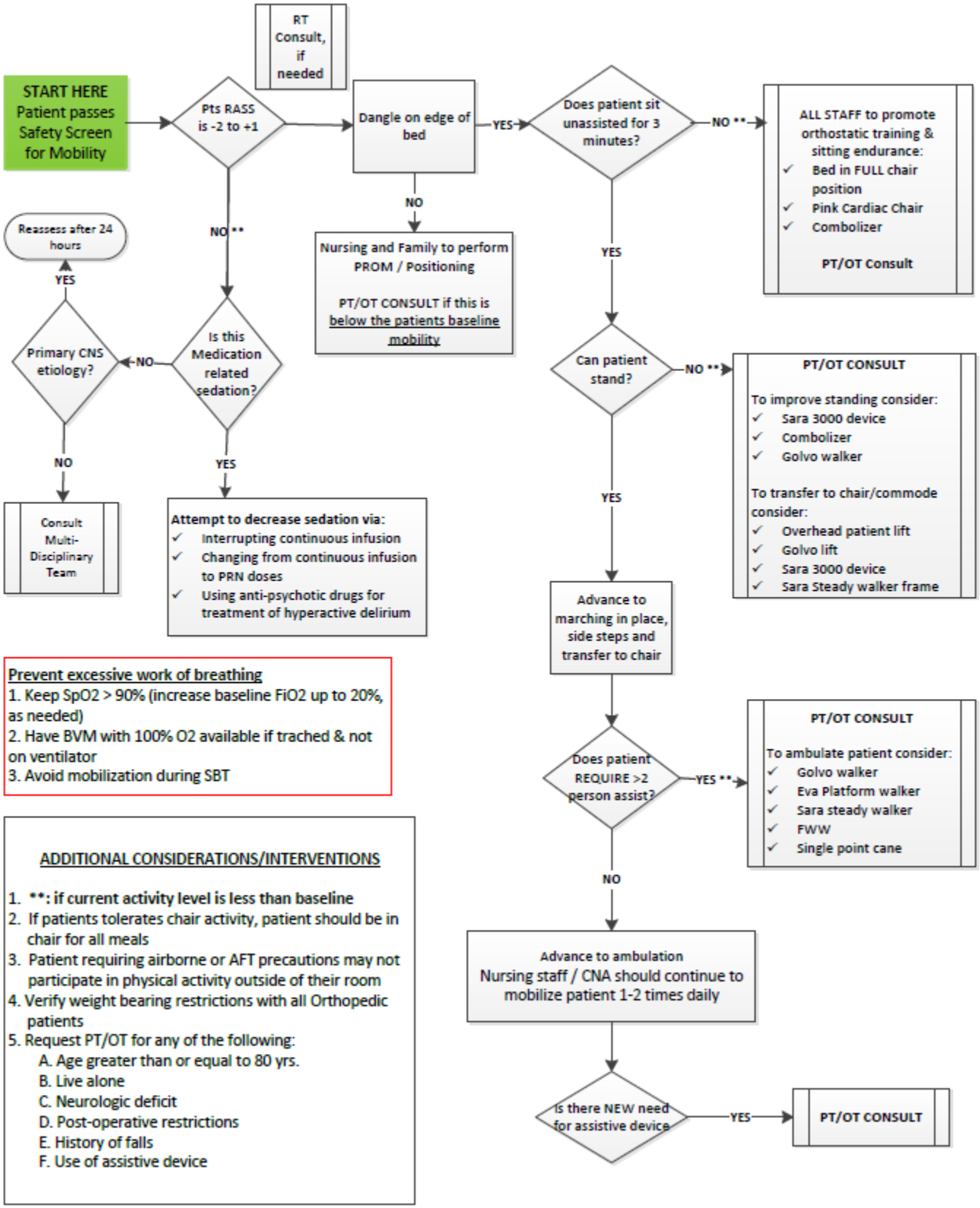
- ✓ CPAP+PS mode (FIO2 ≤0.5, PEEP ≤8, PS+10)
- ✓ Decrease to PS+5 as tolerated
- ✓ Position pt > 30 degrees upright
- ✓ SBT: 30-120 minutes as tolerated by pt
- ✓ RSBI = RR ÷ VT (Liter)
- ✓ Obtain Arterial Blood Gases at end of SBT

FAIL → **Discontinue SBT Screening Trial**
Return to AC mode or previous mode of ventilation
Document Reason for failure
Consult Intensivist for further ventilator orders

PASS → **EXTUBATE** **Prior to extubation, refer to ventilator orders and obtain order from Intensivist


C Choice of Sedation and other Continuous Drips
Reassess goal daily
Titrate and taper therapy to maintain goal pain/comfort level and RASS score
D Delirium Assessment, Prevention and Intervention – perform every shift
CAM-ICU Positive
Assess and Document – All Patients
RASS every 4 hrs., hourly if on continuous sedation and PRN
CAM-ICU every shift with initial assessment and PRN
REQUEST DELIRIUM ORDERS SET
Review Medication Profile with Clinical Pharmacist and MD
Continue Non-Pharmacologic Interventions
"THINK"
Possible Causes of Delirium
Toxic situations and meds: CHF, Shock, dehydration, NEW organ failure, deliriogenic meds
Hypoxemia
Infection/Sepsis (nosocomial), Inflammation, or Immobilization
Non-pharmacolgical interventions
K+ (potassium) or other electrolyte interventions
"Non-Pharmacologic" Interventions for ALL patients
Pain – Monitor and/or manage pain – consider and treat for pain BEFORE sedation
Orientation – Talk about day, date, place, discuss current events, provide caregivers names, use clock and calendar in room
Sensory – Determine need for hearing aids and/or eye glasses
Sleep – Noise reduction, day-nigh variation, "Quiet Time" to promote sleep, comfort & relaxation (e.g., massage, daytime bath, back care, wash face/hands, oral care)
Mobility – Screen and Intervene as below
E Early Exercise and Mobility – perform every shift
Perform Early Exercise Safety Screen
RASS > -3, FiO2 <60%, PEEP <10, SpO2 >90%, RR <30
No increase in vasopressor within 2 hours
No active myocardial ischemia within 24 hours
No arrhythmia requiring new antiarrhythmic within 24 hours
Not receiving therapy that restricts mobility, e.g., Femoral sheath, IABP, CRRT, Transvenous Temp Pacemaker
No bleeding risk (Hgb ,7, Plts<20K, INR >5)
No injuries requiring immobilization, e.g., unstable fractures
1st 24 hrs post NeuroIntervention (tPA) or ACTUE stroke
*Neurology clearance required if EVD or Lumbar Drain present, ICP >20 or goal, Hemi-Craniectomy, actue ischemic stroke on pressors
FAIL
Reassess next shift for Early Exercise
Initiate PROM
PASS
Early Exercise Mobility Progression
Refer to MOBILITY ALGORITHM
Request PT.OT Consult per algorithm
F Family Engagement
Involve and include patient and family in rounds when present at bedside
Assure patient and family and involved in plan of care and updated regularly

