NSA General Medicine

Pre Admission:	
Admission room set up	Set up wall suction
Admission and Transfer:	
Height & Weight	Vitals including Pain
ALPS ON if necessary	Skin and wound check
Room orientation for new admit or transfer orientate patient to new surroundings and introduce GetWellNetwork videos.	

Report critical patient information to RN immediately:

- patient falls
- patient experiencing chest pain or shortness of breath
- new complaints of pain
- change in vital signs or vital signs outside of normal parameters (see normal section)
- presence of rash or unexplained swelling that could indicate a medication reaction

Report off Q shift

- Shift report from off-going NSA and on-coming NSA. Touch base with RN for quick report.
- Use the SBAR and proper technique for Purposeful Rounding.

Q15 min	**Suicide Precautions/Sitter** – EPIC documentation & review policy *PC104: Suicide Precautions for Patients*
Q 2 hours	**Non Violent Restraints –** EPIC documentation & review policy PC27 **Falls Prevention:** • Call light within reach, offer frequent toileting, supervised toileting, bed locked & in lowest position, assistive devices (glasses, walker) available to patients. Reinforce to patient/family need to call for assistance when toileting & ambulating, supervised toileting, Offer frequent toileting, use dim light at night. Bed alarm on for high risk. Purposeful Hourly rounding. Repositioning for bed bound patients: Turn and reposition
Q 4 hours	**Clinical Documentation / Data Validation**–DOCUMENTATION IN REAL TIME **Vital Signs (VS) and documenting in real time**. • Temperature (tympanic/NCIT) • Pulse • Respirations • Blood Pressure (Systolic/Diastolic) • Pulse Oximeter – NSA will demonstrate proper technique for obtaining Pulse Ox and proper documentation of results **Pain notification** – NSA will ask patient if they are in pain with every VS check and notify RN immediately if patient is in pain. **Cardiac**: Check on proper lead placement, stand-by & patient profiles **VTE** (ALPS): check to see if sleeves are right size for patient and equipment is on and working.
Q shift	**Daily Care:** Skin • Skin Care –use of skin care products: moisture barrier creams moisturizing creams foam soap

	anti-fungal cream use of skin care products • Report any skin changes to RN, such as rashes, redness, open areas, Swelling. Oral Care • Assist patients that are independent. • Provide care to patients that are not independent. Bathing: • Bed bath and **peri care** on patients who are unable to bathe themselves. Bed baths are to be administered daily and more often, as needed • CHG Baths-in collaboration with RN on patients with central lines Intake & Output collection and documentation • -po fluids measurement (30 ml = 1 ounce) • -emptying Foleys, ostomies, approved drains Patient Mobility • NSA will demonstrate proper technique for ambulating and turning patients • Ambulation – if patient has order to ambulate, patient must ambulate in hall Turn patients on bedrest q 2hrs
As ordered by physician (AC/HS or q6hr usually)	**Check blood glucose using glucometer and document as determined by order** Collaborate with RN the plan of care (i.e, meal delivery, timing of glucoscan check, and insulin administration by the RN) • Notify RN immediately if glucoscan is outside of normal range: Normal adult/ped range: 76-120 mg/dl • Critical values of <40 and >500 mg/dl must be immediately rechecked & RN notified
PRN	• Kanban System/supply room -demonstrate proper usage of the Kanban System within the unit's supply room. • Update and review and white board in patient's room. • Specimen Collection –obtaining specimens and proper labeling of specimens

Normal ADULT Vital Signs

Temperature (tympanic/NCIT):	**36.5C – 37.5C**
Pulse:	**60-100 beats/minute**
Respirations:	**12-20 /minutes**
Blood Pressure:	**Systolic 110 - 150 (mm Hg)**
	Diastolic 60 – 80 (mm Hg)

I & O Conversions

1 ounce (oz)	**= 30 mL**	
4 oz	**= 120 mL**	
8 oz	**= 240 mL**	
1 cup	**=8 oz**	**= 240 mL**

AT THE FOREFRONT
UChicago Medicine

TIP SHEET: Intravenous Immune Globulin (IVIG) Administration

Indications

- Primary immunodeficiency disorders
- Guillian-Barre
- Multiple sclerosis
- Idiopathic Thrombocytopenia Purpura (ITP)
- Autoimmune hemolytic anemia and neutropenia
- Autoimmune disorder
- Humoral rejection in solid organ transplant
- Desensitization prior to solid organ transplant
- CMV + with resistance to ganciclovir and post ALLO Stem Cell Transplant
- CLL and other Lymphoproliferative disorders with hypogammoglobulinemia
- CAR-T patients with hypogammoglonulinemia
- Kawasaki disease
- Pediatric HIV
- Refractory dermatomyositis
- Refractory polymyositis
- Chronic inflammatory demyelinating polyneuropathy

Mechanism of Action

- Replacement therapy for primary and secondary immunodeficiency, and IgG antibodies against bacteria, viral, parasitic and mycoplasma antigens.
- Interference with Fc receptors on the cells of the reticuloendothelial system for autoimmune cytopenias and ITP.
- Provides passive immunity by increasing the antibody titer and antigen-antibody reaction potential.

Onset of Action

- Provides immediate antibody levels
- Immune thrombocytopenia: Initial response: 1 to 3 days; Peak response: 2 to 7 days (Neunert 2011)

Duration

- Immune effects for 3-4 weeks

AT THE FOREFRONT
UChicago Medicine

Administration Instructions

Prior to Administration:

- Assess for prior IVIG use and reactions.
- Assess live virus vaccination; IVIG can interfere with live virus vaccines.
- Assess for cardiac and lung disease. Administer at the lowest possible rate in compromised patients.
- Always check LexiComp and UCMC Formulary when administering any medications unfamiliar to you.

Contraindications:

- Renal Failure or rapidly progressing renal disease.
- Dehydration
- Known anaphylactic or severe hypersensitivity to IVIG.
- Selective IgA deficiency with circulating antibodies to IgA

Dose/Frequency:

- Range from 200-1000 mg/kg/day for 1-5 days of therapy. **Dosing is based on ideal body weight or actual if less than ideal and then rounded to the nearest vial size.**
- IVIG is prepared and dispensed by the pharmacy in a 10% concentration.
- Orders should state specifically if either sucrose-stabilized or non-sucrose containing product.
    - **Patients at a high risk of renal failure should ***not*** receive the sucrose based product. The following patients are considered high risk:**
        - Solid organ transplant
        - Renal insufficiency GFR (<60 ml/min or elevated BUN)
        - Volume depleted
        - Age >65
        - Receiving other nephrotoxic medications
        - Diabetic
        - Septic
        - Paraproteinemia

Pre-medications:

- Administer 30 min prior
    - Benadryl
    - Tylenol
    - May need to repeat if a long infusion (over 3 hrs)
- Prophylactic administrations of glucocorticoids may be given if there is a history of infusion-related side effects:
    - Hydrocortisone 100mg IV

- Ensure adequate hydration
- Non-ambulatory patients should have a prophylactic VTE medication.

Infusion:

- Room temperature
- 10% solution at 0.5ml/kg/hr. for 30 min, increased by 0.5ml/kg/hour every 30 min as tolerated, to a maximum rate of 5 ml/kg/hour.
- **DO NOT** exceed maximum rate of 2ml/mg/hour in patients at high risk of renal impairment or thrombosis.
- Infusion usually takes 4-10 hrs. depending on the dose.
- Infuse on a separate line. Do not infuse or mix with other medications.
- Baxter pump infusion name: Immune Globulin (must infuse under correct infusion library)

Monitoring:

- Vital signs pre-, with each rate increase, hourly after reaching max rate, and then post-infusion.
- Check serum creatinine and BUN prior to infusion and then daily after infusion.
- Check pre-CBC prior to infusion
- Daily Weight
- Strict I/O

Reactions:

STOP THE INFUSION, MAINTAIN IV ACCESS, AND NOTIFY THE PHYSICIAN IMMEDIATELY IF ANY OF THE BELOW REACTIONS OCCUR:

- Headache
- Fever, chills, rigors
- Nausea/Vomiting
- Joint or muscle pain
- Flushing
- Chest tightness
- Irritation at the infusion site
- SOB, Wheezing
- Hives

Rapid Response Team (RRT)

RRT purpose

- To provide early and rapid intervention to clinically unstable or deteriorating patients located outside of critical care capable areas, but within the Medical Center

Activating an RRT

- Activate an RRT when a patient's condition is felt to be clinically unstable or deteriorating. This may be a respiratory, cardiovascular, neurological, or other medical change in the patient's condition. Triggers include:

Respiratory:
- ✓ Respiratory Depression
- ✓ Tachypnea
- ✓ Difficulty breathing
- ✓ Bleeding into airway
- ✓ Decreased oxygen saturation
- ✓ Reversal agent without immediate response (e.g., naloxone/Narcan, flumazenil/Romazicon, neostigmine/Prostigmin)

Cardiac:
- ✓ Bradycardia
- ✓ Tachycardia
- ✓ Hypotension
- ✓ Symptomatic Hypertension
- ✓ Chest pain

Neurological:
- ✓ Mental status change
- ✓ Acute Loss of Consciousness (LOC)
- ✓ Seizure
- ✓ Suspected acute stroke
- ✓ Unexplained agitation or delirium

Medical:
- ✓ Uncontrolled bleeding
- ✓ Rising lactate to > 4 mEq/L
- ✓ Acute decrease in urine output

Other:
- ✓ Staff member worried about patient
- ✓ Greater than 1 stat page required to summon patients primary team for acute problem
- ✓ Uncontrolled pain

- Dial **1-4-7** and provide the operator with the patient's location (unit, room, and phone number).
- Notify the primary service via paging system at the same time if not already present at the bedside.
  - ➢ The RRT can be called for patients with a DNAR (Do Not Attempt Resuscitation) order. The primary nurse should inform the RRT of the patient's code status upon arrival.
  - ➢ The RRT should not be called for patients with a comfort care order.
  - ➢ An RRT should not be called to assist with a transfer or placement of an IV

RRT Members

- ✓ Critical Care Outreach Nurse- **will respond within 15 minutes.**
- ✓ Respiratory therapist
- ✓ Pharmacist
- ✓ Primary Service physician
- ✓ You!
- ✓ Critical Care Outreach Nurse Back up- MICU Attending/Hospitalist carrying the 9000 pager

- ❖ Call early- if your patient's status has deviated from previous assessment or report; **Don't Wait-Activate!**
- ❖ Call often-there is no harm in activating an RRT. As a matter of fact, you just bought yourself an extra set of nursing eyes on your patient! As a Critical Care Outreach Nurse, I add RRT activations to our patient rounding list and check in on them throughout your shift!

DATE	ROOM	TIME PATIENT FOUND AM/PM	DIAGNOSIS	PRIMARY SERVICE AT TIME OF ARREST	PATIENT ADDRESSOGRAPH

CHEST COMPRESSIONS INITIATED AT _____ AM/PM

BACK BOARD PLACED AT _____ AM/PM

VENTILATON INITIATED AT _____ AM/PM

MOUTH TO MOUTH/BAG & MASK _____ AM/PM

INTUBATED AT _____ AM/PM

	VITAL SIGNS						PUSH DRUGS										IV DRIP DRUGS (Conc/Dose)										PROCEDURES				
TIME	HR/PULSE	RHYTHM	BP	PULSE OX	DEFIB ENERGY	TIME	ADENOSINE	AMIODARONE	ATROPINE	CAL. CHLORIDE	EPINEPHRINE	LIDOCAINE	MAG. SULFATE	$NAHCO_3$	VASOPRESSIN	OTHER	TIME	AMIODARONE	DOBUTAMINE	DOPAMINE	EPINEPHRINE	LIDOCAINE	NOREPI	PROCAINAMIDE	VASOPRESSIN	OTHER	BLOOD DRAW	TIME	COMMENT		
																											CENTRAL LINE/IV PLACED				
																											CHEST TUBE INSERTED				
																											FOLEY				
																											NG INSERTED				
																											OPEN CHEST				
																											OTHER				
																											PACING				
																											PERICARDIO -CENTESIS				
																											ABGs	Ph	PO_2	PCO_2	K'
																											Time				

COMMENTS:	TIME RESUSCITATION ENDED: AM/PM	OUTCOME:
Dr. Cart Signature:		RECORDER:
Team Members:		

78.35 R11/02

Pink - Pharmacy
White - Patient Record

AT THE FOREFRONT
UChicago Medicine

The Center for Nursing Professional Practice and Research

Specialty Assessments: TR bands

Question:

What is TR band?

TR band is a compression device designed to assist haemostasis of the radial artery after a transradial procedure.

Question:

What is the UCMC expectation for the assessment of TR bands?