Attachment 2: MOBILITY ALGORITHM



Prevent excessive work of breathing

1. Keep SpO2 > 90% (increase baseline FiO2 up to 20%, as needed)
2. Have BVM with 100% O2 available if trached & not on ventilator
3. Avoid mobilization during SBT

ADDITIONAL CONSIDERATIONS/INTERVENTIONS

1. **: if current activity level is less than baseline
2. If patients tolerates chair activity, patient should be in chair for all meals
3. Patient requiring airborne or AFT precautions may not participate in physical activity outside of their room
4. Verify weight bearing restrictions with all Orthopedic patients
5. Request PT/OT for any of the following:
   - A. Age greater than or equal to 80 yrs.
   - B. Live alone
   - C. Neurologic deficit
   - D. Post-operative restrictions
   - E. History of falls
   - F. Use of assistive device

Reference: Engel, etal. ICU Early Mobilization: From Recommendation to Implementation at Three Medical Centers. *Crit Care Med.* 2013: 41(9):S69-S80.
Authors: Bhavjot Kaur, PT DPT, Laura Yastishak, PT DPT, Alisa Curry, PT DPT, Kathy Weinberg, MSN, RN, CCNS, CCRN (REV 2 6/2020)

SECTION 9 – Continuous EEG

Continuous EEG (cEEG) at WHHS

Background

Prolonged continuous digital video and electroencephalographic monitroing (abbreviated as continuous EEG or cEEG) is increasingly utilized in critically ill patients with acutely abnormal neurological conditions. cEEG monitoring is almost always required/recommended for optimal management of prolonged or refractory status epilepticus and should, at times, be considered an integral part of multimodal monitoring of the injured brain, particularly in post-cardiac arrest patients or in patients at risk for nonconvulsive seizures or delayed cerebral ischemia.1,2 Hospitalized patients with encephalopathy of undetermined cause (even in the absence of acute brain injury) may often benefit from cEEG monitoring – this patient population has been shown to experience non-convulsive seizures in close to 40% of cEEG studies in the ICU.3 Non-convulsive seizures often occur interminttently and may have no obvious clinical correlate (are only detectable with EEG monitoring). The presence of non-convulsive seizures has, in some studies, been associated with increase risk of poor clinical outcome.

Continuous EEG can, in real time, detect convulsive and non-convulsive seizures, partical and generalized seizures and is especially helpful when seizures occur (or cluster) intermittently. cEEG can also definitively (better than clinical expert observation alone) differentiate shivering and other movement and psychiatric disorders from epileptic seizurse. In clinical studies of cEEG in ICUs, cEEG results have been shown to directly affect/guide significant (ie >50% of the time) changes in anti-seizure drug regimen.4 cEEG can further be used to target desired level of pharmacological sedation/coma in refractory cases of status epilepticus (SE) and during therapeutic hypothermia treatments.

Indications (beoynd routine EEG study)

1. All cases of refractory SE, including convulsive and non-convulsive SE
2. Brain injured or cryptogenic encephalopathic/comatose patients with persistent uncontrolled or stereotyped movements of undetermined etiology
3. Early treatment of most cases of convulsive SE
4. Select cases of comatose/encephalopathic hospitalized patients without uncontro9lled/sterotyped movements whose mental status impairment remains unexplained.
5. Select cases of recently completed or prolonged/ongoing therapeutic hypothermia treatment.

Protocol

cEEG must be ordered by a neurologist or medical intensivist, and the EPIC order should be supplemented by a call to the EEG technician "on-call." Most of the time, cEEG can be started during normal extended "business" hours, 7 days a week and should not be need to be started late at night or overnight. The typical duration of cEEG monitoring is 24-72 hrs, but longer periods of monitoring may be requested/needed. Comatose patients often require >24 hrs of monitoring to detect an electrographic seizure.5

Optional (non-continuous, typically RN triggered) video monitoring of cryptogenic movements during cEEG should be requested or deferred by the ordering physician.

Daily down- or up-loading of cEEG recordings will be the responsibility of the EEG technician and supervising physician, and cEEG studies should be officially interpreted/read by the requested neurologist within one day of a 24 hr recording period.

When not in continuous monitoring use, the cEEG machine can be used for routine EEG studies, which is especially helpful when multipe simultaneous EEG studies are ordered.

References:

1. Le Roux, P et al. Consensus Summary Statement of the International Multidisciplinary Consensus Conference on Multimodality Monitoring in Neurocritical Care. *Neurocritical Care*, Sept 2014.

2. Brophy, GM et al. Guidelines for the Evaluation and Management of Status Epilepticus. *Neurocritical Care*, Apr 2012.

3. Pritivera, M et al. EEG detection of nontonic-clonic status epilepticus in patients with altered consciousness. *Epilepsy Res* 1994.

4. Kilbride, R et al. How Seizure Detection by Continuous Electroencephalographic Monitoring Affects the Prescribing of Antiepileptic Medications. *Arch Neurol* 2009.

5. Classen, J et al. Detection of electrographic seizures with continuous EEG monitoring in critically ill patients. *Neurology* 2004.

INTERMEDIATE CARE UNIT (STEP DOWN UNIT)
STRUCTURE STANDARDS

A. Admission Criteria
   1. Adult experiencing acute or potentially acute illness or injury, or an exacerbation of a chronic condition affecting one or more body systems. Common candidates for admission include post ICU/CCU transfer patients, patients with diseases or disorders requiring diagnostic or therapeutic interventions, more frequent monitoring and nursing care.

Indicator	Admission Criteria
Cardiovascular System	- Rule out MI with normal EKG, no evidence of ischemic injury pattern or no change in chronically abnormal EKG. - Requires monitoring of cardiac rhythm. - Requires pacemaker evaluation and surveillance. - Moderately Unstable Post cardiac surgery patients. - Moderately Unstable Pre and Post PTCA patients. - Pre and post stent patients who require every 2 hour monitoring. - Hypertensive urgency without evidence of end-organ damage.
Pulmonary System	- Blood gas monitoring not requiring arterial lines in association with acute episode of chronic or other decompensated state (e.g., patients that require this definitive care to achieve improved state). - Patients requiring Noninvasive Positive Pressure Ventilation (NPPV) or High Flow Oxygen for respiratory management. - Ventilator dependent patients requiring interim weaning and minimum management.
Neurovascular System	- Altered level of consciousness. - Evaluation and initiation of definitive therapy. - Requires medications IV push for seizure control (except anesthetic agents). - Stable Stroke, requires frequent neuro assessments or frequent suctioning. - Subarachnoid hemorrhage post-intervention (clipping or coiling) monitoring for signs of vasospasm or hydrocephalus. - Stable neurosurgical patients with a lumbar drain.
GI / Endocrine Disorders	- GI bleeding with minimal orthostatic hypotension responsive to fluid therapy. - Diabetic ketoacidosis requiring continuous insulin infusion and POCT Glucose up to every hour. - Hyperosmolar state with resolution of coma. - Thyrotoxicosis, hypothyroid state requiring frequent monitoring.
Miscellaneous	- Drug Ingestion/Overdose, hemodynamically stable, requiring frequent neurologic, pulmonary or cardiac monitoring. - ETOH Withdrawal requiring IV medication management. - Postoperative patient following major surgery, hemodynamically stable but requires fluid resuscitation and transfusion. - Postoperative patient requiring close nurse monitoring during first 24 hours, e.g., carotid endarterectomy, peripheral vascular reconstruction - Post procedure patient requiring close nurse monitoring for ultrasound facilitated thrombolysis (EKOS). - Blood InVivo Compatibility Testing. - Severe sepsis, without evidence of shock (lactic acid may be elevated but BP stable), responding to fluid resuscitation.
IV Drips Accepted	Refer to attached Critical Drips Guidelines for Intermediate Care Unit or WHHS Pharmacy Intranet home page for detailed information.