- Monitor continuous pulse ox on the thumb with the TR band to ensure perfusion through the radial artery.
- After 2-4 hours the air in the cuff is slowly removed per protocol until hemostasis is achieved and the band is removed.
    - TR band removal begins after 2 hours for non-intervention and after 4 hours for intervention procedures. The MD's post-procedure orders should specify the appropriate instructions to follow. See examples below:

Procedure Instructions: Trans-Radial Band Removal (Non-Intervention) [305053] Start: 01/31/17 1224, UNTIL SPECIFIED, ROUTINE

Question	Answer	Comment
Procedure:	Trans-Radial Band Removal (Non-Intervention)	
Instruction 1:	Withdraw 5 mL air after 2 hours. If no bleeding please repeat process every five minutes until balloon is fully deflated.	
Instruction 2:	If bleeding occurs, re-inject 5 mL of air, wait 30 min and withdraw 5 mL of air again. Repeat until 5 mL is removed	
Instruction 3:	Remove arm band and observe for 30 min. Hold pressure and call fellow if re-bleeds.	
Instruction 4:	When band is completely removed - please apply occlusive dressing to site	

Procedure Instructions: Trans-Radial Band Removal (Intervention) [305054] Start: 01/31/17 1224, UNTIL SPECIFIED, ROUTINE

Question	Answer	Comment
Procedure:	Procedure Instructions: Trans-Radial Band Removal (Intervention)	
Instruction 1:	Withdraw 5 mL air after 4 hours. If no bleeding please repeat process every five minutes until balloon is fully deflated.	
Instruction 2:	If bleeding occurs, re-inject 5 mL of air, wait 30 min and withdraw 5mL of air again. Repeat until 5 mL is removed.	
Instruction 3:	After 30 min, repeat steps 1 and 2	
Instruction 4:	Remove arm band and observe for 30 min. Hold pressure and call fellow if re-bleeds.	
Instruction 5:	When band is completely removed - please apply occlusive dressing to site	

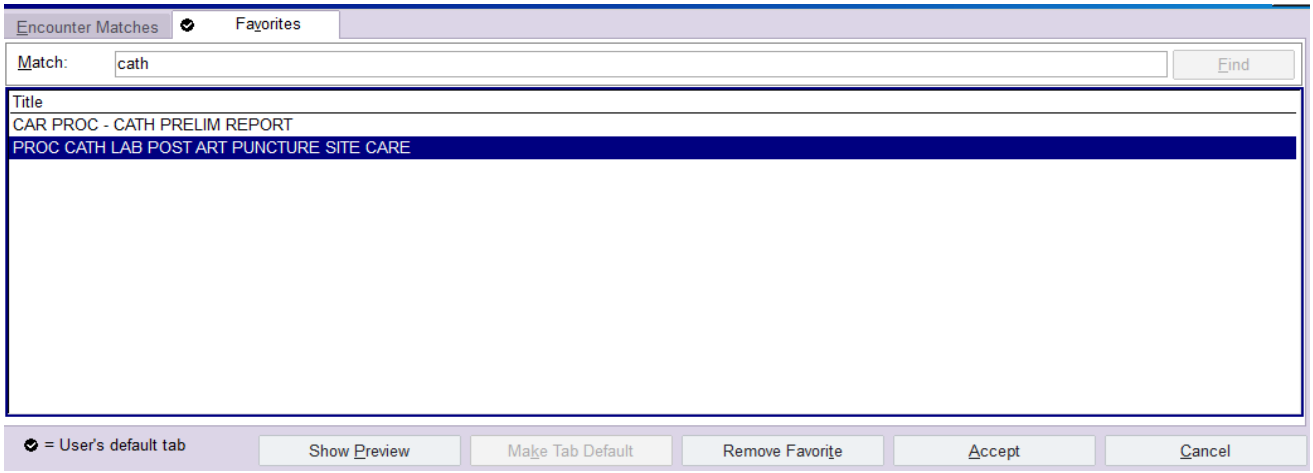
- Only a specific syringe can be used to aspirate air.

  When aspirating air, apply your thumb on the plunger to avoid abrupt deflation of the balloon.

Things to watch for include….

- Hematoma
- Psuedoaneursym
- Bleeding
- Acute occlusion of the vessel/thrombosis
- Radial artery spasm

<u>For additional information related to assessments of patients with TR bands</u>
Search Cath-Lab Post ART puncture site care order set



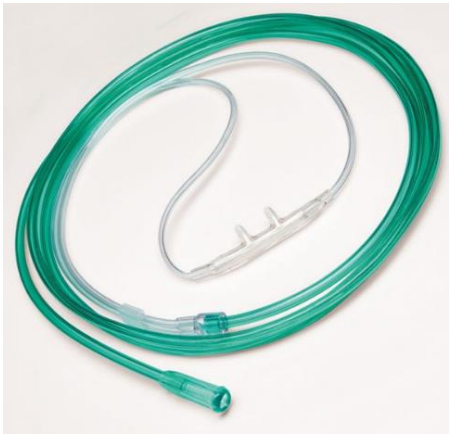
THE UNIVERSITY OF CHICAGO
Respiratory Care Services

Adult O2 Device Tip Sheet

Low Flow Nasal Cannula:

Flow Range 0.25 -6 LPM

Apply humidification when using > 4 LPM



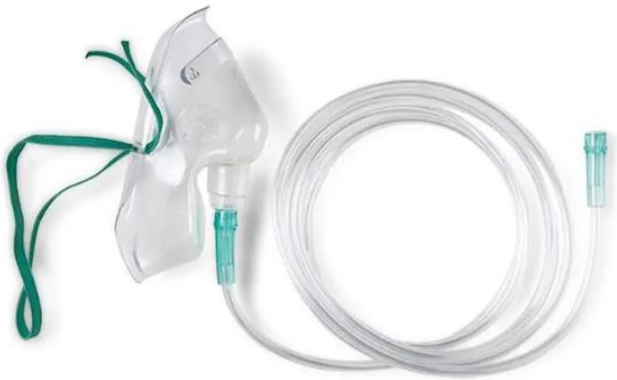
"High Flow: Nasal Cannula:

Flow Range 6-15 LPM

Apply humidification when in use. Ensure bubble humidifier used supports > 6 LPM, (there are two sizes)

FiO2: 45-80%

*** Typically used in adult patients with higher *baseline* LPM needs. For example, if an end-stage pulmonary fibrosis patient wore 8LPM at home, this device could be used to meet their home regimen O2 needs.



Simple Mask:

Flow Range 5-10 LPM

FiO2: 35-50%

Use device per IFUs. Ideal for patient who is "mouth-breathing" or can only tolerate blow-by. No less than 5 LPM due to **high** risk of rebreathing CO2. Set flow between 5-10 LPM to achieve targeted SpO2 goal.

THE UNIVERSITY OF CHICAGO
Respiratory Care Services

Adult O2 Device Tip Sheet

Venturi Mask:

Flow Range 3-16 LPM

FiO2: 28-50%

Use device per IFUs. Turn arrow to FiO2 that you want to deliver, then match the corresponding LPM printed above setting to achieve FiO2. If titrated always adjust **BOTH** LPM and FiO2 together. Ideal for patient who is "mouth-breathing". You can set and deliver a specific FiO2 with this mask versus just LPM (simple mask).

***MOST* frequently used with a trach collar (instead of aerosol mask) as the O2 delivery device for the transport of a stable trach patient.**

If your pt requires this device, set appropriate LPM for device/pt's FiO2 needs and call a RRT!

Non-Rebreather Mask:

Flow Range 10-15 LPM

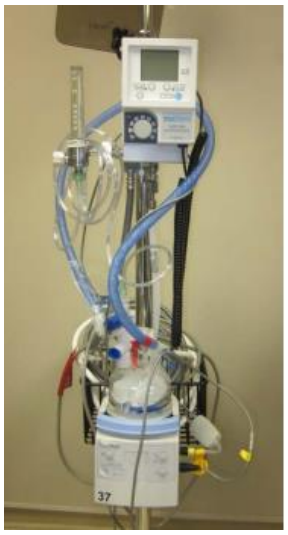
FiO2: 60-100%

Use device per IFUs. Use during airway emergency, short term therapy until pt transfers to ICU. **NO** less than **15 LPM** for ADULTS due to VERY **high** risk of rebreathing CO2.

***Has one-way valve on each side of interface compared to partial-rebreather mask, allows higher FiO2 delivery.**

THE UNIVERSITY OF CHICAGO
Respiratory Care Services

Adult O2 Device Tip Sheet



Heated and Humidified High Flow Nasal Cannula:

Flow Range 1-60 LPM (depending on interface used, see attachment A for specifics.

FiO2: 21-100%

Pts CANNOT be on this device while on the adult medical floors in Mitchell. They must be transferred to ICU.

1

2

3

(1) Aerosol mask- can be cool or heated aerosol.
(2) Face tent- use with cool aerosol (upper airway/facial swelling)
(3) Trach collar- use with heated aerosol for surgical airways

All devices can provide 28-90%. Select device per pt condition. Use Venturi system on LVN (large volume nebulizer) for cool or aerosol pole with blender for heated aerosol.

THE UNIVERSITY OF CHICAGO
Respiratory Care Services

Adult O2 Device Tip Sheet

eCART Overview

eCART, Electronic Cardiac Arrest Risk Triage, is a predictive software tool embedded inside Epic that can identify patients at risk of clinical deterioration, with the goal of facilitating care management and halting progression of a medical crisis.

eCART NURSE WORKFLOW

Step 1: Review Epic Patient List at least every 4 hours

Step 2: For all **high** or **moderate risk patients**, double click to review the eCART Detail View:

- If *new* to you, follow the Nurse Pathway and document disposition
- If *known* to you, document disposition status

*If a **comfort care order** has been officially filed, you are not required to continue management through eCART*

eCART RISK STRATIFICATION

Patients are automatically and continuously stratified using their vitals signs and laboratory values into high, moderate, and average risk.

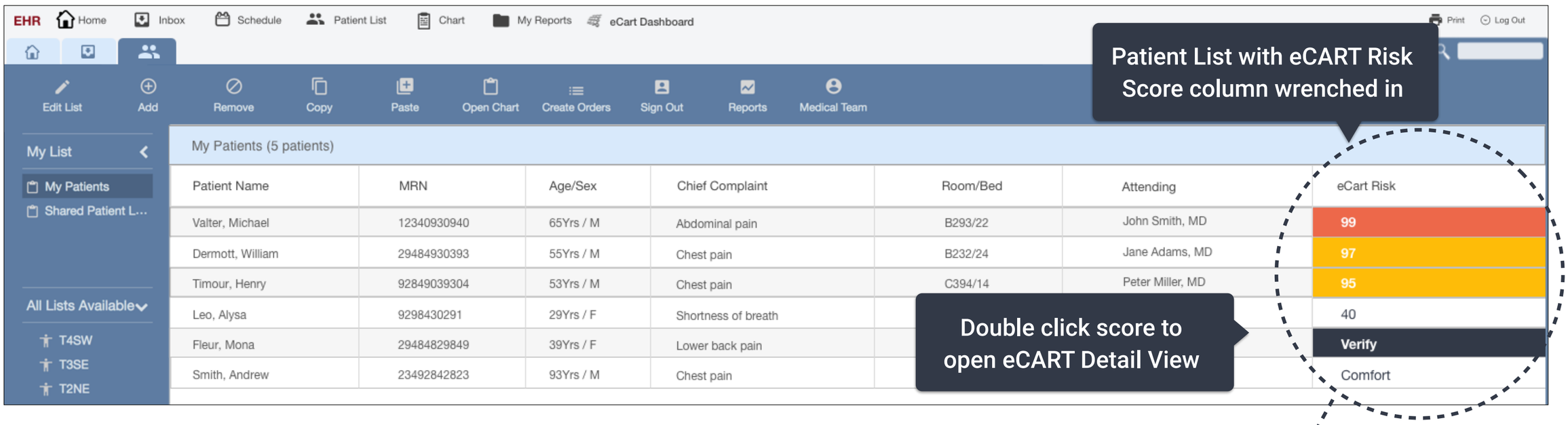
High risk (100 - 97)

Moderate risk (96 - 93)

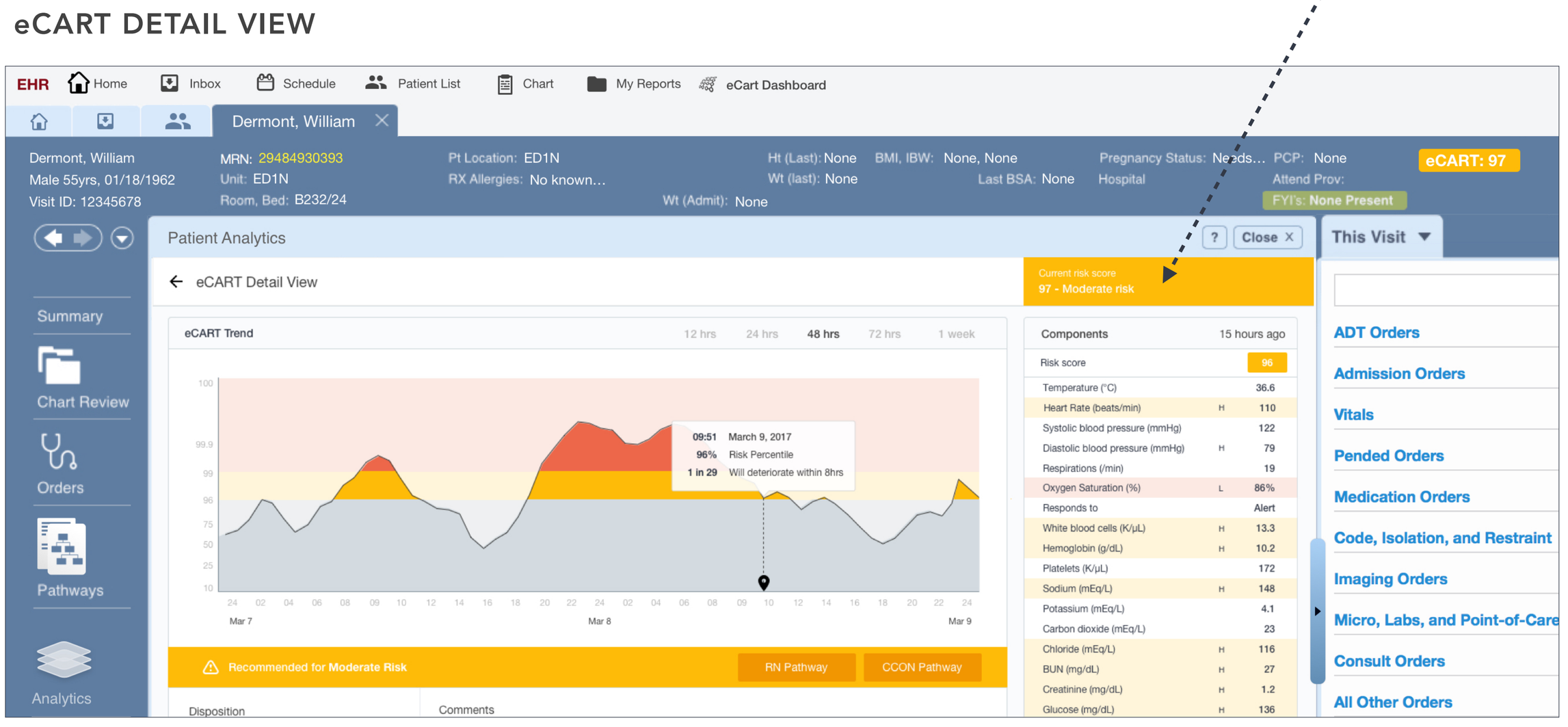
Average risk (<92)

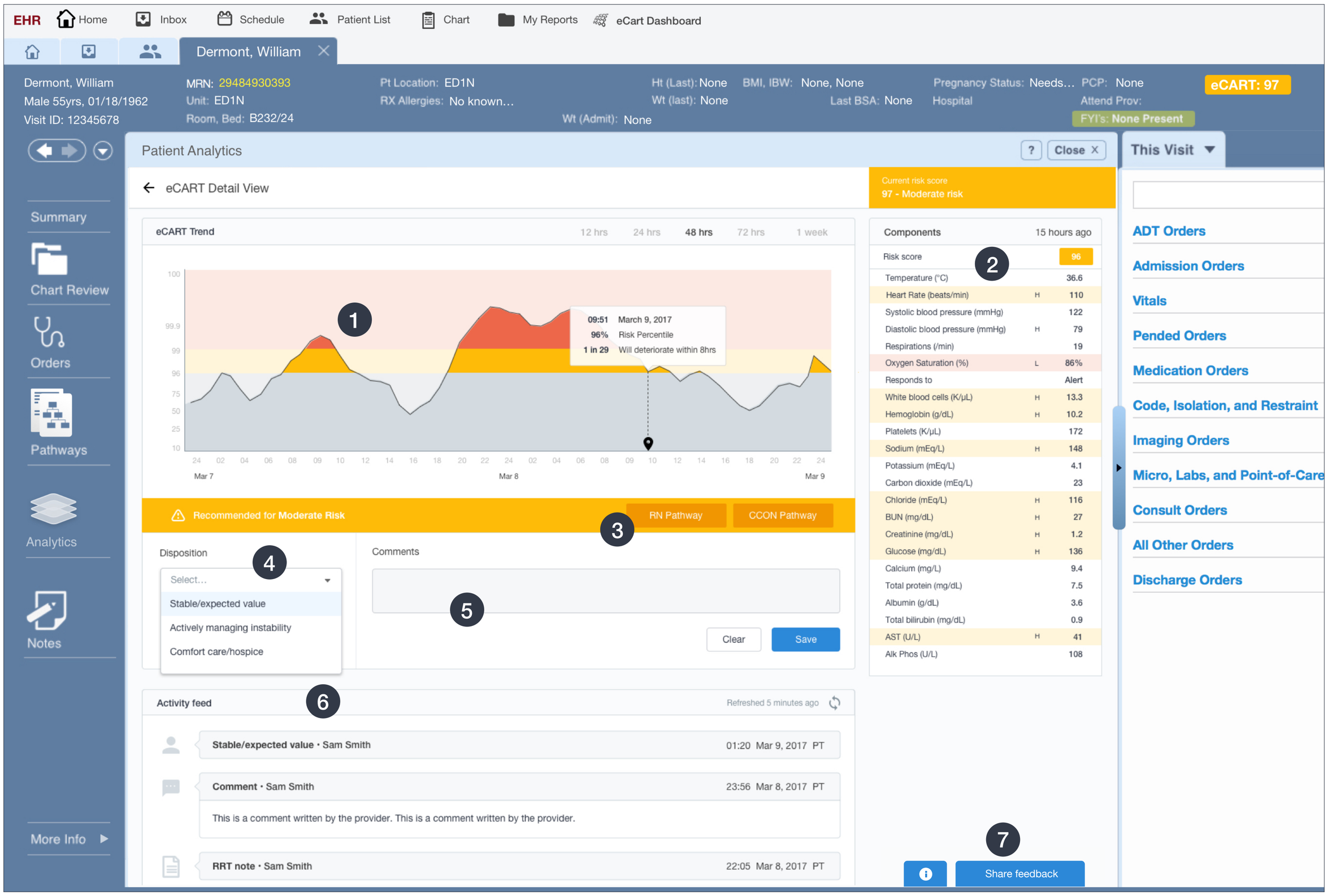
If a black **Verify (-)** appears for your patient, it indicates that one or more vital signs are outside normal physiologic ranges, and data should be corrected in the EHR.

PATIENT LIST VIEW



eCART DETAIL VIEW





1 Hover over trend to see eCART over time

2 Review contributing vitals/labs over time

3 Select RN Pathway for assessment/management

The first time a patient is elevated in your shift, enter the RN Pathway and follow the prompts to enter a manual respiratory rate (e.g. not just 18) and a GCS and screen for sepsis. These will file to flowsheet rows in Epic. On subsequent elevations during the same shift, repeat the Pathway if clinically worsening.

4 Disposition Status

A physician, rapid response provider or nurse may designate a disposition status to further characterize as:

- **Stable/expected value** → Indicates the elevated score is not cause for concern
- **Actively managing instability** → Indicates that the patient is in fact higher risk but is being adequately managed
- **Hospice/comfort care** → Indicates patient is in hospice or comfort care

5 Comment field

Add comments to facilitate shift to shift and interdisciplinary care. eCART notes are NOT a part of the EHR; need for full documentation of notes and medical decision making within Epic still remains.

6 Track status updates on the activity feed

Review historical dispositions, comments and actions in the Activity Feed to facilitate shift to shift and interdisciplinary care.

7 Click to enter feedback or comments

For urgent issues involving patient care, call the Rapid Response Team at 147. For IT issues, call UCM IT Service Desk at 2-3456.

Non-urgent comments or suggestions can be shared via the Feedback tab in the bottom right, and they will be sent to the Adult Inpatient Sepsis Task Force.

AgileMD

Cardiology: Cardiac Cath & Sheaths

July 2016

Do's & Don'ts of Sheath Care

- Do not allow your patient to ambulate with a sheath
- Do keep head of bed 30 degrees or less
- Do not connect arterial sheath to pressure bag
- Do keep dressing in place- fellow will remove when ACT < 180
- Do have suture removal kit, gauze and tegaderm at the bedside
- Do call with any questions or concerns:

Cardiac Cath Carge RN: 68757

Janet Friant: 7271 **CCU fellow: 3228**

THE UNIVERSITY OF CHICAGO MEDICINE

Length of Bedrest

Venous sheaths

- Bedrest – 2 hours. If received anticoagulation – 4 hours

Arterial sheaths

- Angioseal- 2 hours, Boomerang- 2 – 3 hours, Perclose- 2 hours, Manual pressure- 6 hours (bedrest starts when sheath removed) if bleeding or complications, length of bedrest may be extended

Radial Access

- TR Band. 2 hours if no anticoagulation, 4 hours if received anticoagulation. Bedrest for 2 hours after case (to allow sedation to wear off)

Possible Complications after Invasive Cardiac Procedures:

**change in assessment of pulses may be first clue of complication

Myocardial Infarction	Stroke
Allergic reaction	Arrhythmias
Infection at access site	Vasovagal
Contrast Induced Neuropathy	Hematoma
Pseudoaneurism	A/V fistula
Retroperitoneal Bleed	Thrombus

TR Band Tips

- Monitor continuous pulse ox on the thumb to ensure perfusion through radial artery
- **Sudden and consistent low pulse ox reading may be a vascular emergency. Notify MD immediately**
- After 2-4 hours the air in the cuff is slowly removed per protocol until hemostasis is achieved, and the band is removed.
- TR band removal begins after 2 hours for non-intervention, and after 4 hours for intervention procedures
- MD post-procedure orders should specify appropriate instructions to follow
- Only a specific syringe can be used to aspirate air. Call the Cath lab charge nurse to obtain a syringe if needed

Resources

Cath lab charge nurse 6-8757
Janet Karol APN pager 7271 (days)
CCU Fellow pager 3228 (evenings and weekends)

Unit Documentation & Workflows – Adult Floor

Admission Tasks/Charting	**Within 1 hour**: Height and Weight, Full Assessment including skin, VS & Pain assessment, Nursing note, VTE, eCART **Within 24 hours**: Needs Assessment, Initiate patient education and plan of care, CDiff Screen, GetWellNetwork videos: pain, fall, discharge
Discharge Tasks/Charting	Print: Discharge checklist, After Visit Summary, Summary of Care. Complete Patient Education & Plan of Care. WALDO-remove lines/drains as appropriate
Q15 minutes	**Violent Restraints, suicide patient**
Q2 Hour	**Non Violent Restraints** **Daily Care:** Braden skin interventions (including turning/repositioning)
Q 4 Hour	**Vital Signs** (HR, BP, RR, SpO2, Temp) **eCART** complete RN pathway for patients with elevated eCART scores o yellow and red flagged patients **Focused Assessments** (neuro assessments for stroke patients) **Pain Assessment:** (Policy# PC 151) o Complete if patient is at or below goal pain score o Requires **reassessment** and documentation within 60 minutes of intervention if required **Telemetry Documentation**(Policy# PC 211) o Review and document: Rhythm, Alarms, High/Low HR parameters **WALDO: Peripheral IV & Central Line** (Policy# PC 118) o site assessment for placement, patency, and signs of infiltration o extravasation **every 1 to 4 hours and PRN** depending on infuscate **VTE (ALPS)**
Q Shift 12 hours Shift to be considered any period of patient care.	**Head to Toe Assessment, baseline** Ongoing Assessment to be done as pt. condition warrants and/or as ordered **Fall Risk** assessment and precautions (Policy# PC 149) **Telemetry Documentation** (Policy# PC 211) o Interpret EKG strip: PR, QRS, QT, HR, rhythm o If changes to rhythm, a new strip with interpretation is required **eCART Score and Disposition** o Document by 0900/2100, transfer/admission, <1hr status change **Specialty Care:** Delirium Screening, chest tube, VAD, c collar, trach, flap **Patient Education** (Policy# PC 157) **Interdisciplinary Plan of Care with nursing note** for topics in which 'progressing' or 'not progressing' are selected (Policy #N1505) **Daily Care:** o **Braden Scale** (refer to Policy# PC 159) **WALDO Flowsheet** o Wound/Ostomy/Drain/Dressing assessed and documented **Intake & Output -** Ongoing and totaled at the end of 12 hour shift **Ambulation** o AM-PAC score (needs assessment and daily assessment) o Activity & Level Walk Distance documented per walk (daily care tab)
Daily for central line	o **CHG bath** all patients with a central line, unless contraindicated (allergy).
Nursing Note is required	o **New pt. condition** o **Acute change in pt. condition** o **Significant event** o **Interdisciplinary Plan of Care (IPOC)** for topics for which 'progressing' or 'not progressing' are selected (Policy# N1505)

Q 96 Hours (4 Days)	○ IV tubing and needleless caps/claves changed and documented in WALDO flowsheet
Q Sunday	**Central line dressings** (including Port and PICC) changed *every* Sunday and PRN (unless tape/gauze dressing, which requires change Q48 hours - refer to policy# PC 230, "Central Vascular Access Device") **Port Needle change** (along with dressing)
Q Wednesday	"**Wound Wednesday**"-comprehensive assessment (complete all applicable WALDO fields including measurements) of all acute and chronic wounds
PRN	• All documentation may require more frequent documentation than specified by policy depending upon the changing patient condition. • Document all narcotic wastes including IV push, PCA, Epidural • New assessment surrounding significant events (new wound, fall)

Stroke documentation: Q4 hour neuro checks and vital signs, swallow screen complete before PO meds/food, Plan of Care and Education section complete for the type of stroke

More frequent assessments needed for certain situations, follow the order set and in EPIC:

- Post heart cath (site and circulation checks q15min x 4, q30min x2, q1hr x4, then q4hr)
- PCA initiation (respiration, sedation, pain q15min x4, q1hr x4, q2hr x4, then q4hr or PRN)
    - Change in dose q1hr x2 then routine/Bolus dose q15 x2 then routine
- Epidural initiation (respiration, sedation, pain, O2 q1hr x24, then q4hr or PRN if stable)
    - Change in dose/Bolus dose q1hr x4
- Blood administration (vitals at start, at 15minutes, and at end)

Frequently given medications/treatments that require Dual Sign-Off:

- Heparin drip, insulin, PCA, epidural, TPN

High Risk Fall Precautions

- Verify that bed/chair alarm is engaged!
- Appropriate signage
- Fall Arm band

Telemetry Alarms (Policy Name: Inpatient Adult Cardiac Monitoring #PC 211)

- Red alarms require assessment of the patient within 1 minute and include the following:
    - VFib, Vtach, Asystole, extreme tachy, extreme brady, pulse ox <85%
- Yellow alarms require assessment of the patient and include:
    - Irregular HR
    - R on T PVC
    - Pacer non-capture or non-pace
    - AFib
    - PVC rate >10, Multiform PVCs
    - SVT > 180