2. Patients who are not candidates for admission to Intermediate Care Unit (Step Down Unit) include:
    a. Patient requiring invasive monitoring of arterial pressure or pulmonary artery pressure or temporary pacemaker (except post cardiac surgery).
    b. Patient requiring vasoactive drugs for regulation of their hemodynamic pressures.
    c. Patient instability requiring more intensive nursing care (1:1 or 1:2 Pt:RN ratio).
    d. Patient with anti-arrhythmic drugs not able to stabilize cardiac rhythm.
    e. Patient requiring frequent vent changes with unstable respiratory status.
    f. Patient requiring NPPV (BiPAP or CPAP) for Obstructive Sleep Apnea or who are DNR/DNI
    g. Acute MI patient who has developed ischemic EKG changes that requires aggressive treatment.
    h. Patients requiring NTG drip for control of unrelieved chest pain.
    i. Patients requiring locked restraints to protect themselves from injury.
    j. Patients in complete heart block who are hemodynamically unstable (pt. will be transferred to critical care).
    k. Patients requiring ultrasound facilitated thrombolysis (EKOS) for pulmonary embolism who are experiencing active respiratory distress.
    l. Patients whose nursing acuity is so high as to require frequency of intervention not able to be delivered in a Intermediate Care Unit (Step Down Unit).

B. Discharge/Transfer Policies
1. Patients can be discharged only by order of the physician or at the discretion of the Medical Director, provided the patient has been evaluated by the physician as outlined in the Medical Staff Bylaws.

2. The nursing staff, with the cooperation of the admitting officer, may transfer a patient at its discretion for the welfare of the patient, his family, or the nursing unit in general. Before this is done, every attempt must be made by the nursing staff to contact the attending physician. If the attending physician cannot be contacted, the Nurse Manager, Charge Nurse, Nursing Supervisor will advise him of the transfer as soon as possible.

3. Patients will be assessed daily in collaboration with the physician as to their need for continued hospitalization, prioritization & level of care or discharge status. Case Management will participate in this process referring to InterQual Level of Care Criteria clinical decision support. The responsible RN and the attending physician will collaborate on the daily assessment. The patient's status will be recorded in the EMR.

4. Prior to transfer to a lower level of care, the patient’s physiologic status must be considered stable, i.e., no longer requiring IV drips listed in Admission Criteria (unless accepted on receiving unit, e.g., heparin) and no longer requiring frequent monitoring.

5. Interdisciplinary conferences and rounds, including Rehab Services and Case Management, will be held weekly on Intermediate Care Unit (Step Down Unit). The Charge Nurse, Nurse Manager, staff members, and representatives from Nutrition Services, Physical/Occupational/Speech Therapy, Social Services, and other departments will attend. The purpose of the conference/rounds is to review the status of each patient on the unit and discuss plans for assisting patients and families to meet physical, psychological, and cognitive requirements for discharge or transfer. The nursing staff will prepare for these conferences by assessing the needs of their patients and families, as well as requirements for discharge or transfer.

6. If a patient is to be discharged/transferred to another institution, the responsible RN will complete the appropriate forms for transfer. The patient's medical record and the appropriate transfer information must accompany the patient on discharge/transfer.

7. Discharge criteria from Intermediate Care Unit (Step Down Unit) includes:
    a. The patient's needs are addressed across the continuum of care.
    b. The patient achieves independence from therapeutic measures performed by nursing or support services, unless continued at home with assistance.
    c. The patient achieves stable body systems and physiologic parameters.
    d. The patient achieves stable laboratory values that have a bearing on his diagnostics.
    e. The patient and his family have demonstrated coping abilities surrounding the illness or injury.
    f. The patient and his family have verbalized/demonstrated post discharge care and its implementation with or without assistance.
    g. The patient requires an alternative or lower level of nursing care and arrangements have been made for a discharge/transfer to another appropriate facility incorporating the patient's significant others.

C. Length of Stay

1. Generally, length of stay is determined by the patient's physical and emotional status, and his ability to perform self-care as determined by the attending physician, rehab, and the nursing staff. Patients may be transferred to a higher or lower level of care to address individual patient needs.

2. A patient's length of stay should be consistent with the average stay for the Intermediate Care Unit (Step Down Unit) patients with similar conditions and acuity levels. The attending physician, the nursing staff, and the case manager will maintain quality care so that the patient can be discharged as early as possible.

3. All available resources should be used to facilitate a timely and appropriate discharge, for example, Social Services, weekly Interdisciplinary Care Conferences, daily interaction between the physician, nurses, family and Case Manager. The Case Manager will assist with the discharge, coordination of efforts for timely and appropriate discharge, provided that the patient has been evaluated by the physician as outlined in the Medical Staff Bylaws.

4. The attending physician will document the justification for an extended length of stay in the patient's EMR.

References

Nates, JL et al. "ICU Admission, Discharge, and Triage Guidelines: A Framework to Enhance Clinical Operations, Development of Institutional Policies, and Further Research." Crit Care Med. 2016 Aug; 44(8): 1553-1602.

American Association of Critical-Care Nurses. *Core Curriculum for Progressive Care Nursing.* St Louis, MO: Elsevier Inc.; 2010.

Stacy, K. "Progressive Care Units: Different but the Same." CCN 2011; 31(3):77-83.