Labs

- Nurses perform all central line blood draws
- Phlebotomy team or the nurse performs peripheral blood draws

University of Chicago Medical Center
ICU Documentation Requirements

*This document provides a summary of UCMC procedure as specified in policy PC128

Upon Admission & Transfer	○ Height & Weight (within 1 hour) ○ Head to Toe Assessment w/ Vitals including Pain Assessment ○ Skin Assessment (within 12 hours) ○ Screen for new or worsening infection ○ Patient Admission Needs Assessment (within 24 hours) ○ Patient Educational Needs Assessment (within 24 hours) ○ Interdisciplinary Plan of Care (IPOC, within 24 hours) ○ Get Well Network education videos (pain, fall, discharge) ○ Nursing Note is required ○ "Patient Change in Location" row completed when transferring or during roadtrips
Q 1 Hour	○ Telemetry visually reviewed for changes from baseline rhythm ○ Vital Signs ○ Pain assessment ○ Richmond Agitation Sedation Scale with narcotic or sedation ○ Intake/Output ○ CVVHD numbers ○ Oxygen/Ventilator settings ○ One Hour daily care as appropriate ○ Unit/patient specific documentation (BS, Neuro checks, pulses, etc.)
Q 2 Hour	○ Restraint documentation
Q 4 Hour	○ Ongoing Assessment • Please note that the "no change (NC)" selection may only be used by the same RN as identified by RNs initial head to toe assessment at start of the shift. ○ Telemetry Documentation (refer to policy N1401E) ○ Rhythm, alarm review, HR parameters ○ "no change" when appropriate ○ Waldo Flowsheet- IV site assessment for placement, patency, and signs of infiltration or extravasation **every** 1 to 4 hours and PRN depending on infusate (refer to policy PC231, "Peripheral Vascular Access Devices") ○ Central line assessment and documentation
Q Shift *(Of any length, a "shift" is to be considered any period of patient care)*	○ Head to Toe Assessment ○ Psychological Assessment ○ Patient Education (as defined in policy PC157, "Patient Education") ○ IPOC ○ Include IPOC nursing note for topics in which 'progressing' or 'not progressing' is selected (N1505) ○ Morse Fall Risk Scale (refer to policy PC149, "Falls Prevention") ○ Braden Scale (refer to policy PC159, "Skin/Wound Assessment and Care") ○ WALDO Flowsheet ○ Wound/Ostomy/Drain assessed and documented ○ Intake & Output completed ○ Screen for new or worsening infection
Q 96 Hours (4 days)	○ IV tubing and claves changed and documented in WALDO flowsheet
Q Sunday	○ Central line dressings (including Port and PICC) changed *every* Sunday and PRN (unless tape/gauze dressing, which requires change Q48 hours)
Upon Discharge	○ Complete Patient Education ○ Complete IPOC ○ WALDO to complete lines/drains PRN ○ Discharge Checklist ○ After Visit Summary (AVS) & Summary of Care Document

AT THE FOREFRONT
UChicago Medicine

TIP SHEET: Heparin drips

This tip sheet provides information on the nursing maintenance of heparin drips along with tips for documentation for ordering and monitoring heparin drips in Epic.

Things to know about heparin drips

1. Absolute Contraindications: known allergy, history of heparin-induced thrombocytopenia, and/or allergy to pork or pork products
2. There is one standard heparin concentration heparin 25,000 units/500 ml (50 unit/ml) for heparin drips.
3. Heparin protocol dosing is weight based. For this reason, an accurate baseline dosing weight must be obtained for these patients. Subsequent dosing is based on APTT results. **Take note of maximum doses for both the BOLUS and Initial MAINTENANCE infusion rates.**
4. Heparin drips must be infused on a Baxter pump using the drug library (this includes heparin boluses) Refer to policy PC 139, *Medication Administration*.
5. The heparin drip is programmed in units/hr on the Baxter pump.
6. A nursing independent double check must be completed at 4 different times: (1) time of drip initiation, (2) when hanging a new bag, (3) when administering a bolus from the bag, and (4) when changing the infusion rate/dose on the pump. The 2nd RN verifies the heparin dose and infusion rate against the original order per the protocol, clarifies any discrepancies with the primary nurse and cosigns the completion of the 2nd check via the administration function on the eMAR at the bedside when the action is completed. Refer to policy PC 143, *High Alert Medications*.

Labs

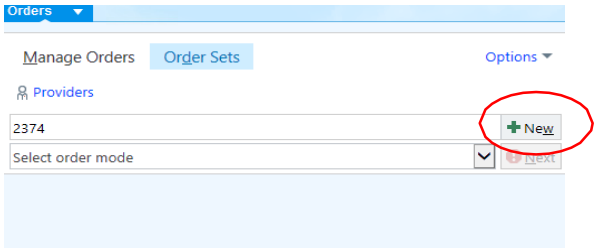
The primary RN is accountable to ensure that time sensitive labs such as aPTT are drawn at the scheduled times.

1. Baseline labs including aPTT and CBC shall be obtained and assessed prior to protocol initiation (within 48 hours of start). In emergency situations a heparin drip can be initiated without a baseline aPTT resulted (i.e. acute pulmonary embolism).
2. Six (6) hours after bolus and infusion rate change, release PRN aPTT in "Orders Overview"
3. Review aPTT results in "Results Review" – Coagulation: after 45- 60 mins
4. Every aPTT result will require a new protocol order entry in Maintenance Protocol Order Set even when aPTT is therapeutic.
5. Continue to follow the protocol until two consecutive aPTT are within therapeutic range; then consult provider to change aPTT orders to daily

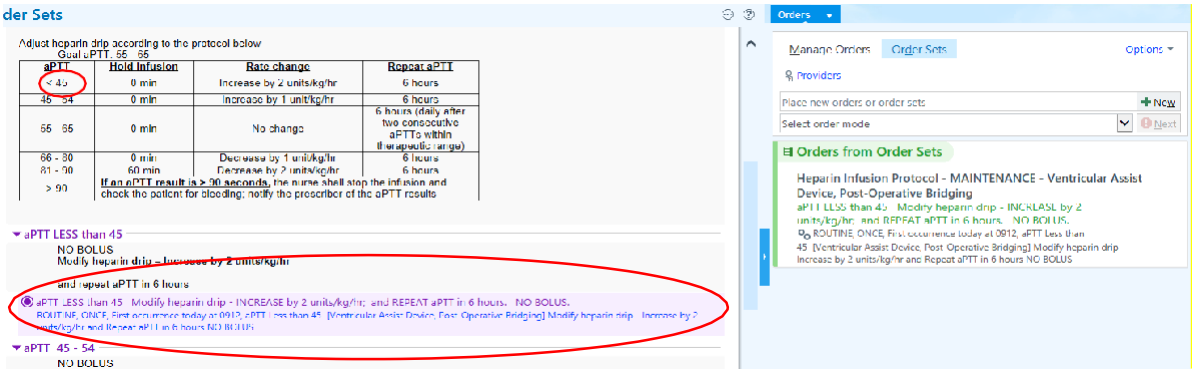
Ordering and Maintaining Heparin Drips

1. Know what protocol you are using - UCMC has **6** Heparin Protocol order sets available. See this tip sheet for further breakdown of commonly used protocols here at UCMC. (Can also be viewed in Share Point through the intranet).

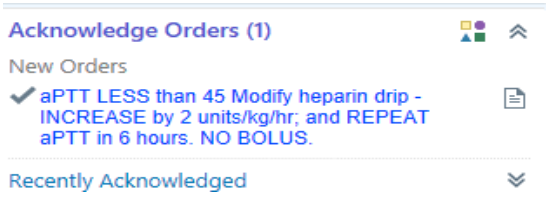
2. Once you have located the protocol number or name, you will need to enter the appropriate protocol order.
   a. Manage orders → order sets →enter heparin protocol number or name in order set box→ click "new" → click "accept"



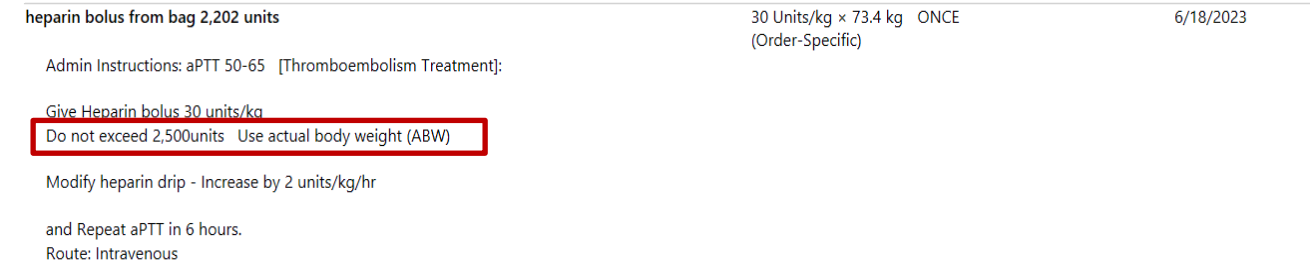
Find the appropriate rate/dose adjustment that corresponds with the aPTT range. Review administration instructions regarding initial infusion rate limits and consult with pharmacist for discrepancies. DO NOT EXCEED MAXIMUM INFUSION RATE.



c. Select that option and sign the order (per protocol) to add to the patients eMAR. This will also populate as a new order to be acknowledged.

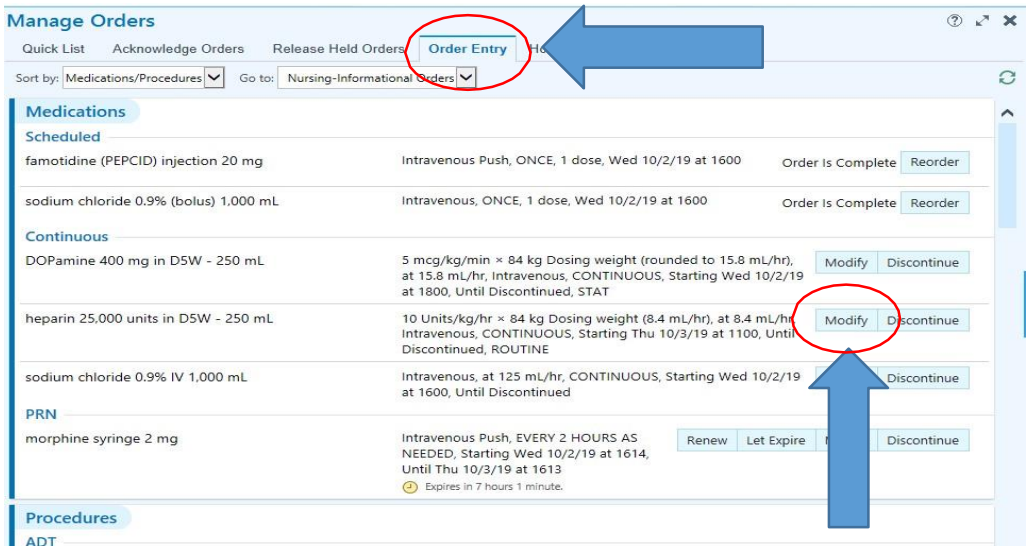


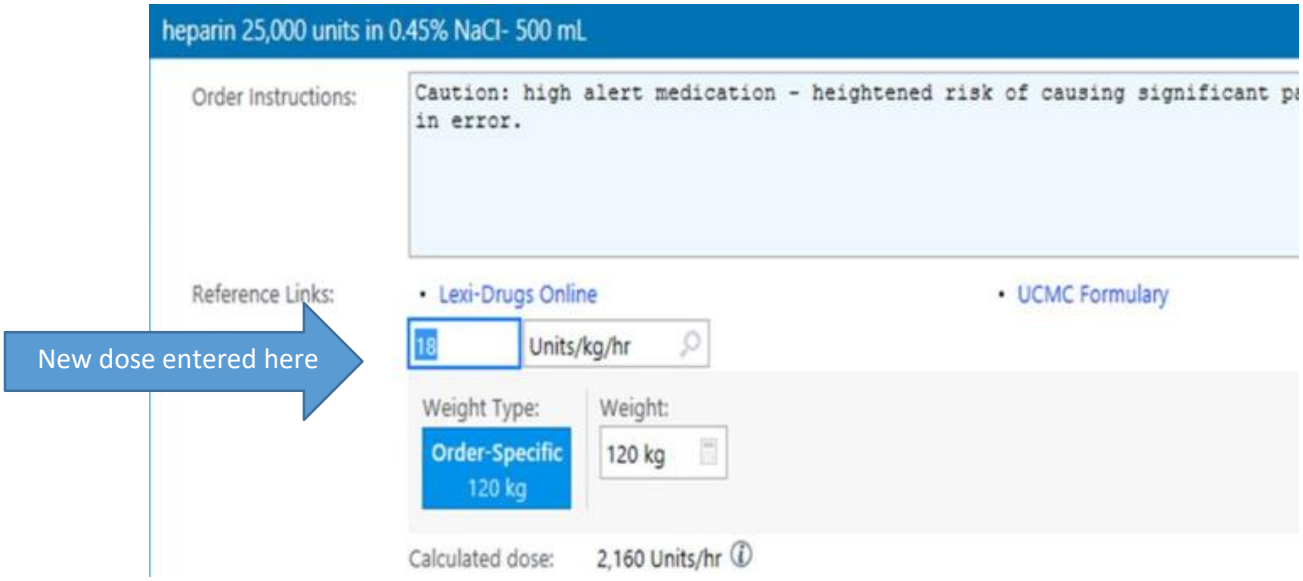
d. In some cases, a Heparin bolus may need to be entered. Enter the bolus order per protocol based on patient's dosing weight. Review administration instructions regarding bolus limits and consult with pharmacist for discrepancies. DO NOT EXCEED MAXIMUM BOLUS DOSE.



e. Lastly, you need to modify the existing heparin drip order (per protocol).

i. Select “manage orders” → order entry → find continuous heparin drip order → click “modify” tab → make adjustments that correlate with aPTT and the heparin protocol





f. If no rate adjustments are needed, enter and sign the order (per protocol) that states PTT within THERAPEUTIC range, continue current therapy NO BOLUS, NO RATE CHANGE.

PROTOCOL TITLE: Adult & Pediatric IVIG Stewardship Process
PROTOCOL NUMBER: PGP-100
ISSUE DATE: 09/2019
REVISED DATE: 06/2021
COMMITTEE OWNER: IVIG Stewardship Committee

(I) OBJECTIVE

The objective of this procedure is to establish a process for the rational use of intravenous immune globulin (IVIG) for the University of Chicago Medicine (UCM) campuses in response to a national drug shortage. The purpose of this document is to provide a set of clear instructions for the allocation of IVIG products in order to facilitate proper distribution.

(II) RESPONSIBILITY

The IVIG Stewardship Committee will be responsible for maintaining and updating the guidelines and recommendations of this program. This document will affect inpatient and outpatient physicians, pharmacists, nurses, and other healthcare personnel that are involved with patients slated to receive IVIG at UCM.

(III) PROCEDURE

a. Providers
    i. Provider will be required to call the primary pharmacist or central pharmacy for order entry and approval of IVIG doses.
b. Pharmacists:
    i. Outpatient IVIG doses:
        1. Expectations: Monday – Friday by end of shift
            a. Prior to an upcoming scheduled IVIG dose, the proper indication, dose (using ideal body weight [IBW]), and frequency must be assessed
                i. If any of these are deemed inappropriate (based on appendix 1), they must be either corrected or denied.
            b. The ordering provider will be contacted for doses deemed inappropriate and will be denied/cancelled, rescheduled, or referred to an outside facility
    ii. Inpatient IVIG doses:
        1. Expectations: The ordering provider will contact pharmacy to request IVIG
            a. 7a-9p: A pharmacist must review eligibility for dose based on the IVIG eligibility criteria (see appendix 1).
                i. If the indication is listed on the table within the green, yellow, and orange sections enter the order
                ii. If the indication is not listed or listed in the “NOT indicated for use (other options available)” (red) section, page the ordering provider to say it is not listed in the approved restriction criteria.
            b. 9p-7a: After hours, a pharmacist must review eligibility for dose based on the IVIG eligibly criteria (see appendix 1).
                i. If the indication is listed on the table within the green section enter the order
                ii. If the indication is listed on the table within the yellow and orange sections, page the ordering provider to assess urgency of dose:
                    1. If needed urgently, enter the order

2. If not needed urgently i-vent and pass-off to primary pharmacist for next day

iii. If the indication is not listed or listed in the "NOT indicated for use (other options available)" (red) section, page the ordering provider to say it is not listed in the approved restriction criteria.

1. If ordering provider is requesting exception then page the pharmacy administrator on call (PAOC) to approval of the IVIG dose. Otherwise, triage to next morning for follow-up

2. After entering an IVIG dose, add a 'order verification queue comment' indicating to pharmacist colleagues that it is approved for verification.

iii. Escalation Process:

1. If a patient population/disease state is not listed on in Appendix 1 (IVIG Eligibility Criteria) OR there are conditions that would make a patient eligible for IVIG in the red section this will be first escalated through the pharmacy formulary management team with supporting evidence. This team will then review the evidence provided by the front line pharmacist ensuring there are no appropriate alternatives.
2. In the case that the pharmacy formulary management team denies the request, this request can be escalated to a representative on the IVIG stewardship committee for final determination.
3. The discussion, should be based purely on clinical rationale backed up with evidence and not dependent upon inventory levels during the time of shortage
4. IVIg Eligibility Criteria
    a. IVIG doses deemed "urgent use indicated" (Green) are approved for administration due to, but not limited to, emergent or life threatening situation or clinical appropriateness
    b. IVIG doses deemed "urgent use MAY be indicated" (Yellow) are conditionally approved for administration based on specific criteria outlined in the IVIG eligibility document. In situations where the pharmacist is unsure of urgency, the pharmacist may page the clinical specialist in this area to discuss.
    c. IVIG doses deemed "Non-urgent use" are triaged to the morning for review by a clinical pharmacist. If the clinical pharmacist is unsure of clinical need the pharmacist may discuss with clinical specialist in area OR escalate to member of multidisciplinary IVIG stewardship committee
    d. IVIG doses deemed "NOT indicated for use (other options available)" are generally denied due to, but not limited to, inappropriate indication, existence of alternate therapies, or inappropriate timing.

URGENT USE INDICATED	Dose	Frequency	Number of Doses
Autoimmune encephalitis	2g/kg split over 4-5 d	Varies	Varies
Chronic inflammatory demyelinating polyneuropathy (CIDP) • Patients at risk for acute exacerbation/respiratory distress	Initial: 2g/kg split over 4-5 d Maintenance 0.5-1 g/kg	every 3-4 wks	Multiple
Guillain-Barre Syndrome (GBS)	2g/kg split over 4-5 d	No maintenance dose	1
Inflammatory myopathies 1. Refractive and active dermatomyositis, polymyositis, and anti-synthetase defined as failing **BOTH** for ≥ 3 months: a. glucocorticoids (≥ 2 months of high doses of prednisone 0.5-1 mg/kg of prednisone or equivalent) b. ≥ 1 conventional immunosuppressant agent at optimal or near optimal doses [methotrexate (20-25 mg/weekly) or azathioprine (2 mg/kg/day) or mycophenolate mofetil (2-3 g/day) or tacrolimus (serum level 5-20 ng/mL) or cyclosporine (2.5-3 mg/Kg/day)] 2. Fulminant inflammatory myopathy rapidly progressing over 1 mo to: • severe weakness • associated myocarditis • severe dysphagia • CK > 10,000 mg/dL. 3. Immune-mediated necrotizing myopathy defined by the presence of anti-SRP or anti-HMGCR antibodies or muscle pathology consistent with the disease	1-2 g/kg over 2-5 d	Every 4-8 wks	
Kawasaki Syndrome	2 g/kg	One-time dose	1 *(2nd dose maybe indicated if no response)*
Multisystem Inflammatory Syndrome in Children (MIS-C)	2 g/kg	One-time dose	1 *(2nd dose maybe indicated if no response)*
Myasthenia Gravis with impending acute respiratory crisis	Initial: 2g/kg split over 4-5 d Maintenance 0.5-1 g/kg	every 3-4 wks	6 maintenance doses (for 6 mo), then reassess
Neuromyelitis optica (NMO)	2g/kg split over 4-5 d	Varies	Varies
Post Vaccine Pediatric Myocarditis with Reduced Ejection Fraction	2 g/kg split over 2 days	Once-time dose	1

URGENT USE MAY BE INDICATED	**Dose**	**Frequency**	**Number of Doses**

Chronic Lymphocytic Leukemia (CLL)/Multiple Myeloma (MM) /CAR-T/Hematopoietic Stem Cell Transplant (HSCT)
• An IgG < 400 mg/dL (excluding paraprotein)
• At least 1 episode of a suspected or confirmed severe bacterial infection within the last 3 months that required BOTH
  ○ antibiotic administration
  ○ ED visit or hospital admission
*Recommend (but do not require) attempting a 3 mo trial of antibiotic prophylaxis prior to proceeding with IVIG
	0.4 g/kg	Every 3–4 weeks	Aim for IgG > 600 mg/dl. Stop if no improvement in frequency or severity of bacterial infections after 1 year

Multiple Myeloma (MM)/Lymphoma patients on BCMA (B-cell maturation antigen) targeted therapy with hypogammaglobinemia (IgG < 400 mg/dL) excluding paraprotein	0.4 g/kg	Every 3-4 weeks	Aim for IgG > 600 mg/dl. Stop if no improvement in frequency or severity of bacterial infections after 1 year
Severe hypogammaglobinemia (IgG < 200 mg/dL) in patients with active cancer or post-HSCT	0.4 g/kg	Every 3-4 weeks	Aim for IgG > 600 mg/dl. Stop if no improvement in frequency or severity of bacterial infections after 1 year
Confirmed antibody mediated rejection (solid organ transplant)	Low dose phase: 100 mg/kg High dose phase: 2 g/kg (max 140g)	Low dose: after each PLEX session High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type	Low dose: PLEX durations vary; often x5 High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type
Hypogammaglobinemia (IgG < 400 mg/dL) AND serious viral infection (BK/HHV6/Adenovirus/CMV, including respiratory virus panel positive for hMPV/RSV/Enterovirus) - Note: viruses not listed above will require approval as limited evidence exists demonstrating benefit. Additionally, non-hypogammaglobulinemic patients will also require approval due to a limited evidence base.	0.4 g/kg	One time dose	1

Hypogammaglobinemia (IgG <400 mg/dL) in **heart or lung transplant recipients**	0.4 g/kg	One time dose	1
Idiopathic thrombocytopenic purpura (ITP) AND: 1. Acute major bleed 2. Acute clinically relevant non major bleed 3. Peripartum 4. Perioperative with plt < 20000 cells when unable to tolerate glucocorticoid 5. Persistent PLTs < 20000 cells when unable to tolerate or have failed glucocorticoids (1-1.5 mg/kg/day for at least 1 week)	1 g/kg over 1-2 d	One-time dose	1
Adult severe autoimmune hemolytic anemia in post-cellular therapy patients who meet one of the following criteria: 1. Failed glucocorticoids (1-1.5 mg/kg/day) for at least 1 week 2. Failed rituximab (375 mg/m2 x1) 3. Are unable to receive rituximab due to: a. Active infection b. History of severe hypersensitivity reaction c. Within 180 days of transplant	1 g/kg	Weekly	2-4
Induction for a high immunologic risk patient (solid organ transplant)	Low dose phase: 100 mg/kg High dose phase: 2 g/kg (max 140g)	Low dose: after each PLEX session High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type	Low dose: PLEX durations vary; often x5 High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type
Neonatal autoimmune (Rh- or ABO-incompatible) hemolytic anemia	1 g/kg (max: 5g)	One-time dose	1
Neonatal alloimmune thrombocytopenia (NAIT)/ Neonatal ITP	1 g/kg (max: 5g)	Q24h	2
URGENT USE NOT INDICATED	**Dose**	**Frequency**	**Number of Doses**
Anti-MAG neuropathy			Infrequent use
Chronic inflammatory demyelinating polyneuropathy (CIDP) • Maintenance therapy required, not urgent	Initial: 2g/kg split over 4-5 d Maintenance 0.5-1 g/kg	every 3-4 wks	Multiple
Desensitization for class I (one) HLA incompatibility (solid organ transplant; limited to cases approved per drug availability and sequestration prior to starting regimen)	Varies by regimen	Varies by regimen	Varies by regimen
Eaton-Lambert syndrome	2g/kg split over 4-5 d	varies	varies

Multifocal motor neuropathy (MMN)	Initial: 2g/kg split over 4-5 d Maintenance 0.5 g/kg	every 3-4 wks	Multiple
Acute Myocarditis	2g/kg split over 24-48 hours	Once	
Neonatal sepsis AND ECMO			
Other neuromuscular syndromes (e.g. multiple sclerosis, Primary immunodeficiency syndromes)			
Secondary immunodeficiency syndromes			
IVIG GENERALLY NOT INDICATED *(OTHER OPTIONS AVAILABLE)*	**Dose**	**Frequency**	**Number of Doses**
Adult autoimmune hemolytic anemia • Preferred therapies: plasmapheresis, glucocorticoids, rituximab, azathioprine, mycophenolate mofetil, danazol, cyclosporine, cyclophosphamide			
Antiphospholipid syndrome • Preferred therapies: plasmapheresis, systemic anticoagulation, glucocorticoids, rituximab			
Desensitization for class II (two) HLA incompatibility (solid organ transplant; limited to cases approved per drug availability and sequestration prior to starting regimen)	Varies by regimen	Varies by regimen	Varies by regimen
Infection (e.g. viral infections, toxic shock) • Generally not indicated, except in setting of hypogammaglobinemia			
Secondary immunodeficiency of chylothorax in the absence of infection			
Stevens-Johnson syndrome (SJS)			
Systemic lupus erythematosus • Preferred therapies: glucocorticoids, azathioprine, mycophenolate mofetil, cyclophosphamide, rituximab			
Toxic epidermal necrolysis (TEN)			

References:

1. British Guidelines on the Diagnosis, Investigation and Management of CLL - **Oscier et al. *BJH* 2012**
2. Canadian IVIG Hematology and Neurology Expert Panel - **Anderson et al. *Transfusion Medicine Reviews* 2007**
3. de Souza JM, Hoff LS, Shinjo SK. Intravenous human immunoglobulin and/or methylprednisolone pulse therapies as a possible treat-to-target strategy in immune-mediated necrotizing myopathies. In: *Rheumatol Int.* Vol 39. Germany2019:1201-1212.
4. Dalakas MC, Illa I, Dambrosia JM, et al. A controlled trial of high-dose intravenous immune globulin infusions as treatment for dermatomyositis. *N Engl J Med.* 1993;329(27):1993-2000.
5. Joint Recommendations from CIBMTR/NMDP/ ASBMT/EBMT/IDSA/CDC - **Toblyn et al. BBMT 2011**
6. McGrath ER, Doughty CT, Amato AA. Autoimmune Myopathies: Updates on Evaluation and Treatment. *Neurotherapeutics.* 2018;15(4):976-994.
7. Mulhearn B, Bruce IN. Indications for IVIG in rheumatic diseases. *Rheumatology (Oxford).* 2015;54(3):383-391.
8. Pinal-Fernandez I, Casal-Dominguez M, Mammen AL. Immune-Mediated Necrotizing Myopathy. *Curr Rheumatol Rep.* 2018;20(4):21