TELEMETRY UNIT STRUCTURE STANDARDS

(Approved 1/21/08 MEC (with changes); 2/13/08 Board)

A. Admission Policies

1. All members of the medical staff with active admitting privileges may admit patients to Telemetry. Doctors with courtesy privileges must be approved by the Chief of Staff. They must request appropriate consultation as directed by the Chief of Staff and as specified by the medical staff bylaws.
2. Patients may be admitted to Telemetry in any of the following ways:
    a. Direct Admissions are admitted directly from their doctor's offices with arrangements made by phone through the admissions office.
    b. Emergency Admissions are patients admitted from the emergency room. These patients must arrive on the unit with medical orders, written by the emergency room physician or Attending Physician.
    c. Transfer patients are admitted to Telemetry from other units, such as the critical care unit, medical/surgical units, Cardiac Catheterization Laboratory, or the recovery room. The unit transferring the patient will obtain updated medical orders before the transfer.
    d. Routine admissions are patients scheduled in advance for admission to Telemetry. These patients will be brought to the unit by the admitting clerk with written medical orders.
    e. "House Convenience" patients may be admitted to Telemetry when the medical/surgical units are full. The Bed Control Nurse/Nursing Supervisor will identify these patients and collaborate with the Telemetry nursing staff to move them as soon as possible.
3. Circumstances of Admission
    a. All patients will be admitted to Telemetry with medical orders that specify:
        1. Order for admission;
        2. Admitting diagnosis;
        3. Code status or directions for the management of a life-threatening crisis;
        4. Diet;
        5. Activity level;
        6. Vital signs and how often they should be taken;
        7. Laboratory tests as needed
        8. Routine medications, especially those the patient takes prior to admission;
        9. PRN medications, such as analgesics, laxatives, antacids, etc.;
        10. Order for continuous cardiac monitoring and indication;
    b. Providers will visit all emergency patients as soon as possible, after their admission to Telemetry. The Emergency Room Department notifies the primary MD of patient's admission to Hospital. The RN assigned to the patient or Charge Nurse will call the attending physician, should the need arise, to obtain further orders or to inform of any patient status change.
    c. Providers will visit all patients on the Unit daily and provide appropriate medical documentation on their conditions. All medical responsibilities previous outlined apply to all patients.
    d. There will be no age or race discrimination in the room assignment of patients to rooms. The nursing staff will consider a patient's, age, isolation needs, and acuity level in placing him/her on the Unit. Special arrangements may be made, according to Hospital policy,
    e. Nursing responsibilities with regard to the newly admitted patient include:
        1. Completing the admission required documentation in Epic. Non-professional staff members may assist with data collection, however, only an RN can complete the initial admission assessment.
        2. Entering an admission note in the EMR is the responsibility of the admitting RN.
        3. Acknowledging medical admission orders.

4. Developing a plan of care as outlined in the Unit's policy on Delivery of Care, Addendum D.
5. Ensuring the patient's name and other vital information is entered into the patient's EMR.

I. ADMISSION CRITERIA

1. Adult experiencing acute or potentially acute illness or injury, or an exacerbation of a chronic condition affecting one or more body systems. Common candidates for admission include:
    a. Post ICU/CCU transfer patients who still require cardiac monitoring.
    b. Patients with diseases or disorders requiring diagnostic or therapeutic interventions, such as congestive heart failure, stroke, chronic obstructive pulmonary disease, and pneumonia.
    c. Metabolic issues such as severe electrolyte imbalance
2. Neurologic
    a. Evaluation and initiation of definitive therapy.
    b. Requires medications IV push for seizure control (except anesthetic agents). c.

    Rule out TIA/Stroke
3. Respiratory:
    a. Blood gas monitoring not requiring arterial lines in association with acute episode of chronic or other decompensated state
    b. Patients requiring Noninvasive Positive Pressure Ventilation (NPPV). c.
    Patients requiring high-flow oxygen therapy.
4. Cardiac
    a. Rule out MI or NSTEMI with normal EKG, no evidence of ischemic injury pattern or no change in chronically abnormal EKG.
    b. Requires monitoring of cardiac rhythm.
    c. Requires ambulatory arrhythmia detection.
    d. Requires pacemaker evaluation and surveillance. e.
    Post cardiac surgery patients.
    f. Pre and post PCI pacemaker, or AICD patients.
    g. Patients post PCI who require NTG drip for prevention of Vasospasm. h.
    Patient with hemodynamically stable new onset-dysrhythmias.
    i. Patients requiring non-titrated infusion of Dopamine for increasing renal perfusion.
    j. Patients with documented cardiomyopathy requiring infusion of non-titrated Dobutamine.
5. Patients who are not candidates for admission to Telemetry include:
    a. Patient requiring invasive monitoring of arterial pressure or pulmonary artery pressure or temporary pacemaker.
    b. Patient requiring vasoactive drugs for regulation of their hemodynamic pressures. c.
    Patient instability requiring more intensive nursing care (1:1 or 1:2).
    d. Patient with anti-arrhythmic drugs not able to stabilize cardiac rhythm.
    e. Patient requiring frequent vent changes with unstable respiratory status.
    f. Patient with IV antiarrhythmic infusions exception Amiodarone and non-titrated Cardizem.
    g. Patients requiring NPPV for acute respiratory failure.
    h. Acute MI patient who has developed ischemic EKG changes that requires aggressive treatment.
    i. Patients requiring NTG drip for control of unrelieved chest pain.
    j. Patients requiring leather restraints to protect themselves from injury. k.
    Patients in complete heart block will be transferred to critical care.

l. Patients whose nursing acuity is so high as to require frequency of intervention not able to be delivered in a Telemetry unit.

C. Discharge/Transfer Policies

1. Patients can be discharged only by order of a physician, provided the patient has been evaluated by the physician as outlined in the Medical Staff Bylaws.
2. The nursing staff, with the cooperation of the admitting officer, may transfer a patient at its discretion for the welfare of the patient, his family, or the nursing unit in general. Before this is done, every attempt must be made by the nursing staff to contact the attending physician. If the attending physician cannot be contacted, the Charge Nurse, Nursing Supervisor, Nurse Manager, or Assistant Chief Nursing Officer will advise him of the transfer as soon as possible.
3. Patients will be assessed daily as to their need for continued hospitalization, prioritization & level of care or discharge status. The responsible RN and the attending physician will collaborate on the daily assessment. The patient's status will be recorded in the EMR.
4. Multidisciplinary conferences, including, Rehab Services and Case Management, will be held weekly on Telemetry. The Charge Nurse, Nurse Manager, staff members, and representatives from Dietary, Rehab Services, Social Services, and other departments may attend. The purpose of the conference is to review the status of each patient on the unit and discuss plans for assisting patients and families to meet physical, psychological, and cognitive requirements for discharge or transfer. The nursing staff will prepare for these conferences by assessing the needs of their patients and families, as well as requirements for discharge or transfer.
5. If a patient is to be discharged/transferred to another institution, the responsible RN will complete the appropriate forms for transfer. The patient's medical record and the appropriate transfer information must accompany the patient on discharge/transfer.
6. Discharges will be documented on the Telemetry census via the computerized census log by the RN responsible for discharging the patient, or as delegated to the Unit clerk/assistant.
7. Discharge criteria from Telemetry Unit are:
    a. The patient's continuum of care needs are planned, finalized, and discharged with supportive care.
    b. The patient achieves independence from therapeutic measures performed by nursing or support services, unless continued at home with assistance.
    c. The patient achieves stable body systems and physiologic parameters.
    d. The patient achieves stable laboratory values that have a bearing on his diagnostics.
    e. The patient and his family have demonstrated coping abilities surrounding the illness or injury.
    f. The patient and his family have verbalized/demonstrated post discharge care and its implementation with or without assistance.
    g. The patient requires an alternative or lower level of nursing care and arrangements have been made for a discharge/transfer to another appropriate facility incorporating the patient's significant others.