9. Work Group Report of the American Academy of Allergy, Asthma & Immunology - **Perez et al. *J Allergy Clin Immunol* 2017**

Heparin Drip Bolus from Bag Examples

Case 1: 76-year-old female with hx mitral valve repair in 2009 who has developed pneumonia. Patient has inconsistent use of Coumadin. VS: 35.7 P92- R24- B/P 128/76 Height: 158 cm Wt: 65 kg Labs: PT 18.0 PTT 23 INR 1.7.
Orders to start Heparin protocol for Prosthetic Heart Valves/Atrial Fibrillation

Acute Coronary Syndromes, Prophylaxis in Prosthetic Heart Valves and Atrial Fibrillation (Goal aPTT: 62-77 seconds).
Initial bolus dose is 60 units/Kg by IV bolus (Maximum 4000 units)
Then begin IV infusion at 12 units/Kg/hour (Initial maximum 1000 units/hr)

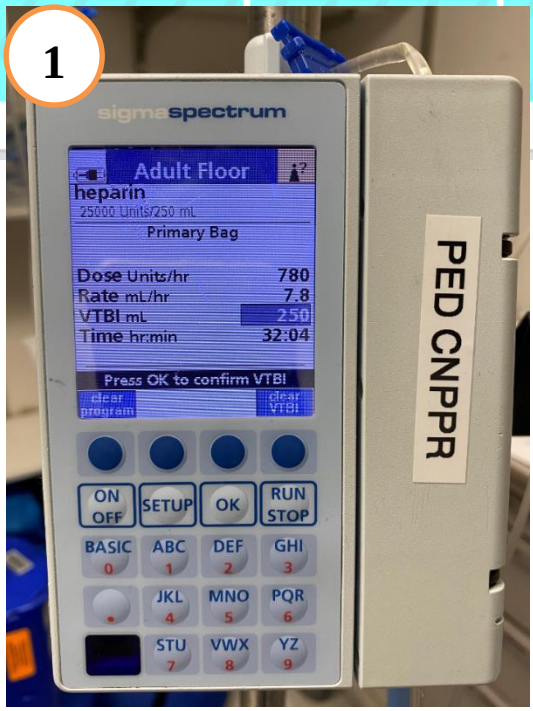
aPTT in seconds	Dose Change	Repeat aPTT
< 49	Bolus 60 units/Kg. Do not exceed 5,000 units. Increase rate by 3 units/Kg/hour	6 hours
49-61	Bolus 30 units/Kg. Do not exceed 2,500 units. Increase rate by 2 units/Kg/hour	6 hours
62-77	No bolus. No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
78-92	No bolus. Decrease rate 2 units/Kg/hour	6 hours
93-200	No bolus. Hold infusion 1 hour. Decrease by 3 units/Kg/hour	6 hours
>200	**If an aPTT result is >200,** the nurse shall stop the infusion and check the patient for bleeding. The nurses shall then redraw a stat aPTT, using the stat aPTT PRN order, away from the heparin infusion or at a different site than previous draw. **If the result is confirmed by another >200 seconds,** the nurse shall continue to hold the drip per protocol and follow nomogram instructions for aPTT 93-200; notify the prescriber of the aPTT results. **If the result is found to be in error,** the nurse shall refer to the nomogram and follow the protocol based on the result from the repeat aPTT.	

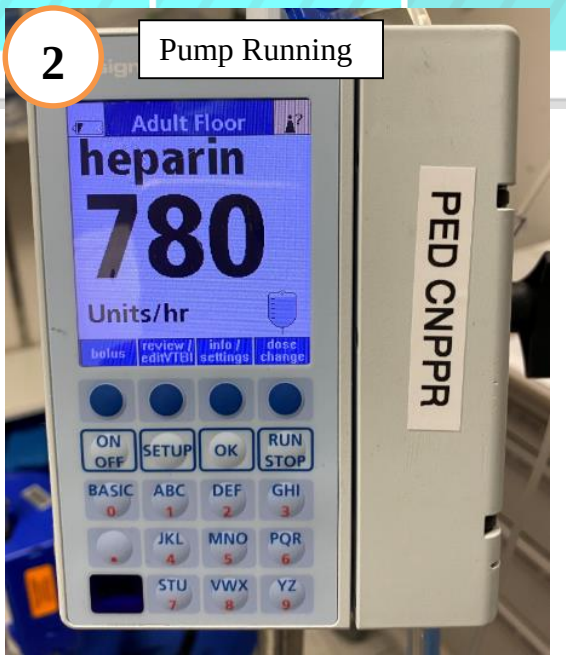
Using Standard Heparin solution 25,000 units/250 ml. D5W. Initiate the Heparin infusion at 12 units/kg/hour.

1. Calculate the rate at which you would program the infusion pump. 780 units/hr__

WAIT FOR PHARMACY TO VERIFY THE RATE!!!!!!!!!!!!!!!!!!!
RATE MUST BE PROGRAMMED IN UNITS/HR.

heparin 25,000 units in D5W - 250ml Dose 12 Units/kg/hr × 65 kg (Dosing Weight) : Admin Dose 780 Units/hr : 7.8 ml/hr Intravenous :





2. After programing the pump for the initial infusion using the protocol, then initiate the Bolus of 60units/kg.

3. Calculate the bolus dose based on the protocol: 3900 units How many units should be administered to the patient? 3900 units

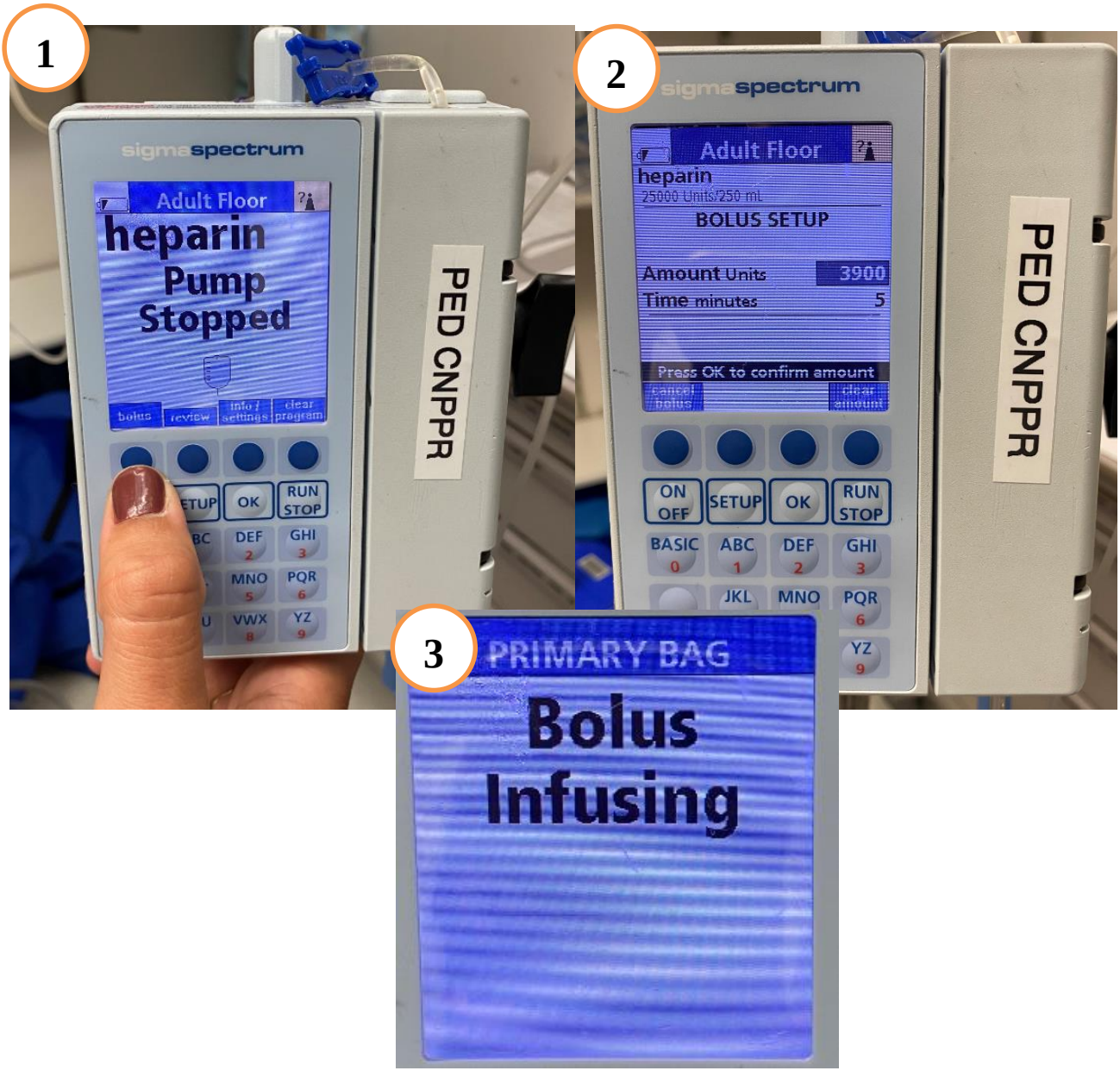
WAIT FOR PHARMACY TO VERIFY THE BOLUS DOSE!!!!!!!!!!!!!!!!!!!

heparin injection **3900 Units** : Dose 60 Units/kg × 65 kg (Dosing Weight) : Admin Dose 3900 units Intraver
Valves :

Admin Instructions:
Do not exceed 4,000units. For Atrial Fibrillation and Prosthetic Heart Valves - Use actual body weight (ABW)

Administration Instructions: Administer 3900 units as bolus from Bag = 39 ml.

4. Demonstrate the bolus function on Baxter pump, 2nd RN to verify.



Case 2: **50 yr old man admitted for acute chest pain, shortness of breath and probable pulmonary embolism. VS: 37.2, P96- R20 B/P 148/90 Ht: 69 cm Wt:85 kg Labs: PT 12.4 PTT 25 INR 1.3 Orders to start Heparin protocol for Thromboembolism.**

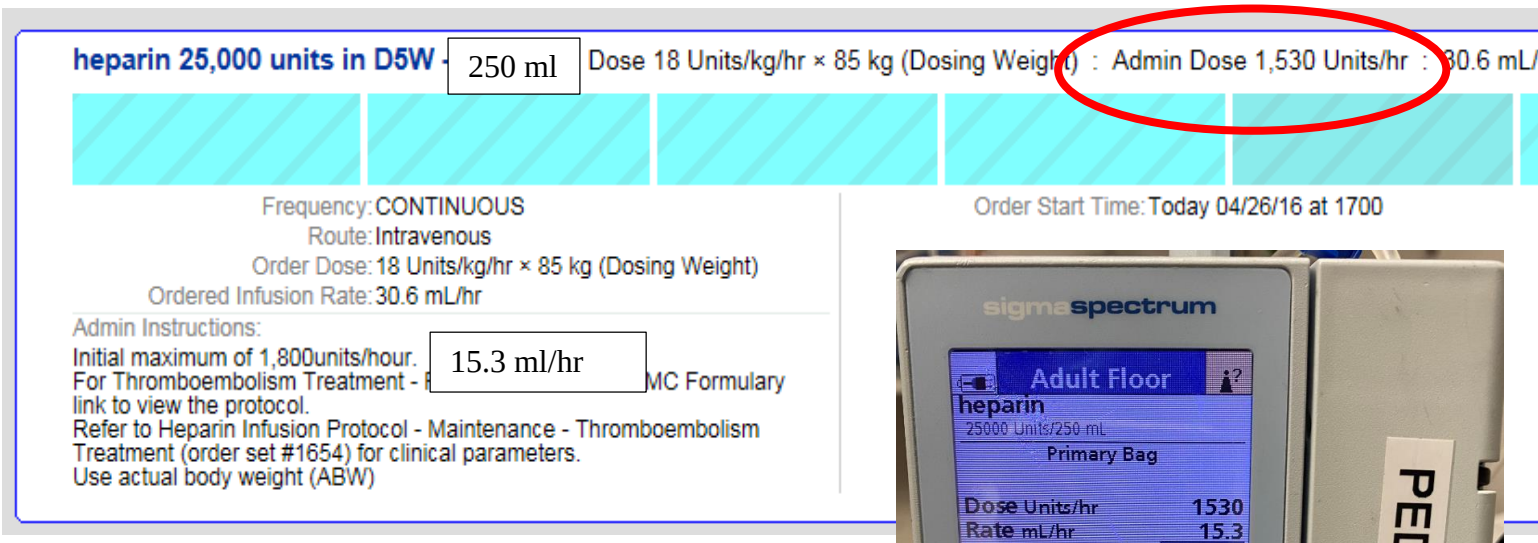
Treatment of Thromboembolism in Adults (Goal aPTT: 62-91 seconds)
Initial bolus dose for treatment is 80 units/Kg by IV bolus (Maximum 8000 units)
Then begin IV infusion at 18 units/Kg/hour (Initial maximum 1800 units/hr)

aPTT in seconds	Dose Change	Repeat aPTT
< 49	Bolus 60 units/Kg. Do not exceed 5,000 units. Increase rate by 3 units/Kg/hour	6 hours
49-61	Bolus 30 units/Kg. Do not exceed 2,500 units. Increase rate by 2 units/Kg/hour	6 hours
62-91*	No bolus. No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
92-105	No bolus. Decrease rate 2 units/Kg/hour	6 hours
106-200	No bolus. Hold infusion for 1 hour. Decrease rate 3 units/Kg/hour	6 hours
>200	**If an aPTT result is >200,** the nurse shall stop the infusion and check the patient for bleeding. The nurses shall then redraw a stat aPTT, using the stat aPTT PRN order, away from the heparin infusion or at a different site than previous draw. **If the result is confirmed by another >200 seconds,** the nurse shall continue to hold the drip per protocol and follow nomogram instructions for aPTT 106-200; notify the prescriber of the aPTT results. **If the result is found to be in error,** the nurse shall refer to the nomogram and follow the protocol based on the result from the repeat aPTT.	