D. Length of Stay

1. Generally, length of stay is determined by the patient’s physical and emotional status, and his ability to perform self-care as determined by the attending physician, rehab, and the nursing staff. Patients may be transferred to a higher or lower level of care to address individual patient needs.
2. A patient’s length of stay should be consistent with the average stay for Telemetry patients with similar conditions and acuity levels. The attending physician, the nursing staff, and the case manager will maintain quality care so that the patient can be discharged as early as possible.
3. All available resources should be used to facilitate a timely and appropriate discharge, for example, Social Services, weekly Care Conferences, daily interaction between the physician, nurses, family and

Case Manager. The Case Manager will assist with the discharge, coordination of efforts for timely and appropriate discharge, provided that the patient has been evaluated by the physician as outlined in the Medical Staff Bylaws.

4. All patients with extended lengths of stay will be identified by the Case Manager, Clinical Nurse Specialist, Charge Nurse, Nurse Manager, or Assistant Chief Nursing Officer, and evaluated by the Utilization Review nurse. Weekly and/or as needed care conferences shall determine priorities for these patients and plan their care or transfer accordingly.

5. The attending physician will document the justification for an extended length of stay in the patient's electronic medical record.

Approved by:

Critical Care Committee	Date: 02/18/14, 4/20/21
Medical Executive Committee	Date: 1/21/08, 03/17/14,
Board of Directors	Date: 2/13/08, 03/24/14

CRITERIA FOR REMOTE CARDIAC MONITORING ORDERS ON THE TELEMETRY & MEDICAL-SURGICAL UNITS

OVERVIEW

The purpose of this document is to outline a policy for the evidence-based use of cardiac monitoring as a diagnostic tool for the surveillance, intervention, and treatment of cardiac arrhythmias in hospitalized patients.

This document outlines specific patient populations/indications for which cardiac monitoring may be of the most benefit.

Remote cardiac monitoring may be implemented in the Telemetry unit and designated medical-surgical units. Appropriate bed selection is at the discretion of the nursing leadership team.

REQUIREMENTS

- Cardiac monitoring requires a physician order.
- Initial order for cardiac monitor may be 24 to 72 hours in duration, based on criteria as outlined in this policy.
- Order for cardiac monitor may be discontinued at any time, based on physician's discretion.
- If cardiac monitoring is not renewed after present order expires:
    - Patient still meeting criteria for cardiac monitor: nurse will maintain patient on cardiac monitor and consult attending physician for renewal order.
    - Patient does not meet criteria for cardiac monitor: nurse will inform attending physician that patient will be transferred to a non-monitored bed.
- All subsequent renewal orders must follow criteria as outlined in this policy.

CRITERIA

Group I (Order must be renewed, in writing in chart, after 72 hours or as needed).

	Syncope **combined** with one of the following: congestive heart failure, ventricular tachycardia, systolic blood pressure less than 90, heart block, heart rate less than 45/min., or greater than 120/min
	New asymptomatic second-degree (type II)
	New onset atrial fibrillation/flutter, uncontrolled (>120/min.) chronic atrial fibrillation/flutter with rapid ventricular response, or sustained ventricular tachycardia
	Post-operative patient with one of the following: angina, new EKG changes, positive pre-operative stress test (within past 30 days), systolic blood pressure less than 90, or heart rate greater than 130
	Post-operative major cardiac surgery (CABG, valve replacement)
	Initiation of antiarrhythmic medications (i.e., amiodarone, flecainide)
	Titration/adjustment of antiarrhythmic medications
	Drug toxicity, with arrhythmias
	External/epicardial pacemaker

Group II (Order must be renewed, in writing in chart, after 48 hours or as needed).

	Acute coronary syndromes
	EKG changes suspicious for ischemia, with or without chest pain
	Acute decompensated congestive heart failure (i.e., requires IV treatment)
	Unexplained syncope with normal physical exam, normal EKG, or previously normal echocardiogram
	Symptomatic bradycardia (heart rate less them 45/min.)
	Symptomatic tachycardia (heart rate sustaining greater than 120/min)
	Stroke/TIA

Group II (cont.) (Order must be renewed, in writing in chart, after 48 hours or as needed).

	Myocarditis or pericarditis, acute phase
	Status post cardiac or respiratory arrest (on current admission)
	Structural heart or coronary artery disease, awaiting revascularization or valve repair/replacement
	Cardiac contusion

Group III (Order must be renewed in writing in chart after 24 hours or as needed).

	Post coronary intervention (PCI)
	Post ablation or cardioversion
	Post pacemaker or AICD implantation
	Chronic, stable atrial fibrillation
	Patients with asymptomatic non-sustained ventricular tachycardia who are hospitalized for reasons other than cardiac or hemodynamic compromise
	New-onset angina in low- or intermediate-risk patients without EKG or enzyme changes
	Suspected pacemaker malfunction or AICD discharge
	Active upper or lower GI bleeding (i.e., Hgb < 8.0)
	Severe electrolyte imbalances, such as: - Hyperkalemia (i.e., >6.0 mEq/L with EKG changes (peaked T-waves of >6 PVCs/min) & IV intervention) - Hypokalemia (i.e., <3.0 mEq/L with >6 PVCs/min and IV therapy) - Hypomagnesemia (i.e., <1.5) - Acute Hyponatremia (i.e., <120 with symptoms)
	Drug toxicity with potentially arrhythmogenic compounds
	Sepsis/strong suspicion for infection (i.e., Lactic acid >4 and/or tachypnea >30)
	Acute exacerbation of COPD or CHF requiring BiPAP
	Post-operative patient with previous history of coronary artery bypass grafts(s) or percutaneous coronary intervention(s)
	Other: Physician must justify in notes

TRIAGING PATIENTS OFF CARDIAC MONITOR

- Patients whose underlying cardiac disease has been stabilized and who have had no arrhythmias. The ordering physician may be consulted for an order to discontinue cardiac monitor.
- Patients who have a terminal illness and who are not candidates for treatment of arrhythmias that may be detected. Many but not necessarily all patients with a do not resuscitate designation may fit into this category. The ordering physician may be consulted for an order to discontinue cardiac monitor.
- Patients with stable asymptomatic premature ventricular contractions that are hospitalized for reasons other than cardiac or hemodynamic compromise. The ordering physician may be consulted for an order to discontinue cardiac monitor.
- If the patient no longer meets criteria for cardiac monitoring, but the attending physician insists to continue/renew the order, the nurse will escalate the issue up the chain of command (refer to Numbered Memorandum #3-182).
- In the event that remote cardiac monitoring is ordered for more patients than the system is capable of handling, after all efforts to triage cardiac monitoring orders have failed, the nursing supervisor will notify the administrator on call (AOC) for further guidance.