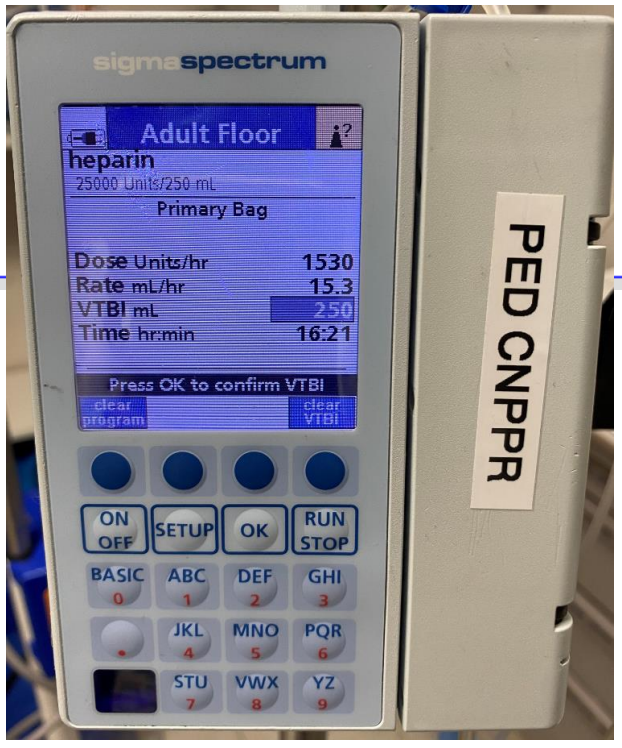
Using Standard Heparin solution 25,000 units/250 ml. D5W. Initiate the Heparin infusion at 18 units/kg/hour.

1. Calculate the rate at which you would program the infusion pump 1530 units/hr

WAIT FOR PHARMACY TO VERIFY THE RATE!!!!!!!!!!!!!!!!!!!
RATE MUST BE PROGRAMMED IN UNITS/HR.



2. Program the pump for the initial infusion. 2nd RN to verify



3. Using the protocol, the Bolus is 80 units/kg.

4. Calculate the bolus dose: 6800 units How many units should be administered to the patient? 6800

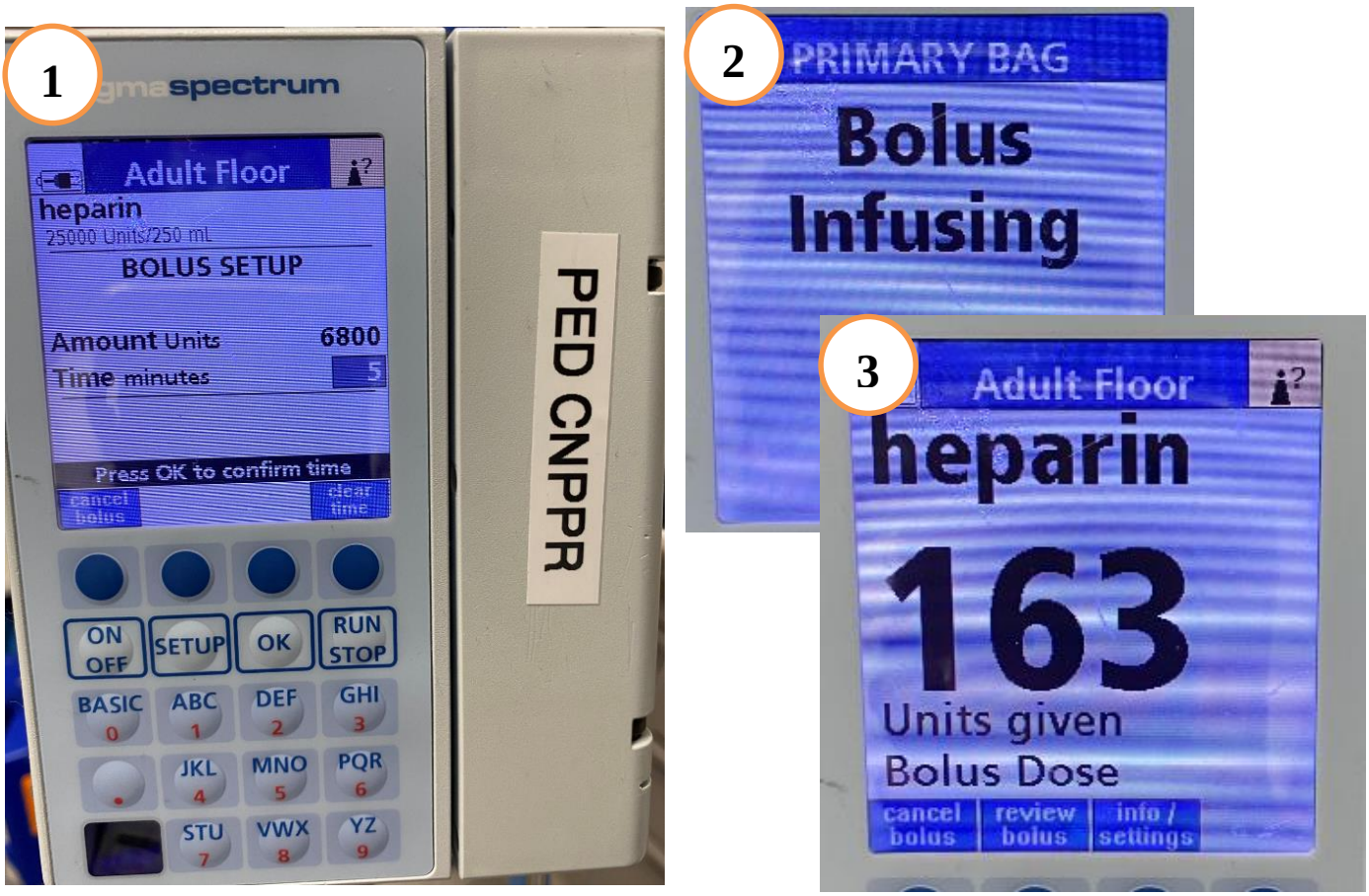
heparin injection | 6800 Units | Dose 80 Units/kg × 85 kg (Dosing Weight) | Admin Dose | 6800 units | Intravenous

Admin Instructions:
Do not exceed 8,000units. For Thromboembolism Treatment -Use actual body weight (ABW)

Administration Instructions: Administer 6800 units as bolus from Bag = 68 ml.

WAIT FOR PHARMACY TO VERIFY THE BOLUS DOSE!!!!!!!!!!!!!!!!!!

5. Demonstrate the bolus function on Baxter pump, 2nd RN to verify.



New Nomograms for Continuous Infusion Unfractionated Heparin
Management by Indication
(As of 3/2019)

Treatment of Thromboembolism in Adults (Goal aPTT: 62-91 seconds)

Initial bolus dose for treatment is 80 units/Kg by IV bolus (Maximum 8000 units)
Then begin IV infusion at 18 units/Kg/hour (Initial maximum 1800 units/hr)

aPTT in seconds	Dose Change	Repeat aPTT
< 49	Bolus 60 units/Kg. Do not exceed 5,000 units. Increase rate by 3 units/Kg/hour	6 hours
49-61	Bolus 30 units/Kg. Do not exceed 2,500 units. Increase rate by 2 units/Kg/hour	6 hours
62-91*	No bolus. No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
92-105	No bolus. Decrease rate 2 units/Kg/hour	6 hours
106-200	No bolus. Hold infusion for 1 hour. Decrease rate 3 units/Kg/hour	6 hours
>200	**If an aPTT result is >200,** the nurse shall stop the infusion and check the patient for bleeding. The nurses shall then redraw a stat aPTT, using the stat aPTT PRN order, away from the heparin infusion or at a different site than previous draw. **If the result is confirmed by another >200 seconds,** the nurse shall continue to hold the drip per protocol and follow nomogram instructions for aPTT 106-200; notify the prescriber of the aPTT results. **If the result is found to be in error,** the nurse shall refer to the nomogram and follow the protocol based on the result from the repeat aPTT.	

Acute Coronary Syndromes, Prophylaxis in Prosthetic Heart Valves and Atrial Fibrillation

(Goal aPTT: 62-77 seconds) **Initial bolus dose is 60 units/Kg by IV bolus (Maximum 4000 units)**
Then begin IV infusion at 12 units/Kg/hour (Initial maximum 1000 units/hr)

aPTT in seconds	Dose Change	Repeat aPTT
< 49	Bolus 60 units/Kg. Do not exceed 5,000 units. Increase rate by 3 units/Kg/hour	6 hours
49-61	Bolus 30 units/Kg. Do not exceed 2,500 units. Increase rate by 2 units/Kg/hour	6 hours
62-77	No bolus. No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
78-92	No bolus. Decrease rate 2 units/Kg/hour	6 hours
93-200	No bolus. Hold infusion 1 hour. Decrease by 3 units/Kg/hour	6 hours
>200	**If an aPTT result is >200,** the nurse shall stop the infusion and check the patient for bleeding. The nurses shall then redraw a stat aPTT, using the stat aPTT PRN order, away from the heparin infusion or at a different site than previous draw. **If the result is confirmed by another >200 seconds,** the nurse shall continue to hold the drip per protocol and follow nomogram instructions for aPTT 93-200; notify the prescriber of the aPTT results. **If the result is found to be in error,** the nurse shall refer to the nomogram and follow the protocol based on the result from the repeat aPTT.	

Acute Neurologic Injury with Indication for Systemic Anticoagulation (Goal aPTT: 62-77 seconds)

No bolus. Begin IV infusion at 12 units/Kg/hour

aPTT in seconds	Dose Change No bolus adjustments	Repeat aPTT
< 49	No bolus. Increase rate 3 units/Kg/hour	6 hours
49-61	No bolus. Increase rate 2 units/Kg/hour	6 hours
62-77	No bolus. No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
78-92	No bolus. Decrease rate 2 units/Kg/hour	6 hours
93-200	No bolus. Hold infusion 1 hour. Decrease rate 3 units/Kg/hour	6 hours
>200	**If an aPTT result is >200,** the nurse shall stop the infusion and check the patient for bleeding. The nurses shall then redraw a stat aPTT, using the stat aPTT PRN order, away from the heparin infusion or at a different site than previous draw. **If the result is confirmed by another >200 seconds,** the nurse shall continue to hold the drip per protocol and follow nomogram instructions for aPTT 93-200; notify the prescriber of the aPTT results. **If the result is found to be in error,** the nurse shall refer to the nomogram and follow the protocol based on the result from the repeat aPTT.	

New Nomograms for Continuous Infusion Unfractionated Heparin
Management by Indication
(As of 3/2019)

Ventricular Assist Device (Goal aPTT: 70-90 seconds)
No Bolus Begin IV infusion at 10 units/Kg/hour (Initial maximum 1000 units/hr)

aPTT in seconds	Dose Change	Repeat aPTT
< 50	No bolus. Increase rate by 2 units/Kg/hour	6 hours
50-69	No bolus. Increase rate by 1 units/Kg/hour	6 hours
70-90	No bolus. No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
91-110	No bolus. Decrease rate 1 units/Kg/hour	6 hours
110-120	HOLD Infusion 1 hour. Decrease rate 2 units/Kg/hour	6 hours
>120	**If an aPTT result is >120 seconds,** the nurse shall stop the infusion and check the patient for bleeding. Notify the prescriber of the aPTT results.	

Ventricular Assist Device, High Bleed Risk (Goal aPTT: 55-75 seconds)
No Bolus Begin IV infusion at 8 units/Kg/hour (Initial maximum 1000 units/hr)

aPTT in seconds	Dose Change	Repeat aPTT
< 55	No bolus. Increase rate by 1 units/Kg/hour	6 hours
55-75	No bolus. No Change.	6 hours
76-85	Hold infusion 1 hour. Decrease rate 1 units/Kg/hour	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
86-95	Hold infusion 1 hour. Decrease rate 2 units/Kg/hour	6 hours
>95	**If an aPTT result is >95 seconds,** the nurse shall stop the infusion and check the patient for bleeding. Notify the prescriber of the aPTT results.	

Ventricular Assist Device, Post-Operative Bridging (Goal aPTT: 55-65 seconds)
No Bolus. Begin IV infusion at 10units/Kg/hour (Initial maximum 1000 units/hr)

aPTT in seconds	Dose Change	Repeat aPTT
< 45	No bolus. Increase rate by 2 units/Kg/hour	6 hours
45-54	No bolus. Increase rate by 1 unit/Kg/hour	6 hours
55-65	No change	6 hours Daily, after two consecutive therapeutic aPTTs taken 6 hours apart
66-80	Decrease rate 1 units/Kg/hour	6 hours
81-90	Hold infusion 1 hour. Decrease rate 2 units/Kg/hour	6 hours
>90	**If an aPTT result is >90 seconds,** the nurse shall stop the infusion and check the patient for bleeding. Notify the prescriber of the aPTT results.	