REFERENCES:

Marin General Hospital. (2017). Housewide clinical manual: remote telemetry monitoring.

O'Connor Hospital. Telemetry ordering criteria.

Sandau, K. E., Funk, M., Auerbach, G. W., Blum, K., Lampert, R., May, J. L., … Wang, P. J. (2017). Update to practice standards for electrocardiographic monitoring in hospital settings. *Circulation, 136*(19), e273-e344.

Washington Hospital Healthcare System

S I N C E 1 9 4 8

Memorandum

DATE: July 27, 2021

TO: Kimberly Hartz, Chief Executive Officer

FROM: Ed Fayen, Executive Vice President and COO

SUBJECT: Capital Purchase – Replacement Computers for Washington Hospital

Support for Windows 7 has sunsetted. We are in need of upgrading our hospital computers to Windows 10. This will require a significant hardware upgrade.

We anticipated this in our FY2022 Capital Budget. We are requesting the purchase of 78 Lenovo workstations with associated monitors, software modules, and related hardware for the hospital. This purchase will amount to $102,232.98. This purchase represents over 50% of the hospital's "computer refresh budget" for FY2022.

In accordance with District Law, Policies, and Procedures, it is requested that the Board of Directors authorize the Chief Executive Officer to proceed with the purchase of the hospital replacement computers in the amount of $102,232.98.

Washington Hospital Healthcare System

S I N C E 1 9 4 8

Memorandum

DATE: July 27, 2021

TO: Kimberly Hartz, Chief Executive Officer

FROM: Ed Fayen, Executive Vice President and COO

SUBJECT: Capital Purchase – Washington Township Medical Foundation Computer Purchase

Windows 7 is no longer supported. We are in need of upgrading our WTMF computers to Windows 10. This will require a significant hardware upgrade.

WTMF has identified 27 Lenovo workstations with associated monitors, software modules, and related hardware for replacement in order to support Windows 10 software. This was anticipated in the FY2022 Capital Budget. This purchase will amount to $26,425.80.

In accordance with District Law, Policies, and Procedures, it is requested that the Board of Directors authorize the Chief Executive Officer to proceed with the purchase of the Washington Township Medical Foundation replacement computers in the amount of $26,425.80.

Washington Hospital Healthcare System

S I N C E 1 9 4 8

Memorandum

DATE: July 27, 2021

TO: Kimberly Hartz, Chief Executive Officer

FROM: Ed Fayen, Executive Vice President and COO

SUBJECT: Capital Purchase – Morris Hyman Critical Care Pavilion Privacy Curtains

When we opened Morris Hyman Critical Care Pavilion, cubicle curtains were purchased for all rooms with a limited number of replacement curtains. This was identified as an issue shortly after we opened in 2018.

We have budgeted for over 500 panels of privacy curtains in the FY2022 Fixed Asset Budget. The panels are needed so we are not utilizing disposable curtains when we are laundering patient curtains for individual rooms. Due to COVID-19 and patients presenting with other infectious diseases, the need for regular laundering has increased. This purchase will allow us to have replacement curtains on hand as we regularly remove privacy curtains for laundering.

The amount budgeted in FY2022 for privacy curtains is $201,824.41. The actual purchase price will be $136,424.64.

In accordance with District Law, Policies, and Procedures, it is requested that the Board of Directors authorize the Chief Executive Officer to proceed with the purchase of the privacy curtains for a total not to exceed $136,424.64.

Washington Hospital Healthcare System

S I N C E 1 9 4 8

Memorandum

DATE: **July 27, 2021**

TO: Kimberly Hartz, CEO
Ed Fayen, Executive VP and COO

FROM: John Lee, CIO

SUBJECT: Epic Healthy Planet

The Epic Healthy Planet module aggregates data from outside sources and combines patient information with real-time analytics. These features will coordinate care, manage risk-based agreements, and allow collaboration with patient care partners that are on different electronic health record systems.

After a thorough review of requirements for the California Quality Incentive Program (QIP), the Epic Healthy Planet module was selected by a team of operations and IT leaders. The plan is to use Healthy Planet to complement efforts already underway to track outcomes, perform interventions and report on outcomes for patients across multiple care settings. The project implementation will take approximately four months to complete. This Epic module will allow Washington Hospital Healthcare System to comply with all QIP requirements so that we could collect on over $5 million in incentive payments.

The Budget for this project is:

Contract Labor	$98,560
Epic Implementation Fees	$84,167
Project Management	$18,273
Total Cost	$201,000

In accordance with District Law, Policies and Procedures, it is requested that the Board of Directors authorize the Chief Executive Officer to enter into the necessary contracts and proceed with the purchase of the contractor and implementation services necessary for a total amount not to exceed **$201,000**. This is an approved project in the fiscal year 2022 Capital budget.

Washington Hospital Healthcare System

WASHINGTON HOSPITAL

MONTHLY OPERATING REPORT

June 2021

Washington Hospital Healthcare System

WASHINGTON HOSPITAL
INDEX TO BOARD FINANCIAL STATEMENTS
June 2021

Washington Hospital Healthcare System

SINCE 1948

Memorandum

DATE: August 4, 2021

TO: Board of Directors

FROM: Kimberly Hartz, Chief Executive Officer

SUBJECT: Washington Hospital – June 2021
Operating & Financial Activity

SUMMARY OF OPERATIONS – (Blue Schedules)

1. **Utilization – Schedule Board 3**

	June Actual	June Budget	Current 12 Month Avg.
ACUTE INPATIENT:			
Average Daily Census	139.5	141.7	149.6
# of Admissions	781	854	779
Patient Days	4,185	4,250	4,550
Discharge ALOS	5.63	4.98	5.82
OUTPATIENT:			
OP Visits	7,984	7,035	7,207
ER Visits	3,881	4,083	3,598
Observation Equivalent Days – OP	338	177	222

Comparison of June acute inpatient statistics to those of the budget showed a lower level of admissions and a lower level of patient days. The average length of stay (ALOS) based on discharged days was above budget. For the month of June, outpatient visits and outpatient observation equivalent days were both higher than budget, while Emergency Room visits were below budget.

2. **Staffing – Schedule Board 3**

Total paid FTEs were 23.6 above budget. Total productive FTEs for June were 1,257.1, 9.9 below the budgeted level of 1,267.0. Nonproductive FTEs were 33.5 above budget. Productive FTEs per adjusted occupied bed were 5.38, 0.29 below the budgeted level of 5.67. Total FTEs per adjusted occupied bed were 6.24, 0.17 below the budgeted level of 6.41.

3. **Income - Schedule Board 1**

For the month of June the Hospital realized income of $8,544,000 from operations.