Appendix 1. IVIG Eligibility Criteria Updated 07/2023

URGENT USE INDICATED	Dose	Frequency	Number of Doses
Autoimmune encephalitis	2g/kg split over 4-5 d	Varies	Varies
Chronic inflammatory demyelinating polyneuropathy (CIDP) • Patients at risk for acute exacerbation/respiratory distress	Initial: 2g/kg split over 4-5 d Maintenance 0.5-1 g/kg	every 3-4 wks	Multiple
Guillain-Barre Syndrome (GBS)	2g/kg split over 4-5 d	No maintenance dose	1
Inflammatory myopathies 1. Refractive and active dermatomyositis, polymyositis, and anti-synthetase defined as failing **BOTH** for ≥ 3 months: a. glucocorticoids (≥ 2 months of high doses of prednisone 0.5-1 mg/kg of prednisone or equivalent) b. ≥ 1 conventional immunosuppressant agent at optimal or near optimal doses [methotrexate (20-25 mg/weekly) or azathioprine (2 mg/kg/day) or mycophenolate mofetil (2-3 g/day) or tacrolimus (serum level 5-20 ng/mL) or cyclosporine (2.5-3 mg/Kg/day)] 2. Fulminant inflammatory myopathy rapidly progressing over 1 mo to: • severe weakness • associated myocarditis • severe dysphagia • CK > 10,000 mg/dL. 3. Immune-mediated necrotizing myopathy defined by the presence of anti-SRP or anti-HMGCR antibodies or muscle pathology consistent with the disease	1-2 g/kg over 2-5 d	Every 4-8 wks	
Kawasaki Syndrome	2 g/kg	One-time dose	1 *(2nd dose maybe indicated if no response)*
Multisystem Inflammatory Syndrome in Children (MIS-C)	2 g/kg	One-time dose	1 *(2nd dose maybe indicated if no response)*
Myasthenia Gravis with impending acute respiratory crisis	Initial: 2g/kg split over 4-5 d Maintenance 0.5-1 g/kg	every 3-4 wks	6 maintenance doses (for 6 mo), then reassess
Neuromyelitis optica (NMO)	2g/kg split over 4-5 d	Varies	Varies
Post Vaccine Pediatric Myocarditis with Reduced Ejection Fraction	2 g/kg split over 2 days	Once-time dose	1

URGENT USE MAY BE INDICATED	**Dose**	**Frequency**	**Number of Doses**
Chronic Lymphocytic Leukemia (CLL)/Multiple Myeloma (MM) /CAR-T/Hematopoietic Stem Cell Transplant (HSCT) • An IgG < 400 mg/dL (excluding paraprotein) • At least 1 episode of a suspected or confirmed severe bacterial infection within the last 3 months that required BOTH ○ antibiotic administration ○ ED visit or hospital admission *Recommend (but do not require) attempting a 3 mo trial of antibiotic prophylaxis prior to proceeding with IVIG	0.4 g/kg	Every 3–4 weeks	Aim for IgG > 600 mg/dl. Stop if no improvement in frequency or severity of bacterial infections after 1 year
Multiple Myeloma (MM)/Lymphoma patients on BCMA (B-cell maturation antigen) targeted therapy with hypogammaglobinemia (IgG < 400 mg/dL) excluding paraprotein	0.4 g/kg	Every 3-4 weeks	Aim for IgG > 600 mg/dl. Stop if no improvement in frequency or severity of bacterial infections after 1 year
Severe hypogammaglobinemia (IgG < 200 mg/dL) in patients with active cancer or post-HSCT	0.4 g/kg	Every 3-4 weeks	Aim for IgG > 600 mg/dl. Stop if no improvement in frequency or severity of bacterial infections after 1 year
Confirmed antibody mediated rejection (solid organ transplant)	Low dose phase: 100 mg/kg High dose phase: 2 g/kg (max 140g)	Low dose: after each PLEX session High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type	Low dose: PLEX durations vary; often x5 High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type
Hypogammaglobinemia (IgG < 400 mg/dL) AND serious viral infection (BK/HHV6/Adenovirus/CMV, including respiratory virus panel positive for hMPV/RSV/Enterovirus) - Note: viruses not listed above will require approval as limited evidence exists demonstrating benefit. Additionally, non-hypogammaglobulinemic patients will also require approval due to a limited evidence base.	0.4 g/kg	One time dose	1

Hypogammaglobinemia (IgG <400 mg/dL) in **heart or lung transplant recipients**	0.4 g/kg	One time dose	1
Idiopathic thrombocytopenic purpura (ITP) AND: 1. Acute major bleed 2. Acute clinically relevant non major bleed 3. Peripartum 4. Perioperative with plt < 20000 cells when unable to tolerate glucocorticoid 5. Persistent PLTs < 20000 cells when unable to tolerate or have failed glucocorticoids (1-1.5 mg/kg/day for at least 1 week)	1 g/kg over 1-2 d	One-time dose	1
Adult severe autoimmune hemolytic anemia in post-cellular therapy patients who meet one of the following criteria: 1. Failed glucocorticoids (1-1.5 mg/kg/day) for at least 1 week 2. Failed rituximab (375 mg/m2 x1) 3. Are unable to receive rituximab due to: a. Active infection b. History of severe hypersensitivity reaction c. Within 180 days of transplant	1 g/kg	Weekly	2-4
Induction for a high immunologic risk patient (solid organ transplant)	Low dose phase: 100 mg/kg High dose phase: 2 g/kg (max 140g)	Low dose: after each PLEX session High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type	Low dose: PLEX durations vary; often x5 High dose: x1, but the total amount is split into 1-4 daily doses depending on patient blood type
Neonatal autoimmune (Rh- or ABO-incompatible) hemolytic anemia	1 g/kg (max: 5g)	One-time dose	1
Neonatal alloimmune thrombocytopenia (NAIT)/ Neonatal ITP	1 g/kg (max: 5g)	Q24h	2
URGENT USE NOT INDICATED	**Dose**	**Frequency**	**Number of Doses**
Anti-MAG neuropathy			Infrequent use
Chronic inflammatory demyelinating polyneuropathy (CIDP) • Maintenance therapy required, not urgent	Initial: 2g/kg split over 4-5 d Maintenance 0.5-1 g/kg	every 3-4 wks	Multiple
Desensitization for class I (one) HLA incompatibility (solid organ transplant; limited to cases approved per drug availability and sequestration prior to starting regimen)	Varies by regimen	Varies by regimen	Varies by regimen
Eaton-Lambert syndrome	2g/kg split over 4-5 d	varies	varies
Multifocal motor neuropathy (MMN)	Initial: 2g/kg split over 4-5 d	every 3-4 wks	Multiple

	Maintenance 0.5 g/kg		
Acute Myocarditis	2g/kg split over 24-48 hours	Once	
Neonatal sepsis AND ECMO			
Other neuromuscular syndromes (e.g. multiple sclerosis, Primary immunodeficiency syndromes)			
Secondary immunodeficiency syndromes			
IVIG GENERALLY NOT INDICATED *(OTHER OPTIONS AVAILABLE)*	**Dose**	**Frequency**	**Number of Doses**
Adult autoimmune hemolytic anemia • Preferred therapies: plasmapheresis, glucocorticoids, rituximab, azathioprine, mycophenolate mofetil, danazol, cyclosporine, cyclophosphamide			
Antiphospholipid syndrome • Preferred therapies: plasmapheresis, systemic anticoagulation, glucocorticoids, rituximab			
Desensitization for class II (two) HLA incompatibility (solid organ transplant; limited to cases approved per drug availability and sequestration prior to starting regimen)	Varies by regimen	Varies by regimen	Varies by regimen
Infection (e.g. viral infections, toxic shock) • Generally not indicated, except in setting of hypogammaglobinemia			
Secondary immunodeficiency of chylothorax in the absence of infection			
Stevens-Johnson syndrome (SJS)			
Systemic lupus erythematosus • Preferred therapies: glucocorticoids, azathioprine, mycophenolate mofetil, cyclophosphamide, rituximab			
Toxic epidermal necrolysis (TEN)			

References:

1. British Guidelines on the Diagnosis, Investigation and Management of CLL - **Oscier et al. *BJH* 2012**
2. Canadian IVIG Hematology and Neurology Expert Panel - **Anderson et al. *Transfusion Medicine Reviews* 2007**
3. de Souza JM, Hoff LS, Shinjo SK. Intravenous human immunoglobulin and/or methylprednisolone pulse therapies as a possible treat-to-target strategy in immune-mediated necrotizing myopathies. In: *Rheumatol Int.* Vol 39. Germany2019:1201-1212.
4. Dalakas MC, Illa I, Dambrosia JM, et al. A controlled trial of high-dose intravenous immune globulin infusions as treatment for dermatomyositis. *N Engl J Med.* 1993;329(27):1993-2000.
5. Joint Recommendations from CIBMTR/NMDP/ ASBMT/EBMT/IDSA/CDC - **Toblyn et al. BBMT 2011**
6. McGrath ER, Doughty CT, Amato AA. Autoimmune Myopathies: Updates on Evaluation and Treatment. *Neurotherapeutics.* 2018;15(4):976-994.
7. Mulhearn B, Bruce IN. Indications for IVIG in rheumatic diseases. *Rheumatology (Oxford).* 2015;54(3):383-391.
8. Pinal-Fernandez I, Casal-Dominguez M, Mammen AL. Immune-Mediated Necrotizing Myopathy. *Curr Rheumatol Rep.* 2018;20(4):21
9. Work Group Report of the American Academy of Allergy, Asthma & Immunology - **Perez et al. *J Allergy Clin Immunol* 2017**

Phone Numbers

ICUs	
3South, East side (Burn)	x6-8958
3SE Charge Nurse	x6-1601
3North, East side (SICU)	x6-0396
3NE Charge Nurse	x6-1616
4E (CVICU)	x6-8967
4E Charge Nurse	x6-1700
8S (ICU)	x6-8376
8S Charge Nurse	x6-8500
8N (Neuro)	x6-8366
8N Charge Nurse	x6-8520/6-8366
9N (MICU)	x6-9366
9S (MICU)	x6-9376
9N/S MICU charge nurse	x6-1504
FLOORS	
3Central North (Trauma)	x6-0393
3Central North Charge Nurse	x6-1660
3Central South (Trauma)	x6-0394
3Central South Charge Nurse	x6-1671
3W Transplant	x6-0392
3W Charge Nurse	x6-1628
4C (Cardiac medicine)	x6-0494/6-0493
4C Charge Nurse	x6-1750
4W (CV Surg)	x60492
4W Charge Nurse	x6-1730
8E (Neuro)	x6-8336
8E Charge Nurse	x6-8547
8W (Ortho, GYN, Uro)	x6-8396
8W Charge Nurse	x6-8560
9E (General Medicine)	x6-9336
9E Charge Nurse	x6-9520
9W (General Medicine)	x6-9396
9W Charge Nurse	x6-9547
10E (Oncology)	x6-1336
10E Charge Nurse	x6-1523
10 Central (Oncology)	x6-8960
10W (Oncology)	x6-1396
10W Charge Nurse	x6-1547
Mitchell 3SE	x5-8373
Mitchell 3SW	x5-8379
Mitchell 4NW	x4-2185
Mitchell 5SE	x5-8573
Mitchell 5SW	x4-6079
Mitchell 5NW	x2-5656
Emergency Department	**x2-2650**
Bed Access	x4-9130
Staffing Resource Office	x2-3525
UCM Operator	x0
Patient Safety Hotline/Event Reporting	x2-5544
Admitting CCD	x6-8230
Admitting Mitchell	x5-2404 or 2-6233
Transfer Center	x4-4782

Miscellaneous Numbers	
Blood Bank	x2-6827
Cath Lab Charge RN	x6-8757
Cath lab after hours	CCU fellow Pgr 3228
Central Supply	x2-1888
Chaplain pgr	Pgr 7008
Clinical Engineering	x2-6744 or pgr 7720
Coroner	773-666-0200
CT Scan	x6-8333
Diabetes Educator	Pgr 8167
Dialysis	x2-1795
Dr. CART	x147
Echo	x6-8445
EP Lab (830a-5p)	x4-7440
EPIC support	Pgr 5780
Ethics	x2-1453/Pgr 3522
EVS	x5-5537
Food Service Issues	x5-3000
Gift of Hope	800-545-4438
Get Well Network	888-496-3375
GI Procedures	x2-6767
HOA	Pgr 7500
IT Help Desk	x2-3456
Infection Control	x2-1365/Pgr 7025
Interpreter	x26330/Pgr 4331
IR	x6-8318
Lab	2-1316
Linen	x6-8408/Pgr 1500
MRI	x6-8403
MRI Fax	x6-0827
Narc Tech	Pgr 7877
Needlestick Hotline	Pgr 9990
Nuclear Medicine	x5-2909
Occupational Med	x2-6757
Ostomy RN	Pgr 4419
Patient Logistics Manager	x2-2261/pgr 6810
Patient Experience	x4-0500
Pharmacy General	x2-1299
Pharmacy Comer	x5-0093
Pharmacy IV Room	x5-2185
Phlebotomy	2-1316
Plant Dept	x2-6295
Radiology	x2-9149
RRT	x147
Risk Mgmt	x4-0473/pgr 1241
Safety Office (Patient)	x5-7233 (5-SAFE)
Security/Public Safety	x2-6262
Stroke Code	Pgr 144
Supply Chain	x2-1888
Tele Hub	x2-7111
Transportation	x5-5537
Wound RN	Pgr 3422