Total Gross Patient Service Revenue of $ 186,636,000 for June was 8.7% above budget.

Deductions from Revenue of $146,009,000 represented 78.23% of Total Gross Patient Service Revenue. This percentage is above the budgeted amount of 77.70%, primarily due to contractual rates.

Total Operating Revenue of $41,122,000 was $2,510,000 (6.5%) above the budget.

Total Operating Expense of $32,578,000 was $7,229,000 (18.2%) below the budgeted amount.

The Total Non-Operating Loss of $608,000 for the month includes an unrealized loss on investments of $284,000 and property tax revenue of $1,447,000.

The Total Net Income for June was $7,936,000, which was $9,489,000 more than the budgeted loss of $1,553,000.

The Total Net Income for June using FASB accounting principles, in which the unrealized loss or income on investments, net interest expense on GO bonds and property tax revenues are removed from the non-operating income and expense, was $7,935,000 compared to a budgeted loss of $1,819,000.

4. **Balance Sheet – Schedule Board 2**

Of particular note in the June 2021 balance sheet is a new line between Other Assets and Other Investments for Prepaid Pension of $5,161,000. This prepaid pension amount is the result of our consistent funding into the plan combined with very favorable investment returns during calendar year 2020. As of June 2020, the balance sheet reflected a net pension liability of $31,798,000.

Other than that, there were no noteworthy changes in assets and liabilities when compared to May 2021.

KIMBERLY HARTZ
Chief Executive Officer

KH/CH

Washington Hospital Healthcare System

WASHINGTON HOSPITAL
STATEMENT OF REVENUES AND EXPENSES
June 2021
GASB FORMAT
(In thousands)

June ACTUAL	June BUDGET	June FAV (UNFAV) VAR	June % VAR.			YEAR TO DATE ACTUAL	YEAR TO DATE BUDGET	YEAR TO DATE FAV (UNFAV) VAR	YEAR TO DATE % VAR.
					OPERATING REVENUE				
$ 111,380	$ 108,763	$ 2,617	2.4%	1	INPATIENT REVENUE	$ 1,360,969	$ 1,287,254	$ 73,715	5.7%
75,256	62,899	12,357	19.6%	2	OUTPATIENT REVENUE	761,514	741,563	19,951	2.7%
186,636	**171,662**	**14,974**	8.7%	3	**TOTAL PATIENT REVENUE**	**2,122,483**	**2,028,817**	**93,666**	4.6%
(142,011)	(129,870)	(12,141)	-9.3%	4	CONTRACTUAL ALLOWANCES	(1,613,722)	(1,532,501)	(81,221)	-5.3%
(3,998)	(3,516)	(482)	-13.7%	5	PROVISION FOR DOUBTFUL ACCOUNTS	(39,991)	(41,558)	1,567	3.8%
(146,009)	**(133,386)**	**(12,623)**	-9.5%	6	**DEDUCTIONS FROM REVENUE**	**(1,653,713)**	**(1,574,059)**	**(79,654)**	-5.1%
78.23%	**77.70%**			7	**DEDUCTIONS AS % OF REVENUE**	**77.91%**	**77.59%**		
40,627	**38,276**	**2,351**	6.1%	8	**NET PATIENT REVENUE**	**468,770**	**454,758**	**14,012**	3.1%
495	336	159	47.3%	9	OTHER OPERATING INCOME	4,849	5,888	(1,039)	-17.6%
41,122	**38,612**	**2,510**	6.5%	10	**TOTAL OPERATING REVENUE**	**473,619**	**460,646**	**12,973**	2.8%
					OPERATING EXPENSES				
17,415	17,182	(233)	-1.4%	11	SALARIES & WAGES	222,017	205,493	(16,524)	-8.0%
(843)	6,645	7,488	112.7%	12	EMPLOYEE BENEFITS	69,037	78,511	9,474	12.1%
5,455	5,159	(296)	-5.7%	13	SUPPLIES	63,234	61,867	(1,367)	-2.2%
4,715	4,834	119	2.5%	14	PURCHASED SERVICES & PROF FEES	56,357	57,372	1,015	1.8%
1,765	1,838	73	4.0%	15	INSURANCE, UTILITIES & OTHER	20,805	20,290	(515)	-2.5%
4,071	4,149	78	1.9%	16	DEPRECIATION	47,918	48,762	844	1.7%
32,578	**39,807**	**7,229**	18.2%	17	**TOTAL OPERATING EXPENSE**	**479,368**	**472,295**	**(7,073)**	-1.5%
8,544	**(1,195)**	**9,739**	815.0%	18	**OPERATING INCOME (LOSS)**	**(5,749)**	**(11,649)**	**5,900**	50.6%
20.78%	**-3.09%**			19	**OPERATING INCOME MARGIN %**	**-1.21%**	**-2.53%**		
					NON-OPERATING INCOME & (EXPENSE)				
213	317	(104)	-32.8%	20	INVESTMENT INCOME	3,163	3,796	(633)	-16.7%
(122)	-	(122)	0.0%	21	REALIZED GAIN/(LOSS) ON INVESTMENTS	149	-	149	0.0%
(1,700)	(2,367)	667	28.2%	22	INTEREST EXPENSE	(21,508)	(25,712)	4,204	16.4%
(188)	288	(476)	-165.3%	23	RENTAL INCOME, NET	1,517	3,252	(1,735)	-53.4%
26	-	26	0.0%	24	FOUNDATION DONATION	2,990	-	2,990	0.0%
-	(39)	39	100.0%	25	BOND ISSUANCE COSTS	(718)	(465)	(253)	-54.4%
-	-	-	0.0%	26	FEDERAL GRANT REVENUE	1,069	-	1,069	0.0%
1,447	1,443	4	0.3%	27	PROPERTY TAX REVENUE	17,317	17,317	-	0.0%
(284)	-	(284)	0.0%	28	UNREALIZED GAIN/(LOSS) ON INVESTMENTS	(2,190)	-	(2,190)	0.0%
(608)	**(358)**	**(250)**	-69.8%	29	**TOTAL NON-OPERATING INCOME & EXPENSE**	**1,789**	**(1,812)**	**3,601**	198.7%
$ 7,936	**$ (1,553)**	**$ 9,489**	611.0%	30	**NET INCOME (LOSS)**	**$ (3,960)**	**$ (13,461)**	**$ 9,501**	70.6%
19.30%	**-4.02%**			31	**NET INCOME MARGIN %**	**-0.84%**	**-2.92%**		
$ 7,935	**$ (1,819)**	**$ 9,754**	536.2%	32	**NET INCOME (LOSS) USING FASB PRINCIPLES****	**$ (5,163)**	**$ (16,708)**	**$ 11,545**	69.1%
19.30%	**-4.71%**			33	**NET INCOME MARGIN %**	**-1.09%**	**-3.63%**		

******NET INCOME (FASB FORMAT) EXCLUDES PROPERTY TAX INCOME, NET INTEREST EXPENSE ON GO BONDS AND UNREALIZED GAIN(LOSS) ON INVESTMENTS

SCHEDULE BOARD 2

Washington Hospital Healthcare System

WASHINGTON HOSPITAL
BALANCE SHEET
June 2021
(In thousands)

	ASSETS AND DEFERRED OUTFLOWS	June 2021	Audited June 2020
	CURRENT ASSETS		
1	CASH & CASH EQUIVALENTS	$ 31,619	$ 68,355
2	ACCOUNTS REC NET OF ALLOWANCES	77,492	61,017
3	OTHER CURRENT ASSETS	12,052	12,523
4	TOTAL CURRENT ASSETS	121,163	141,895
	ASSETS LIMITED AS TO USE		
6	BOARD DESIGNATED FOR CAPITAL AND OTHER	215,928	214,744
7	REVENUE BOND FUNDS	6,643	10,923
8	BOND DEBT SERVICE FUNDS	32,763	31,387
9	OTHER ASSETS LIMITED AS TO USE	10,098	10,155
10	**TOTAL ASSETS LIMITED AS TO USE**	265,432	267,209
12	**OTHER ASSETS**	246,106	222,268
13	**PREPAID PENSION**	5,161	-
14	**OTHER INVESTMENTS**	12,163	11,679
15	**NET PROPERTY, PLANT & EQUIPMENT**	640,049	684,274
16	**TOTAL ASSETS**	**$ 1,290,074**	**$ 1,327,325**
17	**DEFERRED OUTFLOWS**	44,063	62,304
18	**TOTAL ASSETS AND DEFERRED OUTFLOWS**	**$ 1,334,137**	**$ 1,389,629**

	LIABILITIES, NET POSITION AND DEFERRED INFLOWS	June 2021	Audited June 2020
	CURRENT LIABILITIES		
1	CURRENT MATURITIES OF L/T OBLIG	$ 10,930	$ 9,500
2	ACCOUNTS PAYABLE	18,246	18,669
3	OTHER ACCRUED LIABILITIES	112,710	116,193
4	INTEREST	10,597	11,247
5	TOTAL CURRENT LIABILITIES	152,483	155,609
	LONG-TERM DEBT OBLIGATIONS		
6	REVENUE BONDS AND OTHER	211,490	223,881
7	GENERAL OBLIGATION BONDS	328,564	331,992
	OTHER LIABILITIES		
10	NET PENSION LIABILITY	-	31,798
11	SUPPLEMENTAL MEDICAL RETIREMENT	40,419	42,578
12	WORKERS' COMP AND OTHER	8,033	8,440
15	**NET POSITION**	527,874	531,834
16	**TOTAL LIABILITIES AND NET POSITION**	**$ 1,268,863**	**$ 1,326,132**
17	**DEFERRED INFLOWS**	65,274	63,497
18	**TOTAL LIABILITIES, NET POSITION AND DEFERRED INFLOWS**	**$ 1,334,137**	**$ 1,389,629**

Washington Hospital Healthcare System

WASHINGTON HOSPITAL
OPERATING INDICATORS
June 2021

12 MONTH AVERAGE	June ACTUAL	June BUDGET	June FAV (UNFAV) VAR	June % VAR.			YEAR TO DATE ACTUAL	YEAR TO DATE BUDGET	YEAR TO DATE FAV (UNFAV) VAR	YEAR TO DATE % VAR.
						PATIENTS IN HOSPITAL				
149.6	139.5	141.7	(2.2)	-2%	**1**	ADULT & PEDS AVERAGE DAILY CENSUS	149.6	141.3	8.3	6%
7.3	11.3	5.9	5.4	92%	**2**	OUTPT OBSERVATION AVERAGE DAILY CENSUS	7.3	5.6	1.7	30%
7.4	8.9	8.6	0.3	3%	**3**	NURSERY AVERAGE DAILY CENSUS	7.4	9.2	(1.8)	-20%
164.3	159.7	156.2	3.5	2%	**4**	TOTAL	164.3	156.1	8.2	5%
2.4	0.7	3.5	(2.8)	-80%	**5**	SPECIAL CARE NURSERY AVERAGE DAILY CENSUS *	2.4	3.5	(1.1)	-31%
4,550	4,185	4,250	(65)	-2%	**6**	ADULT & PEDS PATIENT DAYS	54,594	51,569	3,025	6%
222	338	177	161	91%	**7**	OBSERVATION EQUIVALENT DAYS - OP	2,659	2,062	597	29%
779	781	854	(73)	-9%	**8**	ADMISSIONS-ADULTS & PEDS	9,353	10,475	(1,122)	-11%
5.82	5.63	4.98	0.65	13%	**9**	AVERAGE LENGTH OF STAY-ADULTS & PEDS	5.82	4.92	0.90	18%
						OTHER KEY UTILIZATION STATISTICS				
1.632	1.638	1.539	0.099	6%	**10**	OVERALL CASE MIX INDEX (CMI)	1.632	1.484	0.148	10%
						SURGICAL CASES				
148	175	159	16	10%	**11**	JOINT REPLACEMENT CASES	1,777	1,922	(145)	-8%
22	18	20	(2)	-10%	**12**	NEUROSURGICAL CASES	266	250	16	6%
11	17	13	4	31%	**13**	CARDIAC SURGICAL CASES	129	129	-	0%
175	195	176	19	11%	**14**	OTHER SURGICAL CASES	2,100	2,170	(70)	-3%
356	405	368	37	10%	**15**	TOTAL CASES	4,272	4,471	(199)	-4%
193	217	210	7	3%	**16**	TOTAL CATH LAB CASES	2,316	2,343	(27)	-1%
115	132	123	9	7%	**17**	DELIVERIES	1,380	1,624	(244)	-15%
7,207	7,984	7,035	949	13%	**18**	OUTPATIENT VISITS	86,486	86,321	165	0%
3,598	3,881	4,083	(202)	-5%	**19**	EMERGENCY VISITS	43,174	48,454	(5,280)	-11%
						LABOR INDICATORS				
1,321.8	1,257.1	1,267.0	9.9	1%	**20**	PRODUCTIVE FTE'S	1,321.8	1,248.8	(73.0)	-6%
177.1	200.6	167.1	(33.5)	-20%	**21**	NON PRODUCTIVE FTE'S	177.1	176.5	(0.6)	0%
1,498.9	1,457.7	1,434.1	(23.6)	-2%	**22**	TOTAL FTE'S	1,498.9	1,425.3	(73.6)	-5%
5.67	5.38	5.67	0.29	5%	**23**	PRODUCTIVE FTE/ADJ. OCCUPIED BED	5.67	5.61	(0.06)	-1%
6.42	6.24	6.41	0.17	3%	**24**	TOTAL FTE/ADJ. OCCUPIED BED	6.42	6.40	(0.02)	0%

* included in Adult and Peds Average Daily Census